



The
Black
Country
Geological
Society

NEWSLETTER No. 181 FEBRUARY 2007

The Society provides limited personal accident cover for members attending meetings or field trips. Details can be obtained from the Secretary. Non-members attending society field trips are advised to take out your own personal accident insurance to the level you feel appropriate. Schools and other bodies should arrange their own insurance as a matter of course.

Leaders provide their services on a purely voluntary basis and may not be professionally qualified in this capacity.

The Society does not provide hard hats for use of members or visitors at field meetings. It is your responsibility to provide your own hard hat and other safety equipment *(such as safety boots and goggles/glasses) and to use it when you feel it is necessary or when a site owner makes it a condition of entry.

Hammering is seldom necessary. It is the responsibility of the hammerer to ensure that other people are at a safe distance before doing so.

COPY DATE FOR NEXT NEWSLETTER IS 2ND APRIL 2007

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FUTURE PROGRAMME

**Lecture meetings are held at Dudley Museum, St James's Road, Dudley.
Phone (01384 815575)
7.30 for 8 o' clock start unless stated otherwise.**

MONDAY 26TH FEBRUARY 2007 (*Indoor Meeting*)

Dr. Cynthia Burek: (University of Chester)

The role of Women in the History of Geology

This is a joint meeting with the West Midlands Regional Group of the Geological Society.

SATURDAY 24TH MARCH 2007 (*Field Meeting*)

Leader: Dr Jaqui Malpass

A visit to the Brymbo Fossil Forest

Jaqui was a recent visitor to one of our Monday meetings when she talked about this exciting locality. Details of the meeting place etc were not available when this Newsletter was being prepared. If you receive this Newsletter through your computer, you will also receive the details by email. If you receive the Newsletter through the post, please consult a member who uses email or failing that telephone the Field Secretary, Andy Harrison (07973330706) or Bill Groves(contact details at the end of this Newsletter).

MONDAY 26TH MARCH 2007 (*Indoor Meeting*)

ANNUAL GENERAL MEETING followed by:

David Pannet. (Field Secretary Shropshire Geology Society).

The Ice Age History of the River Severn around Shrewsbury/Ironbridge.

David Pannet has produced leaflets and maps of the Shrewsbury area, and conducted careful investigations into its complex geology. The pioneering description of the glacial history produced by Professor Lapworth - the glacially dammed Lake Lapworth, overflowing and cutting the Severn Gorge and depositing lake silts to mantle the drift and moraines - has been shown to be a little too simple. A number of silted channels have been detected since Lapworth's times, all of which appear to be cut by sub-glacial streams, draining the ice sheet to the north-north-west. One of these channels forms the present Ironbridge Gorge, and some are buried beneath Telford. The concept of one lake covering the whole area is also much more complicated, with a number of lakes existing at various times. David will bring us up to date with the latest ideas about this fascinating area.

SATURDAY 28TH APRIL 2007 (*Field Meeting*)

Leader: Alan Bates (Shropshire Geological Society & OU Geology Society)

Coates and Lilleshall Quarries, Wenlock Edge.

Hard hat and stout boots (safety boots if people have them) required. Meet at the National Trust Car park in Much Wenlock for 10:30am. Alan will be interested in what any of our members have to say about the Wenlock Series.

MONDAY 30TH APRIL 2007 (*Indoor Meeting*)

SPRING CONVERSAZIONE.

Global Warming – Should We Worry?

Everyone is invited to take part in this forum which is the second such event. Last year it proved to be very well worthwhile. If you have something to say – even if it is a bee in the proverbial bonnet – come and say it.

SATURDAY 12TH MAY 2007 (*Field Meeting*)

Leader: Dave Owen (Gloucestershire Geological Trust)

Tintern Quarry, Forest of Dean

Details to be finalised.

SUNDAY 3RD JUNE 2007 (*Field Meeting*)

Leader: John Payne

Raggedstone Hill, Southern Malverns.

Joint trip with the Woolhope Naturalists Field Group. Meet in the Hollybush Car Park at **10.00am** which is on the North side of the A 438 at grid reference: FO 759369. You will need to bring a packed lunch.

LOOKING FORWARD

July - Weekend to the Natural History Museum.

August - Trip to the Abberley Hills and Shavers End Quarry.

Proposed trip to Auvergne volcanic area in France. Only three members have expressed an interest, so I think it is off for the time being at least.

Andy Harrison and Gordon Hensman

OTHER SOCIETIES

NORTH STAFFORDSHIRE GEOLOGISTS' ASSOCIATION

Joint meeting with the West Midlands regional group of the Geological Society

Affordable Volcano Monitoring

Hazel Rymer (Open University)

Tuesday 24th April 2007

University of Wolverhampton, Room 202, Department of Applied Sciences, Wulfruna Street, Wolverhampton.

7 30 pm.

In the last 200 years, over 140,000 people have been killed by volcanic eruptions. Many times this number died due to starvation, disease and economic hardship resulting from volcanic eruptions. Education and planning can help to reduce the number of deaths. I want to contribute to disaster prevention by developing a volcanic eruption early warning system. Of the 600 or so active volcanoes on Earth, around 100 actually erupt each year, but only a small fraction of these are monitored in any way. A large eruption on one side of the world has profound effects on the other side in terms of humanitarian, economic and environmental consequences as

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populations increase and the global economy becomes ever more inter-dependant. I plan to develop new instruments to monitor the small changes in gravity, which happen months or even years before an eruption starts. We cannot prevent volcanic eruptions, but with smart monitoring we can predict them. Knowing that an eruption – even a small one – will happen in the next few years allows local governments to develop building and planning regulations to reduce the risk to the local population. Schools, hospitals and homes can be modified so that they are affected as little as possible (by strengthening roofs and windows) and new buildings can be located in lower risk areas. Evacuations can be planned and practiced. Globally the effects of a large eruption can be reduced by adapting strategies used for other natural disasters or even war, by stock piling vital resources and preparing emergency communications.

The new gravity instruments will work a bit like bathroom scales. When you stand on the scales, gravity pulls your mass downwards onto the spring and it compresses. If you stood on the scales for a few minutes, and your scales were about 100,000,000 times more sensitive, you would see that the weight displayed would change with time because the force of gravity actually changes all the time. It changes as the Earth moves relative to the Sun and Moon. It also changes as the mass beneath you moves. This is unusual in a bathroom!, but under a volcano, as huge masses of magma and gas move (more than 10^8 kg before a small eruption), gravity changes are measurable at the surface. The new instruments don't have a spring, and you shouldn't stand on them, but they will have a load fastened onto a springy mat which will detect the change in weight of the load as gravity changes.

Before any eruption happens, magma and gases accumulate deep inside the volcano or begin to migrate upwards. Sometimes the volume of the volcano changes a little as it inflates to accommodate the new magma and this can be measured by GPS. Because of the huge density contrast between magma and gas, I can calculate how much magma and gas have moved and where to if I can measure the mass and volume change. The mass and volume are found by combining the gravity and GPS data. These changes are usually not spotted because of a lack of resources to provide instruments and technicians to analyse the data – many developing countries have more active volcanoes than volcanologists to monitor them. The new gravity meters will be cheaper and smarter than those now available because they will use the latest materials technology and they will be networked. Each network will run automatically. The data from a network of the instruments will be sent wirelessly to be analysed and the change in mass beneath the surface calculated. I will use the calculations to form a picture of what is going on beneath the surface so that the hazard can be evaluated long before there are physical signs at the surface. Whole chains of volcanoes can be monitored in this way.

[EDITORIAL](#) [NOW FANCY THAT \(part 2\)](#)

You may recall that in the October 2006 Newsletter I wrote a piece about the water shortages in the Island of Jersey. The British Geological Survey (BGS) reported that the island's groundwater was largely polluted and there was no aquifer of any size. However, the island's parliament, the States, decided to ignore the scientific evidence and take the advice of a local water diviner who claimed that there was a deep underground river flowing from neighbouring France. The States based further drilling investigations on the diviner's information. This was ridiculed in the satirical magazine *PRIVATE EYE*, which prompted a letter to the magazine from a Jersey resident who claimed that time and time again, so called experts came up with misinformation. I ended this article with the sentence; "We can wait for the results of the drilling with interest".

We must wait no more, *PRIVATE EYE* reports that the latest drilling could not find the limitless fresh water, and although the diviner would not accept the results, the *JERSEY EVENING POST* in a leading article said that it was time for the island to move on. As with all satire there is a serious aspect to all of this. We all know how evidence presented by geoscientists can so often be disregarded by decision makers, not only at a local level, but if we look to the United States, also at a national level.

At our January meeting we heard from Neil Rushton, an expert in mass movement and landslips about making the Ironbridge area a safer place to live in. No one would dispute the science behind his work as it is self evident, but so often scientific predictions of what is likely to happen

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are rejected by 'the man in the street'. We are still building on flood plains, indeed a couple of years ago I read a story of the building of some new houses in the East Midlands being delayed until the floodwater had gone down! But too often when the Earth Scientist reports on likely future outcomes, the evidence is dismissed as improbable or misplaced, and even when accepted it is likely to be dismissed because 'something will turn up'.

PRIVATE EYE No. 1177 February 2007

Bill Groves

MEETING REPORT

MONDAY 29TH JANUARY 2007 (Indoor Meeting)

Neil Rushton: (Team Leader Engineering Advice Telford and Wrekin)

Landslips in Telford.

This was one of those excellent meetings where a professional engineer took us through his work in the Ironbridge Gorge World Heritage Site, designed to prevent further slippage and erosion. The problem seemed straight forward, the Severn cuts a steep sided gorge in the area; the rocks are largely a Carboniferous sedimentary sequence, and mixtures of sandstones and shales encourage slippage and massed movement. The river removes the toe of the slope, there is slippage into the river bed which changes its shape and encourages flooding. The solution also seems simple, support the base of the slope, but as Neil showed us it is far more complicated than that.

He took us through the history of the area and showed us some fascinating maps related to geology and ground stability. When describing the work that was being done he interestingly put a time scale on the outcome of the stabilisation process, 100 years stability seemed to be the aim. There was also the interesting way they were dealing with the very slow movement that we call 'creep' and a wooden road construction that allows the subsurface to move beneath it. This was a fascinating glimpse of an area that we all know, on my next visit I will look at the gorge with a different perspective.

Bill Groves

The BCGS Website

The BCGS website is our Geological Society's shop window in the Digital World. It advertises our existence and what we stand for. Over the last year there have been an increasing number of people contacting us, after having found the website, with questions ranging from how to join to specific questions about local geology.

Over the last few years the bi-monthly BCGS Newsletters have been distributed by email and they have been stored on the site in "pdf" Adobe Acrobat format. The Newsletters contain a rich variety of information, mostly current and future events, but also a wealth of field reports, lecture reports and conservation items. Over the long winter evenings I have attempted to compile an index for the last four years 2003 to 2006. The index contains a short title about the article, the author, the newsletter number/page and is linked to the pdf document.

The index can be accessed from the BCGS website www.bcgs.info by clicking on the pull down menu called 'Newsletter Index' which is below the Newsletter tab. I have recently also secured more disk space to expand the website and would be interested to hear from members what other things they would like to see added. Please contact me with your comments and suggestions at hickmang@bp.com.

Graham Hickman

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FROM OUR MEMBERS**Interesting facts from Gordon Hensman**

.The largest Glacial Erratic known: "Big Rock" (how's that for originality) near Okhotsk, Alberta, Canada, around 41m (131ft) long by 18m (59ft) wide by 9m (29ft) high. It weighs around 16,500 tonnes, 36 million pounds. Made of quartzite, it has been transported around 480km (300 miles) from Athabaska Valley, near Jasper, Alberta between 18,000 and 10,000 years ago.

Largest Geode: found near Almeria, Spain in May 2000, 8m (26ft) long, 1.8m (6ft) wide (1.8m) high, dated to 6 million years ago .

From the Guinness Book of Records

GEOLOGY IN STAMPS

You can now find stamps about almost any subject, and I hope to feature a few that depict geological topics. If any other members are interested in stamps with a geological content, I would very much like to hear from you. I am not a serious collector but I do like some of the works of art that can appear on postage stamps. The picture shows a set of five British stamps from 1991, and they were produced to commemorate the one

hundred and fiftieth anniversary of the first use of the word *Dinosaur*. Each stamp features the front part of the skeleton of a particular dinosaur, together with a small outline of the animal next to a human figure for scale. The five featured dinosaurs are *Iguanodon*, *Stegosaurus*, *Tyrannosaurus*, *Protoceratops* and *Triceratops*.



As with most modern commemoratives you could buy them as a 'Presentation pack' with an explanatory leaflet, and this leaflet has several illustrations and a description of Sir Richard Owen's work in Victorian England in promoting this newly found fossil.

He first coined the word 'dinosaur' and then laid claim to much of the discovery and development of ideas, which had in fact been done by other geologists. I read this waiting for the acknowledgement of Gideon Mantell who did the pioneering work in Sussex and found the first bones of *Iguanodon*. Unfortunately, he is not mentioned, and so it seems that after 150 years Richard Owen is still claiming all the praise for Victorian dinosaur work and excluding the talented Sussex doctor, who many would argue has a greater claim to recognition. If you want to know more about this fascinating struggle I suggest you read *The Dinosaur Hunters* by *Deborah Cadbury* (ISBN 1-85702-963-1).

Bill Groves

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[GEOLOGICAL PLACES](#)

In the last Newsletter we had a report on the members' evening, and with it came two splendid photographs from *Alan Ledbury* and *Peter Twigg*. These were of the Matterhorn and Santorini, both interesting geological places. Other members must have photographs somewhere of



interesting geological places they have visited that they would like to share with the rest of us. If you can get the photograph to me with a brief description I will do my best to publish it. If you have access to a computer and can email it to me, that is ideal, or you can lend me a print and I will scan it. Please leave it in an envelope at the Reception desk at the museum. I am afraid I am unable to transfer slides to this document as yet.

To set the ball rolling, I include here a picture of the University Museum in Oxford. I do this because it has a wonderful collection of rocks, minerals and fossils together with some excellent dinosaur skeletons, and is steeped in geological history. The building is pure Victorian gothic, with an iron and glass interior similar to St. Pancras station. I have also used this picture to show that 'Geological Places' need not be exposures of rock, it is just a locality with a geological connection that you have enjoyed.

Bill Groves

[GEOBABLE](#)

The geobabble item on 'geodiversity' in December's Newsletter inspired me to submit a few thoughts on the subject. 'Geodiversity' is a word which has come to have extraordinary power. It encompasses all things geological: rocks, fossils, minerals, soils, landforms and the processes which shape them, but crucially empowers them with new meaning - a meaning which has propelled geology on to the political agenda, raised its status and increased its eligibility for funding.

At the History of Geoconservation Conference in Dudley in November 2006, Murray Gray from Queen Mary College, London, talked specifically about the origins of 'geodiversity', and it seems that the term can be traced back to Tasmania where it was first used by Chris Sharples (Consultant Geoscientist, Tasmania) in the early 1990's, along with the term '*geoconservation*'. The abstract from Chris Sharples' paper presented to the 2004 Conservation Commission Conference 'Earth Heritage: World Heritage', throws further light on the subject.

In 1972 the outstanding glacial valley of Lake Pedder in Tasmania was flooded for a hydro-electric scheme. This set alarm bells ringing amongst the Tasmanian cognoscenti and led to a gradual recognition that the preservation of landforms and associated processes was just as important as wildlife conservation. When, after many years of political controversy, the Tasmanian Wilderness World Heritage Area was established in 1989, it crucially included two geological features: relict glacial landforms, and ongoing geomorphic processes, (*geodiversity*) both to be valued and protected (*geoconservation*) alongside the flora and fauna.

Thus the two terms were born to summarise these two features – a masterstroke, as they lie so comfortably with the well established terms, '*biodiversity*' and '*bioconservation*'. The new World Heritage status assigned to geoconservation in Tasmania made it relatively easy to argue that

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geodiversity underpins *biodiversity*, and this opened the door to previously undreamed of funding for geoconservation projects.

It took some time for these concepts to emerge from the antipodes and gain international acceptance, and there was serious resistance from some quarters. Some bioconservationists, for instance, saw the geoconservation lobby as an unwelcome threat in the struggle for precious funding. However, use of the term '*geodiversity*' has gradually become accepted since 2000, and has certainly caught on in a big way in the UK, where it has spawned a whole new '*geoindustry*'. The last few years have seen an explosion of publications and projects with the emphasis on geoconservation, and fostering public awareness of geology. This activity has been fuelled to some extent by the availability of money from the Aggregates Levy Sustainability Fund.

These are exciting times for geology! '*Geodiversity*' has given geology a whole new dimension and opened up new horizons. It has led to the creation of the Global Geopark network, with five Geoparks currently established in the UK and one in the Republic of Ireland. There is a long distance 'Geopark Way' in the offing and increasing interest in *geotourism*.

I wonder if that valley in Tasmania will one day become a site of geological pilgrimage on a par with Hutton's Unconformity at Siccar Point?

Julie Schroder

Sources:

History of Geoconservation Conference, Dudley 24-25th November 2006, Abstracts (and personal notes)

Conservation Commission Conference 'Earth Heritage: World Heritage', Dorset September 2004, Abstracts

Natural Foundations: geodiversity for people, places and nature, Stace, H., and Larwood J.G. 2006

[CONTACT US](#)

As ever we would love to hear your news and views, for any part of the Newsletter, so please put pen to paper or fingers to keyboard and give us your thoughts. We are often able to print photographs that are sent by email or colour print. Notices that appear in this Newsletter will remain in future editions until the date of the related meeting or event has passed. In order to include material in the April Newsletter, please send or give it to one of the Editorial Team by **Monday 2nd April 2007**

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