



The
Black
Country
Geological
Society

NEWSLETTER No. 189 JUNE 2008

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.

Joint Chairmen:
Alf Cole C.Sci;
Alan Cutler B.Sc.,
M.C.A.M.,
Dip.M., M.CIM.

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Hon Secretary
Barbara Russell

Meetings Secretary
Gordon Hensman B.Sc.,
F.R.Met.S.

Field Secretary
Andrew Harrison BSC.,
MSc., F.G.S.

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**COPY DATE FOR NEXT NEWSLETTER IS
MONDAY 4th AUGUST 2008**

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.

SUNDAY 29TH JUNE 2008 (*Field meeting*)

The Devensian glaciation of the Shropshire Plains. Leader: David Pannet (Shropshire Geol Soc)

Meeting point: Fisherman's car park between Acham and Cross Houses (SJ538085) at 10:00 am.

Second stop at Merton (SJ454142) for coffee and toilet stop. Followed by a series of short car trips and walks - some over rough ground.

Lunch - picnic in the grounds of Preston Montford Field Centre or Shawardine Castle Green, followed by a pub stop at Edgerley. Return via Merton for tea if required.

SUNDAY 27TH JULY 2008 (*Field meeting*)

Permo/Trias geodiversity of Kinver. Leader: Alan Cutler BCGS

This local excursion will include a visit to the well-known rock houses and Alan will be aided by local historian **David Bills**.

Meet at **10.30am** in Stourbridge at the Trinity Grange development (DY8 4DJ), **Amblecote High Street** (A491) just north of the town's ring road. (GR: SO900848) (Contact number 07977 928493)

MONDAY 29TH SEPTEMBER 2008 (*Indoor meeting*)

At the moment we do not have a speaker for 29th September. If any member feels they are able to speak to us on any geological topic, please contact us.

MONDAY 27TH OCTOBER 2008 (*Indoor meeting*)

The latest developments in the effort to remove CO₂ from the gases released when coal, gas or oil are burnt. Speaker: Christopher Rochelle BGS

Christopher will speak to us on power stations where captured CO₂ is forced down spent oil wells. This technology is very relevant to the whole business of curbing climate change, and we are grateful that Chris is able to keep us up to date.

Andrew Harrison, Gordon Hensman and Alan Cutler

OTHER SOCIETIES

GLOUCESTERSHIRE GEOCONSERVATION TRUST

Saturday June 14th - Huntsmans Quarry Open Day, 11.00am, Huntsmans Quarry, Naunton

This is the third open day the quarry has held, getting better every year. Gloucestershire Geoconservation Trust is providing a Rock and Fossil Roadshow, '*Treasure Hunt*' activities for kids; tours of the working quarry; dry stone walling; stone cropping and other demonstrations, refreshments and displays. The quarry is in the Jurassic and is near Stow-on-the-Wold (there is a map on the quarry website).

Address: Huntsmans Quarries, Buckle Street, Naunton, Cheltenham, Gloucestershire GL54 3BA

www.huntsmansquarries.co.uk

www.glosgeotrust.org.uk/home1.htm

NORTH STAFFORDSHIRE GROUP OF THE GEOLOGISTS' ASSOCIATION

Sunday 15 June:

Malvern Leader: Professor John Winchester

A field trip to illustrate features of the Late Precambrian basement of Central England visiting a number of quarries and exposures along the Malvern Hills. From the Precambrian inlier, rocks of the Malvernian and Warren House Group and from the Lower Palaeozoic, rocks of the Cambrian and Silurian periods.

Sunday 20 July:

Crummack Dale, Austwick, Yorkshire. Leader: Alan Diggles

A walk of about 9km into Crummack Dale from Austwick (situated to the SE of Ingleton) for rocks of the Silurian (Austwick Formation Sandstones), Carboniferous Limestones and Ordovician Siltstones. Features to include the Norber erratics, Nappa scars and Moughton Whetstone Hole. A minibus is planned (subject to numbers) leaving from the Earth Sciences Car Park at Keele at 7.30am.

Saturday 16 August:

Leader: Dr Patrick Cossey

Provisional, either following a section of the Hamps/Manifold Trail or on the Roaches.

Saturday 27 September:

Calton Hill Quarry, nr. Buxton Leader: Dr Chris Arkwright

Meet at 10.00am at Miller's Dale Station Car Park, Grid Ref: SK137733 (parking fee payable). To investigate Carboniferous igneous intrusions and lavas and their associated limestones in the Buxton area. Overall length of walks about 5km, limestone succession and interbedded lavas in Miller's Dale Quarry then, driving into Tideswell for a dolerite quarry to examine lithology and thermal effect on surrounding country rocks. Packed lunch at picnic site in the quarry. After lunch drive to Calton Hill, park at SK112710 to examine the structure and lithology of a Visean volcanic complex and dolerite intrusion in the disused quarry.

For further information contact NSGGA Field Secretary **Gerald Ford**, 01630-673409 or e-mail: g.ford@ukonline.co.uk

For contact with the **Field Secretary** on the day of a field trip the mobile phone number is 07789 826807 when there is a chance that it will be switched on

EXHIBITION

There is an exhibition at Derby Museum and Art Gallery, The Strand, Derby, entitled **Explorations in Geology**. Works based on 18th century investigations into the formation of the Earth. Mon-Sat (10am-5pm), Sun 1pm-4pm. Ends 1st September.

MEETING REPORT

SATURDAY 19TH APRIL 2008 (*Field meeting*)

Joint Field Trip with the Woolhope Naturalists Group: 'Hanter Hill, Powys'

Leaders: Sue Hay and Geoff Steel (Woolhope Naturalists Group)

From the start of this trip the weather threatened to be wet and give poor visibility. Members of the Woolhope Naturalists Group were met in a lay-by close to Burlingjob, not far from Old Radnor, Powys at around 10:30 am. Sue Hay and Geoff Steel started with a brief introduction to Hanter Hill and what was to be seen. The aim of the day was to walk up and around the hill identifying the different rock types, their relationships to each other and various features within the rock types. Poor conditions prevented us from getting near to the hill summit until after lunch.

Hanter Hill is one of three 'hogbacks' that make up the Stanner-Hanter Igneous Complex. The other two hills are Worsell Hill and Stanner Hill. The complex outcrops as a fault bounded inlier within the southern portion of the Church Stretton Fault System. The Hills are separated by east / west extensional faults splaying from two arms of the Church Stretton Fault which have moved to the northeast and the southwest.

Hanter Hill is believed to be a volcanic body, possibly a feeder system beneath a subduction related volcanic island arc, formed at between 10.0km and 15.0km depth approximately 702 million years ago, during the Pre-Cambrian. Dolerite forms the bulk of Hanter Hill which was later intruded by gabbros followed by an unspecified acid rock, possibly a granophyre, which can be seen on the southern side of the hill. Later vertical movements, along the Church Stretton Fault system, placed the ancient rocks of Hanter Hill against younger Wenlock and Ludlow Shales of Silurian age. Today Hanter Hill is seen as an elevated fault bounded block, or horst, forming the high ground whilst the surrounding Silurian rocks form the lower ground representing sunken fault bounded blocks, or grabens.

We saw examples of the three different rock types; dolerite, gabbro and acid rock and evidence showing the order of intrusion. Where the dolerite was fine grained and cleaved the gabbro tended to be coarse grained and tourmaline rich. At the boundaries of these two rocks chilled margins, defined by fine grained gabbro, and partly digested and broken pieces of dolerite, or xenoliths, showed the gabbro to have been molten when it came into contact with the dolerite and therefore younger. Similar features were noted between the boundary of the gabbro and the acid rock which was intruded later as the chemistry of the magma in the feeder system became less basic.

I would like to take the opportunity to thank Sue and the Woolhope Group for yet another very interesting fieldtrip and look forward to our next one together.

Andy Harrison

EDITORIAL**SAGRADA FAMILIA, BARCELONA**

My apologies if this newsletter is reaching you rather late in the month but I was away on a short holiday at the start of June. It was not a geological holiday as such, although we all look at the rocks and structures around us when we are away from home. One of the places I visited was Barcelona, a city I have never seen before, and along with most tourists in the area I wanted to see the 'Sagrada Família', the spectacular and unusual church designed by *Antoni Gaudi*.

The building has been going on for over 100 years, and it is thought that it will be another 80 years before it is finished. The outside is quite stunning but inside I found a feast of geological materials. The high columns represent trees; and nature and natural materials is one of the themes of the construction. When you look at the columns it is noticeable that they are not built of a uniform stone giving an unusual striped appearance. The floor of the building is strewn with sawn blocks of all kinds of rock; igneous, sedimentary and metamorphic, all cut to the correct shape depending upon their future position in the construction. I started to identify them, granite, porphyry, marble and a couple of sandstones, there were seven or eight different rock types.



On turning a corner, amid the noise of construction, scaffolding and dust there was a sequence of display boards explaining how these several rocks are incorporated into the building in keeping with the theme of nature and natural materials. Each rock type had its own double board with illustrations, including a large colour photomicrograph, some had sections in English but the geological detail was in Spanish. One feature of each board was a cube of the rock set into a press to represent testing it for its load bearing capacity, and over my tourist headphones came the explanation of the striped columns. Different rocks can withstand different loads, so, the architect explains, the higher columns will be of a material that can bear a great weight. Not only that, the base of the column must withstand a greater

pressure than the higher parts, so you change the material as you go up, hence the striped appearance. Basalt was at the base of many columns having the greater strength, and this would pass upwards into granite or porphyry.



All this was fascinating and very interesting and I don't think I have seen this done before. When you go into a large building made of natural materials, whether under construction or finished, it is often very difficult to get ready information about the materials used. This was a real geological bonus and emphasised to the visiting public the importance of the natural resources around us. I would love to see this type of information given more often in this country.

The photographs show, from the top: *the familiar exterior of Sagrada Familia; *the main columns representing a forest with light filtering through from the top and the striped appearance, note the scaffolding in the background; *detail of one column of granite with a xenolith with porphyry above: *close up of part of an explanation board showing the photomicrograph of the granite, a plan of the building (top left) telling you where this rock can be found, information on its load bearing strength (bottom left) and the top of a photograph showing the granite in the building.

Bill Groves

FROM GORDON HENSMAN

RANCHO LA BREA

I have known about these famous "tar pits" in Los Angeles for as long as I can remember. I think I first read about them in those informative Children's Encyclopaedia published, if I remember correctly, by Harmsworth. I had the impression that they were "bottomless" lakes of asphalt, similar to those in Trinidad. Unwary animals were trapped and then sank into the tar to be buried entirely, only to reappear many years later as slow convection currents brought them to the surface. However, I was wrong, as I found out when a friend gave me a very informative booklet from the George Page Natural History Museum Los Angeles, on a recent trip to California.

HISTORY OF DISCOVERY

The Spaniard, Father Juan Crispi, in his diary of the Gaspar de Portola expedition, which left San Diego on the 14th July 1769, reports that they came across extensive swamps of bitumen called *chapote*. Thirteen years later in 1781, Los Angeles pueblo (town), was established under Spanish rule as El Pueblo de Nuestra Senora la Reina de Los Angeles. The tar pits were described thus in 1792:

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“Near the Pueblo de Los Angeles there are more than twenty springs of liquid petroleum, pitch etc. Further to the west of the said town in the middle of a great plain of more than fifteen leagues



in circumference, there is a great lake of pitch, with many pools in which many bubbles or blisters are continually forming and exploding.... In hot weather animals have been seen to sink in it and when they tried to escape they were unable to do so, because their feet were stuck and the lake swallowed them. After many years their bones have come up as if petrified”

After 1822, Mexico became independent of

Spain and controlled the area. In 1848, after the invasion and defeat of Mexico by the Americans, and subsequent treaty of Guadalupe Hidalgo, Mexico lost half its territory to the U.S.A. The modern California was admitted to the union in 1850. In 1875 the state geologist J.D. Whitney (after whom Mount Whitney was named), reported that, *“About 7 miles west of Los Angeles is the most important of the numerous tar springs seen in this vicinity. It is from here that most of the asphaltum used in the town is obtained.... very large amounts of hardened asphalt, mixed with sand and the bones of cattle and birds which have become entangled in it, lie scattered over the plain”* Strangely enough for a geologist, Whitney did not recognise the animals at Rancho La Brea as fossils.

However, in the same year 1875, a Professor Denton from Massachusetts, visited the deposits and reported to the Boston Society of Natural History that the tooth of a sabre-toothed cat had been found buried fifteen feet down in the asphalt.

WHAT ARE THE PITS?

In the 1960's it was recognised that there was a clear layering of fossil accumulations, and an explanation of the tar traps in the context of flood plain deposits. This destroyed earlier pictures of “tar pits” where animals were trapped and sank out of sight. The tar pits are in reality tar seeps from organic rich deposits that accumulated in the Tertiary period, when the Los Angeles Basin was submerged beneath the Pacific. At Rancho La Brea, Pleistocene shallow marine sediments, sometimes called the San Pedro Sand, rests upon inclined older marine Pliocene strata. The San Pedro Sand was tilted and then overlain by late Pleistocene shallow marine and terrestrial deposits. The tilting may have coincided with a fall in sea level during the Illinoian Glacial Stage. Marine conditions persisted in the Rancho La Brea area until at least 100,000 years ago, according to the interpretation of fossils collected from 50 to 75 feet below the present ground level.

THE FOSSILS

Rancho la Brea is one of the richest sources of Pleistocene fossils anywhere in the world. More than 600 species have been identified. There are 58 species of mammals, 138 species of birds, 24 species of reptiles, 6 species of amphibians and 3 species of fish. Camels, lion (panthera atox), sabre-toothed cats and tigers, horse (extinct until they escaped from the Spanish), mammoths, mastodons, tapirs, llamas, teratorns (extinct large birds of prey), short faced bears (larger than grizzlies), ground sloths, bison, many rodents, insectivores, hares, caracaras etc.

PEOPLE

The earliest record of human occupation in the area is over 10,000 years old. They include artefacts from Rancho la Brea ranging in age from about 9,000 years to under 4,000 years old, such as wooden hair pins, bone and shell ornaments, spear throwers, wooden darts and cogged

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stones – the function of which is hotly debated. One skull of a woman is dated to about 9,000 years ago, and closely associated with her remains are the remains of a dog. By far the most common artefacts are associated with asphalt mining activities. These include numerous shells of scallop and other marine molluscs and the wedges made from deer and elk antlers. The shells were used for asphalt containers, and the antler wedges were probably hafted and used as picks. Elk antlers were acquired by trade from the southern San Joaquin valley; elk were never present in the Los Angeles basin even in prehistoric times.

The photograph shows one of the pits with models of the Pleistocene mammals.

Gordon Hensman

ARTY-CRAFTY GEOLOGY



Is a tattoo art? People have strong feelings about tattoos and often assume that they are a sign of an uncouth and violent nature. However, this can be wide of the mark. I have an academic friend and keen geologist who also happens to like tattoos. When you meet him with his jacket on you would not know that he sported some very original designs on his body, although when he is in the field with his sleeves rolled up you would see the ammonite in the picture on his forearm. He took a line drawing of it to the artist who copied it, I am not sure of the genus. Like many geologists he also enjoys a pint of beer, and you can see this represented at the bottom of the picture.

Bill Groves

GEOBABBLE



A belemnite is a common fossil, found mostly in the Jurassic. In places it can be picked up in numbers when walking across fields. The word 'belemnite' was first used in 1646 and again in 1677 by that great 17th century naturalist, Robert Plot. However these bullet shaped fossils were also called 'thunderbolts', thrown down from the heavens during a thunderstorm. This word was used from the fifteenth century and was only applied to the fossil in 1618 by Latham in a book on Falconry; '*Take a thunder-bolt, the which is found most commonly in the fields.....put it into a hot fire and burne it well*'. What this was for I do not know, although they were used in ancient medicine. An 1826 book by Polwhele says that for; '*the reumatis.....I knew an old woman who used to boil celt (vulgarly a dunderbolt or thunderbolt) for some hours, and then dispense her water to the diseased*' I think I will stick to Paracetamol!

Bill Groves

PLEASE CONTRIBUTE

We rely on all members to make the content of the Newsletter more interesting. If you are sending photographs, can you please reduce them as suitable for documents. The Newsletter is kept below 1MB for the convenience of members. In order to include material in the August Newsletter, please send or give it to me by **Monday 4th August 2008**

*PLEASE SEND MATERIAL FOR THE NEXT
NEWSLETTER*

to

Bill Groves

billgroves300@btinternet.com

**Why not have a look at our excellent website
at:**

www.bcgs.info