



Buckinghamshire Earth Heritage Group Newsletter No.13 March 2011

**Event: Froghall Conservation Day.
Sunday 30th January 2011**

One fine Sunday in January, the sound of sawing and cutting could be heard through the still morning air near Chalfont St.Giles. The occasion was the BEHG Conservation Event at the Froghall brick-pit SSSI. A group made up from members of the BEHG and the Chiltern Society worked hard to clean up the site - rediscovering the underlying geology.

Graham Hickman started the day by explaining the local geology using a number of maps and illustrations alongside a selection of pebbles found at the site. The gravels represent the earliest recognised stage of the Thames and have been traced from the Goring Gap to Norwich. The geologist R.W.Hey named these as the 'Westland Green Gravels' after the type location at Westland Green near Bishops Stortford, in Bedfordshire.

The SSSI notification at Froghall is based on the stratigraphic importance of these gravels for understanding the history of the ancient Thames and for correlation between the Upper and Lower Thames deposits.



The main task was clearing brambles and saplings from the main bank to reveal the gravels beneath. Bob Older (photo above) takes a well earned break. The 'before' and 'after' (photo lower left) record the achievements of the group.



Froghall SSSI - Conservation Day Clean-up - 30th January 2011



The gravels contain pebbles of vein quartz, quartzite, chert and sandstones which were derived from the palaeo-Thames drainage area, this extended as far as the Midlands. Rare volcanic pebbles (photo below) were probably brought initially by glaciers from as far away as Wales.



More information on Froghall SSSI is available on our website at:
www.bucksgeology.org.uk/sssi/froghall_brickworks.htm

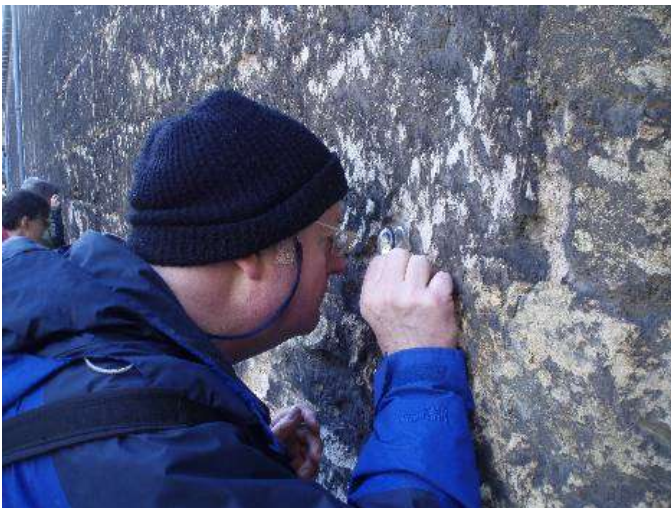
Event: Oxford City Building Stone Walk Saturday 12th February 2011

A dozen members enjoyed an unusually bright sunny day in February examining the building stones around Oxford City centre. Followed by an interesting afternoon looking at the geological exhibits at the Oxford University Museum of Natural History.

The trip started outside the museum, where the group examined a set of reproduced casts of dinosaur footprints. These have been set into the lawn outside of the museum. The original footprints were found in Ardley Quarry to the north of Oxford. The footprints are believed to belong to Megalosaurus walking through mudflats or shallow water. They demonstrate the proximity to land during that part of the Jurassic period.



Graham Hickman showed the group to a number of different buildings where a variety of local stones could be examined.



Andy Still (photo above) examining the walls of New College. This is built from the Headington Freestone, with a foundation of Headington Hard. During the 17th and 18th centuries much of Oxford was built from this limestone. Coming from Headington Quarries a few miles east of Oxford, this was a plentiful source of stone which could be easily dressed to smooth faced blocks.

The Headington Hard is a harder and better cemented limestone often showing bioturbation. Headington Hard is present as a foundation stone in many of the buildings which have been later refaced with more distant sourced stone types.



The photo above shows a piece of coral preserved in a wall. The older parts of the city were built with the local stone "Coral Rag" which is very hard and resistive to erosion but can't be cut and faced to produce smooth impressive buildings.

Following lunch, some of the group returned to the Oxford University Museum of Natural History where Mick Oates provided an informative tour of the museum (photo below). The Museum opened to the public in 1860, it is built in the Gothic style and has a light and airy interior called the Great Court. Leading off the Great Court are a number of rooms and lecture theatres built for each of the related academic departments.



Mick Oates (photo above) adds commentary to the displays, describing the geological history and evolution of Oxfordshire and neighbouring Buckinghamshire.

Event: Bryant's Quarry Heath & Reach, Bedfordshire

Saturday March 12th 2011

Dr Clive Rodgers led a small band of members around Bryant's Quarry looking at the Lower Greensand. The trip started early at 8:15am to enable the quarry owner to schedule maintenance work to take place later in the day. The first stop was an impressive section of cross-stratified sands (Photo below) within the Silver Sand Group.



Dr Clive Rodgers explained how these sands were laid down in a marine environment, probably as a sand bar at the mouth of an estuary. This site, which resembles a desert environment, has been used as a back drop to a number of recent movies including the "Mummy" series and part of the "Da Vinci Code".



Within the sands there is a number of interesting semi-vertical trace fossils (photo above). These are interpreted to be the burrows of benthonic marine invertebrates, such as shrimp. They often show a spiral appearance and have been preferentially cemented. The cementation may be replacing an early form of stability. Modern creatures in similar high energy environments have been shown to secrete binding chemicals to stabilise burrow walls.

The next stop was a slightly younger succession of

strata. Here much smaller bi-directional "herringbone" cross-stratification was observed (Photo below - scale bar 15cm). These strata are interpreted to show tidal influences. Microfossils and pollen have indicated brackish conditions suggesting deposition within a tidal estuary.



Although no longer *in situ*, a number of fine specimens of fossil wood (Photo below) were found from a pile of golden sands which had been removed from above the herringbone strata.



Finally the group examined the overlying glacial boulder clay, finding far travelled rock types and fossils, as well as a fine example of striations preserved on a boulder which had been embedded within the slowly moving ice sheet. (Photo below).



Members Questions

Question: I had this odd flint specimen brought in recently from Bedgrove (photo below). The two rectangular marks do not compare to anything we have in the Museum collection. Are they the result of some more recent physical action rather than something palaeontological? **Mike Palmer**



Answers: If you look carefully at the two dark rectangular marks they are indented and have an obtuse (approx 160°) apex at either end. They represent the external cast of two adjacent interambulacral plates from an irregular echinoid (sea urchin) fossil, which became enveloped in flint. The plates would originally have been preserved in calcite (CaCO₃) while still embedded within the flint nodule in the Chalk formation, but on being broken open, dissolved away. They are darker coloured simply because the slightly indented impression has an ingrained dirty surface.

The identity of the echinoid cannot be stated for certain, but it is definitely not one of the extremely

spinose Cidaroid genera, which are also often preserved in this way. The most likely candidate is Echinocorys or Conulus, a fairly common type, which when complete was historically prized as a charm to ward off evil spirits or encourage good luck on the farm. They would have been picked up then (as now) in fields and given a colloquial name like "Shepherd's crowns" due to the apparent similarity caused by the vertical converging pattern.

The photograph below (from the Natural History Museum website) illustrates one of these. The internal impression of equivalent plates, still intact, can be seen on the side of this specimen (two such plates have been outlined in red).



Shepherd's Crown echinoids *Conulus* preserved as a flint internal filling.

Look also for other fossils preserved in this way, such as fragments of bivalve shells and casts of echinoid spines, which produce spiny rod-like impressions. Try using plasticine to create a positive mould of these fossils, to understand more easily what they looked like originally.

Dr. Michael Oates

For more information on fossil sea urchins in folklore, visit this site:

http://www.nhm.ac.uk/nature-online/earth/fossils/fossil-folklore/fossil_types/echinoids.htm

Membership

Membership of the BEHG is open to anyone with an interest in geology. Membership subscription run annually from January 1st. Individual membership is £5 and family membership is £8.

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

2011 Future Programme

Saturday April 16th 2011, 10am – noon. Aylesbury town centre Geological walk. To book contact Lindsay Hiles at behg.membership@btinternet.com

Saturday May 21st 2011, 1:30pm - 4pm. AGM followed by geological talk. Learning Zone 2, Bucks County Museum, Aylesbury. Contact Mike Palmer at mpalmer@buckscc.gov.uk or call 01296 624519 for more information.

Monday May 30th 2011, Bank Holiday. – All day. Bucks Fly-Drive – Geological drive across the county stopping to look at the rocks, buildings and scenery along the route. Gain an overview of Buckinghamshire's geology in a single day. To book contact Graham Hickman at hickmang@bp.com or 07763363266.

Saturday June 18th 2011, 11am - 4pm. Ice age to the tropics in Buckingham (Coombs Quarry and Buck Sand Pit). A joint meeting with the Open University Geological society. further details to follow. To book contact Jill Eyers at j.eyers@btopenworld.com or call 01494 881325 (mornings only).

Saturday July 2nd 2011, 1:00pm - 4:00pm. Burnham Beeches – Geology and Hydrology. Led by Graham Hickman. To Book contact Burnham Beeches management team on 01753 647358.

Saturday August 13th 2011, 10:00-3:00pm. Sand and fossils at Munday's Hill Quarry, Leighton Buzzard. A joint meeting with the Open University. Children 8 years or older welcome under parental guidance. To Book contact Sue Brown sue.brown@environment-agency.gov.uk

Saturday August 27th 2011, – All day. Recording the sequence at Home Farm Gravel Pit, Stowe. This intriguing glacial gravel locality needs interpreting. Jill and the other geologists will show how to do this and, hopefully, by the end we will have more to say about how these gravels formed. To book contact Jill Eyers at j.eyers@btopenworld.com or call 01494 881325 (mornings only).

Saturday Sept 11th 10am – 4pm. Milton Keynes Area walk – geological walk & Olney church yard building stones. To book contact Graham Hickman at hickmang@bp.com or 07763363266

Saturday November 5th 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.

November, Indoor lecture. Joint meeting with Bucks Archaeology Society. Bucks County Museum, Aylesbury. Contact Mike Palmer at mpalmer@buckscc.gov.uk or call 01296 624519 for more information.

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

For general enquiries please contact:

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