



The
Black
Country
Geological
Society

NEWSLETTER No. 176 April 2006

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.

Chairman
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Field Secretary
Bob Bucki/Andrew
Harrison

In this edition:

Future Programme

Page 1

April 18th 1906

Page 3

The K/T Boundary Mass Extinction Event

Page 4

Black Country Fossils: Poleumita

Page 4

Boulderdash

Page 5

Geobabble

Page 5

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 24TH APRIL 2006 (*Indoor Meeting*)

Conversazione

“Evolution or Creationism/Intelligent Design – are they equivalent?”

This meeting is a new departure for the society in that we are not having a lecture, but we hope to have a discussion between members about this current topic. We have invited some guests to join us who may not be as convinced by the theory of evolution as are the majority of our members, and we would hope that individual members would also invite friends and colleagues to join us. We are also hoping that as many BCGS members as possible would come to this meeting and make it an interesting alternative to our normal programme.

SUNDAY 14TH MAY 2006 (*Field visit*)

Martin Albutt and Mike Williams: The Bult Wells Inlier

This replaces the periglacial visit that Andrew was to have led in May. Details of times and starting point will be available soon, if you would like to go on this trip please telephone **Mike Williams** on **01902 822505**. **(Please see the end of this Newsletter)**

SUNDAY 25TH JUNE 2006 (*Field visit*)

Mike Williams: Possible coach trip to Big Pit, Blaenavon.

Big Pit stands on the eastern rim of the South Wales Coalfield, where coal outcrops on the hillsides. Iron Ore and limestone were also found here so it was natural for an ironworks to be founded at Blaenavon. The Ironworks were established in 1789 and the remains are now open for visitors and Blaenavon has been declared a World Heritage Site. It is now part of the National Mining Museum of Wales.

In order that our annual coach trip might go ahead, we need a minimum of 33 people to make the day viable. The cost will be in the region of £7 per head. The entrance to the museum is free but we are not yet sure of arrangements of a possible underground visit. It is also planned for the coach to pick up people in Wolverhampton, Walsall, Birmingham outskirts, Dudley and Stourbridge. **It is important that Mike gets expressions of interest as soon as possible; telephone number above. (Please see the end of this Newsletter)**

SATURDAY – SUNDAY 16TH – 17TH SEPTEMBER 2006

DUDLEY ROCK AND FOSSIL FAIR

This will follow the format of previous Rock and Fossil Fairs organised by Dudley. The society has booked the stall by the entrance as usual, and there will be opportunities for members to help in various ways during the event. More detailed information will appear in later newsletters.

April 2006

EDITORIAL

April 18th 1906 is a date that should be familiar to those who have any geological interest. It is 100 years ago this month that San Francisco was all but destroyed by a massive earthquake. The facts are familiar: 7.9 on the Richter scale; 3000 people died, out of a total population of 400,000 and 225,000 more were made homeless. It is often asked when the next 'big one' will be.

The underlying structural geology is well known, with the San Andreas Fault in everyone's vocabulary, but it is not that simple. There are several major strike slip faults underlying the highly urbanised San Francisco Bay area, and there is a 62% probability that there will be at least one earthquake of over 6.7 magnitude in the next 30 years.

One scenario by an engineering consultant predicts that a 7.9 earthquake could kill 3,400 and seriously injure 13,000, if it struck in the daytime. The figure is lower for night as most are in resistant domestic buildings. This is death by shaking alone, not by fire which could raise the figure. However, less than 5% of all buildings are highly vulnerable; that is, are built of older materials and prone to collapse, but this small percentage would account for more than half of the fatalities. Bringing those buildings up to scratch would cut casualties by half.

Shaking is the primary effect of an earthquake, and its initial, unheralded arrival will cause most damage. If your house is built on solid bedrock it will shake less than one that is built on a softer deposit, say sand and gravel. Since 1906 San Francisco has expanded to areas that have been reclaimed from the sea, and so buildings are on soft mud. When this is shaken it is prone to *liquefaction*, where the sediment turns into something like a quicksand, and loses its ability to support any structure. The city's subway system: Bay Area Rapid Transit (BART), in parts runs through material prone to liquefaction. Each rush hour train could be holding up to 2,500 people. The outcome could be horrendous.

However, the city authorities are working to solve this problem and others such as rebuilding bridges, strengthening water pipelines where they cross faults and rebuilding vulnerable hospitals. But basically it is unprepared for the impending disaster; it appears to be human nature to largely ignore scientific advice whether it relates to likely earthquakes or simple issues such as to global warming. We still build on flood plains and choose to live close to sea level.

Even so, one would hope that we can wait 20 or so years before the 'big one' arrives in California, and hope that it occurs at 4 am on a Sunday.

REFERENCES:

- New Scientist. Vol 190 No 2547. 15 April 2006. pp 8-11. "100 years on, you'd think San Francisco would be ready". www.newscientist.com
- "San Francisco faces big shaker" Molly Bentley. BBC NEWS. <http://news.bbc.co.uk/1/hi/sci/tech/4916870.stm>
- Simon Winchester. *A crack in the edge of the world*. Penguin.

Bill Groves

MEETINGS REPORTS

MONDAY 27TH MARCH 2006 (*Indoor Meeting*)

SOCIETY Annual General Meeting 2006

Just fewer than 30 members attended this meeting. In his Chairman's address, **Alf Cole** thanked those members of the Society whose efforts had ensured that we once again completed a successful year, with some inspiring lectures and very interesting fieldwork. Sadly, the recent death of Andrew Rochelle had rather overshadowed the year. Alf made a special mention of the Society's contribution to the Dudley Volcano at Barrow Hill as well as the progressing Geodiversity Plan for the four Black Country Boroughs.

April 2006

In his view of 'New Directions for 2006/2007', Alf floated many ideas. We could hold more debates, perhaps with other societies and some workshops when members with their families could experience a more hands-on feel for geology. We might organise indoor events with local schools/colleges where geology is being taught and develop closer links with neighbouring like-minded societies and even more distant societies for joint field days.

In the formal part of the evening, the officers of the society are as on page 1 of this Newsletter, with **Andrew Harrison** being elected to be our new Field Secretary. The Committee members who do not appear on page 1 are: **Barbara Russell; Bob Bucki** and **Martin Normanton**.

(Please note that these are not the minutes of the meeting, merely my informal notes. Bill Groves)

MONDAY 27TH MARCH 2006 (Indoor Meeting)

The K/T Boundary Mass Extinction Event Dr Peter Floyd (Keele University)

This event of 65ma was one of six major extinctions in the geological record, and without going into the palaeontological evidence, Peter Floyd examined the two main suspects that would trigger the necessary conditions: asteroid impact and/or extreme volcanicity.

For asteroid impact there would be a crater 10-15 km across and the well documented Chicxulub crater on the Yucatan peninsular in Mexico is of the right size and age. Peter then examined the related evidence of the Iridium layer, an anomaly that could be explained by an impact, and high temperature and pressure features such as glass spherules and shocked quartz. The effects could be darkness, cold, a firestorm and acid rain, but equally some have argued that there could be greenhouse warming.

The volcanic option would require a massive explosion or series of explosions of acid/intermediate magma so that material reached over 15 km altitude. Peter described Pinatubo in 1991 which threw ash to an altitude of 30 km and lowered temperatures by ½°C for 5 years, so a bigger eruption is needed for 65ma. The Deccan traps on the Indian subcontinent are flood basalts of the right volume, and they lasted ½ - 1 million years and originated from a mantle plume. The timescale straddles the K/T boundary.

At the end of this superbly illustrated lecture, Peter discussed other related topics; were both scenarios operating together? Could a large impact trigger a major eruption? Why did some organisms survive relatively unchanged? The most interesting speculation was with regard to the Yellowstone Park Caldera, 85 km x 45 km, and it is fed by a mantle plume which is active!

We thank Peter for giving us such an interesting evening on one of the most fascinating topics in modern geology.

Bill Groves

BLACK COUNTRY FOSSILS



Poleumita discors is a *gastropod*, or a snail. *Poleumita*, the genus, is confined to Silurian rocks, and the species, *discors*, will only be found in the Wenlock and Ludlow series of the Silurian.

Gastropods have been a constant animal since earliest times. They were common in the Cambrian and are still common. They evolved slowly and steadily, and are found in fresh water, the sea and on land. They lived on the sea floor in the Silurian, and are associated by other benthic fossils such as brachiopods and bivalves. They do not seem to be popular amongst collectors, you rarely find

April 2006

enthusiasts in the Much Wenlock Limestone hoping to find a gastropod, as they would a trilobite or coral. Inexperienced fossilers often think that they have found an ammonite. They are not of great stratigraphic importance, rarely used to fix the relative age of a rock.

The specimen in the photograph is from Dudley, but strangely it was picked up from the gravel on one of the paths in the Castle in 1976. As with all of the specimens featured in the Newsletters, it is part of the fine collection at Dudley Museum and Art Gallery.

Bill Groves

BOULDERDASH!

We are having a slow response to Alan Cutler's request for information about the location of glacial erratic boulders in the Black Country. Even to the untrained eye these boulders are normally easy to spot as they are large – usually over a metre in diameter - and very smooth. Closer inspection will show that they are a crystalline, normally igneous, rock. Often, when they have been found during the development of a site they are incorporated into the environment as a feature. Two of the locations passed on to us so far are of this type:

- Boulders positioned around the lake in West Park, Wolverhampton. GR: SO 905 993
- Boulders at the entrance to McDonald's Restaurant on the Penn Road, (A449) Wolverhampton, about 300m SSW of the Ring Road. GR: SO 9011 9775

Any information, whether detailed or vague will be very useful to Alan, but you can email it to one of the editorial team if that is easier.

Bill Groves

GEOBABLE

Fossil terms are often a good source of peculiar names and terms, and I was recently investigating those connected with *trace fossils*. These are literally the traces left by former organisms rather than the remains of the actual animal. I suppose that footprints are the most spectacular, and there is a lot of information to be had on dinosaur trails. However, in the Black Country the trilobite is the popular fossil, and many terms refer to the different types of trace fossils associated with trilobites living and moving.



All arthropods walk with what is called *metachronal rhythm*; look at the waves of leg motion travelling from the tail to the head on a centipede. These leave individual prints of the feet, but there are different terms depending upon whether the animal was walking forwards on the surface or walking sideways in a crab like movement. Being an animal that lived on the sea floor, mostly feeding, resting and burrowing into the muddy substrate, there are a whole host of terms to describe these different situations.

Cruziana (see illustration) is a common trace fossil; a bilobed trail with clear edge furrows forming a herringboned pattern. Up to thirty different 'species' of *Cruziana* have been recognised, but whether they represent different species of trilobite or are more associated with the different activities being undertaken by the animal is difficult to tell. Some specific trails have been identified as belonging to a particular trilobite species, but they are rare; different shapes probably reflect whether it was walking at various speeds, on the flat or on a slope, or feeding or resting when the body could have been at various angles; the possibilities are endless.

References: the book 'Invertebrate Palaeontology and Evolution' by E.N.K. Clarkson (Blackwell Science) is a good source of information, but there is also an excellent website devoted entirely to trilobites: www.trilobites.info/trace.htm this has lots of illustrations and diagrams, and even moving animations.

Bill Groves

POSTSCRIPT

Since writing the above I have come across the recent work of *Felix Edrem*, the renowned French palaeontologist, who together with *Luigi Toidi* has extensively described the 'Gaspillage fauna' of Provence. His work on the micropalaeontology of the *Prewt* stage and his discovery of the new

April 2006

sponge species *Eldoon tiwtin* has led him to be awarded the *Croix de menteur* by Instituté de Lyons. However, it was his related work on trilobite trails that interested me, and his description of *Invétété* trails where some prints, while taking a curved course show slippage marks, as if the fast moving animal is skidding round a corner. Analysis of the trails in the area suggests that the trilobite was being chased by a large predator as they often end in a zone of struggle.

Related research with dinosaur footprints in the Bush Siltstone of Texas shows similar skidding phenomena from a running herbivore, being chased by a group of raptors. These trace fossils are thought to be related to the abundant *Coprolite Beds* of the area.

Bill Groves
1st April 2006

[CONTACT US](#)

As ever we would love to hear your news and views so please put pen to paper or fingers to keyboard and give us your thoughts. 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 June Newsletter, please send or give it to one of the Editorial Team by **Monday 5th June 2006**

<u>EDITORIAL TEAM</u>		
<p><i>Hon. Secretary:</i> Sarah Worton 158 Oakham Road Oldbury B69 1QQ Tel 01384 235946</p>	<p>Graham Worton Dudley Museum and Art Gallery 1 St James' Road Dudley DY1 1HU Tel 01384 815574 Or email: graham.worton@dudley.gov.uk</p>	<p>Bill Groves 23 Churchward Grove Wombourne Wolverhampton WV5 9HB Or email: bill.groves@dudley.gov.uk billgroves300@btinternet.com</p>

BCGS Website now at www.bcgs.info

STOP PRESS

Important field trip information on last sheet.

Important changes to field trip schedule

Here are some important changes, additions and further information regarding our field trip programme for the summer. We could not incorporate it into the original Newsletter.

SUNDAY 14th MAY 2006 (*Field visit*)

Martin Albutt and Mike Williams: The Builth Wells Inlier

Meeting point: *Service Station, east of roundabout at Crossgates. SO 088649*

TIME: 10.00 AM.

Crossgates lies at the intersection of the east/west A44 to Rhyader and the north/south A483 Newtown to Llandrindod. The service station has all facilities, including a café and toilet.

From here we will drive south through Llandrindod and Howey on the A483, branching off left (E) to Newmead Farm (SO 053544) where parking is arranged for the visit to Newmead Scar and exposures beyond.

The ground being covered is elevated hill country, up to 1500 feet, mainly sheep farming. Suitable footwear and windproof outer garments are suggested in addition to the usual geological paraphernalia.

The Builth Inlier is of Ordovician rocks surrounded by Silurian. It is planned to take a lunch break in Builth Wells town.

SATURDAY/SUNDAY 10th/11th JUNE 2006 (*Field visit*)

A FIELD STUDIES WEEKEND

On Saturday there would be a mapping exercise around Minton Batch, in the Synalds Group of the Longmyndian and this could continue on the Sunday in the Edgton Area.

SUNDAY 25th JUNE 2006 (*Field visit*)

Mike Williams: Possible coach trip to Big Pit, Blaenavon.

Please note the new date. We have moved the day from the Saturday to the Sunday to accommodate travel arrangements. Please contact Mike if your availability has changed.

SUNDAY 20th AUGUST 2006 (*Field visit*)

Joint trip with Shropshire Geological Society to Dolyhir Quarry

Proposed itinerary is:

- 10.00 am Meet in Kington and visit Bradnor Quarry (Plant remains above Bone Bed)
- 11.00 am Dolyhir Quarry (Precambrian, complex structure, minerals, unconformable Silurian with fossils)
- 2.00 pm Hanter Hill (Basic intrusions with tourmalinisation)
- 4.00 pm A walk along part of Hergest Ridge.

This is a boots/Wellingtons, hard hat, high visibility vests day and there may be a limit on numbers.

PLEASE KEEP MIKE WILLIAMS INFORMED OF YOUR INTEREST AND AVAILABILITY FOR THE FIRST THREE TRIPS ON 01902 822505