Buckinghamshire Earth Heritage Group

Newsletter No. 16 October 2011

Event: 'Rocks and You' Project launch – leader Jill Eyers

Sunday August 28th 2011

The launch of the 'Rocks and You' project was very successful. Despite the other attractions that a Bank Holiday weekend offers and the unseasonably low temperatures, we saw a good number of people passing through the exhibit area. We were able to show them our new project plans and share some of the wonderful Chiltern geology that was underfoot.

Thanks go to Julia Carey and her team during the days leading up to the launch; clearing the vegetation from the Chalk quarry face and making the access paths safe and clear of excessive vegetation. I understand that washing and cleaning the Chalk faces left her whiter than white in the Chalk slurry! Shame we don't have a photo. Then on the morning of the launch day our intrepid team of 3 went down to complete the job.

We now have a very nice clean Chalk face at Whiteleaf Quarry as shown in the photo above. We will make sure we make good use of it with the local school and groups. At the launch event we had 32 people signed up to join in with our events and the conservation work. We have also heard from several groups and schools who would like to have workshops, or walks, to see our sites and learn about the geology in their areas.

So we are off to a good start with the 'Rocks and You' project and more information on how you can be involved will follow shortly. There are already a number of new events scheduled in October and November 2011 and these can be found at the back of this newsletter.

Photo below - The Launch exhibition gathers a crowd.

Photo below - Tony shows his latest finds.

In addition to the geology we have included a number of biodiversity surveys which Natural England is very interested in supporting with us. This is essential work, not just a nice idea. If we have protected species on our sites we need to know, and improve, our geological localities in an eco-friendly way. Plus we may well get many more members if we do ecology with the geology!

Jill Eyers

Event: Visit to H.G.Matthews, brick works, Chesham - leader Jill Eyers

Tuesday September 13th 2011

This trip was organised as part of our Chalk livelihoods project. H.G. Matthews, in Chesham, was a fantastic opportunity to see the traditional method of brick-making. The family run business was founded in 1923 by Henry Matthews and is still run by his family today, in fact, it was Sally Matthews **(photo below, dressed in red)** who led our group around the works. She prided herself on having lads working for the business whose father had worked for them and for some, even their grandfathers!

The brick-making industry in the UK has seen much consolidation with hundreds of small brickworks closing since WWII. This has led to a sad decline in local character and distinctiveness of buildings, with local rustic bricks being replaced by uniform mass produced ones. H.G. Matthews is the last remaining brick works in Buckinghamshire. Their survival is attributed to flexibility and quality of their products. Their traditional skills and techniques enabling bricks to be matched for special purposes or for exceptionally good looking new-builds! Virtually any shape of brick can be made to order and we saw moulds made for special sites such as stately homes. They match ancient bricks and are virtually indistinguishable from the original product.

Photo above: decorative brick mould with H.G.M initials.

Photo below: A wood fired kiln being emptied after firing. It could be seen how the position in the kiln (near the fire holes, near the edges, in the centre or at the top) made a significant difference to the colour and appearance of the finished brick due to the temperature differences.

The clay used is from the Reading Formation and this is still dug from original deposits around Bellingdon and from nearby Chalfont St. Giles. The Reading Beds clays do not have an organic content to assist in the firing and save on cost, unlike the Oxford Clay found further north in the County. The clay has to have fuel mixed in with it, which is a type of pulverised coal. Between April and October all bricks are dried naturally outside, and in the winter months are dried by burning wood chippings.

We also discovered how they made the glazed bricks. It was interesting to see the bricks dipped in salt solutions which would provide a suitable glaze to the special batch going through on the day of our visit. For hundreds of years, glazed bricks were an accidental by-product of early firing methods, yet became a decorative enhancement to brickwork. Beautiful examples of this can still be seen in many villages and market towns.

It was Henry George Matthews (HGM) who was a great conservationist, believing that maintaining and restoring the landscape was essential. We were shown how the company keeps up this ethos and strives to minimise pollution and reduce energy use. The company also re-plants areas in an eco-friendly way once clay extraction has finished in an area. The ground area is restored and planted with broad leaved woodland or turned into ponds to encourage the indigenous wildlife. To date over 25 acres of oak, beech, ash and cherry have been planted.

Jill Eyers

Talk - 'Treasures from the Geology Collections' – by Mike Palmer,
Wednesday September 14th 2011.

The Museum's current exhibition, *100 Treasures from the Museum's Collections*, includes ten geological specimens **(Photo right).** A 190 million year old piece of Upper Lias limestone was presented as Buckinghamshire's oldest rock to be found at the surface and was used to explain how the county's rocks; limestones, clays and sandstones can tell us about Buckinghamshire's largely marine past. A piece of 490 million year old Tremadoc shale was presented as the oldest object in the collections. This was not a component of Buckinghamshire's surface geology but rather a glimpse into what lies beneath, coming from the bottom of a 1,200ft bore hole in Calvert in 1911. Another piece showing the top of the Tremadoc shale, from a depth of 450ft was shown. This had a distinctive red stain that resulted from weathering during the arid Triassic period, when this old rock formed the land surface, before the subsequent deposition of Jurassic marine strata.

Large crystals of selenite were viewed and their origin explained (see 'Members Questions'). A large example of the appropriately named *Titanites giganteus* ammonite from Aylesbury also made the top 100 treasures partly for its size, but also due to its high profile which arises from a number of local buildings making use of the local Portland limestone and using the giant ammonites as decoration within the walls. Examples can be seen at Dinton Folly, Quainton's village store and the perimeter wall at Hartwell.

The talk ended with a look at 'Little & Large'. Little was represented by the Museum's collection of Foraminifera, microscopic fossils of single-celled marine animals that secrete protective shells.

Large came in the form of a 16cm Cetiosaur claw **(Photo left)** which was identified for us by the American palaeontologist, Jack Horner (who was the inspiration for the palaeontologist in "Jurassic Park", and consulted for Spielberg in its making). However, one puzzle remains. Cetiosaurs were Jurassic dinosaurs living on land, so it is most likely that this bone was part of a dead dinosaur washed out to sea in the Late Jurassic and deposited in the marine Kimmeridge Clay.

With time running out the remaining geological treasures – the cave lion jaw, Watermead pliosaur and Dr John Lee collection were left to be the topics of future talks. *100 Treasure from the Museum's Collections* runs until Saturday 29th October.

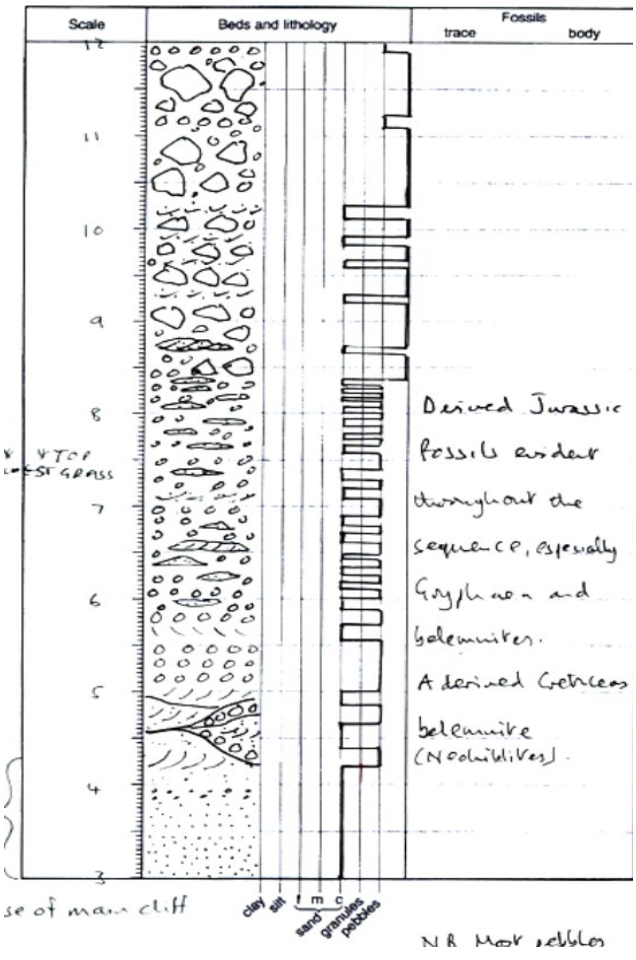
Mike Palmer

Event: Recording the sequence at Home Farm Gravel Pit, Stowe.

Sunday September 18th 2011

The visit to Stowe afforded an opportunity to measure the sections and record a graphic log for the Group's records. Jill also provided training to those who had not done this before. The quarry is owned by the National Trust and is located a short walk from the Estate Office.

Photo above: shows the location 2. Where the graphic log (below) was measured.



The succession shows unconsolidated coarse sands, gravels, conglomerates, and cobbles. Overall there is an increase in grain size with occasional boulders towards the top of the succession. The strata are visibly bedded and flat lying. The composition of the pebbles is dominantly of Jurassic limestone and Cretaceous flints. A variety of transported derived fossils were found, **(Photo below)** especially the bivalve Gryphaea, belemnites and occasional ammonites.

Cross bedding dip directions suggest transport from the North and North East. Because the beds are stratified and crudely sorted, this strongly suggests a fluvio-glacial origin and a Pleistocene age and ties to regional interpretations of where the limits of the Anglian ice sheets came.

Cross bedding is very common in the sandier beds, these are discontinuous and sometimes seen as lenses representing lower energy patches. The environment appears to be that of an outwash plain where braided streams continually migrate across each other. Overall, this is a site with a good section of fluvio-glacial sands which have excellent research and teaching potential

Clive Rodgers

Walk: Goring to Hartslock – Landscape and livelihoods.

Sunday September 25th 2011

This walk was part of our landscape and livelihoods project. The whole walk was designed to be 5.5 miles, but a shorter 2 mile round trip was chosen to provide more time exploring the village of Goring and linking it to the livelihoods. The walk started at the Catherine Wheel car park in Goring and followed the river (Thames path) up to the open field viewpoint (**Photo below**). The walk incorporates some interesting aspects from the geological past, to archaeology and historical to the present.

The river Thames was perhaps the most important contributor to livelihoods in this area for thousands of years, for our hunter-gatherer ancestors who navigated by the rivers, to the Mesoltihic fishermen, and the first farmers in the Neolithic who would have looked forward to the annual flooding of the fields. At Goring, the river meets the major ancient footpaths of the Icknield Way and Ridgeway at one of several fording places along the Bucks- Oxfordshire stretch. The intersection of these paths and the river, where it has cut a steep channel through the Chilterns, has made the town an important trading settlement over a very long period. The Romans built the causeway to link their road from the major settlements of Dorchester to Silchester. We know the major road was here as Streatley describes it ''strat" and ''leah" meaning clearing for the street (main road) in Anglo-Saxon. The name Goring has also survived the millennia ''Gara" and ''inghas" meaning Gara's peoples' place.

But why does the river flow here? Has it always flowed here? The short answer is ''no" and it used to follow a very different path. In geological terms the Thames is a very young feature and this part of its course only developed ½ million years ago. The Thames used to flow from the Midlands and went east to enter the North Sea at Ipswich. During the very large ice build up known as the Anglian glaciations, Oxfordshire and neighbouring counties were covered in an ice sheet which stretched all the way to Scandinavia. As the big thaw arrived the ice sheet, although retreating, still blocked the old (Proto-Thames) path. With so much water building up the result was a massive release of water cutting down into the solid chalk hills, producing valleys – now known as the ''gaps" such as Watford Gap and Goring Gap. The result was a new course for the Thames through Goring and on towards London. Trade and Goring never looked back!

Jill Eyers

Walk: Vale of the White Horse – Landscape and livelihoods.

Sunday October 2nd 2011

The weather for this walk proved to be exceptional, such a glorious day! Everyone had a brilliant time. The walk centred along the Ridgeway path, now a major long distance route, but the question of antiquity of the Ridgeway is still hotly debated. However, this part of the Berkshire Downs is one of the very few areas in the country where prehistoric landscapes are preserved. Burial sites such as Waylands Smithy **(Photo right)** have a long history; the Neolithic long barrow beginning life around 5,500 years ago with a second tomb being developed around 5,300 years ago. With only 15 people in the 1st phase and 8 in the second, this clearly does not represent deaths from the whole community in this period. Who were these people? Why only these bodies buried here? Where was the rest of the population buried? We came up with a number of ideas on this one...

The Bronze Age white horse, and Iron Age hillforts as well as Celtic field systems are clearly visible in the landscape. No-one has ever built structures or deep ploughed much of the area, probably because it has remained sacred and much visited since the Neolithic. Jill Eyers

Members Questions:

The Bucks County Museum has some large Selenite crystals from Brill collected by Dr Morley Davies, the famous Welsh geologist/palaeontologist who spent over 50 years at Imperial College, London, in the late 19th-early 20th century. Selenite is an evaporitic mineral so does the presence in these beds suggests that they were formed under specific environmental conditions?

Mike Palmer

Answer:

Selenite is a form of Gypsum, a common mineral which occurs widely, particularly as an evaporite, in deserts (e.g. Desert Rose). The chemical formula is Calcium Sulphate dihydrate, with the chemical formula $CaSO_4 \cdot 2H_2O$. But Selenite crystals often turn up in excavations on the Gault, Oxford, Ampthill and Kimmeridge Clays in the Vale of Aylesbury. They are usually transparent, perfectly formed rhombic-shaped crystals, which when twinned can give rise to many attractive clusters.

Does this mean that Buckinghamshire was once a desert too? The local Selenite is neither evaporitic nor native to the originally deposited clay. It occurs only in the uppermost 2 or 3 metres, in the weathered zone. It results from the decay of pyrite (Iron sulphide - FeS_2) in the Jurassic clay The pyrite breaks down in the wet oxidising environment of the weathering zone into among other things, Sulphuric Acid. This acid attacks and reacts with the calcite, which is present in the abundant fossil shells, to create the Calcium Sulphate that is Selenite.

Be careful with your specimens, as Gypsum is very soft and crystals damage easily.

Dr Michael Oates

2011 Future Programme

Wednesday October 26th 2011, 10am start. Biological survey training and survey of **Whiteleaf Quarry** and into the surrounding woodland and out onto the chalk grassland. Trainer: Tom Hose. For more details and to book a place contact Jill Eyers: j.eyers@btopenworld.com

Sunday October 30th 2011, 10am start. Biological training and survey at **Buckingham Sand Pit.** Trainer: Tom Hose. For more details and to book a place contact Jill Eyers: j.eyers@btopenworld.com

Saturday November 5th 2011, 10am – 4pm. Festival of Geology at University College London, Gower Street, London WC1E 6BT. This free event held by the Geologists' Association is hugely popular. Geological talks, exhibits and vendors. The BEHG are planning to have a presence. Volunteers are needed to help on the BEHG stand. Please contact Graham Hickman at hickmang@bp.com if you are able to help at any time during the day.

Saturday November 12th 2011, 2pm. 'Livelihoods from the Chalk: Past, Present and Future in the Chilterns', talk by Bev Fowlston. Joint meeting with Bucks Archaeology Society. Bucks County Museum, Church Street, Aylesbury HP20 2QP. Contact Mike Palmer at mplamer@buckscc.gov.uk or call 01296 624519 for more information.

Saturday November 27th 2011, 10am – 4pm. Coombs Quarry logging the geological section. Training and professional logging. Carbonate sequence. For details and to reserve a place contact Jill Eyers: j.eyers@btopenworld.com

2012 Programme

The HLF project 'Rocks - and You' will generate many new events for the group and the committee will be meeting in December to discuss the new 2012 programme. The committee would be pleased to hear any ideas or suggestions you have. We are also considering a two day weekend field trip in 2012 and would like to get an early idea of participation from members.

Membership

At this year's AGM it was proposed and unanimously agreed to raise the annual membership fee to cover the Group fixed costs such as insurance, website and GA membership. Therefore, the 2012 membership fee, due for renewal on 1st January 2012, will be **£7.50** for an individual member and **£12** for a family membership. Membership renewal reminders will be sent out to existing members during November 2011.

A copy of the membership form is available on our website: www.bucksgeology.org.uk
If you would like to join please complete and send the application form together with payment to: Membership Secretary, Lindsay Hiles 4 Phoenix Close, Leighton Buzzard Beds LU7 3YW email: behg.membership@btinternet.com

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The Buckinghamshire Earth Heritage Group aims to record, conserve and promote the geology of Buckinghamshire and Milton Keynes.

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