

# Geoscientist

The Fellowship magazine of The Geological Society of London | [www.geolsoc.org.uk](http://www.geolsoc.org.uk) | Volume 23 No 2 | March 2013

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## SOPWITH SURPRISE

The first British  
geological section?

## VOTE! VOTE! VOTE!

Election issue – full details

# LIE OF THE LAND

New digital mapping  
techniques in the flat lands



# 125<sup>th</sup> Anniversary Scottish Field trips

## The Great British Tertiary Volcanoes: Exploring the Palaeogene centres of Skye and Rum

27<sup>th</sup> May – 1<sup>st</sup> June 2013

The igneous centres of the NW Highland and Islands of Scotland, have provided the starting points for much of our understanding of petrology. Classic studies like that of Harker (Skye) and Emeus (Rum), have unravelled the inner workings of volcanic plumbing systems and their products. This trip, based on the Isle of Skye, explores two of these great igneous centres, by foot and boat. Looking at layered igneous rocks, sills/dykes, lava flows and explosive volcanism, amongst the backdrop and beauty of the inner Isles of Skye and Rum. Everything from textures to the wide expanse of flood basalts and beyond will be covered, with something for everyone's volcanic tastes.

### Itinerary Outline

Monday 27th May	Travel from Inverness and arrive in Portree, Isle of Skye.
Tuesday 28th May	Trotternish peninsular, sediments, shallow intrusions, lavas and landslides (including Duntulm Castle).
Wednesday 29th May	The Central Cullins and boat trip along cliffs, visiting the inside of the Skye volcano (with seals and other wildlife).
Thursday 30th May	Lavas of Talisker bay and North West Skye, including Distillery tour.
Friday 31st May	A taste of Rum....Day trip to the Isle of Rum igneous centre!
Saturday 1st June	Travel back to Inverness with scenic stops and Castles en route

## Structure and tectonics of the NW Highlands of Scotland: From deep crust to hydrocarbon reservoirs

2<sup>nd</sup> – 7<sup>th</sup> June 2013

The NW Highlands of Scotland is classic ground for structural geology. It was here that many of the key concepts were developed, from the recognition and analysis of thrust systems to the discovery of mylonites. This five day field excursion aims to provide an overview not only of the geology and tectonics of NW Scotland but also a broad range of faults and shear zones. These chart deformation styles in the deep crust through various forms of mylonites and cataclasites right up to faulting and damage in analogue hydrocarbon reservoirs. The trip involves a combination of landscape views and hands-on outcrops.

### Itinerary Outline

Monday 3rd June	Excursion begins proper, travelling to Kinlochewe, Gairloch, Gruinard and then onto Ullapool. Overnight in Ullapool.
Tuesday 4th June	Travel to Assynt and Laxford and then onto Tongue. Overnight in Tongue.
Wednesday 5th June	Visit the Thrust belt at Arnabol-Kempie. Overnight in Tongue.
Thursday 6th June	Travel to Sango and Portvasgo. Overnight in Tongue.
Friday 7th June	Travel to Eastern Moine, Portskerra (Devonian) and then back to Inverness by late afternoon. (Accommodation not included for this night)

To register your interest in attending or for more information,  
please email Naomi Newbold at [naomi.newbold@geolsoc.org.uk](mailto:naomi.newbold@geolsoc.org.uk)



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# Lyell Meeting 2013

## The Cambrian Explosion – understanding Earth systems at the origin of modern ecosystems

13 March 2013

A joint meeting of the Geological Society of London, the Palaeontographical Society, the Palaeontological Association and The Micropalaeontological Society

As consensus begins to emerge on the topology of high-level phylogenetic relationships amongst animal groups, molecular clocks are beginning to elucidate the slow fuse versus big bang debate relating to the origin of major animal groups, and it is now clear that the major animal clades diverged tens of millions of years before their first appearance in the fossil record. Understanding this macroevolutionary lag requires a multidisciplinary understanding of Cambrian Earth systems, in which a complex interplay of sea-level change, ocean geochemistry, biomineralisation and ecosystem engineering producing the major evolutionary diversification that characterises the early Cambrian. This involves a change from matground dominated ecosystems in the Ediacaran to the primitive but recognisably modern ecosystems associated with the Cambrian substrate revolution. Contemporaneously, the repeated but approximately synchronous evolution of biomineralisation in animal groups in the early Cambrian led to the first skeletons, and the selective opportunities provided by these novel structures. This meeting will bring together palaeobiologists, ichnologists, geneticists, geochemists and stratigraphers to re-assess the complex, non-uniformitarian processes that operated in ecosystems before, during and after the Cambrian Explosion. One aim will be to examine the varied feedback processes operating in these ecosystems and the changes that occurred across the Ediacaran–Cambrian boundary. In addition, recent suggestions of underlying mechanisms for these changes will be examined, including the Great Unconformity hypothesis that invokes the reworking of continental regolith during early Cambrian sea-level rise, transgression and continental inundation as an environmental trigger for the evolution of biomineralisation.

The meeting will be relevant to all who are interested in complex feedback processes within Earth systems, as well as those with a direct interest in the Ediacaran–Cambrian transition.

### Conveners:

Paul Smith (Oxford) and David Harper (Durham University)

### Speakers include:

Howard Armstrong (Durham University), Kevin Peterson (Dartmouth College), Peter Holland (University of Oxford), Robert Gaines (Pomona College, California), Greg Edgecombe (Natural History Museum), David Harper (Durham University), Duncan McIlroy (Memorial University of Newfoundland), Gabriela Mangano (University of Saskatchewan), Duncan Murdoch (University of Bristol), Nick Butterfield (University of Cambridge) and Martin Brasier (University of Oxford)

### Further information

For further information about the conference, please contact:

Naomi Hewbold, Conference Office, The Geological Society,  
Burlington House, Piccadilly, London W1J 0BG

Tel: 0207 434 9944

Fax: 0207 494 0579

Email: [naomi.newbold@geolsoc.org.uk](mailto:naomi.newbold@geolsoc.org.uk)

Web: [www.geolsoc.org.uk/lyell13](http://www.geolsoc.org.uk/lyell13)

Twitter: #lyell13



# “SUBTLE LANDSCAPES OF ENGLAND'S EASTERN COUNTIES GET A NEW MAPPING TOOL”

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## Geoscientist is the Fellowship magazine of the Geological Society of London

The Geological Society, Burlington House, Piccadilly, London W1J 0BG  
**T** +44 (0)20 7434 9944  
**F** +44 (0)20 7439 8975  
**E** enquiries@geolsoc.org.uk (Not for Editorial)

## Publishing House

The Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath BA1 3JN  
**T** 01225 445046  
**F** 01225 442836

## Library

**T** +44 (0)20 7432 0999  
**F** +44 (0)20 7439 3470  
**E** library@geolsoc.org.uk

## EDITOR-IN-CHIEF

**Professor Peter Styles FGS**

## EDITOR

**Dr Ted Nield NUJ FGS**  
**E** ted.nield@geolsoc.org.uk

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Published on behalf of the Geological Society of London by **Century One Publishing** Alban Row, 27–31 Verulam Road, St Albans, Herts, AL3 4DG

**T** 01727 893 894  
**F** 01727 893 895  
**E** enquiries@centuryonepublishing.ltd.uk  
**W** www.centuryonepublishing.ltd.uk

## ADVERTISING EXECUTIVE

**Jonathan Knight**

**T** 01727 739 193  
**E** jonathan@centuryonepublishing.ltd.uk

## ART EDITOR

**Heena Gudka**

## DESIGN & PRODUCTION

**Sarah Astington**

## PRINTED BY

**Century One Publishing Ltd.**

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 ISSN (print) 0961-5628  
 ISSN (online) 2045-1784

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**Subscriptions:** All correspondence relating to non-member subscriptions should be addressed to the Journals Subscription Department, Geological Society Publishing House, Unit 7 Brassmill Enterprise Centre, Brassmill Lane, Bath, BA1 3JN, UK. Tel: 01225 445046. Fax: 01225 442836. Email: sales@geolsoc.org.uk. The subscription price for Volume 22, 2012 (11 issues) to institutions and non-members is £108 (UK) or £124 / US\$247 (Rest of World).

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## PAST & FUTURE COLLIDE

In 2008 the Royal Institution, just around the corner from Burlington House, reopened its doors after a monumental makeover inspired by its then Director, neuroscientist, sometime author and TV presenter, Baroness Susan Greenfield.

Music played; waiters plied champagne; a stall offered oysters. Transformed into a West End 'salon' for scientists, this holy temple of ancient science and outreach had not just had a paint job; it had been *reimagined* – for a cool £22m – complete with stylish restaurant.

But alas, it failed. Venue hire and fine dining (Mayfair not being exactly short of swanky venues and restaurants) failed to match the income lost when, to help pay for it all, the RI sold the properties whose top-dollar rents had long been keeping it afloat. Now the building is apparently being offered for sale to pay off debts reported to be £7m. Sadly, financial planning is not rocket science. Perhaps if it had been, the RI's Trustees would have done a better job.

Cue, much gnashing of teeth from science's retired colonels - none of whose harrumphings have made much mention of the RI's future, or acknowledged that this fine kettle of fish is one in which the RI have pickled themselves. It is nobody's fault, but their own. Yet the State, it seems, should now pick up the tab, bail them out, and allow the RI to continue in the same old way. Nobel prizewinner Professor Sir Harry 'Buckyballs' Kroto, leading the charge, has likened the potential sale to the destruction of the Buddhas of Bamiyan – an analogy that unwittingly casts his fellow scientists in the role of the Taliban, because it was surely they, and no-one else, who set the charges under 21 Albemarle Street.

This ludicrous overstatement neatly illustrates the real, underlying message of this fiasco. Just as hyperbole is best left to journalists, financial planning should be done by those who understand it. The RI does not deserve to be saved from itself on the strength of the historic achievements of Michael Faraday and Humphry Davy, even if they were both Fellows of this Society (and the latter a founder); and given its own flopped self-reinvention, its future now lies entirely behind it. Its current importance to science and outreach is vestigial - and what there is of the latter, largely outmoded. None of its present activities can reasonably be used to disguise what has become an unseemly wrangle over science's Holy Places.

Yes, it's sad, but the building's not going anywhere – it's Grade 1 listed. Move the scientists to a university. Move the collections to the Science Museum. Above all, move on.

**DR TED NIELD** EDITOR



# SOCIETY NEWS

## ELECTION – FELLOWS

The following are put forward for election to Fellowship at the OGM on 6 February 2013:

**ADAM** Andrew; **ADAMSON** Kate Louise; **ADRIASOLA MUNOZ** Alberto Constantino; **AISULAMI** Sulaiman; **AKINLOTAN** Oladapo; **ALLAN** Alexander; **ALMOND** Christopher James; **AMICI** Riccardo; **ANDERSON** Ian George; **ARMITAGE** Peter Joseph; **AVERY** Andrew Michael; **AYNSLEY** Benjamin James; **BALABAN** Sorin-Ionut; **BARKER** Hannah Jayne; **BARRATT** Rachel; **BARTLETT** Samantha; **BASZTYK** William Alexander; **BEADLE** Catriona; **BELLIS** Alexander Stanyon; **BERRYMAN** Jake Gordon; **BHATTI** Tariq Javed; **BIGGERSTAFF** Andrew Charles; **BLACK** Martin; **BOOTH** Douglas; **BOSE** Rituparna; **BOWEN** David Adam; **BRADLEY** Alexander John; **BRITTON** Scott Allan; **BROOM-FENDLEY** Sam; **BROWN** Scarlett; **BROWNING** John; **BUCKELL** John Palsler; **BURKETT** Lydia; **BUSSEY** Andrew Ross; **CAHILL** Rory; **CARRAGHER** Peter David; **CARROLL** Gareth; **CARTWRIGHT** Thea Grace; **CASSIDY** Una Therese; **CHASTNEY** Joshua Henry; **CHEUNG** Wai Kuen; **CHRISTAKIS** Eirinius; **CHU** Chun Tak; **CLARKE** Ian; **CLEGG** Roger; **COLE** Edward James; **COLES** David John; **COLLYER** Timothy Eric; **COLYER** Phillip Martyn; **CORREA** Antonio Claudio De Franca; **CRADDOCK** Lucy; **CROUCH** Michael John Collingwood; **DASHWOOD** Benjamin Alexander John; **DASHWOOD** Martin Frederick; **DAUNCEY** Graham Phillip; **DAVIES** Alicia; **DAVY** Thomas; **DE FREITAS** Jessica Elizabeth; **DEANEY** Jack; **DEMONTE** Philippa Jean; **DEVLIN** David Patrick; **DODD** Laura Margaret; **DODMAN** Alice Rose; **DODSON** James Campbell; **DOERY** Roger Henry Clifford; **DOHERTY** Helen Mary; **DOWEY** Patrick James; **DOWLING** Damian Patrick James; **ENGLISH** Joseph; **EVANS** Ian Jonathan; **EVANS** Joss; **FELIX** Thomas; **FITZSIMONS** Karen; **FLEMING** Marguerite Jane; **FOX** Richard John; **GARDINER** Helen Jane; **GARWOOD** Russell James; **GEORGE** Owen Edward; **GIBB** Jacqueline Anne; **GIBB** Robert Kennedy; **GIBSON** Hazel Laura; **GILBERT** Matthew; **GILLES** Charlotte; **GOATER** Aaron; **GOODMAN** William; **GOWERS** Martin Bernard; **GRAY** Tanya Natasha; **GREEN** Jonathan; **GREGSON** Ian Dean; **GRIFFITH-SWAIN** Ceri; **GRINDROD** Peter; **GUNN** Rowena; **HACKSHALL** Robin; **HAGAN** Rachel; **HAKES** David; **HANCOCK** Thomas; **HANNAH** Peter Edward; **HARESIGN** Eleanor; **HARRISON** John William; **HARVEY** Briony Claire; **HAWKINS** John; **HEATHER** Megan; **HENDERSON** Paul Joseph Roden; **HERON** Kyle; **HEWITT** Nathan Anthony; **HINDSON** Thomas; **HINGSTON** Richard; **HOAK** Thomas; **HOUNSOM** Nicholas James; **HOWE** Stuart Alexander; **HOWETT** Neil Michael; **HYDE** Philip; **JAMES** Iain; **JANICZEK** Aneta Dominika; **JARRELL** James Laurence; **JERVIS** Anthony James; **JIMENEZ MUNECAS** Ana; **JONES** Adam; **JONES** Emily; **JUDEN** Amy Elizabeth; **KAN** William; **KARMACHARYA** Shailesh Kumar; **KAZIMOTO** Emmanuel Owden; **KEARNS** Hannah Jade; **KENNY** Gavin Gary; **KING** Andrew Hedley; **KOENITZER** Sven Fred; **KURLANDA** Hanna; **LAMBERT** Christopher David; **LAMBLE** Andrea; **LEE** Chun Fai; **LEE** Ting Jennifer; **LEMING** Gary Stuart; **LEUNG** Ho Sun; **LEVELL** Daniel; **LLANES** Pedro; **LONG** Megge May Eileen; **LYNCH** Ralph Victor; **MACRO** Anna Elise; **MADUKWE** Chirwe Chioma; **MALING** Adam James; **MANDER** Daniel Thomas; **MARTIN** Ben James; **ASON** Louise; **MASON** Peter Ian; **MCCARTHY** Michael James; **McCRACKEN** Simon John Andrew; **MCKIRDY** Scott William; **MCLAURIN** Alexander Neil; **MCSORLEY** Jacqueline Glennon Jarvie; **MEDLEY** Helen Jane; **MEREDITH** Robert Jon Owen; **MESZAROS** Judit; **METCALFE** Megan Louise May; **MIDGLEY** Nicholas; **MILES** Gareth David; **MILNE** Alastair John; **MILTON** Jack Edward; **MONTICONE** Benjamin Jean Armand; **MORGAN** Andrew Gethin; **MORGAN** Daniel Kenneth; **MORIARTY** Aoife; **MUBASHER** Abdalla; **MURPHY** Liam Stephen; **MURRAY** Ann; **NEPOMUCENO FILHO** Francisco; **NIXON** Sarah; **NOBLE** Michael Douglas; **NWANNA-NZEWUNWA** Ikenna Chibuzor; **O'LEARY** Hugh Arthur Henry **O'BRIEN** John;

## Society Awards 2013

The Society is delighted to announce the winners of its medals and funds, and offers all its heartiest congratulations. The Awards will be presented at President's Day on 5 June 2013.

Wollaston Medal: Kurt Lambeck; Lyell Medal: Paula Reimer; Murchison Medal: Peter Kokelaar; William Smith Medal: Martin Jackson; Coke Medal: Ian Sims; Coke Medal: Robert Thomas; Aberconway Medal: Peter Burgess; Bigsby Medal: Christopher Jackson; Prestwich Medal: Not awarded; Sue Tyler Friedman: Henry Frankel; R H Worth Prize: Hans Hagdorn; Wollaston Fund: James Wookey; William Smith Fund: Marie Edmonds; Lyell Fund: Siwan Davies; Murchison Fund: Alison Rust; Distinguished Service Award: Richard Moody; President's Awards: Nicolas Brantut, Matthew Pound.

## Mutual society

*Bill Gaskarth writes on the mutual recognition of professional qualifications with overseas professional organisations*

For several years, the Society has been seeking to conclude agreements with a number of overseas professional organisations under which we would mutually recognise the equivalence of each other's professional qualification ('title'). Such agreements have been in place for some time with the American Association of Petroleum Geologists and with the Institute of Geologists of Ireland. Late last year, the Society concluded an agreement with the American Institute of Professional Geologists (AIPG) following a review that established that the aims and objectives of both organisations, and the peer review processes, although they differ in detail are equally exacting and broadly comparable. As a result the two organisations have agreed to recognise the equivalence of the titles of Chartered Geologist (CGeol) and Certified Professional Geologist (CPG). This agreement can be seen on the Society's web site at [www.geolsoc.org.uk/reciprocal-arrangements](http://www.geolsoc.org.uk/reciprocal-arrangements).



▶ To read more on this story, visit the Online version

## Vote! Vote! Vote!

*Edmund Nickless, Executive Secretary writes:* Can I please encourage you to cast your votes for the President designate and Council? The total number of Fellows voting in 2012 was 972 from an electorate of around 10,000. The candidates have committed to give a considerable amount of their time to serve the Society if elected – so please, give a very little of your time to vote. Without a reasonable turnout, it will be difficult to encourage people to stand in future.

## FUTURE MEETINGS

Dates for meetings of Council and Ordinary General Meetings until April 2014 shall be as follows:

- 2013: 16 April; 26 June; 25 September; 27 November
- 2014: 5 February (OGM at 3pm); 9 April 2014



## FROM THE LIBRARY

The library is open to visitors Monday-Friday 0930-1730.

For a list of new acquisitions click the appropriate link from <http://www.geolsoc.org.uk/info>

## The Geological Society Club

The Geological Society Club, successor to the body that gave birth to the Society in 1807, meets monthly (except over the field season!) at 18.30 for 19.00 in the Athenaeum Club, Pall Mall. Once a year there is also a special dinner at Burlington House. New diners are always welcome, especially from among younger Fellows. Dinner costs £55 for a four-course meal, including coffee and port. (The Founders' Dinner, in November, has its own price

structure.) There is a cash bar for the purchase of aperitifs and wine.

■ 2013: 13 March; 10 April (Burlington House); 15 May.

▶ Please send cheques, payable to 'Geological Society Club', to: **Cally Oldershaw**, c/o Shashu Lalji, Department of Earth Sciences, Natural History Museum, Cromwell Road, London SW7 5BD. E: [cally.oldershaw@bopenworld.com](mailto:cally.oldershaw@bopenworld.com) DR

## Fellowship renewals

### *Edmund Nickless, Executive*

**Secretary writes:** Every year at this time we remind Fellows to renew their Fellowship for the current year, or face being struck off – and the subsequent inconvenience of having to re-apply. For the Society, late payment results each year in additional costs and administration. In this economic climate, we ensure that optimum use is

made of Society resources and we rely on the support of Fellows to achieve this. Time is running out for you to renew your Fellowship. To ensure that you continue to support and belong to your professional body, please renew today, preferably online via the website; or you can call Burlington House and ask for the Fellowship Department.

## Chartership news

**The Society continues to extend accreditation to various commercial company training schemes, writes Chartership Officer, Bill Gaskarth**

Gammon Construction Ltd (Hong Kong) was the first commercial company to have its training scheme accredited by the Society. They presently have eight trainees on the scheme, working towards CGeol. Recently, schemes from Atkins (UK), Arup (Hong Kong) and the Hong Kong Government (CEDD)



have also been accredited. Accreditation will be extended, and accreditation certificates awarded, to other offices of these international companies when an application is made by each agreeing to follow and use the accredited scheme.

▶ A longer version of this article may be viewed online. Information on the Accreditation scheme may be found in the Membership section of [www.geolsoc.org.uk](http://www.geolsoc.org.uk) by following 'Chartership and Professional' and selecting 'Accreditation of Company Training Schemes'. Queries to: Chartership Officer, Bill Gaskarth E: [chartership@geolsoc.org.uk](mailto:chartership@geolsoc.org.uk) T: 07916 138631.

## Big spring book sale

During the week of 8th – 12th April the Library will be holding its biggest ever sale of duplicate and out-of-scope stock.

Come along to Burlington House and browse over 100 titles, many in mint condition and all at lower prices than can be found online. The sale will be in the Central Library, upstairs at Burlington House and is open to all. Visit us this April and pick up a bargain!



## ELECTION – FELLOWS CONTINUED...

The following are put forward for election to Fellowship at the OGM on 6 February 2013:

O'MALLEY Matthew; OLDHAM Eleanor Jane; ORMISTON Saul Alasdair Ian; PARSONS Andy PASCOE Thomas Stephen Gundry; PATRICK Estelle Jayne; PICCIRILLI Daniele; PICKERING Helen; PIKE Mark; PLAIL Melissa; PLETZ Zoe; POOK Geoffrey George; POPA Marius; POPE James Owen; POUNDER Malcolm; POVEY Danny Keith; POWELL Andrew Paul; PRICE Michael; PROCTOR Matthew; PRYOR Mark James Stuart; PURCELL Peter; QUIGLEY Kieren; QUINLAN Paul Joseph; QUINN Phillip John; RAJBONGSHI Biprades; RALPH Madeleine; REDFERN Simon; REES-OWEN Rhian; RITCHIE Sarah; ROBERT Matthew James; ROBERTS-HOLMES Oliver Peter Dyne; RODRIGUEZ Clara Rosa; ROSCOE Victoria Florence; ROWLANDS Holly Jayne; RUSSELL Jonathan; RUTTER James; SATTAUR David Richard; SAUNDERS Melanie Sarah; SAUNDERS Paul Victor; SEBATO CERALDI Teresa; SHARP Russell; SHEPPARD Neil Michael; SHUN MING Chan; SMITH Charlotte Rebecca; SMITH Kelly Victoria; SMITHELLS Rose Allen SOBCZYK Eugeniusz; SOBOTZKI Johannes; SPENCER-PHILLIPS Matthew Leonard; STEEN Ralph Hall; STEWART David John; STOCKALL James; STOIKOVICH Benjamin; STRANG Adam Louis; SWATTON Lucinda Emily Marlene; SWINNERTON William Brian; SYMEONIDIS Konstantinos; TANNER Jonathan William; TAVANA Mehrdad; TAYLOR Richard Peter; THALASSINOS Stavros; THOMAS Samuel Mark; TINDELL Thomas David; TONKINS Matthew; UJJAN Imtiaz Ali; VASSILIOU Marius Simon; VERNAU Gareth Richard; WAINMAN Carmine; WALKER Deborah Ann; WAN Samantha; WARBURTON David Gary; WATSON Raymond West; WEIR-JONES Iain; WHITTLELY Neil Andrew; WILDMAN Mark; WILLIAMS John Glynn; WONG Kam Hung; WONG Koon Yui; WRIGHT Philip David Jensen; YEUNG Hoi Yan; ZAMBRANO Jessica Alejandra.

The following Candidate Fellows wish to upgrade and be elected to fellowship

BARKER Edward; CARTWRIGHT Lee; CLEMERSON Cedric; DENISON Anthony; DENNISON Melissa; ETHERINGTON Bryn James; GREEN David Peter; HARRISON Paul Isaac; HOLLOWAY Matthew; HOWELL Claire; HUGHES William; INDUNI Allan; KING James; LALE-MONTES Rocio; PEARCE Lauren; PEARCE Sean; POORE Kirsty; TOWNSEND Daniel; TRUBY Jennifer; WAYLETT Alice; WILLIAMS Kathryn.

[LECTURES]

## Shell London Lecture Series



### Exceptionally Preserved Fossils: Windows on the Evolution of Life

Prof. David Siveter, University of Leicester  
27 March 2013

Our understanding of the history and evolution of life on Earth relies heavily on the fossil record and especially on rare cases of so-called 'exceptional preservation', where the soft parts of animals and entire soft-bodied animals are preserved. Such exceptionally preserved fossils provide unique insights of animal palaeobiology and the true nature of biodiversity.

The lecture will illustrate beautifully preserved fossils through geological time. It will focus especially on spectacular finds from two of the world's most important fossil assemblages, from 530 million year old rocks in China and 425 million year old rocks in the Welsh Borderland. Such fossils are crucial in helping to fill gaps in our knowledge of the history of life and in helping resolve controversies about the relationships of animals still alive today.

- **Programme** – Afternoon talk: 1430 Tea & Coffee: 1500 Lecture begins: 1600 Event ends.
- **Programme** – Evening talk: 1730 Tea & Coffee: 1800 Lecture begins: 1900 Reception.

### FURTHER INFORMATION

Please visit [www.geolsoc.org.uk/shelllondonlectures13](http://www.geolsoc.org.uk/shelllondonlectures13). Entry to each lecture is by ticket only. To obtain a ticket please contact the Society around four weeks before the talk. Due to the popularity of this lecture series, tickets are allocated in a monthly ballot and cannot be guaranteed.

- ▶ Contact: **Naomi Newbold**, The Geological Society, Burlington House, Piccadilly, London W1J 0BG, T: +44 (0) 20 7432 0981  
E: [Naomi.newbold@geolsoc.org.uk](mailto:Naomi.newbold@geolsoc.org.uk)



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## Elections to Council 2013-2014

The October issue of *Geoscientist* invited Fellows to nominate new members of Council. There are eight vacancies on Council including President-designate. Two nominations have been received for the post of President-designate and 10 for the remaining seven places. The results of this preliminary ballot will determine the list for the formal vote at the Annual General Meeting to be held on 5 June 2013.

- **Jane Francis**, *Secretary Science*, is stepping down from Council before the end of her term due to her workload at the University of Leeds. She stepped down as *Secretary, Science* after the November 2012 meeting of that Committee. **Alastair Fraser**, a current member of the Science Committee, succeeded her in that role.
- **Paul Maliphant**, *Vice President*, chairs the Chartership Committee and is retiring from Council. Council proposes that **David Cragg**, an existing member of Council who also sits on the Professional Committee, is elected to the office of *Vice President* at the AGM and takes over the chair of the Chartership Committee.
- **Susan Marriott**, *Vice President*, has responsibility for the Regional Groups and is retiring from Council. Council proposes that **David Jones**, an existing member of Council who also sits on the Professional Committee, is elected to the office of *Vice President* at the Annual General Meeting and takes over this role.
- **Colin Summerhayes**, *Vice President* with responsibility for the Development & Fundraising Committee, will also be retiring from Council, and as allowed by the bye-laws the President proposes to fill the consequential vacancy from one of the existing or to be elected members of Council.
- **Adam Law**, **Alan Lord** and **Jonathan Turner** continue in their roles as *Treasurer*, *Secretary*, *Foreign & External Affairs* and *Secretary Publications* respectively.

The supporting statements of candidates standing for election follow, together with a table showing the expertise of the present Council (biographies of the continuing members of Council are at [www.geolsoc.org.uk/vote2013](http://www.geolsoc.org.uk/vote2013)).

BALLOTING

### VOTING ONLINE

Fellows are encouraged to vote online by logging onto the Fellows-only part of the website [www.geolsoc.org.uk/vote2013](http://www.geolsoc.org.uk/vote2013). Please follow the instructions.

### POSTAL VOTING

A postal ballot paper is enclosed for those unable to vote on-line. Fellows should make their mark for one of the candidates for President-designate. Fellows should also enter a mark against the names of up to seven candidates they are voting for to serve as ordinary members of

Council. Papers with marks against more than seven names will be invalid.

The balloting paper should be placed in the envelope provided, which should be sealed and returned to reach the Society no later than 31 March 2013.

Unless we are able to determine your eligibility to vote the envelope will not be opened and your vote will be invalid.

Consequently you are asked to write your full name on the back

of the envelope. Please do not include any other communication whatsoever in the envelope.

**NOTE: Fellows may only vote once, either online or by returning the postal ballot**



**SUPPORTING STATEMENTS,  
PRESIDENT-DESIGNATE NOMINEES**

**PHILIP ALLEN**



The Geological Society means different things to different people. Some see their main connection through the Society's role in accreditation and professionalisation, through the benefits of its publications and scientific meetings, or through their use of its world-class library including its maps and electronic resources. Others are perhaps more aware of its outreach to schoolchildren, the general public, politicians, civil servants and policy makers, and by the formulation and

dissemination of its position statements on contentious issues of the day. As President I would aim to maintain this overall strategy of serving both science and profession, but would in particular like to contribute to a vision for how we foster the broadest possible range of geoscience innovation and communicate it to each other and to society. We need to be scholarly and professional, outward-facing and inclusive, open and participatory.

I have been a Fellow of the Society for over 30 years, and have recently served on Council (2009-12), for two years as Science Secretary. I obtained a BSc at Aberystwyth, spent two years with BP before studying for a PhD at Cambridge, lectured in Cardiff and Oxford, and then held Chairs overseas in Trinity College Dublin and ETH-Zürich before returning to the UK at Imperial College London. I held a Royal Society-Wolfson Research Merit Award (2006-2011) and received the Lyell Medal in 2007. I have published over 100 papers and four books, in the sub-disciplines of sedimentology, stratigraphy, basin

analysis and tectonic geomorphology. I increasingly feel the need for integrative approaches.

*Proposer: H D Johnson*

*Supporters: I J Fairchild, I Stewart*

**DAVID MANNING**



The Geological Society of London is in a unique position to address key issues that face the world. Society depends on mined resources, for food and energy security, and for many raw materials. We need water, and safe space for construction. Addressing these needs, our profession underpins very significant wealth creation by industry, globally, and its ability to deliver is founded on the quality of our universities, their research, and the graduates that they produce.

As President, I would represent all sides of the profession to make sure that our collective value is articulated and realised.

I became a Fellow in 1977. During the 35 years that have elapsed since then the world has changed, and geology has changed. I became a Chartered Geologist in 1993, Chartered Scientist in 2005 and European Geologist in 2005.

Having started as an experimental petrologist, I worked on petroleum reservoir diagenesis and am now Newcastle University's Professor of Soil Science. I was Director of Mineral Solutions Ltd for 10 years, employing around 30 staff in mining due diligence, consultancy and manufacturing/selling mineral-based products.

I have served the Society in many capacities. Following committee service, I was Chair of the Mineral Deposits Studies Group (1985-88), and Chair of the North West Regional Group (1998-2000). I served on Council from 2004-07, and was Professional Secretary from 2008-11, during which time I implemented the current process for gaining Chartership. I currently serve as the Society's delegate on the Council of the European Federation of Geologists.

*Proposer: B Cheshire*

*Supporters: J Davidson, F C Brassington* ▶

**COUNCIL MEMBERS**

	Present Council (2012-2013)	Nominees for new Council (2013-2014)
<b>PRESIDENT</b>	Mr D T Shilston	Mr D T Shilston
<b>VICE PRESIDENTS</b>	Mr P Maliphant Dr S Marriott Dr C P Summerhayes	Mr D J Cragg Mr D A Jones
<b>SECRETARIES</b>	Professor J E Francis ( <i>Science</i> ) Professor A R Lord ( <i>Foreign &amp; External Affairs</i> ) Mrs M P Henton ( <i>Professional</i> ) Dr J P Turner ( <i>Publications</i> )	Professor A J Fraser ( <i>Science</i> ) Professor A R Lord ( <i>Foreign &amp; External Affairs</i> ) Mrs M P Henton ( <i>Secretary, Professional Matters</i> ) Dr J P Turner ( <i>Publications</i> )
<b>TREASURER</b>	Dr A Law	Dr A Law
<b>OTHER MEMBERS OF COUNCIL</b>	Mrs N K Ala Dr M G Armitage Miss S Brough Professor R W H Butler Professor N A Chapman Mr D J Cragg Professor J E Francis Professor A J Fraser Dr S A Gibson Dr R A Hughes Mr D A Jones Professor R J Lisle Dr B R Marker OBE Dr G Nichols Professor J H Tellam  <b>Retiring members of Council</b> Miss S Brough Professor J E Francis Dr S A Gibson Dr R A Hughes Mr P Maliphant Professor S B Marriott Dr C P Summerhayes Professor J H Tellam	Mrs N K Ala Dr M G Armitage Professor R W H Butler Professor N A Chapman Professor R J Lisle Dr B R Marker OBE Dr G Nichols  <b>Nominations for President-designate</b> Professor P Allen Professor D A C Manning  <b>Nominations for Council</b> Dr A L Coe Dr A S Cohen Mr J A Coppard Mrs J Dottridge Mr C S Eccles Dr M Edmonds Professor K M Hiscock Dr M Rogerson Dr L Slater Mr M E Young

**SUPPORTING STATEMENTS FOR COUNCIL NOMINEES**

**ANGELA COE**



I am standing for election because I believe that the Geological Society forms the backbone of the geoscience community in the UK. I can offer expertise in teaching, research, postgraduate management, and publishing as well as energy and enthusiasm. I am passionate about Earth Sciences together with supporting and inspiring new generations of scientists. I am a stratigrapher and sedimentologist with particular expertise in sequence stratigraphy, fieldwork and palaeoclimate change. I have published two popular textbooks as well as journal articles on wide-ranging topics including the geological timescale, climate change, stratigraphic evidence for human activity and new environmental proxies. I have worked on academic and oil industry led research projects. I am currently a Senior Lecturer at the Open University this brings me into contact with hundreds of Earth Science undergraduates every year from a wide variety of backgrounds. I have been a Fellow of the Geological Society for over 25 years and I currently serve on the Stratigraphy Commission. I am also a voting member of the International Commission for Jurassic Stratigraphy and a member of the NERC peer review college. I have a BSc in Geology and Geophysics from Durham University and a D.Phil. from Oxford University.

*Proposer: H Rymer*

*Supporters: J Mather, P Logan*

**ANTHONY COHEN**



Since gaining my first degree in Earth Sciences and a PhD in Geochemistry, both from Cambridge University, and an MSc from Leeds University, I have worked as an Earth Scientist for over 30 years in academia (Cambridge and The Open University) and industry (Johnson Matthey). I am currently a Senior Research Fellow and Head of Earth Sciences at The Open University. I have been a FGS for four years, although I have contributed to GS activities for much longer. I was a JGS subject editor from 2000-04 and editor of a set of JGS thematic papers on 'Black Shales' in 2004. In 2010, I served on the GS committee that wrote the Society's statement on Climate Change. I was a joint-convener of the GS-sponsored meetings on Carbon Isotope Excursions (2010) and Source Rocks (2011). In March 2011, I gave two public lectures at Burlington House on 'Rocks, carbon and climate' as part of the Society's contribution to National Climate Week. If elected to Council, I would continue to promote the essential and unique contributions that

industry and academic geologists make to dealing with society's key challenges: energy sustainability, provision of food and water, natural hazards, and anthropogenic environmental change.

*Proposer: N W Rogers*

*Supporters: J E Illiffe, I J Fairchild*

**JIM COPPARD**



I am a mineral exploration geologist with over 22 years of field and management experience.

I have been an

independent Geological

Consultant and have worked for the highly successful exploration teams of Rio Tinto and Anglo American - where I am the Regional Head of Exploration. I completed my MSc, DIC in Mineral Exploration at the RSM in 1988. I have been a Fellow of the Society for 20 years, and am also a Chartered Geologist and European Geologist. I have a great passion for geology and discovery, the latter having been recognised by my peers through international awards. I act as a scrutineer for Chartered Geologist candidates and I also mentor young geologists (something that was crucial in my early career). I am a stalwart of the Mineral Deposit Studies Group, and was previously its Industry Representative.

I strongly believe in enhancing the professional status of geoscientists and that the Geological Society is the right place to lead this initiative.

As geoscientists, we need to encourage young people to feel the passion for geology and its related subjects. We need to enhance science education and programs like 'Rockwatch': these young people will be our future geoscientists.

*Proposer: R Harrington*

*Supporters: R H Sillitoe, G M Brown*

**JANE DOTTRIDGE**



I am a hydrogeologist with 35 years' experience in groundwater and contaminated land. I am a Chartered Geologist and a Specialist in Land

Condition (SiLC), with a degree in Natural Sciences from Cambridge University and an MSc in Hydrogeology from the University of Birmingham.

I am currently a Technical Director at Mott MacDonald, and have spent most of my career in consulting, working on wide range of UK and international projects. I have maintained an active interest in education and training of geologists and hydrogeologists, and spent seven years as an academic at UCL, focusing on teaching and research in hydrogeology. Recently I was external examiner for the MSc in Hydrogeology at Leeds University.

I chaired the Hydrogeological Group from 1994-98 and the British chapter of

the International Association of Hydrogeologists from 2006-11. I have been a member of the Accreditation Committee and both a scrutineer and a mentor for Chartered Geologists. I was Assistant Editor of QJEGH from 2001-06.

I would like to support the Society's involvement in geological education and training at all levels, encourage greater participation in the Society from consulting geologists and more interaction between the Society and hydrogeologists and contaminated land professionals.

*Proposer: A Carruthers*

*Supporters: M G Winter, P Younger*

**CHRIS ECCLES**



I am a director of TerraConsult Ltd. with 25 years' experience of working in engineering geology, geotechnics and

contaminated land. I hold a BSc (Hons) in Engineering Geology (Newcastle-upon-Tyne, 1987) and an MSc in Soil Mechanics (Imperial College, 1990). I have been a Fellow of the Society since 1987 and became a Chartered Geologist in 1994. I am also a Chartered Scientist, European Geologist, Chartered Environmentalist, Specialist in Land Condition and a UK Registered Ground Engineering Adviser.

I have been serving the Society and the wider geoscience profession over many years, having been the secretary of the South East Regional Group, committee member of the British Geotechnical Association and Treasurer then Chairman of the North West Geotechnical Group. I have been a scrutineer of applications for chartered status since 1999 and I have been a member of the Society's Chartership Committee since 2008.

As a member of the Council I would promote the value of professionalism and chartered status both within the Society and externally. Currently the majority of Chartered members work in hydrogeology, engineering geology, geotechnics and contaminated land. I would seek to increase the range of Chartered Geologists and Scientists in other areas other areas such as academia and the petroleum industry. A further objective would be to promote the role and importance of geology to the world showing how our profession can contribute to current and future challenges to society.

*Proposer: N Robinson*

*Supporters: D Norbury, G Tuckwell*

**MARIE EDMONDS**



I am a lecturer in the Earth Sciences Department at the University of Cambridge, with research interests in volcanology, natural hazards, igneous petrology



and magmatic degassing. After completing my undergraduate (BA in Natural Sciences) and PhD degrees at Cambridge, I spent the early part of my career working as a volcanologist in volcano observatories in the Caribbean and in Hawaii, with the British and the United States Geological Surveys respectively. Natural hazards are of increasing concern in society as our population grows. My research is at the forefront of volcanology, and involves developing new methods to measure volatiles in gases and magmas, volcano monitoring techniques, and our understanding of what triggers magmas to erupt. The Geological Society takes a prominent role in supporting and promoting research into volcanic hazards, the effects of volcanic activity on climate and the risks arising from natural hazards in general. I have been a Fellow of the Society since 2009. I gave a public lecture on the climate effects of volcanic eruptions as part of the Shell Lecture Series in 2010. I was committee member for a Geological Society Specialist Group: the Volcanic and Magmatic Studies Group, during 2008-12.

*Proposer: N Woodcock*

*Supporters: M Bickle, D Pyle*

### ■ KEVIN HISCOCK



I am a Chartered Geologist and Professor of Environmental Sciences at the University of East Anglia where I teach and have research interests in

hydrogeology and hydrochemistry. I currently chair the East Anglian Regional Group of the Geological Society and previously served the Society as Chair of the Hydrogeology Group and as a member of the Awards Committee. I was the Society's recipient of the William Smith Fund in 2000 and the Whitaker Medal in 2011. I am also a member of the Committee of Heads of University Geosciences Departments which, in conjunction with other national bodies, including the Geological Society, provides insight to the development of geosciences teaching and research at a national level. With my extensive experience of postgraduate provision in hydrogeology and understanding of the role of Earth Sciences

in addressing the challenges presented by global environmental change, I would welcome the opportunity to serve as a Council member to represent the applied and environmental interests of academic and professional geoscientists.

*Proposer: J Andrews*

*Supporters: J Alexander, J Barclay*

### ■ MIKE ROGERSON



The University of Hull recently reconstituted its Earth Science unit (within the larger Department of Geography, Environment and Earth Science) and from September 2013 will offer a BSc degree in Geology with Physical Geography for the first time since the Earth Science Review. We therefore represent the newest research-led Geology department delivering degree-level content in the UK.

As the major architect of these changes, I can provide a unique perspective on the role the GSL plays in supporting the HE sector to deliver the research and education urgently needed by national and international organisations. Ongoing expansion of the industrial geoscience sector makes these needs ever more acute, and the UK must expand and diversify HE provision in geoscience if it is to play its part in meeting these needs. As a researcher, I have received substantial funding from industry (including the petroleum, minerals, steel and geothermal sectors) and can bring this wide experience to the service of the GSL council, in addition to my experience of geosciences in HE. I will be proud to serve the GSL in a capacity that addresses the recruitment, retention and interaction of school-level students through to employment in senior capacities within Geoscience sector industries.

*Proposer: L E Frostick*

*Supporters: D Parsons, H M Pedley*

### ■ LUCY SLATER



I want to serve on Council to inspire future Earth scientists and to strengthen industry-academia links. Most children are fascinated by rocks, sand, mud, water... but by the time

they are making decisions about university degrees they have lost their natural connection with the Earth and many will not be aware of Earth science or know about the fantastic career a geoscientist can have. I want to serve on Council to help continue and build on the Society's work to inspire the next generation of Earth scientists. As a member of the oil industry with a strong academic background I can help also to forge stronger links between industry and academia.

As a member of the Society since the early 90s, and of the Petroleum Group, I have regularly benefited from excellent conferences and workshops hosted by the Society. I studied Earth Sciences at Durham and have a PhD from Cambridge. I have

**Left: Fellows are encouraged to vote online at [www.geolsoc.org.uk/vote2013](http://www.geolsoc.org.uk/vote2013)**

worked as a geophysicist in the oil industry for the last 16 years. Working for supermajors through to start-ups, I value the influence of large organisations and the dynamism of small groups. I want to serve on Council to inspire future Earth scientists and to strengthen industry-academia links.

*Proposer: L E Frostick*

*Supporters: R Hardman, G Goffey*

### ■ MICHAEL YOUNG



I am Director of the Geological Survey of Northern Ireland, an office of the Northern Ireland government that advises on the full range of geoscience issues. Mineral and hydrocarbons exploration, geothermal exploration, energy storage, groundwater management, land-use planning, and the development of geotourism are all active issues for GSNI. I am enthusiastic about expanding the Society's influence in Northern Ireland and strengthening links between Northern Ireland's geoscience community and those of GB and the Republic of Ireland. I am keen to promote dialogue and research into the policy issues now surrounding the development of natural resources. I joined GSNI (and BGS) in 2004 to manage the Tellus survey programme, through which I have already advanced links between the Surveys and university geoscience communities in Northern Ireland, GB and the Republic.

As a geophysicist I previously specialised in mineral and groundwater exploration and regional geoscience mapping, with operational experience in 20 countries, in industry and consultancy. I graduated in physics at Bristol University, have an MSc in geophysics (RSM, Imperial) and an MBA (Warwick). I was elected FGS, CGeol in 1992. I sit on the Geosciences Committee of the Royal Irish Academy and am Past-President of the Belfast Geologists' Society.

*Proposer: R A B Bazley*

*Supporters: D Peach, J D Floyd*

#### BACKGROUND OF CONTINUING MEMBERS OF COUNCIL

Name	Expertise	Sector
Natalyn Ala	Hydrogeology	Industry
Mike Armitage	Mining	Industry
Rob Butler	Structural Geology	Academe
Neil Chapman	Radioactive Waste Management	Industry
David Cragg	Engineering Geology	Industry
Al Fraser	Petroleum Geology	Academe/Industry
Tricia Henton	Environmental Geology	Government (retired)
David Jones	Hydrogeology	Government
Adam Law	Petroleum Geology	Industry
Richard Lisle	Structural Geology	Academe
Alan Lord	Micropalaeontology	Museum
Brian Marker OBE	Environmental Geology	Retired
Gary Nichols	Sedimentology	Academe
David Shilston	Engineering Geology	Industry
Jonathan Turner	Structural/Petroleum Geology	Industry/Academe

# Exploration, Resource and Mining Geology Conference 2013

## Getting it right from the outset

21-22 October 2013, Cardiff, Wales, UK

Call for Abstracts



### THE CONFERENCE

The Australasian Institute of Mining and Metallurgy (The AusIMM) and The Geological Society of London are pleased to announce the **Exploration, Resource and Mining Geology Conference 2013** and are calling for abstracts from intending authors for consideration in the conference programme.

We are operating in challenging times. Despite relatively high commodity prices, there are few mining projects where an easy dollar is to be made. There are particular challenges that must be faced, including the need for cost-effective discovery strategies and methods; evaluation and extraction of often lower-grade complex (geologically and/or metallurgically) deposits; understanding time-orebody variability to achieve the optimum mine plan; and predicting grades in geologically complex deposits that can be achieved by selective mining using wide-spaced data.

These and other challenges can be ameliorated by 'getting it right from the outset' and building orebody knowledge.

Topics to be discussed at the conference include:

- Exploration value drivers and strategies
- Geophysical and geochemical exploration tools and techniques
- Benefits of geological mapping for exploration and exploitation
- Regional and orebody scale controls to mineralisation
- Geological modelling and uncertainty evaluation
- Drilling, sampling, assaying and QA/QC
- Resource estimation, classification and reporting
- Mine geology, grade control and reconciliation
- Geometallurgy
- New technologies
- Case studies.

The conference will be supported by a number of pre- and post-conference workshops and post-conference field trips. If you are interested in presenting a workshop or leading a field trip, please contact event management

**Professor Simon Dominy FAusIMM(CP) FGS(CGeol)**  
Snowden Group / Curtin University, Australia  
Exploration, Resource and Mining Geology 2013 Conference Chair

### Abstracts

Authors who have short (300 word) abstracts accepted, will be invited to submit an extended abstract (up to four pages, including figures). All accepted extended abstracts will be published in the conference proceedings and presented at conference technical sessions. At least one author of each accepted paper is expected to attend the conference to present their paper.

### Submission of Abstracts

All abstracts are due by 22 April 2013.

### Online Abstract Submission

Please submit a preliminary abstract, not exceeding 300 words per paper, in English by 22 April 2013 via the Speakers Portal on the website.

### Recognition of high-quality technical papers

Selected high-quality extended abstracts may be submitted as full papers for publication in one of the prestigious AusIMM/IOM<sup>3</sup> Transactions journals, *Applied Earth Science*. These papers will qualify for consideration for The AusIMM Best Paper Prize, which is awarded annually at The AusIMM Awards Dinner.

### For further information, please contact:

Claire Lockyer, Coordinator, Publications, The AusIMM  
Telephone: +61 3 9658 6167 | Email: [clockyer@ausimm.com.au](mailto:clockyer@ausimm.com.au)

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For registration enquiries, please contact:  
Georgina Worrall, Conference Manager, The Geological Society  
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# Advancing geology?

**WRITTEN BY GORDON NEIGHBOUR**

**Gordon Neighbour** \* wonders if now is the time for the Society to become involved in developing a new Advanced level qualification in geology



## SOAPBOX CALLING!

Soapbox is open to contributions from all Fellows. You can always write a letter to the Editor, of course: but perhaps you feel you need more space?

If you can write it entertainingly in **500 words**, the Editor would like to hear from you.

Email your piece, and a self-portrait, to [ted.nield@geolsoc.org.uk](mailto:ted.nield@geolsoc.org.uk). Copy can only be accepted electronically. No diagrams, tables or other illustrations please.

Pictures should be of print quality – as a rule of thumb, anything over a few hundred kilobytes should do.

Precedence will always be given to more topical contributions. Any one contributor may not appear more often than once per volume (once every 12 months).

“ WITH THE PROPOSED REVIEW OF BOTH GCSE AND A LEVEL EXAMINATIONS, IT WOULD SEEM THE IDEAL TIME FOR THE GEOLOGICAL SOCIETY TO BECOME MORE INVOLVED IN THE DEVELOPMENT OF THE GEOLOGY QUALIFICATIONS ”

**Gordon Neighbour**

With the proposed review of both GCSE and A level examinations, it would seem the ideal time for the Geological Society to become more involved in the development of the Geology qualifications. We have seen ample evidence from Chris King and Fiona Hyden (*‘Reasons to be cheerful?’ Geoscientist 21.05 June 2012*), showing that the uptake of students taking Geology qualifications has been increasing over the past few years – I am sure that all fellows of the Society would see that this is good news. However we have the perennial argument concerning the “worth” of the qualification, and the suggestion that perhaps we ought to be encouraging students to pursue only mathematics, physics and chemistry if they want to follow a geology course in higher education.

## REVIEW

So when the qualifications are reviewed, should the Geological Society follow the lead of the Institute of Physics campaign (*‘Advancing Physics’*) and work with examination boards and the Earth Science Teachers Association to develop a new Advanced Level course that satisfies all parties and the standards required from a professional body?

It is pleasing to see the Geological Society developing more and more online resources, with the *‘Rock-Cycle’* and *‘Plate Tectonics’*, as well as the Schools Affiliate scheme, which is gaining momentum all the time. But one thing is very clear: despite the excellent work already being undertaken by the Society with the Geoscience Education Academy, helping non-specialist teachers

develop their geoscience skills, it is still very much the hard-working band of teachers of *‘A’-level* and GCSE Geology that inspires so many students to develop an interest in the subject. That first taste of the wonders and diversity of our science has for years *‘hooked’* students – I myself was introduced to it by an enthusiastic geography teacher while still at school.

## MINIMUM STANDARD

Universities and the Society should now decide what they think the “minimum standard” should be, in terms of the skills that any potential geology student should possess before embarking on their studies in higher education. What are the skills required of a successful geoscientist in the 21st Century? If mathematics, physics and chemistry are seen as *‘vital’* components, should a new specification concentrate on developing those skills in a geosciences context?

I always argue that geology is the “perfect” science; I do not currently teach it in my own school, but I do try to develop the skills of my students with many extra-curricular opportunities, so that they are enthused by the subject. With enhanced support from the professional body it would be easier to encourage more senior leaders to teach the course in their schools – and perhaps also bring benefits to recruitment to the Society!

Over to you colleagues – how about *‘Advancing Geology’*?

\***Gordon Neighbour** is Head of Computing and IT, and Head of Learning Support, Torquay Girls’ Grammar School



Time for the Society to break surface on *‘A’* Level syllabus?

Images: Edward Kyslynsky / Shutterstock.com

**G**eologists living and working in the subtle landscapes of the eastern counties of England are used to geological mapping that is based on rare outcrops of bedrock, linked by very low regional dips and layer-cake stratigraphy. We three authors all work in this area and have become convinced that systematic detailed analysis of landscape topography can add new and powerful tools in research and also provide a key to much better general public understanding. Some initial studies of this approach were used in recent *New Naturalist* books by one of our number - Peter Friend<sup>1,2</sup>.

We are all three involved in local research and geoconservation work, and decided to test these ideas by compiling maps using widely available digital data for the adjoining counties of Bedfordshire and Cambridgeshire. Support was provided by a small grant from Natural England that was administered with the help of Geo-East, an informal association of organisations in the six counties of Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk. A version of our report was produced for various websites within the Geo-East network<sup>3</sup>, but this article is the first 'published on paper' account of our work.

We have selected six maps, at two different scales, to illustrate the types of visualisation we have been testing. Using ESRI's ArcGIS Geographical Information System software, we have overlain 1:50,000 scale geology mapping (British Geological Survey, 2011) and 1:250,000 scale soil mapping (National Soil Resources Institute, 2011) on a hill-

shaded digital terrain model (DTM) derived from the Ordnance Survey Opendata Panorama dataset. This combination of datasets has allowed intuitive visualisation and discussion of the relationships between landscapes, geology and soils.

## INTERPRETATION

Figure 1 covers the counties of Bedfordshire (in the SW) and Cambridgeshire (in the NE), plus the Borough of Milton Keynes. The long dimension (from SW to NE) of the area mapped is about 100 km. The map presents an elevation model in metres with a vertical exaggeration of 20, using elevation colouring and hill-shading to pick out major topographic features. We draw attention to some of these features using flag-labels and the red rectangle around Bedford locates the area represented in Figures 4-6.

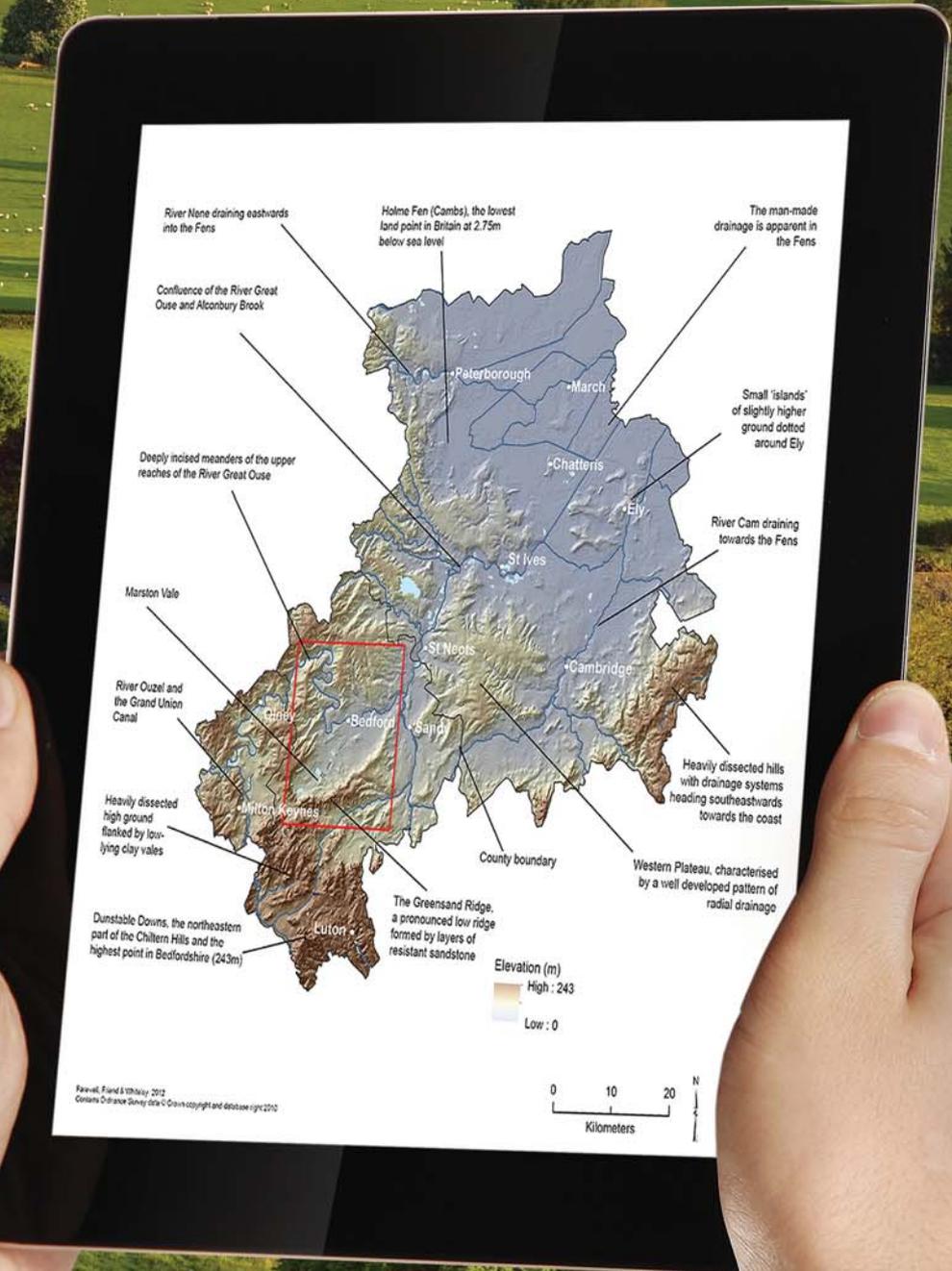
Figure 2 covers the same area and uses the same elevation portrayal, but with the addition of a layer representing bedrock geology. This extra layer involved some merging and rationalisation of data to provide consistent coverage across the two counties. The map shows the SW-NE trend of the bedrock units that is typical of this region of England. Flag-labels identify different stratigraphic units of Jurassic and Cretaceous age that underlie superficial deposits and are normally obscured at the surface. Notice that most of the topographic features of the landscape do not correspond closely, on this scale, to the trend of the bedrock units, except where the Chalk hills provide the highest elevations along the SE boundaries of both counties. ►

# LIE OF THE LAND

**Timothy Farewell, Peter Friend and Martin Whiteley\*** explore new digital mapping techniques in the flat-lands of Eastern England



Figure 1 (shown on tablet computer)  
Regional topography of Bedfordshire,  
Cambridgeshire and Milton Keynes



► Other approaches are obviously required to shed light on what has influenced the local landscape.

Figure 3 is similar to Figure 2, except that an additional layer of shading represents surface (or superficial) geological deposits, essentially of Quaternary age. Surface deposits obscure most of the underlying bedrock, with the silty and peaty Fen deposits in the NE showing up particularly clearly, as does a widespread capping of glacial till on areas of higher ground. This till is a clay- and pebble-rich deposit, formed by deposition from ice sheets. There is disagreement<sup>4,5</sup> about the correlation of tills of Mid Pleistocene age across the Eastern Counties, and all agree that more local work is needed. Meanwhile we simplify our overview by accepting that the local till was deposited during the Anglian Stage (Marine Isotope Stage 12) and estimating that this took place between 480 and 425Ka.

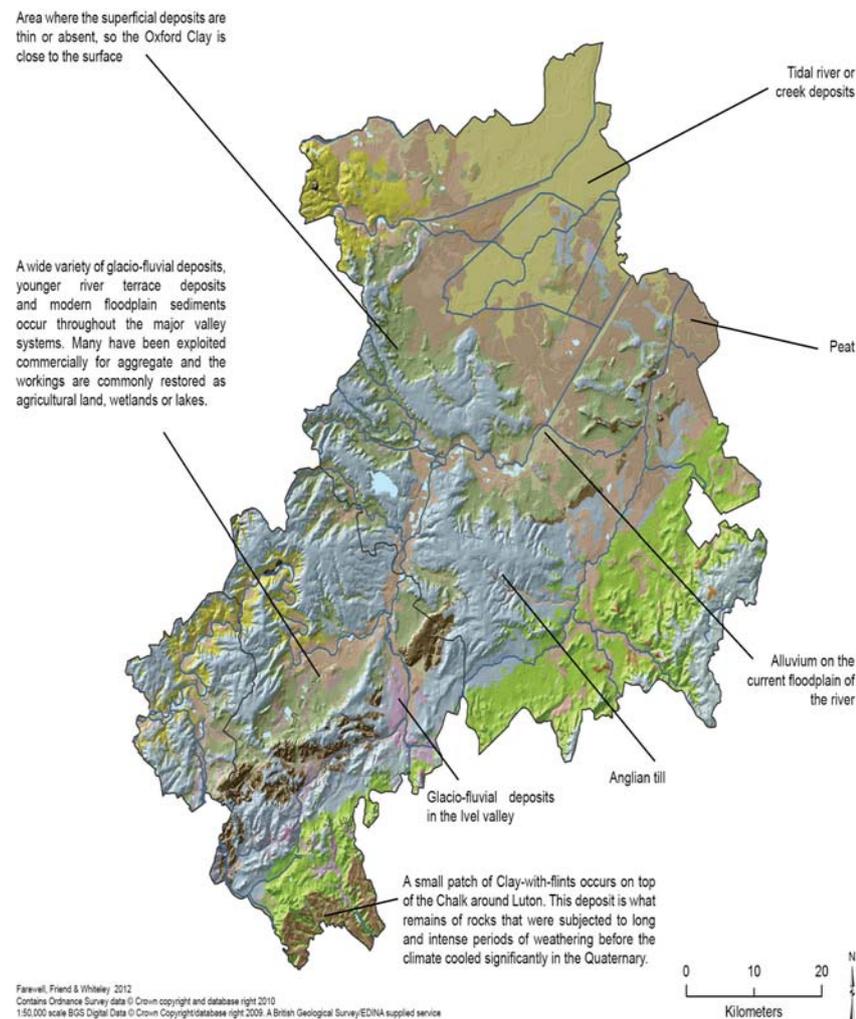
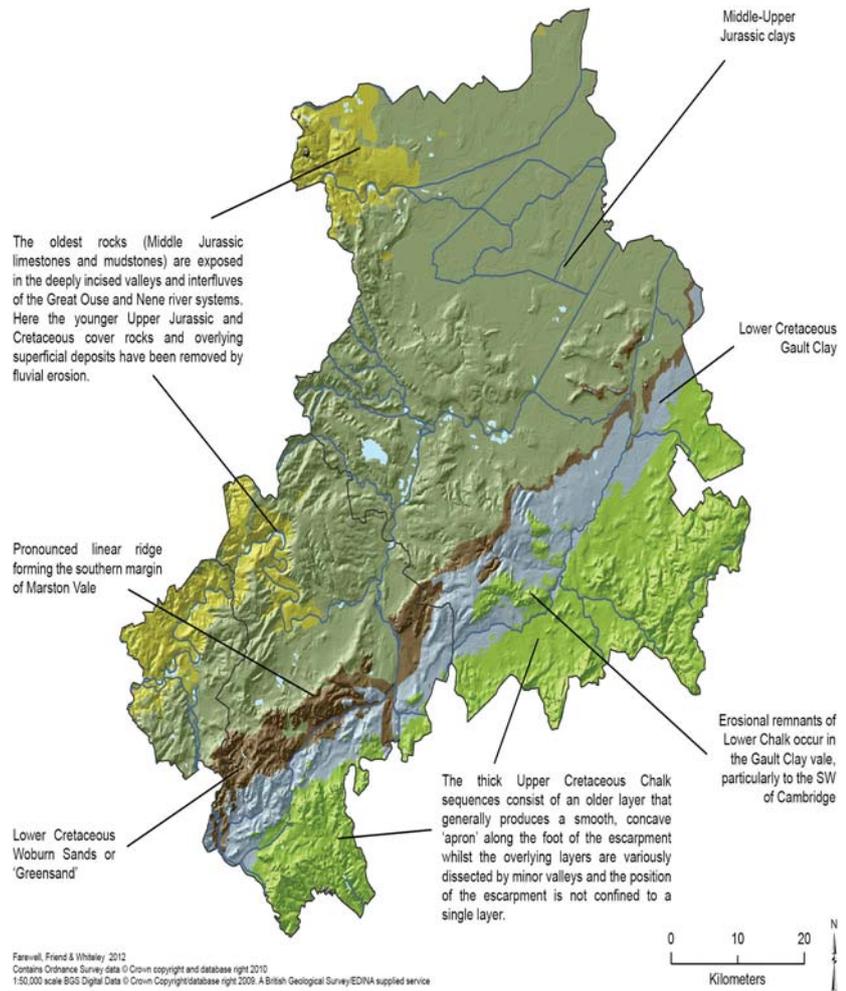
The till is now preserved only on the higher hills and plateaux where it has not been removed by river and slope erosion. This distribution provides time constraints that help in the understanding of landscape evolution because it generally shows a much closer correspondence with topography than does the pattern of the bedrock units.

The remaining three maps (Figures 4-6) illustrate the local area centred on the town of Bedford as outlined on Figure 1. The map boundary represents an area 25km from north to south, and 20km west to east.

We focus on Marston Vale, a remarkably large and relatively flat-floored landform with an average elevation of about 30m above sea-level. It has a pronounced elliptical form (the 'Bedford Bite'<sup>1</sup>) that is elongated SW-NE. The River Great Ouse enters the Vale from the NW, emerging from a highly meandering upstream valley that is incised into Middle Jurassic bedrock, much of which is limestone. After flowing through Bedford, the Great Ouse flows NE towards the sea.

The hills to the NW of Marston Vale have been eroded in Upper Jurassic mudstones, mainly the Oxford Clay. On the floor of the Vale, numerous old pits that exploited the lower horizons of the Oxford Clay for brick-making have left their mark, and obliterate any original drainage patterns. The southern and SE margins of Marston Vale are particularly clearly defined and rise 60-100m above the floor; here they have been eroded in relatively resistant Lower Cretaceous

**Figure 2:** Regional bedrock geology of Bedfordshire, Cambridgeshire and Milton Keynes (NB. For reasons of space Figures 1 through 6 have been narrowed to fit and are no longer in correct proportion)



**Figure 3:** Regional surface deposits of Bedfordshire, Cambridgeshire and Milton Keynes

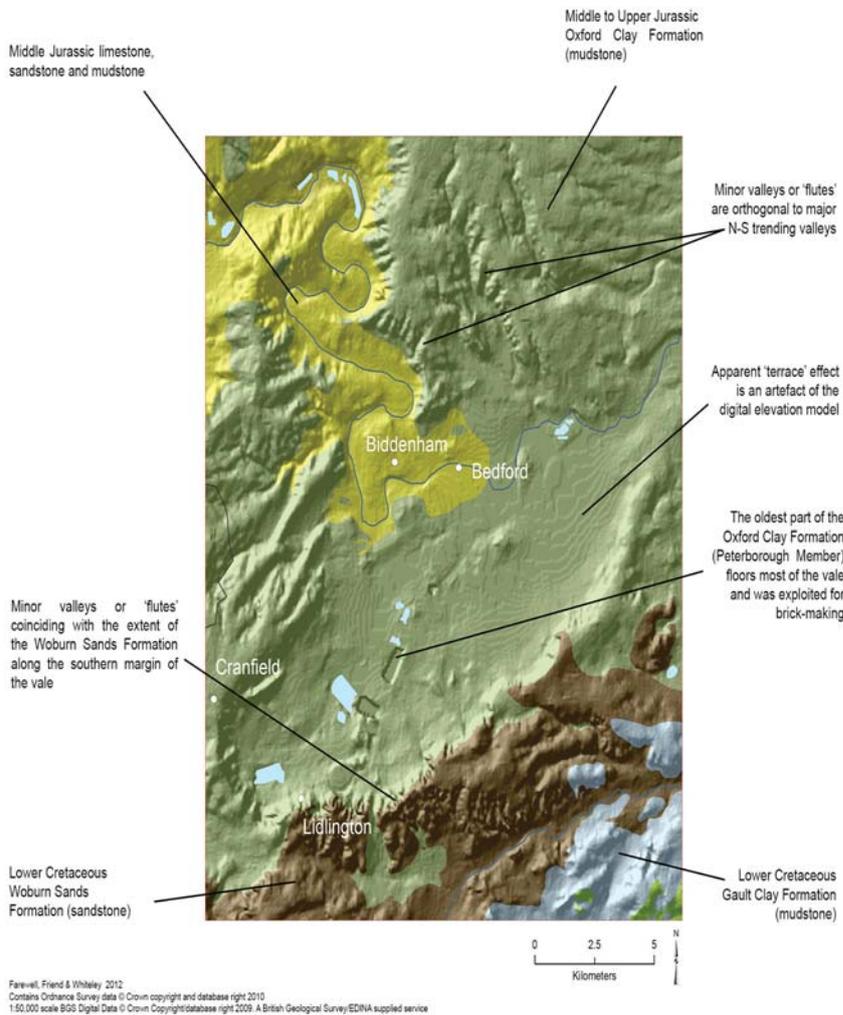


Figure 4: Local bedrock geology of the Bedford area

sandstone (Woburn Sands Formation or 'Greensand'). The marginal slopes of the Vale are either smooth or locally distinctly 'fluted'. We believe that this reflects contrasts in the slope failure patterns due to differences in the local geological materials.

The most important feature shown on Figure 5 is the extensive cover of most of the higher ground by glacial till, known locally as the Oadby Till, and considered to be Mid Pleistocene in age (see above). It is difficult to avoid the conclusion that the whole of Marston Vale has been created by erosion of parts of a continuous sheet of this glacial deposit, and that this erosion must have happened since the melting of the Anglian ice sheet.

The 'fluted' margins in the south of the Vale, where the layers of bedrock have slumped and been incised by small streams, have formed under a range of post-Anglian climates that include very prolonged and repetitive spells of periglacial conditions. So too have the closely-spaced 'flutes' to the north of the River Great Ouse, although they have formed in the clay-rich till.

## DENUATION

It is not easy to evaluate the relative importance of fluvial erosion by a highly mobile River Great Ouse, no longer constrained within its upstream meander belt, and slope-generated erosion under conditions of periglacial ground mobilisation. Our current thinking is that both contributed substantially to the evolution of Marston Vale. Slope retreat due to repeated freeze-thaw cycles, along with the development of thaw-lakes, would have initiated landscape lowering. Efficient removal of the mobilised and slumped material must have depended on the ancestral River Great Ouse. Our conclusion that Marston Vale is primarily a Quaternary landscape feature implies high rates of denudation, an observation that has wider implications because similar processes are likely to have been active together in other parts of eastern England, such as the Fens.

It is well established that soil development is a function of climate, relief, parent material (geology), organisms, and time<sup>6</sup>. In the context of Marston Vale we see relief and parent material (which are themselves often linked) as the dominant local drivers for the differences in types and properties between the soils (Figure 6). ▶

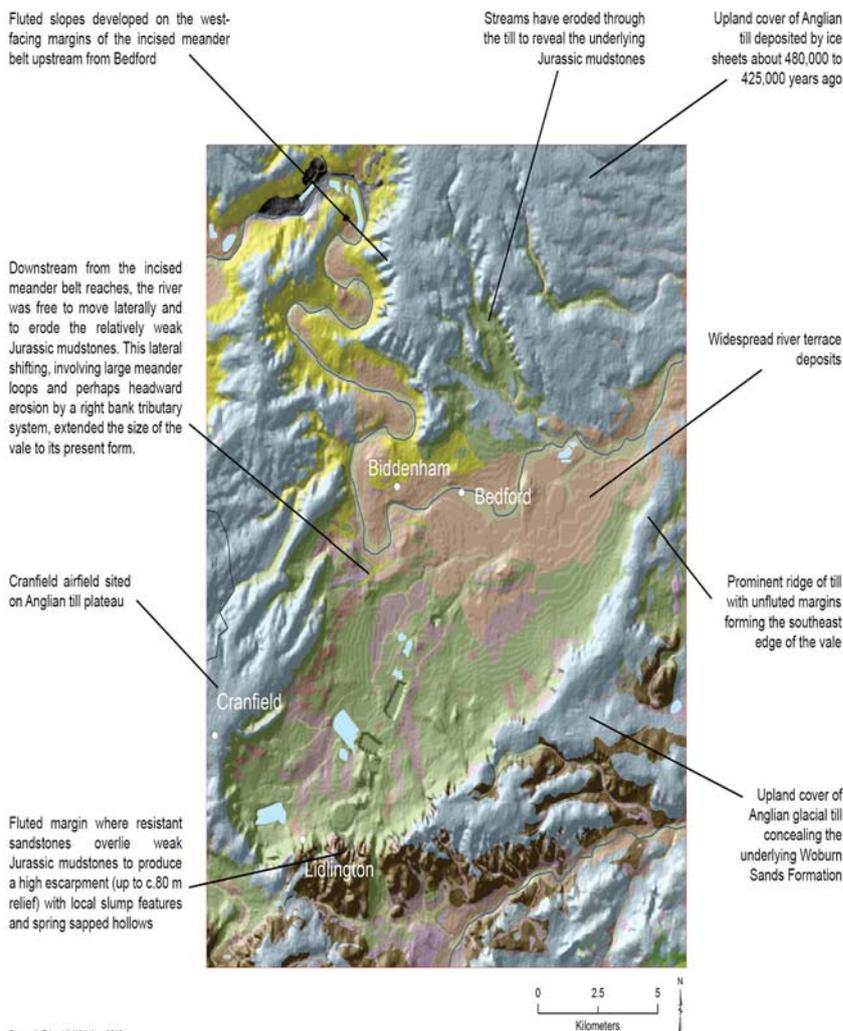


Figure 5: Local surface deposits of the Bedford area

► The soils dataset (NSRI, 2011) used in this map have been overlain on the same hill-shaded digital terrain model used previously. Displayed here are different soil associations (e.g. Evesham, Hanslope, Denchworth & Moreton), which are groupings of taxonomic soil series<sup>7</sup> commonly found in association with each other in the landscape. Over 700 soil series have been mapped in England and Wales. These are differentiated on the basis of their drainage characteristics, texture (% sand, silt, clay, organic matter) and parent material. Within Marston Vale heavy, poorly-drained soils form on clay-rich substrates, regardless of whether they are Jurassic or Pleistocene in age. In contrast, better-drained loamy soils characterise areas that are underlain by porous bedrock or fluvial sands and gravels.

## RATES OF CHANGE

Long gone are the days when people viewed landscapes as permanent features of a non-evolving Earth. We all now accept that landscapes change. The advantage of our detailed map-based approach is that it helps us to understand better the interaction of the different processes that have fashioned those changes.

The area of Figures 1 to 3 provides a sample of part of the SW-NE trending scarp-and-vale topography that is typical of central and eastern England. The gentle, overall tilting of the Jurassic and Cretaceous strata that underpin this topography has occurred during Cenozoic times, the last 65 million years. The extent to which this crustal movement has been caused by thermal doming of NW or Western Britain early in the Cenozoic, or erosional isostasy is debatable. They resulted in the complete removal of some 300m of Upper Cretaceous Chalk from the Bedford area (Figs. 4-6), suggesting an average denudation rate of 300m over 65 million years or about half a centimetre per thousand years. The removal of the Chalk revealed the underlying rocks, with their different weathering characteristics: weak (Gault and Jurassic) clays formed low-lying vales separated by a more resistant (Woburn) sandstone scarp. Where remnants of the once continuous Chalk cover remain further south, they too form a prominent scarp feature.

A cross-section through the western end of Marston Vale, in the Bedford area, along with some conjectural reconstructed surfaces (Figure 7),



Marston Vale, Bedfordshire, looking south from Cranfield footpath towards Rectory Farm

Images: Mike Wilkinson via Wikimedia Commons

illustrates how the Vale may have formed. It is clear from detailed mapping<sup>8</sup> that the pre-glacial landscape contained significant topography that would have influenced the thickness of the till that was later deposited over it<sup>9</sup>. When the till was deposited across the area now occupied by the Vale, an escarpment capped by the Woburn Sands is likely to have caused a thinning of the till cover in that area. Soon after the ice sheet vanished, erosion would have tended to remove the till, re-exposing the Woburn Sands escarpment and perhaps localising the course of the ancestral River Great Ouse as it flowed eastwards towards the sea.

## TERRACE GRAVELS

Preserved in a meander loop some three kilometres upstream from Bedford, the Biddenham Member is the oldest river terrace deposit, the first relict of the ancestral River Great Ouse. It is considered to be of Marine Isotope Stages 9 age<sup>10,11</sup> and probably represents several phases of sediment aggradation under fluctuating fluvial conditions. On this basis, the terrace gravels formed c. 320Ka and were deposited directly on Jurassic rocks, indicating that at Biddenham the cover of Anglian till had been completely eroded away before the terrace formed. Elsewhere in Bedfordshire preserved thicknesses of till usually exceed 30m so it is not unreasonable to suggest that >20 m of till was eroded away during a very short time period (ca.105-160 Ka) immediately following Anglian deglaciation.

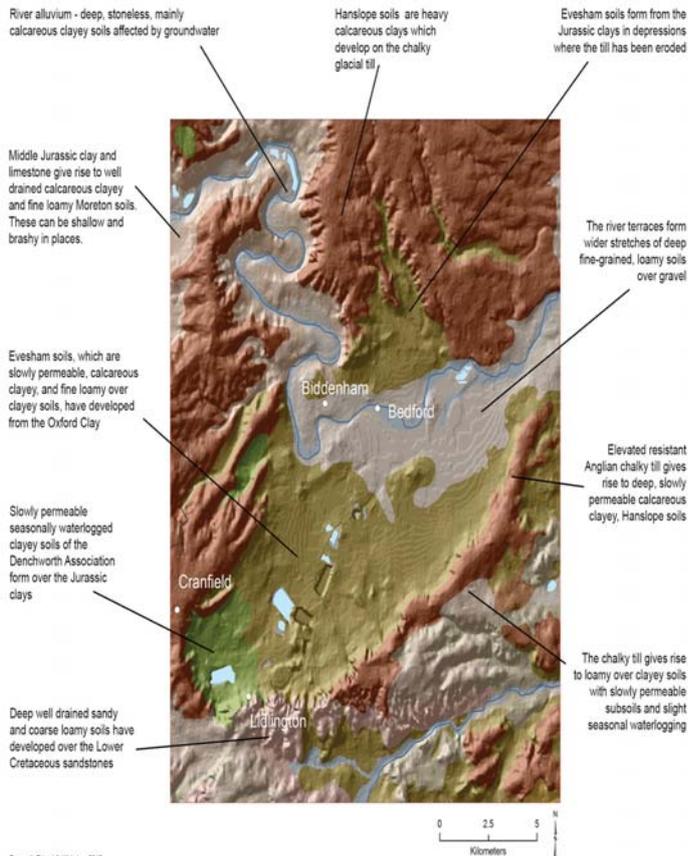
Although denudation rates averaged over uncertain periods of time have to be

treated with caution, our estimate is that the initial excavation of Marston Vale began with very high denudation rates (or about 13-19 centimetres every thousand years) under predominantly periglacial conditions and localised seasonal surface drainage. Many other river terrace systems throughout north-west Europe have been attributed to similarly high 'uplift rates'<sup>12</sup>.

Our observations suggest there were marked contrasts in the denudation rates that prevailed during the Cenozoic generally and the Pleistocene in eastern England (Figure 8). The remarkable efficiency of Pleistocene periglacial processes<sup>13</sup> had a major role in removing Anglian till to reveal an exhumed landscape, though we feel that the speed of this suggests climate change modification of surface processes more than tectonic movement. In the Bedford area, the River Great Ouse acted as an efficient remover of newly eroded sediment and Marston Vale was carved out very rapidly during Mid Pleistocene times.

Using map-based data of many types has provided us with new perspectives on the evolution of this remarkable landscape. ■

\* **Timothy Farewell** National Soil Resources Institute, Department of Environmental Science and Technology, School of Applied Sciences, Bullock Building, Cranfield University, Cranfield, Bedfordshire MK43 0AL; **Peter Friend** Friends of the Sedgwick Museum, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ; **Martin Whiteley** Bedfordshire Geology Group, Bedford Museum, Castle Lane, Bedford MK40 3XD



Farewell, Friend & Whiteley 2012  
Corine Corine Survey data © Crown copyright and database right 2010  
Soils data © Cranfield University and for the Controller of MGSO, 2011

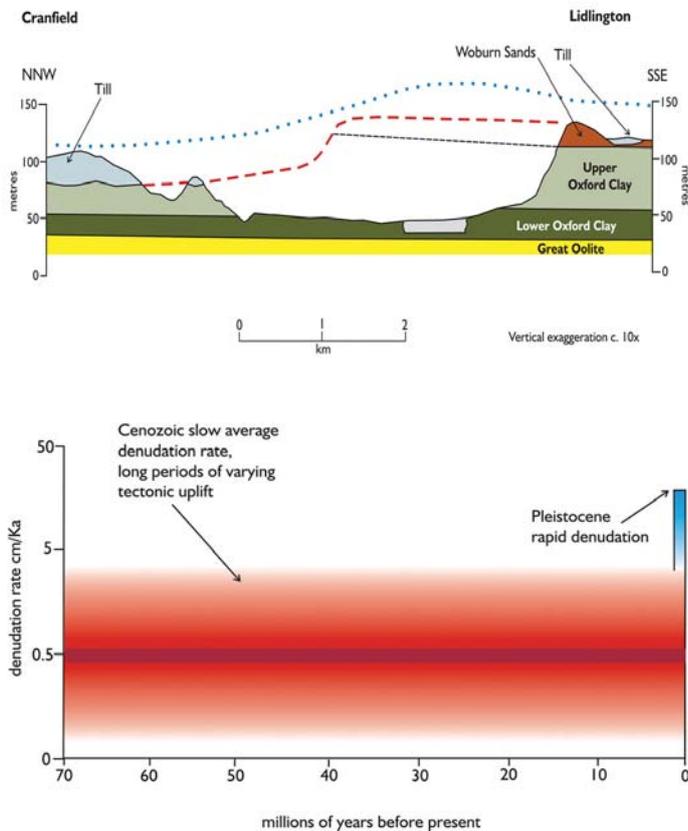


Figure 6:  
Local soils of the Bedford area

Figure 7: Cross-section through the western end of Marston Vale. The red dashed line represents the conjectural Cenozoic landscape that influenced the form and thickness of the Anglian till cover (blue dotted line), now mainly eroded away

Figure 8:  
Diagram comparing denudation rates over long (and uncertain) time periods during the Cenozoic with order-of-magnitude-higher local rates in Marston Vale during the Pleistocene

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Images: Autumnsonata via Flickr.com



The River Great Ouse, Tyringham, Buckinghamshire

## ENDORSED TRAINING/CPD

Course	Date	Venue and details
Geohazard Risk Analysis and Communication	11-15 March	Five day course. Venue: University of Sussex. Fee: £1160, 10% discount for Fellows. Convener: Prof. Roger Moore FGS. Contact details on website, or at <a href="http://www.sussex.ac.uk/geography/pgstudy">www.sussex.ac.uk/geography/pgstudy</a> .
The Geology of Spain	12-23 March	Field excursion. Department of Earth & Environmental Sciences, University of St Andrews Venue: St Andrews, Fife and central Spain. £1500, 10% discount for Fellows. Contact: Catherine Brown. Details on website.
Geology of Scotland and its Economic Earth Resources	13-21 March	Venue: St Andrews, Fife and the Scottish Highlands. Fee: £700, with 10% discount for Fellows. Contact: Catherine Brown. Details on website.
Onshore Cone Penetration Testing	22 March	Venue: Warrington, Cheshire, England. Organised by: FUGRO. Free. Contact: Steve Poulter, Fugro Engineering Services, T: 0870 402 1400. Full contact details on website.
Lapworth's Logs	n/a	'Lapworth's Logs' are a series of e-courses involving practical exercises of increasing complexity. Contact: <a href="mailto:info@lapworthslogs.com">info@lapworthslogs.com</a> . Lapworth's Logs is produced by Michael de Freitas and Andrew Thompson.

## DIARY OF MEETINGS MARCH 2012

Meeting	Date	Venue and details
Black Sea Oil and Gas Forum 2013 Gastech	5 March	Venue: Sheraton Sofia Balkan, Sofia, Bulgaria. Convener: Laurence Allen. See Website. Further information and registration: <a href="http://www.blackseailgas.com">www.blackseailgas.com</a> .
GeoCareers Fair South West Regional	6 March	Venue: Plymouth University. Contact: Jonathan King. E: <a href="mailto:jonathan.kingeo@yahoo.co.uk">jonathan.kingeo@yahoo.co.uk</a>
Chartership Workshop East Midlands Regional	12 March	Speaker: Bill Gaskarth. Venue TBC. Contact: David Boon E: <a href="mailto:dboon@bgs.ac.uk">dboon@bgs.ac.uk</a>
Glasgow's Mining Legacy Central Scotland Regional	12 March	Venue: Strathclyde University. Speaker: Donald Lin. Time: 1745 for 1800. Contact: Lesley McLellan. E: <a href="mailto:Lesley.McLellan@ls.glasgow.gov.uk">Lesley.McLellan@ls.glasgow.gov.uk</a>
The British Gas Industry: Considerations for the Use of Environmental Forensics West Midlands Regional	12 March	Venue: Building MA, Wulfruna Street, University of Wolverhampton, Room MA 202. Speaker: Dr Russell Thomas (Technical Director, Parsons Brinckerhoff). Time: 1800 for 1830. Contact: Daniel Welch. E: <a href="mailto:geolsoc_wmrg@live.co.uk">geolsoc_wmrg@live.co.uk</a>
Lyell Meeting 2013: The Cambrian Explosion – understanding Earth systems at the origin of modern ecosystems, Geological Society, Palaeontological Association, Micropalaeontological Society, Palaeontographical Society	13 March	Venue: Burlington House. Please register online. Free to Fellows of sponsoring societies (left). Charges otherwise. Please register online. Contact: Naomi Newbold E: <a href="mailto:Naomi.newbold@geolsoc.org.uk">Naomi.newbold@geolsoc.org.uk</a> . T: 020 7432 0981
Estimating and Reporting Mineral Resources Southern Wales Regional	13 March	Venue: Room 1.25, Earth Sciences, Main Building, Cardiff University. Speaker: Dr Lucy Roberts (SRK). Time: 1730 for 1800. Contact: <a href="mailto:swrg@geolsoc.org.uk">swrg@geolsoc.org.uk</a>
Schools Competition Final South West Regional	13 March	Venue: Plymouth University. Details on website. Time: from 1830 (Tea) Contact: Gordon Neighbour. E: <a href="mailto:gordonneighbour@hotmail.com">gordonneighbour@hotmail.com</a>
Research in Progress Meeting Geochemistry Group, Mineralogical Society	14 March	Venue: Open University, Milton Keynes. For details, abstract submission n and registration, see website. Contact: Christina Manning E: <a href="mailto:c.manning@es.rhul.ac.uk">c.manning@es.rhul.ac.uk</a>
School Geology Challenge 2013 Southern Wales Regional	19 March	Venue: Gower College Swansea (Gorseinon Campus), Belgrave Road, Gorseinon. See website. Contact: <a href="mailto:swrg@geolsoc.org.uk">swrg@geolsoc.org.uk</a>
Recovery from the Greatest Mass Extinction of All Time South West Regional	20 March	Venue: Burrell Theatre at Truro School, Truro, Cornwall. Evening meeting. Speaker: Prof. Mike Benton. Contact: Danielle Pullen E: <a href="mailto:swrg@geolsoc.org.uk">swrg@geolsoc.org.uk</a>
Volcanism Impacts and Mass Extinctions Causes and Effects Natural History Museum	27 - 29 March	Venue: Natural History Museum, London. See website or go to: <a href="http://massextinction.princeton.edu">massextinction.princeton.edu</a> . Contact: Professor Gerta Keller E: <a href="mailto:gkeller@princeton.edu">gkeller@princeton.edu</a>
Exceptionally Preserved Fossils: Windows on the Evolution of Life Geological Society, Shell UK	27 March	Venue: Burlington House. A Shell Lecture. See p.8



Image: Andrew Bowden via Flickr.com

# SOPWITH'S SECTION

Graham Carlisle\* and Susan Turner examine yet another newly rediscovered facet of the ever-surprising work of Thomas Sopwith...

**A** new find on the auction circuit fit for Jubilee Year (2012) was an original manuscript production by Thomas Sopwith FRS FGS (1803-1879). Graham Carlisle, collector of 19th Century illustrations of north-eastern engravers, leapt at the opportunity without being sure of its historical context or accuracy. But from what he could see, this object was without doubt an astonishing labour of love and work of art.

One of the better-known auction websites has an antique seller facility called: "buy it now". Early in May, Graham was periodically checking for old maps on Northumberland and Durham

**Above:** View across the Pennine Hills, backbone of northern England and stomping ground of Thomas Sopwith

when he came across what has turned out to be one of the earliest geological cross-sections of Britain.

The item on offer was listed as: '*Antique Map - limestone strata North of England 1839*'. The seller had provided many images of what he considered to be a very large 'print' of "limestone strata". A 'print', at an advertised length of "around 40 feet" (~13m) and dated 1839 seemed an unlikely object to Graham – unlikely, but not impossible. "Something at the back of my mind recalled the purchase, with associated publicity, of a very large 'printed' geological item of great importance" he says. Was this a geological map? A wall-mounted educational tool perhaps? This particular 'antique map' was

newly listed; an immediate decision was required. And so Graham bought a black, tubular tin container.

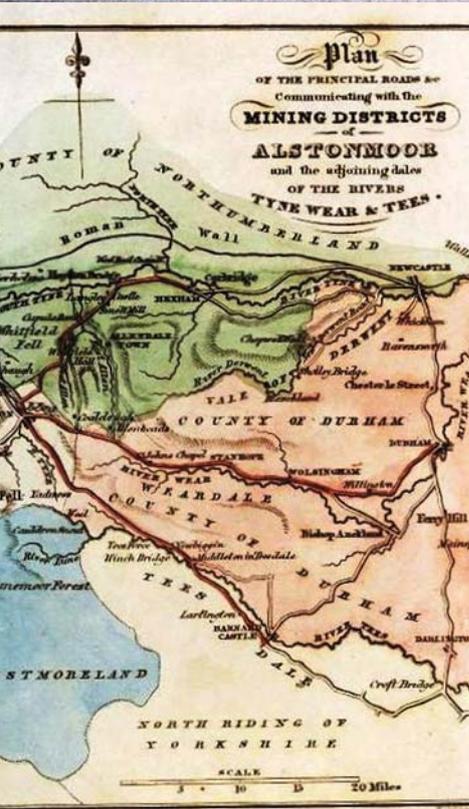
## ENGRAVERS

Graham has no geoscience background. His field of interest is the illustrative work of northeastern engravers working in the period from 1760 to 1860, and it has often led him down a few random by-ways. What then, was he to make of this? What he had acquired was beyond his expectations - and so he sought some geological help from Sopwith researchers in an attempt to understand more about his find.

Graham, it turned out, had become the proud possessor of one ►



The 1839 Sopwith Strata Section with the black circular tin container in the foreground



Far left: Early map of the mining districts of Alston Moor, by Thomas Sopwith (1833)

Left: Thomas Sopwith's cartoon sketch of William Buckland in 1840

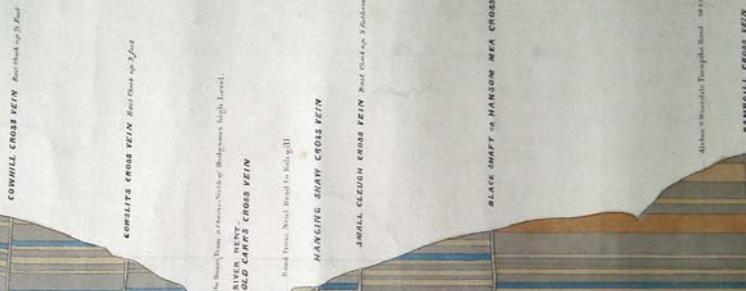
► of the first, and certainly the most extensive, hand-drawn coloured cross-sections of the geology of Britain. It covers the ground from Cross Fell to Hownes Gill in Co. Durham, a length given as '28 miles 12 chains 60 links'. And that amazingly precise work was carried out by Thomas Sopwith, one of the early 19th Century's unsung heroes of geology, a man whose grandson (of the same name) far outshines him in fame and internet materials these days - think Sopwith Camel and Pup and Hawker and Armstrong Siddeley.

We think it is more than high time that we gave TS Senior his due for his early geological endeavours. Sopwith did become a Fellow of the Geological Society in late 1835 and his faithful constancy in recording 19th Century events has been of enormous use to more than one historian of science.

## APPRENTICE

Sopwith, coming from a Newcastle upon Tyne family of cabinet makers, became a young apprentice under J & T Dickinson, operators of lead mines in the North of England. It was undoubtedly then that he first devoured Westgarth Forster's (1809, 1821 2nd Ed.) classic section from Newcastle to Cross Fell, showing the underground structure. Forster had been the first to provide a stratigraphic column, although 18th Century cross-sections are known, from the work of White Watson and John Farey. Sopwith produced his own first book with sections in 1829, based on his apprenticeship years, when he spent much of his time walking the hills and dales learning by observation.

We are not yet sure why exactly he made this section, through the Carboniferous Limestone in the Lead Mining Districts of the North of England; but in 1839 (or possibly the year before) he was working on a model of part of Alston Moor lead mines and Nentsbury lead mines, Cumberland, (model XVI, illustrated in Turner & Dearman 1982). Sopwith exhibited on the Alston Moor strata at the 1838 British Association for the Advancement of Science (BAAS



Close-ups of parts of the 1839 Sopwith Strata Section showing detail of colour and structure

Inset: Font style of the 1839 Sopwith Strata Section title

1839) and on 6 November 1839 lectured to Durham University students about plans, sections, geological drawings, and models.

Since the 1820s Sopwith had honed his skills in isometric drawing and made sections (and a large one-off geological model) to show the structure of set areas, while in the late 1830s he had begun to think about making the smaller models (which have now become extremely collectable). We know however that he did exhibit his 1839 Strata Section at the British Association meeting in Newcastle in 1840. This was a pivotal meeting for him, as he met so many of the important geologists of the day and - at William Buckland's advice - proceeded to create and produce some of the most important three-dimensional models of geological structure, which were subsequently sold all over the world. This was when he penned the famous sketch of William Buckland *en route* with Louis Agassiz to look for evidence of glaciations (picture).

## SPECTACULAR

This spectacularly beautiful new discovery measures a massive 42 feet long by 2 feet 5 inches deep backed onto heavy linen (pictures). The horizontal section is drawn at a scale of 300 feet to the inch, and the vertical section at 100 feet to the inch. It is in pen (Indian ink) and has been hand coloured, with the length made up of just fewer than 10 (9.73, to be precise), individual sheets of paper pasted onto a continuous, unbroken linen mount. Each sheet overlaps its neighbour by about an inch.

Technically, the sheets are of 19th Century 'Antiquarian' size (52.5 inches wide by 30.5 inches deep). Sopwith must have placed an order (to which supplier, we do not as yet know) for the entire length of high-



**Above: The Sopwith Section, in all its 42-foot glory**

**Below: Young Thomas Sopwith in his formative years (photo by S. Turner of painting in possession and with permission of Robert Sopwith).**

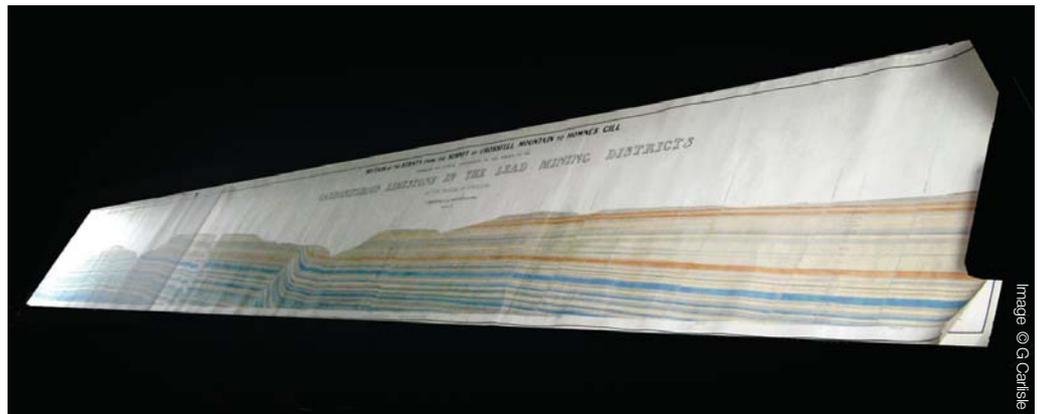


Image © G Carlisle

grade thick blank drawing paper (This would have been very expensive; even more reason for the great care taken by TS). Probably because of the fractional differences in height for the supplied sheets (they might come with a 'deckle', because of the manufacturing process), they have been trimmed. Therefore, accounting for this and the overlap, the sheet size as measured is now 51.5 x 29.5 inches.

Sheets of drawing paper at this period were woven, and no watermark is present. At some stage in its long life the section was cut into two parts: length one is 14 feet 11 inches long; length two 27 feet and 3.5 inches long. Sopwith worked with patience and care. Every tiny change in direction of every single sequence is mapped out by the minutest of pinpricks - a magnifying glass is needed to see them.

From a distance the Section has every appearance of being printed; the 'title' is indicative of high-quality wood engraved lettering. The 'font size' is attractively balanced between each line within the title. There is a giveaway though; some of the lettering crosses the join of consecutive sheets in a manner that would never have been practical in print. Examination of the section shows that it was coloured after mounting onto the linen backing. Graham believes that the Sopwith Strata Section should properly be considered as unfinished.

Although there are faint pencil notes (presumably by Sopwith) regarding colours to be used, one part of the Section carries only a pencil outline that remains

uncoloured. Colour coding was one of Sopwith's fortés but this example predates his later work at the W B Lead Mines.

We have found references to the Crossfell to Hownes Gill Section in Sopwith's diary (via a quotation in Richardson's 1891 biography). It reads: "On January 25th [1841]... Professor Sedgwick also called and examined the large section of the strata from Howne's Gill to the summit of Crossfell, which he honoured with the appellation of this 'gorgeous section.'..."

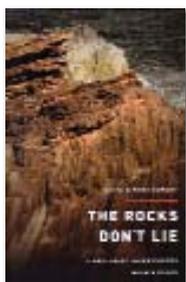
Clark and Hughes in their *Life and Letters* of Sedgwick make no mention of the meeting, but that signifies nothing. Sopwith, unlike many, was one to note down every detail of his life - especially his meetings with eminent persons - as he was clearly a man on the rise. Sopwith later (1864) lectured on the section, and probably exhibited it. Wendy Cawthorne (Assistant Librarian, Geological Society) has informed us that the Society seems not to have a copy. However, we will be very happy to hear from any reader who is able to provide information that throws greater light upon this remarkable section. ■

### FURTHER INFORMATION

For more on TS - see <http://www.facebook.com/ThomasSopwithAppreciationSociety>

For further reading please see online [www.geolsoc.org.uk/en/Geoscientist](http://www.geolsoc.org.uk/en/Geoscientist)

\* **Graham Carlisle** is a collector of 19th Century illustrations. Dr Susan Turner is a palaeontologist, museum designer and historian of science, based in Australia



## The Rocks Don't Lie

If the public opinion polls are correct around a third of people in Britain and nearly a half in the US consider it probable at least that the Earth was created in the last 10,000 years. Of these a considerable proportion would explain the rock record in terms of the year-long flood of Genesis. The uncomfortable truth is that a belief universally left for dead nearly two centuries ago is alive and well in the popular consciousness.

Although originally intended as a response to the 'Flood Geology' of Young Earth Creationism, Montgomery - a geomorphologist at the University of Washington - has written a very readable book that covers the complex interactions between geological science and the idea of a global flood over the centuries. Montgomery makes many good points. He demonstrates that the progress of science cannot be simply reduced to wise sceptical scientists triumphing over naive fools in dog collars. He points out that Christians have not always invoked either a literal seven-day creation or a year-long global flood. He tells us that, far from representing mainstream Christianity, Flood Geology is a barely 100 years old and arises from an unholy union of unorthodox theology and geological illiteracy. Throughout the text are scattered gentle but valid reminders that flood geology multiplies the inconceivable by the impossible.

Inevitably one wishes some things were done better. Montgomery tells us that a key failing of Wegener's theory was the inability of the crust to sustain the required lateral forces, but neglects to tell us how this objection was answered (by the lithospheric plate). A more pressing problem in a polemic against fundamentalism is his handling of Bible interpretation, where he makes much of the possibility of multiple sources within Genesis. The attention of biblical scholars has shifted from debating how Genesis was formed to how the book in its final state is to be interpreted. He only very briefly alludes to those interpretations of Genesis 1 and 2 which suggest that it was

never intended as Earth history anyway. Another regret is the slightly distanced treatment of Young Earth Creationists. They remain remote figures. *Why* they believe as they do is not fully explained.

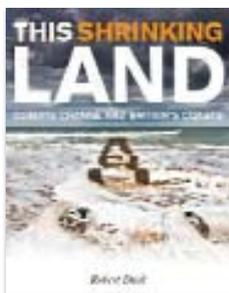
This is a badly needed, engaging and even-handed book deserving the widest possible circulation. Order a copy for your local library.

*Reviewed by Chris Walley*

### THE ROCKS DON'T LIE; A GEOLOGIST INVESTIGATES NOAH'S FLOOD

DAVID R MONTGOMERY, Published by: W W Norton and Company, 2012, ISBN 9780393082395

List price: £17.99



## This Shrinking Land

Hang on to your hats! Britain may not be such a safe place to live after all. This book starts at a cracking pace, describing a catalogue of major tsunamis and storm surge disasters, mythical submerged landmasses and lost villages - mixing facts, speculations and poems, and only pausing to take breath and ask the big question 'why us?'

Chapter two begins to provide an explanation through Holocene sea-level rise and global warming, before being diverted by the history of the curling Grand Match, the Tay Bridge disaster and the two-year exile of the boozy Lady Grange on Hesper in the Outer Hebrides. This, as you may have gathered, is no ordinary science textbook on coastal processes; it is a book with humour, anecdotes, strange facts and oddities jostling to be heard alongside the technical background.

The power of waves is introduced in Chapter three, not with Airy or Stokes wave theory, but with 2600 tonne blocks lost from harbour breakwaters, the 1849 breaching of Spurn (caused by excessive gravel extraction), the loss of Dunwich port and even Shakespeare's Sonnet 64 ('when I have seen the hungry ocean gain advantage on the kingdom of the shore' - I was a Stratford boy and learnt this well!). The chapter ends with the seductive

power of the sea, Agatha Christie and Jane Austen. Chapters follow in much the same vein, on coastal defences and the trouble that they can cause ('defending the indefensible'), and the reasons why Scotland is different from England (clue: it's something to do with the geology).

Chapter six focuses on the 21st Century conflicts and solutions, managed retreat, shoreline management plans and Donald Trump's golf course. The final chapter poses the question 'is my house with its sea view safe?' and manages to convince me otherwise, even though I live 35 miles from the sea. At 185 pages, this is a pleasure to read, not too long-winded or bogged down by unwelcome technical detail.

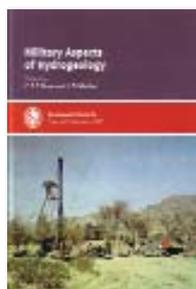
The diversions into English literature, history and popular culture are a real joy and make the book stand out from the crowd. The layout and illustrations are adequate, some of the photographs look like they have been taken from old slides and the binding should be good enough to survive a good few reads. If you like your geology with a touch of human interest, then this book will appeal to you.

*Reviewed by Mark Lee*

### THIS SHRINKING LAND: CLIMATE CHANGE AND BRITAIN'S COASTS

ROBERT DUCK, Published by Dundee University Press, 2011. ISBN: 978 1 84586 118 6 hbk 208pp.

List price: £20.00



## Military Uses of Hydrogeology

Napoleon famously said an "army marches on its stomach", but when it comes to water there's more to it than that - and the rest can be summed up simply as "mud!" This publication describes how the military needs hydrogeological expertise both to find water and predict ground conditions.

Twelve of this collection of 20 papers originated from a meeting at Burlington House (November 2009) held jointly between the History of Geology and

Hydrogeological Groups, and the Institution of Royal Engineers. It starts with two papers covering pre 20th Century history, with Paul Younger's amusing description of how a knowledge of local groundwater conditions was fundamental in two battles between the English and the Scots, and John Mather on how the eastern coastal defences were supplied with water during the 18th Century. Remaining papers cover warfare from WW1 to Iraq and Afghanistan.

Papers are presented from both sides in both World Wars; the more recent German involvement in Somalia, Kosovo and Afghanistan; hydrogeological support to the US military 1917-2010; the US military's investments in hydrogeology; and the tensions between Palestine and Israel over West Bank water resources. I was particularly pleased to see mention of the Wartime Pamphlets – a collection of well records put together in the 1940s – of great value to those of us who developed what is now the Environment Agency's observation borehole network.

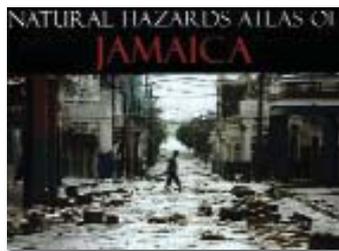
This is not the first Society publication on military geology with *Geology and Warfare* (Eds. Rose and Nathaniel, 2000) and a number of papers in both other Special Publications and *QJEGH* in recent years. A brief Internet search shows that the subject also attracts attention outside GSL meetings and publications at international symposia held over many years, and by other UK geological societies. This publication has added significantly to the growing literature on this subject and is recommended to those interested in the history of our science and its military applications.

*Reviewed by Rick Brassington*

#### **MILITARY USES OF HYDROGEOLOGY**

TED ROSE & JOHN MATHER, *GSL Special Publication 362*  
ISBN: 978-1-86239-340-0 (hbk) Published: 29 March 2012. 376pp

List price: £110.00



## **Natural Hazards Atlas of Jamaica**

This book has a large format and many excellent plates and useful maps and diagrams. It is well bound and suitable for anyone interested in Jamaica and the effects of its associated natural hazards. It is ideal for anyone with a general interest in this subject and students from GCSE to professional level. It is written in a jargon-free style and good value at £35.

Listing first the natural hazards typical of the area (floods (coastal and inland), landslides, earthquakes, hurricanes, tropical storms and tsunamis) it proceeds to explain them in detail. The authors show how secondary effects (e.g. liquefaction during earthquakes and floods during hurricanes) interact with the local physical environment as dictated by the geology (various types of limestone, 'volcaniclastics' and alluvial deposits) in the landscapes typically associated with these rocks (e.g. karst and alluvial plains).

The book contains many plates showing the local areas (especially the effects of the hazards on them), many large maps and informative diagrams detailing features such as hydrostratigraphy, rainfall, geology, landslide engineering effort and coastal flooding. Of particular interest are detailed maps of hurricane tracks, wind strengths and associated tables showing return periods.

The authors move on to consider Jamaica parish by parish, looking at the human geography, physical geography and hazard profiles of each. The book looks at coastal and inland flooding; both sudden and catastrophic (e.g. from storm surges and tsunamis) and gradual (from coastal erosion or sea level rise). It also lists the dates of the most significant hurricanes and earthquakes since the 19th Century.

The authors have supplied a useful glossary of terms used in the text and a list of references and some suggestions for further reading. This is essentially a general book for everyone rather than a detailed text book for the specialist. It is however very interesting for all and can be recommended most strongly.

*Reviewed by Steve Rowlett*

#### **NATURAL HAZARDS ATLAS OF JAMAICA**

PARRIS LYEW-AYEE JR & RAFI AHMAD, Published by University of the West Indies Press, 2012. Mona Geoinformatics Institute, University of the West Indies, Mona Hardback ISBN 978-976-640-259-4 150pp

List price: £35

[www.uwipress.com](http://www.uwipress.com), [www.monagis.com](http://www.monagis.com)

### **REVIEWS: COPIES AVAILABLE**

We have received the following books. Please contact [ted.nield@geolsoc.org.uk](mailto:ted.nield@geolsoc.org.uk) if you would like to supply a review. You will be invited to keep the review copy. See *Geoscientist Online* for an up-to-date version of this list.

■ **NEW! Glaciogenic Reservoirs and Hydrocarbon Systems.** (2012) Edited by Huuse et al. Geological Society Special Publication 368. hbk

■ **NEW! Geology and Hydrocarbon Potential of Neoproterozoic-Cambrian Basins in Asia.** (2012) Edited by Bhat et al. Geological Society Special Publication 366.hbk

■ **NEW! Sustainable Development and Management of the Shallow Subsurface.** (2012) Edited by de Mulder et al. Geological Society, IUGS. hbk.

■ **NEW! Earthworks in Europe.** (2012) Edited by Radford, T A. Geological Society Engineering Geology SPecial Publication No 26. hbk.

■ **NEW! Faulting, Fracturing and Igneous Intrusion in the Earth's Crust.** (2012) Edited by Healy et al. Geological Society Special publication 367. hbk.

■ **NEW! Advances in Carbonate Exploration and Reservoir Analysis.** (2012) Edited by Garland et al. Geological Society Special Publication 370. hbk

■ **Mechanics of Fluid Flow** by Basniev, Dmitriev and Chilingar. John Wiley, Scrivener hbk.,568pp

■ **South of Scotland – British Regional Geology (4th Edn.)** - Stone et al. British Geological Survey (NERC) 248pp, with map.

■ **Disaster Deferred - a new view of Earthquake Hazards in the New Madrid Seismic Zone.** (2012) by Seth Stein. Columbia University Press pbk, 282pp

■ **Continuum Mechanics in the Earth Sciences** by William I Newman Cambridge University Press

■ **Theory of Reflectance and Emittance Spectroscopy (2nd Edn)** by Bruce Hapke. Cambridge University Press.



# PEOPLE

▶ Geoscientists in the news and on the move in the UK, Europe and worldwide

## CAROUSEL

All fellows of the Society are entitled to entries in this column. Please email [ted.nield@geolsoc.org.uk](mailto:ted.nield@geolsoc.org.uk), quoting your Fellowship number.

### ■ JON COOKE



Jon Cooke has joined the Board of Directors at consultants ES International Ltd. Jon is an Engineering Geologist and an expert in geo-environmental risk management, with a background working for major international multidisciplinary consultancies and a wealth of experience in leading and managing multidisciplinary teams.

### ■ BOB WHITE



Bob White FRS, Professor of Geophysics in the Department of Earth Sciences, University of Cambridge, has been named Harold Jeffreys Lecturer 2013 by the Royal Astronomical Society. The Harold Jeffreys Lecture is given annually on a topic in solid Earth geophysics. The award recognises his outstanding record of research and leadership in a career that has focused on the use of state-of-the-art seismic data to investigate the structure of those parts of the Earth's crust formed by melting of the mantle at mid-ocean ridges, continental rifts and hot spots.

## Earth Model Award 2012

Neftex announces the second round of Society-supported awards for UK Masters students, writes **Adler deWind**



Winners of the 2012 Awards: first place, Adam Pacey (not pictured), second place; Daniel Collins (left) and jointly in third place; Madeleine Ralph and Sean Bale

Neftex, an Earth science research company providing geoscience products and services to the exploration industry, has announced the Earth Model Awards for 2013. Prizes of £2000, £1000 and £500 are offered to the students who present the most innovative and forward-thinking research projects. Matching sums also go to their host department. The award is open to all UK-based geoscience students, with a project

related to integrated global geosciences, who are currently working towards an Earth science Masters. The awards are now in their second year and are supported by The Geological Society of London.

▶ To register visit [www.neftex.com/earthmodelaward](http://www.neftex.com/earthmodelaward). Expressions of interest deadline: 26 May 2013. Final projects to be submitted by 16 September 2013. Winners announced - November 2013

## STICKS AND STONES





## HELP YOUR OBITUARIST

The Society operates a scheme for Fellows to deposit biographical material. The object is to assist obituarists by providing contacts, dates and other information, and thus ensure that Fellows' lives are accorded appropriate and accurate commemoration. Please send your CV and a photograph to Ted Nield at the Society.

## IN MEMORIAM [WWW.GEOLSOC.ORG.UK/OBITUARIES](http://WWW.GEOLSOC.ORG.UK/OBITUARIES)

### THE SOCIETY NOTES WITH SADNESS THE PASSING OF:

Bailey, Kenneth \*  
Blackburn, James Kirk \*  
Bowler, Christopher Michael Lance \*  
Chapman, W T \*  
**Doughty, Philip**  
**Hobson, David M**

Jones, Brian Lloyd \*  
Middleton, John \*  
Million, Ronald \*  
Williams, Colin L \*  
**Willis, John Humfrey A.**  
Zwart, Hendrik \*

In the interests of recording its Fellows' work for posterity, the Society publishes obituaries online, and in *Geoscientist*. The most recent additions to the list are shown in bold. Fellows for whom no obituarist has yet been

commissioned are marked with an asterisk (\*). The symbol § indicates that biographical material has been lodged with the Society.

If you would like to contribute an obituary, please email [ted.nield@geolsoc.org.uk](mailto:ted.nield@geolsoc.org.uk) to be commissioned. You can read the guidance for authors at [www.geolsoc.org.uk/obituaries](http://www.geolsoc.org.uk/obituaries). To save yourself unnecessary work, please do not write anything until you have received a commissioning letter.

Deceased Fellows for whom no obituary is forthcoming have their names and dates recorded in a Roll of Honour at [www.geolsoc.org.uk/obituaries](http://www.geolsoc.org.uk/obituaries).



## DISTANT THUNDER

## Chat lines

No Valentines this year? Cheer up. Nina Morgan\* has some ideas on meeting the perfect partner...

Although in the early days of geology it was often the men who got the credit, most would acknowledge that they could never have achieved their great breakthroughs without the intellectual, emotional and practical support of a good woman. For those who never married, like the geologist John Phillips (1800 – 1874), first Professor of Geology at Oxford University, it was a sister, Annie, who provided this crucial backup – a fact he was proud to acknowledge both in private and in print.

For example, in the 1848 Survey Memoir and elsewhere he credits her with the discovery of a crucial bit of evidence that revealed the origin of the Malvern Hills. But for many others, it was a devoted, well educated and intelligent wife who drove them on their quest for greater

geological understanding (*q.v. Distant Thunder, Geoscientist 22.01 February 2012*).

But in those pre-internet days finding – and wooing – the perfect partner was usually achieved more by chance than design. Some, like Roderick Murchison (1792 – 1871), were introduced to their future wives by friends. Others, for example Richard Owen (1804–1892), first encountered their beloved through work. Owen, a medically-trained anatomist and palaeontologist and the driving force behind the founding of what is now the Natural History Museum in London, met the love of his life when he was called in to treat her for an injury. Still others, like William Buckland (1784–1856), the first Reader in geology at Oxford University, met their life partners purely by chance.

In a journal entry for October 8 1839, the diarist Caroline Fox records how: "...Dr Buckland was once travelling some-

where in Dorsetshire, and reading a new and weighty book of Cuvier's which he had just received from the publisher; a lady was also in the coach, and amongst her books was this identical one, which Cuvier had sent her. They got into conversation, the drift of which was so peculiar that Dr Buckland at last exclaimed, 'you must be Miss Morland, to whom I am about to deliver a letter of introduction.' He was right and she soon became Mrs Buckland."

The couple were married on 31 December 1835. A talented artist and admirable fossil geologist, Mrs Buckland proved to be, in the words of Roderick Murchison, "a truly excellent and intellectual woman, who, aiding her husband in several of his most difficult researches has laboured well in her vocation to render her children worthy of their father's name."

Although the story of the Bucklands' first meeting is possibly apocryphal, it does demonstrate the value of a good chat-up line. And although not noted for his sense of humour, the French naturalist and zoologist Georges Cuvier (1769–1832)

might well have been pleased to know that his book provided such an effective introduction to what became real a marriage of true minds.

**Below left: Professor and Mrs Buckland and son Frank. Taken from Elizabeth Gordon's (1894) *The Life and correspondence of William Buckland*, London: John Murray, p103**

### ACKNOWLEDGEMENT

Sources for this vignette include: *Life of Sir Roderick I. Murchison Based on his Journals and Letters* by Archibald Giekie, John Murray, 1875; *Almost more than love, the marriage of Richard Owen and Caroline Clift* by Karolyn Shindler, *Evolve*, issue 6, winter 2011, pp. 57–61; *The Life and Correspondence of William Buckland, DD, FRS*, by his daughter Mrs Gordon, John Murray, 1894; and John Phillips, *The Malvern Hills compared with the Palaeozoic districts of Abberley, Woolhope, May Hill, Tortworth and Usk. Memoir of the Geological Survey of Great Britain and of the Museum of Practical Geology in London*: Longman, London, 1848.

\* Nina Morgan is a geologist and science writer based near Oxford



OBITUARY



# ISLES STRACHAN 1924-2012

Distinguished graptolite palaeontologist who was also a talented mathematician and linguist

Isles was born at Loanhead, Edinburgh, on 12 March 1924. He attended the Royal High School, Edinburgh, where he was the Tullis Medal Dux in Mathematics for 1942. He went to Edinburgh University where he studied Geology, Botany, Zoology and Astronomy. His studies were interrupted due to a bout of ill-health, but in spite of this he was awarded the medal for Advanced Palaeontology in 1946 and graduated BSc Geology in December 1946. He moved

on to Selwyn College, Cambridge, where he gained his PhD in 1951.

## GRAPTOLITES

In the same year he was appointed to a Lectureship in Geology at Birmingham University where he spent the rest of his academic career, rising to Senior Lecturer. During his time there, he specialised in graptolites; their morphology and their use in stratigraphy. His diligent work was recognised with the naming of three graptolites after him: *Huttagraptus praestrachani*,

*Huttagraptus strachani* and *Streptograptus strachani*. He made a big contribution with his two synoptic supplements to the Elles and Wood monographs on graptolites. In 1957 he spent a year in Illinois on a Fulbright Scholarship.

“ ISLES SPECIALISED IN GRAPTOLITES; THEIR MORPHOLOGY AND THEIR USE IN STRATIGRAPHY ”

During his time at Birmingham he founded the Lapworth Museum, in honour of the pioneering geologist and former Professor of Geology at Birmingham, Charles Lapworth. He taught himself to read Russian and Chinese, and he attended the International Congress in Prague in August 1968 when the Russians invaded Czechoslovakia. He had always hoped to go to China but this never materialised. However, he did dine at the Chinese Embassy in London at the invitation of the Consul in recognition of the help he had given to Chinese students.

## LATIN

Isles retired to St Andrews with his family in 1984, because he wanted to live close to a university library where he could continue his studies. Given his expertise in palaeontology in general, and

graptolites in particular, he was given an Honorary position at St. Andrews University, where he contributed to the teaching courses for Geology Honours students, offering lectures and practicals on graptolites. In later life he set himself the task of translating Robert Sibbald's '*Scotia Illustrata*' (1684) from Latin into English.

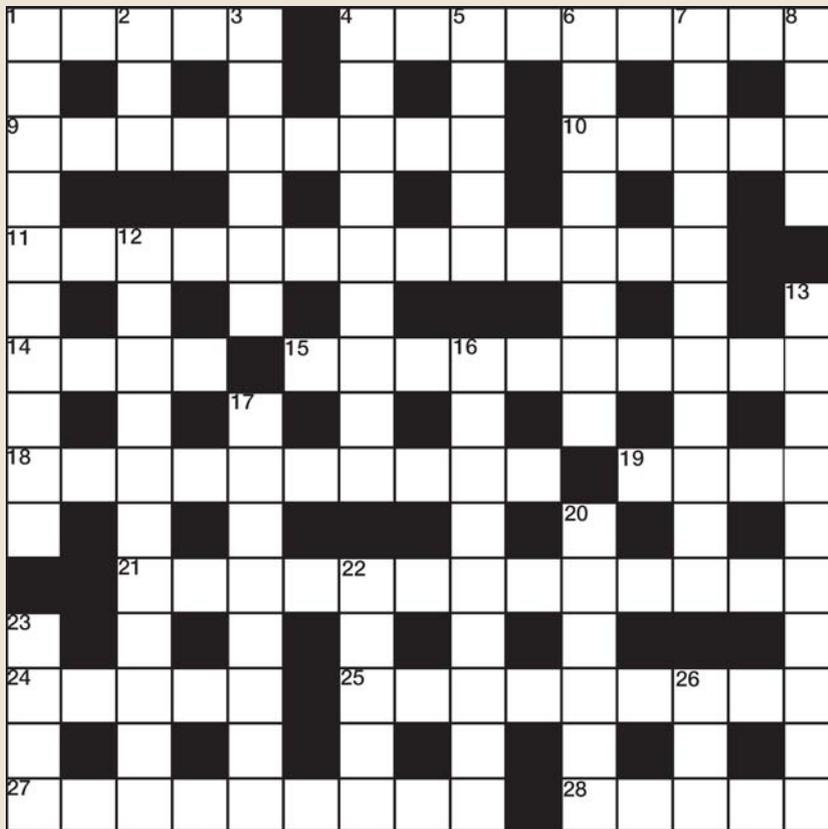
When the graptolite community was informed of his death, a number of responses were received. One in particular summed up Isles' achievements. Chen Xu of Nanjing wrote "he was a good friend of our Chinese graptolite workers. We will remember his outstanding contribution to the fine structures of graptolites." Another co-worker said "Isles' Palaeontographical Society monographs continue to be extensively used by all graptolite workers all of whom owe him a considerable debt of gratitude for the huge amount of time and effort that went into their production."

During his time in Birmingham, he attended Weoley Hill Church in Selly Oak. It was there he met and married Peggy Thompson. They had one daughter, Margaret Isles. Both survive him.

► By **Richard A Batchelor** (with contributions from **Jan Zalasiewicz**, **David Loydell** and **Denis Bates**)



**CROSSWORD NO. 167 SET BY PLATYPUS**



**ACROSS**

**DOWN**

- 1 Turbidite sequencer (5)
- 4 Hindu philosophical texts (9)
- 9 Raising to a higher plane, my Lord (9)
- 10 Gravitationally curved path of an object around a point in space (5)
- 11 State of the uninvolved, uncommitted, and unconnected (14)
- 14 Hazard to shipping (4)
- 15 Distinctive characteristic useful in naming and data retrieval (10)
- 18 Property exhibited by igneous rock with neither excess nor deficiency of silica (10)
- 19 Open-ended neck-ring (4)
- 21 Dentists particularly concerned with malocclusive biting (13)
- 24 Latin backside (5)
- 25 Powerful men in government who enjoy a threesome (9)
- 27 Rock comprising more than 50% calcium carbonate (9)
- 28 Castrated rooster (5)

- 1 Type of volcanic bomb with a cracked exterior (10)
- 2 Funerary receptacle (3)
- 3 18th Century apartment complex, next door to Burlington House, where according to Wilde, Mr Ernest Worthing had a set (Act 1, Scene 1) (6)
- 4 Atom capable of forming a single bond (9)
- 5 Primitive photosynthetic autotrophs, ranging from unicellular to gigantic (5)
- 6 Condition of compounds having similar molecular but different structural formulae (8)
- 7 Dwelling places (11)
- 8 Information (4)
- 12 Image showing a range of frequencies from low to high, and perhaps its variation with time (11)
- 13 Change in orientation of a rotational axis (10)
- 16 Large aquatic tetrapod diapsid, apparently immune to end-Cretaceous meteorites (9)
- 17 Caves - how picturesque (8)
- 20 Relating to the fundamental building blocks of matter (6)
- 22 Exceed another in performance (5)
- 23 Cricketing ellipse (4)
- 26 Mythological being - lesser demon (3)

**WIN A SPECIAL PUBLICATION**

The winner of the Dec/Jan Crossword puzzle prize draw was **Dr Richard Batchelor** of St Andrews.

All correct solutions will be placed in the draw, and the winner's name printed in the May issue. The Editor's decision is final and no correspondence will be entered into. **Closing date - 20 March.**

The competition is open to all Fellows, Candidate Fellows and Friends of the Geological Society who are not current Society employees, officers or trustees. This exclusion does not apply to officers of joint associations, specialist or regional groups.

Please return your completed crossword to Burlington House, marking your envelope "Crossword". Do not enclose any other matter with your solution. Overseas Fellows are encouraged to scan the signed form and email it as a PDF to [ted.nield@geolsoc.org.uk](mailto:ted.nield@geolsoc.org.uk)

Name .....

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Membership number .....

Address for correspondence .....

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**SOLUTIONS DEC/JAN**

- ACROSS:**  
 1 Mafic 4 Marmoreal 9 Table Land 10 Excel  
 11 Room and Pillar 14 Trap 15 Protoplasm  
 18 Overridden 19 Silt 21 Computational  
 24 Fungi 25 Arresting 27 Oversteps 28 Smelt
- DOWN:**  
 1 Maturation 2 Fib 3 Coeval 4 Meandered  
 5 Radii 6 Overlaps 7 Excoriation 8 Lull  
 12 Opalescence 13 Emits Light 16 Thesaurus  
 17 Drumlins 20 Biases 22 Usage 23 Afro 26 Ire

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*(The Times, Newspaper, 22 October 2008)*

## PESGB Stoneley Lecture Series

The PESGB are proud to announce the next lecture and date to continue our Stoneley Lecture Series in memory of Professor Robert Stoneley.



## Geology and Me

### Hugh Dennis

"Comedian and geology enthusiast"

**Tuesday 12 March 2013**  
Central Hall, Westminster, London

PESGB is pleased to announce that the speaker for the next Stoneley Lecture on 12th March 2013 will be well known comedian, actor and presenter Hugh Dennis.

While best known for Mock the Week, The Now Show and Outnumbered, Hugh is passionate about the outdoors and recently presented a BBC TV series entitled The Great British Countryside which examined the relationship of geology to the landscape and the industrial past. He says he is never happier than when at the top of a hill in the rain, looking at the landscape stretching away to the horizon.

**Registration is now open, please invite your friends, family and work colleagues to attend.**

[www.pesgb.org.uk](http://www.pesgb.org.uk)



Thanks to the following sponsors for their support. Sponsorship opportunities are still available contact Rebecca Dibley for more information. ([rebecca@pesgb.org.uk](mailto:rebecca@pesgb.org.uk) or +44 (0)20 7408 2000)

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## WHEN KNOWLEDGE COUNTS...



## ...COUNT ON FUGRO

Our well-established technical courses in Cone Penetration Testing and geophysics are now linked to a new 1 day course "An Introduction into the Challenges of Acquisition and Interpretation of Geological, Geotechnical and Geospatial Data for the Offshore Renewable Industry". This means you may choose a 1, 2 or 3 day course at a range of venues.

### New Courses for 2013

#### GeoConsulting & Site Investigation for the Offshore Renewable Industry

Tuesday April 9th 2013 - Hamburg

Tuesday May 14th 2013 - Paris

Wednesday June 19th 2013 - Wallingford, Oxon

#### Onshore Cone Penetration Testing\*

Friday March 22nd 2013 - Warrington

Friday April 19th 2013 - Glasgow

Friday May 17th 2013 - Birmingham

Friday June 21st 2013 - Wallingford, Oxon

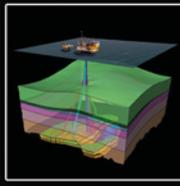
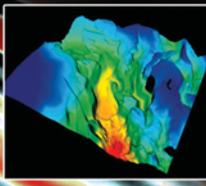
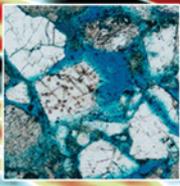
#### Geotechnical and Geo-environmental Geophysics\*

Thursday June 20th 2013 - Wallingford, Oxon

\*Accredited for CPD by Geological Society

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[www.fes.co.uk/courses](http://www.fes.co.uk/courses)





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# Microbial Carbonates in Space and Time: Implications for Global Exploration and Production 19-20 June, 2013

The Geological Society, Burlington House, Piccadilly, London

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Microbial carbonates occur globally throughout the stratigraphic column, from the Archean to the present day. They constitute principal reservoirs of the recent pre-salt discoveries offshore Brazil, producing fields in the Middle East, and are the targets of the pre-salt play offshore Angola. Further development of our understanding and knowledge of microbial carbonates has significant implications for future worldwide exploration and production of these intriguing deposits.

Over the 2 days conference we invite geologists, petrophysicists, geophysicists and petroleum engineers to examine challenges in exploration, appraisal and production associated with microbial carbonates in various parts of the stratigraphic column.

### Key themes to explore include:

- Marine vs. Non-marine microbial facies and textures
- Reservoir Characterisation:
  - o Scaling up - from microbial processes, textures to facies and geobodies
  - o Formation Evaluation - advances in data acquisition and evaluation
  - o Reservoir scale seismic imaging and attribute studies
  - o Diagenesis and preservation
- Regional and basin settings
  - o Play Characterisation - seismic imaging, relationship to hydrocarbon source and association with hydrothermal activity
- Microbial carbonate analogues - ancient to modern

For further information and detailed abstract guidelines please visit [www.geolsoc.org.uk/carbonates13](http://www.geolsoc.org.uk/carbonates13) or contact:

Steve Whalley, The Geological Society, Burlington House, Piccadilly, London W1J 0BG  
T:020 7434 9944 F:020 7494 0579



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# 100 Years and Beyond:

## Future Petroleum Science & Technology Drivers



**Date: 23-24 September 2013**

**Venue: Imperial College London**

This 2-day meeting will celebrate 100 years of petroleum-related science and engineering education at Imperial College. With a list of distinguished speakers, we aim to mark this landmark achievement by looking forward to the next 100 years, with emphasis on discussing key future drivers and related energy supply issues. The meeting will be wide-ranging, with presentations covering global energy trends, future geoscience and engineering technologies, unconventional hydrocarbon resources, carbon sequestration and climate change.



**We have an outstanding group of confirmed speakers, including:**

- Lord Ron Oxburgh
- Lord John Browne
- Professor Scott Tinker (Director, Bureau of Economic Geology, Texas)
- Dr. Bruce Levell (VP Emerging Technologies, Shell)
- Malcolm Brown (Senior VP Exploration, BG Group)
- Bryan Lovell (former President, Geological Society of London)
- Professor Joe Cartwright (University of Oxford)
- Emeritus Professor John Woods (Imperial College & the 2007 Joint Nobel Peace Prize Winner)
- Mike Daly (VP Exploration, BP)



**Further information and registration details:**

Further information and registration details can be found at:  
[www.geolsoc.org.uk/oilcentenary13](http://www.geolsoc.org.uk/oilcentenary13)

or contact Steve Whalley at the Geological Society, using the following email address: [steve.whalley@geolsoc.org.uk](mailto:steve.whalley@geolsoc.org.uk)



The meeting is jointly convened by Imperial College London and by The Geological Society of London, supported by the American Association of Petroleum Geologists, The Society of Petroleum Engineers and by the Petroleum Exploration Society of Great Britain.

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