

## FGS field trip to Derbyshire July 1-4, 2011

*"I've been everywhere man ... never paid my fare man ... I've been everywhere"*

The first time I went on one's of Graham's field trips, I was really nervous, shy and worried; what were the people going to be like, would they be nice to me, would I have any fun. I gradually settled in and became more used to all these strangers, and then I relaxed sufficiently to go a bit further from Graham and do a little exploring of my own – great, I had found what I had been looking for - a smell - a rabbit - and off I went - hooray. I caught it – wow; won't Susan be pleased and won't Graham be proud of me.! Actually - no. Graham was a bit cross and took away my lovely prize away. Since then they keep an eye on me to stop me escaping and having fun.

Take this last field trip. We arrive at Lodge House Opencast Coal Mine (Figure 1) where they all gather and chatter (*boring!*). We are going to see the clearly developed cyclothem of the Westphalian Coal Measures, just below the Triassic New Red Sandstones which were exposed in the road cuttings just to the east of the mine. The mine boss man says we will all be able to go down into the pit and into the works area (*exciting*) but no, everyone else goes and I am left behind. Don't worry says the man - those left up here will be entertained to a film explaining all about open cast coal mining – *yawn!*

Sue had left me with Chris (our leader's wife) while she went down to the opencast site - allegedly to take me for a walk. As I didn't want to go for a walk, I decided to stay with the rest of the group and wait for Sue to come back. I then went into the presentation (for the 2nd time), this time with Chris, and lay very quietly on the floor by her side.

I didn't mind the bit about the planning difficulties (the public thought opencast mining would increase drastically when deep pit mining stopped, but it didn't - it continued just as before); nor the bit about how 14 tonnes of rock is removed to obtain 1 tonne of coal in this pit; nor even the bit about the thick coal seam (1.4m thick) which is the mainstay of the mine financially (all the others being <0.5 m thick); nor the bit about the care they take to protect the local communities and to help the environment (that is the bit I like, that is the bit that smells good); but the bit I couldn't take was the statistics - a repeat was too much for any dog, even me, a long-suffering "geodog".

I dived under the conference tables in an attempt to escape. My plan was foiled; Chris was still attached to me, but she soon gave way (she had no choice really, it was a case of follow willingly or be dragged), whilst the geologist explained the difficulties in calculating exactly how much coal will be in place in any future acreage due to the activities of ancient coal workings, invisible from the surface. I found Sue and Graham - thank goodness they had got back. I hadn't heard them speaking, but I did hear Sue's familiar footsteps (and of course smelt her lovely scent); she was in the site office returning her hard hat!



Figure 1: The large 'digger' at the back removes the bulk of the spoil, the small digger in front scrapes off the last layer exposing the coal bed for mining



Figure 2: Carboniferous limestone quarry within the Stone Centre, typical large scale bedding of basal micrites

*"Derbyshire's biggest export is Derbyshire"* – this comment (which summed up the trip) was made at the coal mine and is neatly demonstrated by the photos of its many quarries.

The next day was great - we went to the Stone Centre at Worksworth. The whole area was one large quarry (Figures 2 and 9) which had been made into a SSSI because it had so many different types of limestone - particularly the fossiliferous reefs with backreef, forereef and channel areas. These were the lagoonal limestones of the Lower Carboniferous Dinantian. I distinctly heard the man say he wanted to get rid of all the weeds which were

obliterating the geology - great I thought I'll dig you a few holes - but no - someone spotted me and that was the end of that.

The FGS jolly-gists had to stay 5m from the quarry faces but I managed to sneak behind the wire fence to check the quality of the limestone! I was off the lead most of the time, right through the grounds of the quarry to an area of stone walls There our guide explained how different types of walls are made depending on the local stone - rounded granite boulders, flat lying angular limestone blocks, rounded capstones (if the stone could be shaped), long through stones to give the walls stability (these also acted as stiles) and gaps through the walls just large enough for a pair of human legs to get through (and me - so through I nipped but was rapidly called back). The whole area had been one vast lagoon above a basement high with patch reefs around the edge. Lead mineral veins were common in this area, but we didn't see any there, but we did find a steam train taking little children along to see some fossils. That afternoon I snoozed whilst they visited the Mining Museum and went underground along a mine at Matlock Bath. As far as I could see everyone was eating ice cream - what about me?



Figure 3: Landslip at Mam Tor.



Figure 4: Swallow hole at Windy Knoll



Figure 5: Odin Mine



Figure 6: Thin galena band in gangue minerals



Figure 7: Fractured fold in limestones, Manifold valley



Figure 8: Crinoidal limestone, typical of shallow water back reef areas where the depositional environment is high energy, the lime mud is removed and the crinoid stems are left broken and sometimes aligned by strong currents. Stone Centre, Worksworth



Figure 9: A reef in limestones (Stone Centre, Worksworth), one of many reefs in the Carboniferous Limestones of Derbyshire. The reefs are patch reefs placed at intervals along the edges of syndepositional horsts which are separated by deeper basal areas

It can get very boring - they all witter on and on - and get excited over rocks! It wasn't all bad, though, as I had several sausages on Sunday (left over from various breakfasts) and we were off to Manifold Valley (Figure 7) and Ecton Mine. Here they all got out and picked up bits and pieces (yawn!!), discussed how these small angular bits of limestone came to be resting in lumps just off the road and coating the hillside. Was it freeze-thaw action of thin bedded limestones? Were they tailings from the adjacent Ecton Mine or crushed limestone from making the road along the hillside above? They never did decide - typical - too many different ideas!

Then would you believe it, these FGS folk scrabbled through the chippings at the side of the road - very unseemly for humans; I noticed the passing motorists giving them very strange looks. But they seemed pleased enough having found galena, sphalerite, malachite, and someone even found a trilobite head! Nothing edible, but apparently a good haul of goodies! We had a nice walk further along Manifold Valley to look at more reefs and admire the strength of these Carboniferous limestones. Some children and other dogs were having fun, but frankly I found it a bit boring - no rabbits to chase and no way of escaping.

That afternoon, we had a great time. In Millersdale we started off looking at classic thick bedded Dinantian Limestone (yawn) but I had to stay on the lead while we walked up the valley road. Our leader was a very effusive man and very chatty. He explained how important surface water in any limestone (karst) area is for human and animal populations (I agreed, I was hot and thirsty). He showed us a perched water table, explained how this river was flowing in its valley (all the other river valleys were dry). As this river has cut down to the deepest level and is therefore the 'base' for all the water tables in the area, with which it connects, it is the only river which flows at the surface.

He took us up the valley to an outcrop of basalt (Figure 10), a dark iron rich rock full of vesicles (small gas bubbles which were void). Then the humans went across the river and up to an old railway track along which they all walked back to the mill at the end of the valley. They arrived back discussing the exposure of a lava - apparently a basalt had flowed out onto the surface of the limestone in the shallow seas of the Dinantian, and had extruded through its cooling crust forming pillows - the humans were so excited but not as much as me because (and this is the best bit) I had been in the river several times to cool off - no-one seemed interested, but I had loved it.



Figure 10: Distinct eroded junction between a vesicular basalt interbedded within limestones. The top of the basalt had been exposed and weathered to a ferruginous clay. Later, along the disused railway track in Millersdale, FGS members saw an outcrop showing the terminal lobe of another interbedded basalt (with small pillows from extrusion into seawater) which was gradually overstepped by successive overlapping limestone beds

The last morning, we went to Odin Mine (Figure 5) - an old lead mine, Mam Tor (Figure 3) where the land had slid downhill forming a large and still moving landslip, then to Windy Knoll, through Whinnats Pass to Treak Cliff Mine and at last a café - hooray - that meant drink and food, a *geodog's* favourite pastime when not chasing rabbits.

They say they have fun on these trips - I don't know how - I have done all the trips and I can tell you there's very little fun - there's no swimming, chasing, escaping and definitely no rolling in cow and badger poo!

PS You will be pleased to know I sent a card to Chris to thank her and David for giving me, my mum and dad and all the 'funny Farnham people' a good time over the weekend.

*Jack (with notes and photos from the Jolly-Gists)*



### **Addendum by Janet Phillips**

**Jack the Hound** - It's been good to see the conversion of the 'Cowering Cur' to the 'Intrepid Hunting Hound'. While sharing a walk around the Hartingdon YHA garden, Jack and I met a cat. The cat took off, Jack took off and I nearly took off. Jack's hackles were up and I thought he was shaking as he did when he first emerged from the Leicester Dog Refuge. However, he assured me that he was only panting, the better to chase the cat. I believed him. He demanded an extra two circuits to dissipate the adrenalin that a hound would naturally generate under such exciting circumstances. It was good to see him restored to normal dogginess.