



NEWSLETTER NO. 130

AUGUST 1998

The Black Country Geological Society

The Society does not provide personal accident cover for members or visitors on field trips. You are strongly 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.

FUTURE PROGRAMME

Lecture meetings are held in the Banquet Room (Dudley Suite) at the Ward Arms Hotel, Birmingham Road, Dudley. Phone: (01384) 458070. 7.30 p.m. for 8 o'clock start.

FRIDAY 21st - MONDAY 23rd AUGUST Geologists Association weekend field meeting to the Edinburgh area. BCGS members are welcome to attend.

TUESDAY 1st to THURSDAY 3rd SEPTEMBER First U.K. RIGS Conference. University College, Worcester. A number of subsidised places are still available to Society members (3 days and accommodation with food for £30). See leaflet in this newsletter. Contact Peter Oliver Tel. 01905 855184.

SUNDAY 27th SEPTEMBER. Field meeting to Southam Quarry and Burton Dassett. Leader: John Crossling (Warwickshire Museum). Southam Cement works and Quarry is approximately 10 km. east of Leamington Spa on the A423 Coventry - Southam road between Southam and Long Itchington, SP 417641. Burton Dassett is about 10 km. south of Southam at SP 395520.

Meet at 11.00 hrs in the car park at the entrance to Southam Cement Works and Quarry. The visit will probably last until approx. 13.30 after which lunch may be taken at a local public house. Burton Dassett Hills will be visited in the afternoon. **HARD HATS** are required for this field meeting. **MEMBERS MUST PROVIDE THEIR OWN.**

MONDAY 5th OCTOBER Lecture: "The Importance of Black Country Geology" by Graham Worton.

Graham Worton writes "The Black Country has long been hailed as an area of outstanding geology. The rocks are the very heart of the World Heritage Bid for Dudley. I will describe how very special this precious heritage is, and describe new and novel dynamic ways to promote and conserve this legacy."

SATURDAY 17th OCTOBER at the Lapworth Museum, University of Birmingham Geologists' Association and the Dinosaur Society of the U.K.; British dinosaurs - their life and times. Contact - The Dinosaur Society UK, P.O. Box 329, Canterbury, Kent CT4 5GB.

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SATURDAY 17th OCTOBER Open day at Halesowen College. New exhibits within the Department such as flume tank and a sedimentation tank, along with a variety of fossil and mineral specimens, maps and laboratory equipment. Come along and support the new and expanding department, learn of new courses and see exciting experiments in geology. Halesowen College Geology department are Society Members and need our encouragement and support.

MONDAY 26th OCTOBER. Lecture: "Glimpses of Namibian Geology" by Dr. A.C. Waltham.

Tony Waltham writes "Precambrian metamorphics in coalesced cratons dominate Namibia's geology. For those not into such basement complexity, the Karoo cover and a series of spectacular geomorphological features provide a magnificent treat for the geological visitor to this lovely country. Wild deserts, wild coast and wildlife offer endless variety, and an interlude across the border takes in the diamond pipes of Kimberley."

DR. TONY WALTHAM is a senior lecturer in engineering geology in the Civil Engineering Department of Nottingham Trent University. Research interests in karst and ground subsidence are frequently allowed to give way to the sheer joy of seeing new places around the world, and chasing new sites for Geologists' Association tours is a major pastime.

MONDAY 9th NOVEMBER. Lecture: "The Miravalles Geothermal System, Costa Rica". By Dr. C.A. Rochelle (British Geological Survey, Nottingham).

Dr. Rochelle is Senior Scientist within the Fluid Processes and Waste Management Group of the Geological Survey. He began studying the Miravalles Geothermal system as part of his PH.D., jointly based at Leeds University and the Geological Survey. The Miravalles Volcano lies in N.W. Costa Rica in the centre of an interoceanic volcanic island arc (the Isthmus of Panama) between the Pacific Ocean and the Caribbean Sea. The geothermal system lies within lava and tuff deposits infilling a collapsed crater. Today it produces about 10 % of Costa Rica's electricity and Dr. Rochelle will tell us how researchers establish the thermal evolution of the system and assess the prospects for electricity production in the future.

MONDAY 30th NOVEMBER. Lecture on mineralogy by Spencer Mather (Society Member).

Garnets are one of the principal gemstones and are composed of isomorphous silicates, all with the same crystal structure, all built up as isotetrahedra, with varying amounts of iron, aluminium, chrome, calcium, magnesium, manganese and some rare earths. They are found in a variety of different geological environments and this is an important aid to their identification. They are used in the manufacture of high quality sandpaper as well as in jewellery.

Spencer Mather is a Society member and has previously talked to the society about minerals in Norway. He is writing a book on garnets. He will bring about forty garnet specimens with him. Some will be for sale: proceeds to BCGS.

MONDAY 25 JANUARY 1999 (provisional date: please check next newsletter for confirmation): Lecture: Dr. Paul Smith. This is the lecture unavoidably cancelled on 19th January this year. "Hunting the Snark - the geology of the northernmost Caledonides."

Dr. Paul Smith writes: "Caledonides are the remains of huge mountains thrown up during the Caledonian orogeny, around 400m years ago at the end of the Silurian. At that time, due to plate movements, Scotland, Greenland and Norway were close together so that the Caledonide belt after leaving the Scottish mainland passes across Shetland and continues up the Atlantic coasts of Norway and Greenland. Until recently the Greenland Caledonides were poorly understood - a direct consequence of their remoteness, difficulty of access and the mountainous, ice-covered terrain.

The northernmost part of the Greenland Caledonides lies at 81 deg North before disappearing into the Arctic Ocean, and the talk will compare the geology of this remote area with the more familiar geology of north-west Scotland. The area is part of the world's largest national park and the nature of the fauna and (limited) flora will be examined, together with the logistics of working in one of the world's remote areas."

Dr. Paul Smith is Curator of the Lapworth Geology Museum at Birmingham University and is also on the Academic Staff of the School of Earth Sciences. His special interests are the Geology of Northern Greenland and the Development of Fish in Palaeozoic times; he lectured to the Society on this last subject in 1995, so now he will speak to us about his researches in Greenland. He is a good friend of this Society and is one of our own members.

MONDAY 8th MARCH 1999 7.45 p.m. ANNUAL GENERAL MEETING.

Followed at 8pm (approx.) by a lecture: "The Failed Sellafield deep nuclear waste repository project." by Colin V. Knipe, B.Sc., C. Eng, C. Geol, M I Min.E. MIMM, F.G.S., Senior Partner, Johnson, Poole and Bloomer, Land Consultants.

Colin Knipe was appointed by the Department of the Environment to be the Technical Assessor to assist the Inspector and Assistant Inspector at a planning inquiry into the refusal by Cumbria County Council to permit U.K. Nirex, the national nuclear waste disposal executive, to construct a deep underground exploratory mine in the Borrowdale Volcanics at Sellafield. This "Rock Characterisation Facility" was intended to be a large scale test bed for the construction and hydro-geological modelling of a deep nuclear waste repository. The 66-day enquiry heard evidence on an amazing array of geological and other scientific research relating to the site and its suitability over a time scale of millions of years to host a waste repository. On the strength of the Inspector's and Colin's reports the Secretary of State, John Gummer, rejected the scheme in March 1997 throwing the whole future of U.K. nuclear waste disposal into turmoil.

EDITORIAL

This newsletter contains an advertisement for a course in A/S level Geology at Halesowen College. I know that many of our members are people who have attended such courses or those run extra-murally from the Universities. I think many of my ex-students would admit that the courses at Sutton College changed their lives (not necessarily for the better, they cry!), through the friendships they made, the career changes that resulted, and through their long term membership of BCGS. Dare you enrol at Halesowen College?

REPORTS

Weekend Field Meeting to Hertfordshire 13-15th June 1998 Leader: Dr John Catt (Rothamstead Experimental Station, Harpenden).

This weekend was jointly organised with the Hertfordshire and Manchester Geological Societies and gave a chance to see Cretaceous, Tertiary and Quaternary exposures not normally available to those of us living in the Midlands. The leader, Dr. John Catt, provided a comprehensive 2-day itinerary showing us a range of exposures of these strata. The stratigraphical sequence in the area is;

LONDON CLAY)	
READING BEDS)	EOCENE
UPPER CHALK)	
Chalk Rock Band)	
MIDDLE CHALK)	
Melbourn Rock band)	
LOWER CHALK)	CRETACEOUS
UPPER GREENSAND)	
GAULT CLAY)	
LOWER GREENSAND)	

The first stop was the Dunstable Downs Viewpoint (TL 007198) on top of the escarpment formed by the resistant Middle Chalk while the lower ground in front was in the Lower Chalk. Included in the Lower Chalk is the important Totternhoe Stone horizon, a harder cream coloured gritty form of chalk which has been used as a building stone perhaps since Roman times but certainly since the 12th century, and is found in many local churches as well as in London and at Windsor Castle. It is fairly widely distributed across the region and into East Anglia, but its greatest development is around Totternhoe (up to 20 ft. thick) so this name is given to all exposures.

The next stop was Totternhoe Quarry (SP 986 218) in the Lower Chalk, now disused but formerly worked for cement manufacture. The quarry sides gave good views of the Lower Chalk and the capping of Middle Chalk with the hard band of Melbourn rock at the junction between them and the Totternhoe Stone below.

After lunch we went into another disused cement quarry, College Lake, (SP 935139) which is now a wildlife centre. The quarry was in the Lower Chalk and also showed a Quaternary sequence. Here there were good indications of glacial action. The Chalk Marl (the lowest part of the Lower Chalk) was overlain by later ice age Coombe Deposits composed of frost shattered chalk and flint. There were examples of interglacial river deposits, and freeze thaw cracking under permafrost conditions with later infilling by sand and gravel.

Two additional localities at Little Heath (TL 017 083) and Tylers Hill (SP 982015) completed an interesting first day, and we were finally invited to a buffet supper kindly laid on at Dr. Catt's house in St. Albans.

On Sunday the first visit was to Woburn Sands Fullers Earth pit (SP933351) where we were shown around the pit and the processing/drying plant by the manager Mr. John Hill. Fullers Earth is a special form of clay derived from a volcanic ash deposit, probably by weathering and alteration of the ash in a shallow marine environment. In medieval times it was used for removing grease from woollen cloth (fulling). It is now widely used in bonding foundry sands, in the manufacture of cosmetics and paper, for refining edible oils and fats, and in drilling oil wells etc. A 9 foot seam of Fullers Earth was being excavated. The seam was under 100-150 ft. of sand as overburden, and this gave views of stratification of the sand with migration of its iron content, as well as an opportunity to collect samples of Fullers Earth.

A stop at Woburn Experimental Farm (SP970358) gave Dr. Catt an opportunity to explain some of his own interests in soil structure and geology. Then we went to Husborne Crawley church (SP955362) where the 14th century tower is built mainly of brown ironstone from the Lower Greensand (Cretaceous) but with a considerable amount of green quartzite, presumably also a local stone but its exact source cannot be traced. The church door-frame was carved from Totternhoe Stone.

The final visit and one of the highlights of the meeting was to see the famous Hertfordshire Puddingstone. This is a silicified conglomerate from the Reading Beds (Lower Eocene) and is a spectacular rock full of flint pebbles with a matrix as hard as the flint pebbles themselves. When the rock is worked or fractured it splits indifferently across the pebbles, rather than leaving the pebbles whole.

We started at Aldenham church near Watford (TL140985) where the tower has many panels of Puddingstone, then went on a two and a half mile walk through Batlers Green and Letchmore Heath to see many examples of Puddingstone used in local buildings. At Batlers Green there was a spoil heap left over by the builders giving a chance to pick up some prize specimens. Some of the party went on to Water End (TL 229043) to see swallow holes where streams disappear when they reach the chalk. On the Monday there was an opportunity to go on a tour conducted by Dr. Catt around the Rothamstead Experimental Station, which has been engaged on research into agricultural practices for over a century. So ended an interesting weekend, ably led by Dr. Catt to whom we are most grateful.

Paul Shilston.

Field meeting to Snailbeach 5th July Leader Peter Sheldrake (Retired Shropshire County Council Environmental Department) (I have been asked to reprint the account of the site written following our previous visit and a reprint of that follows this more recent account. Ed.)

This was an enjoyable and well attended meeting ably led by Peter Sheldrake and held on one of the few dry and almost warm days of this 'summer'. For those who would like to visit the site I suggest a call to Shropshire C.C.'s Countryside Service Tel. 01743 255 053 for a copy of their 'Snailbeach Mine' leaflet. This has a clearly scaled and keyed plan which shows two trails marked by posts and studs in the footpath. The leaflet gives a description of the buildings and adits which have been preserved and made safe, although entry below ground is not permitted. There is a brief history of mining methods, costs and minerals extracted plus some interesting items on the horrors of mining even in relatively shallow workings.

Shropshire County Council deserve praise for their preservation of this site which cannot be enclosed or supervised. Countless resident bats are included among the wildlife so all external connections to the adits are fitted with human proof but bat friendly grids, recognising that these creatures need space to fly in downward spirals to their roosts and that frogs and hedgehogs have inbuilt suicide plans for getting themselves into *impossibly deep holes*.

The walk into Perkin's adit was, like all underground expeditions, mysterious and distanced from reality until we came up against huge plugs infilling slumps in the road above our head. There were several inches of fudge coloured water underfoot and this thin mud inevitably finished up on our hands and faces, but the occasional gleam of sphalerite or galena in our wavering torchlight outweighed this and the explosive thump of hard hats on outcrops of calcite or barite. Traversing a small wooden bridge 100 ft. underground with only a rope handrail was fun with a dozen or so strong torches but a hundred years ago a young miner with only a candle in his hat must have walked in dread of falling or of meeting the ghosts of his Roman predecessors.

We emerged to the sudden temperature difference above ground while those much taller than our ancestors rubbed their aching backs then headed for the huge piles of spar. This 'waste' has been reworked to meet the needs of the paint and paper industries and a highly toxic section has been covered and stabilised. The heap is useful in learning to distinguish the three white minerals- calcite, barite and quartz and also the two metallic ores, galena and sphalerite. Some good samples may be seen in the churchyard wall nearby and it is thought that Snailbeach lead can be found at Pompeii!

We saw no sign of copper on this visit, but it is thought that this and a little silver may still lie at uneconomic depth and in inadequate quantity.

Further reading:

'The Welsh Borderland' British Regional Geology

'Mining in Shropshire' ed. Adrian Pearce

'Shropshire Geology - Where to go and What to see' P. F. Phillips and J. R. Stratford.

Ann Nicholds.

Monday 23 June Field meeting to Snailbeach Historic site and Old Mine led by Peter Sheldrake of Shropshire C.C. Environment Department

Snailbeach mine, which yielded lead, zinc and barite, worked veins in the Ordovician Mytton Flags which are sandwiched between the Stiperstone Quartzite and the Hope shales. The veins trend east west and dip at 70° and 80° into the hillside. The main veins are of barite yielding galena while deeper they are of calcite bearing sphalerite. At still greater depth copper and tin are found but these have not been mined. Lead ingots from Roman times have been found in the area but traces of the earliest mining are obliterated by later working. Records of mining exist from the seventeenth century. The heyday of mining was 1850-1870 when 500 men were employed. The mines closed in 1911 though surface working of barite continued until 1955. The mine was worked to a depth of 1600 feet, the upper part draining freely from adits but water being pumped to the 112 yard level.

The whole site had become very dangerous. The buildings are being stabilised but English Heritage does not allow restoration work, only work which will stabilise them in their existing condition. Some of the remaining buildings are quite magnificent, twelve of them being listed. They were well built but the wooden lintels have rotted. Building preservation work has been carried out to a high standard.

The locomotive shed housed the engines which brought coal to the mine and has a roof and is to be used as a mine centre. The mine shafts have been made safe with concrete caps. The 1797 winding engine house and the 1850 blacksmith's shop remain, the latter with its forge and an enormous pair of bellows, also the miners dry, a large building without windows or cooking facilities, where many of the miners may have slept. The compressor engine house sent compressed air to the mine for the drilling tools. There is a large Cornish Engine house on site. The engine pumped water from the mine. The magazine house has a double stone wall and had bark on the floor to prevent sparks from the miners' feet. The walls were lined with wood and the roof was of wooden pitch to encourage any explosion to discharge its energy upwards rather than horizontally.

Unusually, the ore was smelted on site, about 3/4 mile away. A large chimney connected to an underground 1/2 mile long flue created a draught for the smelter.

The buildings today are hidden in a wooded setting among the scattered houses of the village. Fish live in the pond that formerly provided water for the mine and increasingly the surrounding houses are becoming desirable residences for an incoming population.

The adit we went in (Perkin's Level adit?) is high up in the mine. The adit was about 5ft high. One heard the bangs as hard hats hit the roof. Evidence of rock falls could be seen, especially in the large stopes which rose almost to ground level. The adit was underwater to a depth of about 5 inches following a period of heavy rain. The barite veins were up to approximately 4ft thick and their steep dip was clearly seen. The miners worked with candles stuck in their felt hats by lumps of clay. The mine had no methane but does have radon. Water drains out through the adits. The miners worked upwards, from bottom to top, to exploit gravity in the removal of the loosened ore. Rough plank staging was placed across the stopes to support their work. Our visit terminated at a large scree slope where good specimens could be collected. Consultants have indicated the strong probability of a roof collapse in the upper stope area over an indefinite time span, as relatively little thickness of rock separates the mined chambers from the surface.

The waste from the mine was most hazardous. The white tip waste was like dune sand and lay in the middle of a village. Winds blew and contaminated the surrounding land. The toxic zinc prevented a vegetation cover and animals fell sick on eating the dust. This waste has been removed or stabilised and a large tip of coarse waste of host rock from the excavation of the shaft has been left for the enjoyment of geologists. This proved a big attraction for some of our members.

Kate Ashcroft.

ITEMS IN BRIEF

1. Mystery of the missing mail! I received a copy of two newsletters, June 1998 and February 1997. They were in a plastic bag from the post office with an explanation that the letter had been damaged during transit. I don't know to whom the letter was addressed. It is unlikely that anyone is sending newsletters to the newsletter editor, so if you have sent copies of these newsletters through the post and they did not arrive at their destination, any other material dispatched in the same envelope is likely to have gone missing. Meanwhile, the Royal Mail offers sincere apologies for any annoyance or inconvenience that you may have been caused!
2. A new membership card has been designed.
3. The Geological Museum in South Kensington is no more. It has been replaced by the Earth Galleries at the Natural History Museum, a result of funding from the lottery and Rio Tinto plc. Four new galleries have recently been opened: 'From the Beginning' a chronological tour through the Earth's history from Big Bang to the shadow of extinction, 'Earth's Treasury', with 3000 gems and minerals displayed, 'Earth Today and Tomorrow' and lastly, Earth Lab.' designed for a group of very dedicated but small group of amateur enthusiasts. (That's us!) The editor would welcome a report on the galleries from any intrepid member who ventures to the metropolis.
4. Have you purchased a millennium diary yet? The Geologists' Association is holding a conference Earth Alert to be held at the Brighton Centre between May 26th-30th in the year 2000 so this could be your first entry.
5. Did you know that the BGS holds an Address Linked Geological Inventory. You can give your post code to the B.G.S. and they can print a full geological report and a geological map of an area 500 metres in diameter for £28 plus VAT or, for £20 + VAT, a home-buyers report. It costs £7.50 plus VAT for a radon report only. You can find out if there is an usually high level of radon, if there is a problem with gas from an underlying rubbish dump or if the building is liable to subsidence or flooding. Phone 0115 9363192 for this service.
6. The Society holds a membership card for the Urban Wildlife Trust which gives free entry into over 2200 Wildlife Trust Nature Reserves across the United Kingdom. Contact Ann Nicholds who holds the card.

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