Buckinghamshire Earth Heritage Group

Newsletter No. 19 May 2012

Event: Coombs Quarry – clean-up, nature survey and fossil hunt day.

Saturday March 17th 2012.

A good number of people arriving for a quick clean-up of one of our favourite quarries, followed by a fossil hunt and a nature survey. Trying to do all three in one go was quite a juggling act, but people soon divided into the jobs they wanted to do and an enjoyable day was had by all.

Photo above: some of the group hard at work at the face

After the initial clean-up the quarry was looking good, a number of loose blocks were identified as potential hazards so a JCB was dispatched following the event to make things safe.

The fossil hunt took two forms. Firstly, the bigger fossils were identified so we could add the information to the geological log prepared in the Autumn of 2011. Then we collected samples to look at the microscopic fossil remains.

The harder limestone beds and softer (marl) were both sampled. Samples were collected systematically ensuring they were correctly labelled with the bed that they had come from and that all surface dirt or soil was removed. This was important because the material washing down the face has come from higher in the quarry and also contains contamination from modern insects and plants.

The samples will be sieved and analysed in thin sections by one of our members, Stephen Packer, who specialises in the area of microfossils and palynology. Palynology is the study of plant spores and pollen.

From the logging work done last year we came to some very good environmental conclusions from describing the rock lithology alone. It will be interesting to add the fossil information to this now and see how it complements our understanding. We also eagerly await the results from the microfossil work as this is completely new research and should add more insights into the Jurassic environment at Coombs quarry and may also assist in the geological dating too.

The geological information will be added to the Coombs pages on the website when we have results back and will let everyone know what we have discovered.

Photo above: one of the other workers at Coombs, hard at work on the vegetation!

Jill Eyers

Event: Winter Hill - a story of past climate change.

Sunday March 18th 2012.

This walk was led by Lesley Dunlop from the Berkshire Geology Group.

From the viewpoint on Winter Hill it was nice to stand on the Berkshire bank, but view all the geomorphological features that were present on the Bucks side. This viewpoint enables you to see subtle and large-scale features in the landscape. It was good to stand there and imagine what this Thames landscape was like during the Ice Age (the Quaternary) when much of the valley was carved and the Chalk hills were shaped.

A number of subtle, but large-scale 'bumps' mark old river terraces. These are particularly noticeable where the roads make a cut into the ground. These terraces were once flood plain deposits lain down by the Thames. Subsequent down cutting of the Thames and uplift of the land has resulted in a these deposits being left as remnant terraces deposited at elevated positions along the sides of the Thames Valley. The oldest terraces are at more elevated positions and the youngest at the bottom – reflecting the progressive down-cutting. The modern and present-day level is thus forming the alluvium in the valley bottom.

The Winter Hill gravel terrace represents an old flood plain deposited by the Thames river during the ice age. It dates from around 450,000 years ago. The deposit is best described around Marlow and is named after the type location at Winter Hill.

Photo: Marlow from Winter Hill

The view from Winter Hill showing Marlow. The area around the church is sited on an outlier of Shepperton gravels. These form one of the younger terraces in the valley bottom and the slightly raised ground above the present day floodplain make it higher and dryer than the rest of the town.

On the walk through Quarry Wood there were several points where the gravel terrace deposits could be examined. All the gravels contained much angular and subangular flint (not surprising as the rivers had passed through Chalk and Palaeogene deposits). However, also reasonably abundant was quartzite and vein quartz. The source of this was very likely to be the Sherwood Sandstone of the Midlands. The composition of the gravels, i.e. the different rock types tells us about the palaeo-drainage or catchment areas of the Thames river.

Our walk also took us to the Cookham Dean Chalk pit. This is an interesting locality as it shows many regular, thin intervals of flint. Much was present as patchy and discontinuous layers, whilst other flints could be found loose on the scree which were burrow fills. The burrows are given the name "*Thalassinoides*" [See members' questions page 8]. Some of the Chalk also was a slightly pinkish shade – a phosphatic Chalk – similar to that in the: Taplow SSSI site that BEHG have worked on in the past.

Photo: Old Chalk Quarry, Cookham Dean

The weather could not have been more different from the snowy February day that the trip was originally scheduled for. The day was spectacularly sunny and made for a very pleasant walk. The walk ended in the Jolly Farmer in Cookham Dean where we had an amazing meal – definitely one of the best roast dinners for a long while!

Jill Eyers

Conservation work.

Buckingham Sand Pit clean-up and nature survey

Saturday April 7th 2012.

This site was in need of a good clean-up as vegetation was beginning to obscure the main faces. Ivy, brambles and saplings were removed by a hardworking team of four members: Tony Britten, Phil Clapham, Nicky Muizelaar and Jill Eyers. The results of their work beautifully exposed the till and esker sections which make this such an important geological site.

Photo: Tony Britten points out the esker deposit.

Following the geological clean-up, a quick nature survey was undertaken resulting in the recording of a long list of species. This is the second of the four surveys that are planned over the year as part of the 'Rocks and You' project.

It has been surprising to see some of the species that have been encountered. At the Bucks Sand Pit site plants such as wild strawberry and lemon balm have been found while at the Coombs Quarry site a massive leopard slug was amongst the more interesting species recorded. A good number of birds were recorded at both sites. Our recordings will enable us to recognise and protect special species whilst cleaning-up the geology. We hope to enhance the biodiversity at the Bucks Sand Pit as we have cleared an area which will be more suitable for butterflies and other invertebrate species that prefer open spaces. It is hoped that the newly exposed sand faces will attract rare burrowing bees and wasps.

If anyone is interested in seeing the species list or helping with the future nature surveys, please contact Jill Eyers. Watch out for the next advertised nature survey – they are really interesting and good fun.

Bugle Pit update

The Bugle Pit is one of the nine SSSI sites in Buckinghamshire designated for its geological importance alone. However, it is currently difficult to access due to thick vegetation, fallen rubble and unsafe steps. All this is about to change thanks to new funding from Natural England and the Geologists' Association Curry Fund. The BEHG is working with these groups to start essential new work at this site. Plans include major new fencing, tree removal and new steps. Volunteers will be able to help with smaller scale clean-up and recording work after these first major stages of restoration have been completed to bring this site back to a safe condition.

Bugle Pit is an important site for the definition of local Jurassic stratigraphy. Reptile bones and teeth remains have been found at this site. It also contains an important sequence of marine beds at the top of the Portland and basal, partly non-marine Purbeck Formations, showing evidence for palaeoenvironmental changes.

'Bugle pit as it is now - this is the 'before' picture – coming soon - volunteers needed to help cleanup.

Further details on the Bugle Pit site can be found at:
http://www.bucksgeology.org.uk/sssi/bugle_pit.htm

Joint BEHG and Bedford Geology Group Event: Mundays Hill Quarry.

Saturday April 14th 2012.

Munday's Hill is a classic section for the Lower Greensand and Gault Clay Formations. These rocks were deposited ~115 to 95 Ma during the Lower Cretaceous Period. The Lower Greensand (here called the Woburn Sands) are superb, showing a wealth of sedimentary structures and trace fossils which are indicative of the ancient tidal environments seen at this location. The Gault Clay provides abundant fossils as evidence of later fully marine conditions due to the Albian transgression.

Photo above: bi-directional cross laminations.

If you read any textbook on the Lower Greensand it will always describe this area near Leighton Buzzard as a 'fully marine tidal seaway'. Evidence of the tidal nature such as clay drapes highlighting bi-directional cross-laminations as well as amazing tidal bundles can be found here. The tidal bundles were very clear – the bundles of 14 representing the lunar tidal cycles of neap and spring tides. However, recent thinking suggests that this part of present-day Bedfordshire was influenced by fresh water and may actually be part of an estuary. To attempt to resolve these different environmental interpretations the group have now taken some samples of the clay drapes for microfossil and pollen analysis. This may well lead to a paper resulting from our research.

Looking at all the evidence in the field the group concluded that the lowest beds of the Lower Greensand were probably formed at an estuary mouth and the upper sands formed as sand bars. Finally, the overlying Silty Beds formed as tidal flat deposits.

Photo above: Wood preserved in marcasite

Within the Woburn Sands wood is preserved in four different ways; as lignite, charcoal (proving forest fires in the source area), iron-oxide mineralisation and as marcasite (photo above). Marcasite is a form of pyrite and does not often form in this kind of oxygenated environment. The interpretation is that the sands were deposited very rapidly and as the wood started to decay it became entombed whereby oxygenated conditions quickly changed to anaerobic.

Within the Gault Clay Formation many fossils were found, including: ammonites, crinoids, corals, bivalves, belemnites, scaphopods, serpulids, fish vertebrae and even a crab carapace.

Photo above: BEHG and BGG members

The April sunshine was very enjoyable. Members of both the Bucks Earth Heritage Group and the Bedfordshire Geology Group enjoyed some excellent geology. We are very grateful to the manager of Aggregate Industries Munday's Hill site, Tom Wise, for allowing us entry to this very special quarry.

Jill Eyers

BEHG Minutes of AGM – Old Gaol Museum, Buckingham

Saturday April 21st 2012.

1. Apologies: Mick Oates, Julia Carey, Graham Hickman, Trish Carter and Mike Farley.

2. Minutes of 2011 AGM: Mike Palmer presented the minutes from the last AGM which were approved by members present. There were no matters arising.

3. Membership: Lindsay Hiles gave an update on the membership which now stands at 53. This is six more than last year but one of these is a family membership so there are actually 10 more counting each member of the family. Jill Eyers thought that there was weak membership in the centre of the county, where we should consider targeting a membership drive. Improved networking could be the key, and it was agreed that this will be discussed at the next Committee meeting.

4. Report on the Previous 12 months: Jill Eyers described the field meetings, conservation and talks of the Group, with special reference to Coombs (tree felling, face cleaning, fossil identification, logging and micro faunal analysis), Buckingham Sand Pit (Logging, log training, surveys such as Bryophyte species), Whiteleaf Nature Reserve, College Lake, Medmenham Chalk Pit, Bugle Pit (with additional funding negotiated by Jill to aid restoration, cleaning, felling and steps). Tom Hose congratulated Jill Eyers on unexpectedly achieving the additional funding sources (e.g. the Curry Fund) for the work at Bugle Pit, and the rest of the Committee agreed. Funding from the 'Rocks and You' grant has greatly assisted our work. This was achieved by successful application to the National Lottery Heritage Fund.

4.1 Rocks and You: This initiative, launched in August, 2011, has been highly successful, and there was a programme in place for the next few months. Jill Eyers gave out a spreadsheet which showed there had been 20 talks, 10 walks, 5 family days/events, 10 schools visits and 11 training and recording days. Jill was thanked by members of the Committee for her outstanding work as Treasurer for the programme. Jill had commented that the delivery of rocks and fossils talks to schools had been especially rewarding, but all aspects were going well. However, there is still more site work needed, and she also suggested that in future we might consider a smart phone with bar code system was a way of providing access to information about sites whereby the code was left as a sticker in front of a rock face, which could be scanned and information be gathered via links to websites. This will be considered further at the next Committee meeting.

4.2 Newsletter and Website: Mike Palmer expressed thanks to Graham Hickman (in his absence) for the high quality of the 5 newsletters he had produced over the last year as well as his continued maintenance of a high quality website. Due to his posting to Trinidad, Graham has tendered his resignation as Secretary and Vice-Chairman, but fully intended to continue as webmaster, producing the newsletters and maintaining the website from abroad. Members expressed their gratitude to Graham.

5. Treasurers Report: Jill Eyers gave out a summary of the accounts from 31.3.11:
[*reproduced on next page*]
In summary, the Group started with an opening balance of £386.32 and ended the period with a closing balance of £15,253.88, largely due to the National Lottery Heritage Fund Grant. The financial statement was approved.

6. Election of Officers: Mike Palmer was elected to continue for a further two years as Chairman. Secretary and Vice Chair elected was Clive Rodgers (to replace Graham Hickman). Jill Eyers was elected to continue as Treasurer and Lindsay Hiles was elected to continue as Membership Secretary. Graham will continue on the Committee as Webmaster and Newsletter Editor. The other committee members and co-opted officers will still be Julia Carey, Tom Hose, Nicky Muizelaar and Mick Oates.

7. Any Other Business: Clive Rodgers mentioned the desirability of being able to use free WiFi in future at Committee meetings in order to Skype both Mick Oates and Graham Hickman at the same time for free, and this might require a change of venue. Clive to email the Committee shortly on this issue.

8. Date of Next AGM: Agreed as Saturday 27th April, 2013

End of Minutes

Buckinghamshire Earth Heritage Group
Income and Expenditure Account for year ending 31st March 2012

Income:	**£**	**£**
Book Sales (and donations)	163.21	
UK RIGS	1125.00	
Oxford Geology Group	450.00	
Membership	266.50	
Chiltern Conservation Board	1500.00	
Rocks and You, Lottery Fund Grant	24,650.00	
Deposits (Norfolk)	480.00	
		28,634.71
Expenditure:		
Fee for speaker at AGM	100.00	
UKRIGS work	1025.00	
Bedfordshire Geology Group – Livelihoods	375.00	
Hertfordshire Geology Group – Livelihoods	375.00	
Oxford & Bucks - Livelihoods	675.00	
Oxford Trip Expenses	13.50	
UK RIGS subscription	10.00	
Web name	7.90	
Hire of room for AGM	22.00	
Insurance	106.78	
Stamps	8.64	
Lamination costs	13.52	
Rocks and You expenditure	11,034.81	
		13,767.15
Excess of Income over Expenditure		£14,867.56
Opening Bank Balance		386.32
Add excess of Income over expenditure		14,867.56
Closing Balance*		**15,253.88**
Plus late payments and unpresented cheques		280.69
Balance as per Bank Statement (31 March 2012)		£15,534.57

*Of this £14,095-19 represents the balance of the "Rocks for You" fund ie. Balance of the grant plus Deposits (Norfolk).

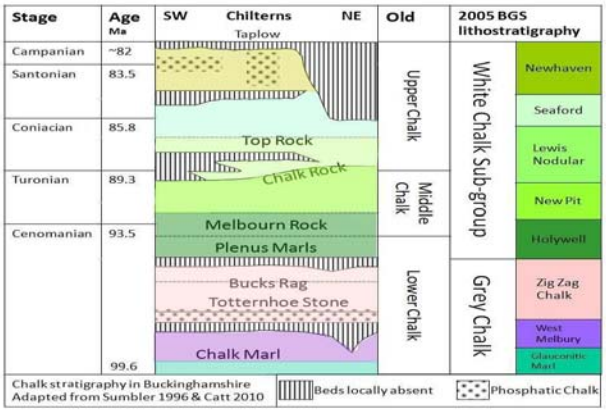
End of Treasurers Report

Event: College Lake

Sunday April 15th 2012.

The visit to College Lake was another bright sunny Spring day. The site is run by BBOWT (Berks, Bucks and Oxfordshire Wildlife Trust) who lease it from Castle Cement. The new visitor centre is excellent and the site has lots to offer; the geology, the lake, the wetland area and all sorts of wildlife, including an amazing variety of birds.

Geologically the site is important for the old Chalk quarry and for the Quaternary (Ice Age) deposits. The Chalk itself is only partly accessible, but highly visible from all viewpoints. It spans the Lower Chalk (ZigZag Chalk Formation) and the Middle Chalk (Holywell Nodular Chalk Formation). In places you can find the harder band of the Melbourne Rock and many of the fossils in the geology display come from this horizon.



The Zigzag Chalk is characteristically softer and greyer, and was the main target for cement production of the past. Dotted around the site are pieces of the old machinery such as the massive clawed digging wheel **(photo below)** and parts of the conveyor belt system.

The Quaternary (Ice Age) deposits are important for the fossil mammal remains found from number 2 channel. Some are displayed in the visitors' centre where Rodney Sims, one of our members, volunteers. He was able to show the group some of the fossils that have been found here including the large mammoth tusk (**photo below**).

The Quaternary (Ice Age) deposits that are currently visible are mainly slope deposits formed by solifluction, a process of down slope sediment movement during glacial freeze-thaw conditions. The topmost surface of some of the slope deposits have become churned up by a process called cryoturbation and there is also evidence for ice-wedge casts. (**photo below**).

Further information about College Lake can be found at:
http://www.bucksgeology.org.uk/college_lake.html - geology
http://www.bbowt.org.uk/reserves/College-Lake - information about the nature reserve

Event: Buckingham Building Stones Geological Walk

Saturday April 21st 2012.

Following the AGM, Clive Rodgers lead the group around Buckingham town centre looking at the geology through the different building stones that can be observed. The route was about 0.7 miles in length and the group took 90 minutes to stroll around.

Around 12 stops were made to look at everything from gravestones to shop fronts. Older walls and buildings have been made from locally found limestones and glacial derived boulders. However newer buildings incorporate stone that has travelled large distances, such as Labradorite from Norway or granites from Scotland or further afield.

A number of fossils were observed in the walls, including bivalves, tube worms, ammonites, gastropods and echinoid spines.

The photo **below** is of the Upper Jurassic ammonite *Titanites giganteus,* in the wall of the Tailor's shop. Surprisingly this large fossil often goes unnoticed. It was actually picked up in a field at Rowsham, near Aylesbury, by a relative of the owner at the time.

The Buckingham Geological walk guide can be found at: www.bucksgeology.org.uk

Members Questions

Question:

During a visit to a Kensworth Chalk Quarry, large burrows (~1cm wide and ~20cm long) were observed in one of the harder layers of the Chalk. What kind of creature would have made these?

Answer:

These burrows are trace fossils. They are classified by palaeontologists in the same manner as fossil plants and animals, but with an "ichnogenus" and "ichnospecies". The ichno- prefix comes from the Greek meaning "trace".
The "Y" shaped Kensworth burrows are included in the ichnogenus '*Thalassinoides'*. But that was not the name of the creature that made them. Many flints started out as *Thalassinoides* burrow-fills, replaced by silica.

They were probably excavated by a burrowing crustacean such as a shrimp. A modern day burrowing Shrimp, *Callianassa californiensis* is shown below.

Dr Michael Oates

2012 Future Programme

Further trips and talks will be scheduled as the year progresses. Please check the BEHG website or email the organisers before any event, for the latest update.

Saturday May 5th 2012, time tbd: Churchyard geology. Hurley, Berkshire. This is a half day workshop with an indoor session (talk) followed by a walk around the village churchyard. Graveyards are full of different rock types and fashions in memorials have changed over the years. This workshop will enable you to identify the main ornamental stones used and how to map out changes and styles in a churchyard. This will allow you to look at and assess your own local churchyard. To book contact Jill Eyers at (j.eyers@btopenworld.com) or call 01494 881325

May 18th to 20th 2012. Weekend field trip. The Ice Age in Norfolk. Leader: Jill Eyers. Some of the UK's finest ice age geology (Happisburgh, Overstrand, Cromer, Blakeney Quay and esker, plus West Runton and an elephant! Friday to Sunday with a nice hotel based in Mundesley. 3-course dinner, B&B. The price looks like being £190 for a single room, and between £230 to £260 for two people sharing twin or double room for the weekend. To book contact Jill Eyers at (j.eyers@btopenworld.com) or call 01494 881325

Friday June 1st 2012, 10am to 4pm. Whiteleaf Cross NNR. Two activities; light clean-up of quarry at Whiteleaf Cross Nature reserve, followed by a nature survey of quarry, woodland and grassland. The survey will include trees identification and age estimation, lichens identification, flowers and main invert groups. ID guides supplied to assist. Suitable for all. To Book contact Jill Eyers at (j.eyers@btopenworld.com) or call 01494 881325

Rescheduled event Sunday 1st July 2012, 1pm to 3.30pm. Ivinghoe Beacon to Incombe Hole. A walk in stunning scenery with geology, archaeology and nature. Circular walk, one steep hill. To Book contact Jill Eyers at (j.eyers@btopenworld.com) or call 01494 881325

Saturday July 28th 2012, - 10.30am to 3.30pm Rock Art - a drop in event in Buckingham Sand Pit. Anyone can paint and we show you how. Come and have a go there will be two themes: rocks and trees. Suitable for all ages and all abilities. Stay as little or as long as you like. We also have geologists and biologists to take you round the site, including the 'bug man'. Just turn up. SP 699 344.

August 13th to 18th 2012, time tbd. Geology week at Stowe. In partnership with the National Trust. The BEHG will be setting up activities such as hands on fossils, minerals, rock ID at the New Inn visitor centre. Plus guided walks down into the Home Farm Quarry. More details or to volunteer contact Jill Eyers at (j.eyers@btopenworld.com) or call 01494 881325

Membership

Annual membership runs from 1st January. Individual membership for the 2012 calendar year is **£7.50** and family membership is **£12**.

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

Confirmation of receipt will either be by email or by post. The BEHG welcomes all new members.

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

Website: www.bucksgeology.org.uk

For general enquiries please contact:
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