

# Bedfordshire & Luton Geology Group

## Annual Review 2006/2007

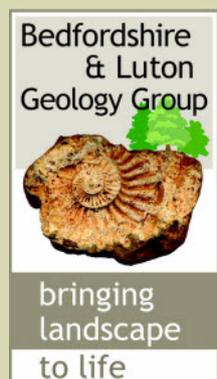
### Kensworth Quarry Visit in May

A large group of members and non-members enjoyed a morning at the country's largest chalk pit - Kensworth Quarry. Dr Mike Oates, a leading chalk expert, led the trip and many interesting fossils were found.



### Fossil Fun at Stockgrove

Children from the local area learn more at Stockgrove Country Park with the help of the Sandpit Project and Chris Andrew of Bedford Museum.



# Sandy Heath Quarries Old & New (or "pooh" - new & old)

By Bev Fowlston BSc FGS

(Photographs courtesy of Dick Denton)

On Sunday 8th October 2006, the B&LGG in conjunction with the RSPB, arranged a day trip to Sandy Warren Quarry and Sandy Heath Quarry. The leaders were Jill Eyers of the B&LGG and Nick Renwick of the RSPB. There were 22 people, including the leaders, attending.

We met at the RSPB shop at 10 am and walked through the heath and along a woodland path where we encountered our first "pooh"! Jill stopped us by some rabbit holes (hence the new pooh!) to tell us a geological trick used in mapping an area; animals, such as rabbits and moles, dig burrows and throw out the earth and rocks, a sure way to tell what is beneath our feet without disturbing nature.

We continued our walk past the Lodge to a disused quarry. It was quite spectacular to walk out of the woods onto a cliff top to be confronted by a sheer face of red-brown sandstone. The group clambered down an overgrown bank to reach the floor of the quarry and, after fighting our way through head-high ferns, we reached the face.



**View of the Sandy Warren Quarry**

Jill showed us many interesting features within the cliff. It was possible to distinguish between planar and cross-stratified bedding from about 15 metres away. It was easy to make out hard and soft bedding planes due to the amount of cementation and the permeability of the sandstone. The group was encouraged to use hand lenses on specimens of the Lower Greensand. The more adventurous members of the group climbed up to the face and retrieved fresh samples. A brief description of the sandstones and the environment in which they were laid down is given in Box 1.

The group moved further along the face to exposures giving a 90° plane on the cross-stratified beds. This enabled Jill to show members how to use a compass-

clinometer (the geologists' friend!) to read the dip and direction of dip. The beds measured gave a 20° dip to the NE and a 20° dip to the S.

## Box 1: A Brief Description of the Lower Greensand and its Environment.

Lower Greensand sandstone was laid down in a marine environment during the Cretaceous ~110Ma ago. The specimen that was sampled on the field trip had rounded, glassy, shiny quartz granules and matrix. The colour of the rock is due to iron oxide cementation that was a later post-depositional addition. The grains in the matrix are medium in size and well sorted. All of this evidence points to a marine environment with gentle currents.

The whole of the Lower Greensand formation is widespread across Southern England from the Isle of Wight to Norfolk. It is a marine deposit with dunes and sand bars indicating a shallow sea deepening to a wider ocean. This ocean is known as the Bedfordshire Straits, which was an extension of the Southern Ocean and linked to a northern ocean following tectonic movement from the Wash south westwards.

An observation made by Jill was; there are no latter stratigraphic units above the Lower Greensand at this location. There is no Gault Clay, no Chalk etc, not even Ice Age deposits. Therefore, the only conclusion is a lot of erosion.

Just as we were leaving the location, a member of the group found a very large, very rounded pebble. Jill got extremely excited by this and pronounced that maybe there were Ice Age deposits after all!



**Jill with an Ice Age Pebble**

Following a very pleasant lunch (well, mine was alright considering I'd left mine at home!), we drove the short distance to the Sandy Heath Quarry, owned by Lafarge. Nick Renwick gave us a brief history of the quarrying so far and how the RSPB are involved in the landscaping and management of the site once quarrying is completed.

Being a new quarry with fresh faces, it was much easier to see the bedding and cross-stratification. Walking down to the main face of the quarry an exposure along the road showed bedding, inclined strata, undulating beds and what looked to be bioturbation.

The group reached the main quarry face and Jill helped members to look at the sands with hand lenses. It showed that the sands were finer than at the previous location and not as well cemented, some grains were coated in goethite, a rare iron mineral. There was a lot

of evidence for iron oxide but it was a post-depositional occurrence. The iron sometimes follows the strata but this can be misleading. A possible cause for the iron settling where it does could be due to changes in water table levels. The presence of the iron is evidence for land being relatively close by and iron-rich minerals being washed over the sands and permeating out.

Jill told us another geologists' trick. This time for determining between silt and clay – you eat it! Not literally of course, but you grind it between your teeth and if it crunches it's silt and if it goes like toothpaste (!) it's clay. In some of these sands there are impermeable clay horizons along which the iron has settled. There are some preserved ripple layers that have clay drapes over them. Malcolm Oliver showed us, with a modern clay draped ripple, how this may have occurred. The clay horizons indicate that the currents had stopped, perhaps prior to turning.

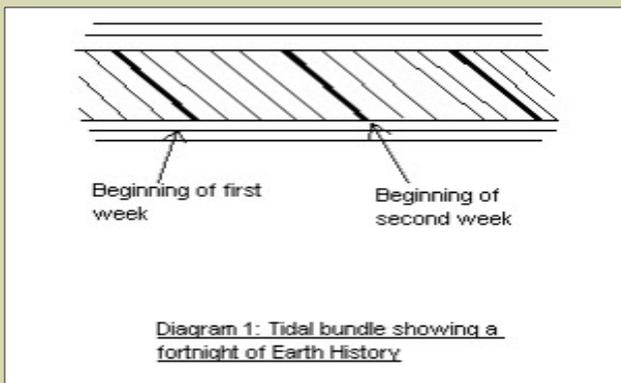


**Looking for fossils at Sandy Heath Quarry**

The group spent some time looking for fossils. A bed of trace fossils (old pooh!) was found, very like worm casts. The casts were probably left by worm-like animals called Ophiomorpha. Other fossils found were bivalves and coprolites (phosphate replacement of the inside of ammonite shells and faeces (pooh again!)).

At the end of the main face, there was a layer that showed the scouring of a channel bed with undulating strata coated in iron-encrusted clay drapes.

The group moved to the end of the quarry, past a huge waste pile of ironstone that had been dumped by the quarrymen. At this end of the quarry, Jill pointed out a fortnight in geological history – a cross-stratified tidal bundle (Diagram 1). It is amazing that we can tell two weeks in Earth History but not how long it takes to lay down a formation!



## Highlights of other events held in 2007.

During Easter half term, many children (and adults) enjoyed a Fossil Fun Activity Day at Dunstable Downs' newly opened Chilterns Gateway Centre.

Amongst the activities were fossil cast making, dinosaur puppets, dinosaur masks and lots of colouring fun for the little ones. Nearly all the children went away with their very own Greensand rock pet.



**Chris Andrew from the Bedford Museum was on hand to answer everyone's fossil questions and identify any fossils that people brought along.**

On Saturday 12<sup>th</sup> May 2007, B&LGG and Leighton Buzzard Art Society jointly ran an Art Workshop at the notorious Old St Mary's Church in Clophill. The ruined church was famous in the 1960's for black occult gatherings and other dubious practices.

The day was overcast, but stayed dry for the afternoon, when Bob Harris of the Art Society gave instructions on drawing and watercolour techniques. Bev Fowlston gave a brief talk on the building stones that make up the beautiful church. The building stones are all local (apart from the odd red granite one!). Some are from the Greensand that is famous throughout Bedfordshire and the world; other rocks include the Totternhoe Stone, also seen in Woburn Abbey, and the oolitic limestone from the north of the County.



**Old St Mary's Church - Artists in action!**

## RIGS Review

With the appointment of our new RIGS Advisor, Martin Whiteley, a review of all sites is currently underway. Some of the sites are open to the public. These include Bromham Bridge, Old St Mary's Church, Ivel Walk at Biggleswade and Stockgrove Country Park amongst others. For a full list of sites and accessibility then please contact any of the committee members for details.

## Mobile Displays

The Group's mobile poster display has been making the rounds of the Bedfordshire Libraries. This is in an effort to publicise the important work that the Group is trying to do: that is to protect and educate about the rare exposures of Bedfordshire's geology and geomorphology.



## Looking forward to 2007/08

We have some interesting projects in the planning stages: Preservation of a chalk exposure at Kensworth quarry and clearance of a Lower Greensand Victorian quarry face at Potton Scout Hut both with disabled access. More interpretation boards are to be designed and erected at Sundon Hills and Dunstable Downs.

**If you are interested in helping with these projects then let us know!**

## A bit of fun!

### Try your hand at this geological wordsearch.

G B E O H N R E T T O T  
S E R A B N I A R G K T  
T L I A S P V D Y L H O  
P E D L C R I N O I D C  
H M G F C H A L K M P I  
T N E P I R I R M E L S  
E I Q L I S S O F S T S  
E T W R S E H C P T U A  
T E R T I A R Y H O K R  
M F Y Y R R A U Q N D U  
N U H X J T O J Z E M J  
L I C H T H Y O S A U R

Belemnite  
Brachiopod  
Chalk  
Crinoid  
Earth  
Era  
Fish  
Fossil  
Grain  
Ichthyosaur  
Jurassic  
Lias  
Limestone  
Quarry  
Ridge  
Teeth  
Tertiary  
Totternhoe

### Committee Members 2006 - 07

Chairperson	Malcolm Oliver
Secretary & Events Organiser	Bev Fowlston
Treasurer	Dick Denton
Membership Secretary	Henrietta Flynn
RIGS Manager	Dr Jill Evers
RIGS Advisor	Dr Martin Whiteley
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**Don't forget to look at the website  
[www.bedsrigs.org.uk](http://www.bedsrigs.org.uk)**