

FIELD TRIP
to the
SOUTHERN END
of the
MALVERN HILLS
Led by Dave Owen of the
Gloucestershire Geology
Trust on Saturday 19th
September 2009

Charles Hiscock

It was a perfect day for a field trip anywhere but the warm, slightly hazy autumn sunshine at the southern end of the Malvern Hills was ideal. We were met by Dave Owen of the Gloucestershire Geology Trust at the interpretation board where the footpath led from the road up the steep side of Chase End Hill (SO 756349).

Dave outlined the plan for the day and we then walked up to our first stop at Chase End Hill Quarry where the face exposes Malvernian Complex (670 Ma) diorite, tonalite and granites which have been metamorphosed into gneisses and schists. A big thrust plane caused the metamorphism, probably in the early Cambrian followed by pegmatite intrusion very similar in composition to the granite. However, these cooled much quicker and are much finer grained and, later still, were affected by folding in the Variscan Orogeny (*Photos 1 & 2*). The main mass of the Malvern Hills is a granite batholith but the Chase End Hill area

displays much more metamorphism and banding of the schists and gneisses.

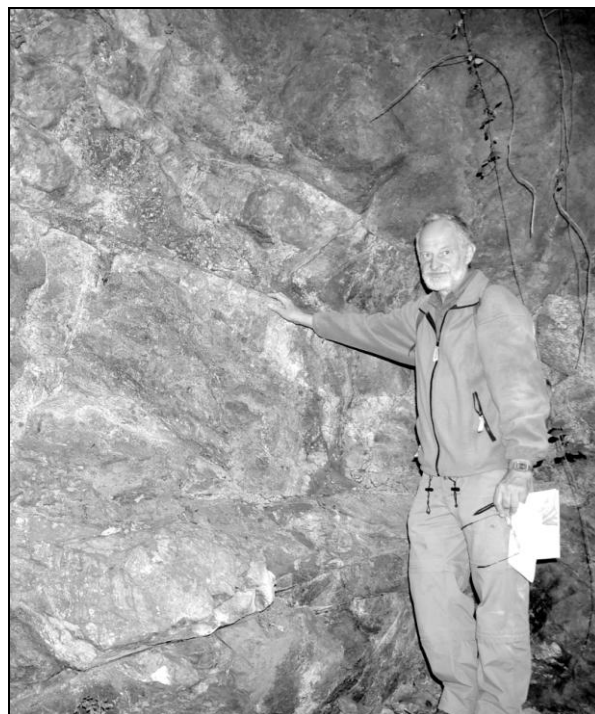


Photo 1: Chase End Quarry: two thrust planes



Photo 2: Chase End Quarry: pegmatite intrusion

From the quarry we walked up the steep hill to the summit of Chase End Hill, finding it very warm in the autumn sunlight. In spite of the haziness, to the east, Dave pointed out low hills of the Arden Sandstone (part of the Mercia Mudstone Group) where a basin had filled with sediment to the depth of 2km east of the East Malvern Fault. To the north the Malvern Hills could be seen rising up and forming one of the largest outcrops of Precambrian basement rocks in southern Britain. The western view took in the Silurian and faulted Permo-Triassic rocks and slightly

to the North-West the Old Red Sandstone of the Herefordshire plain stretched across into Wales. Looking south, we could see the small area of Carboniferous Coal Measures around Newent and then round to the south-east, the Cotswolds and the outlier of Bredon Hill. In the foreground lies an area of glacio-fluvial gravels and sands characterised by rounded mounds. To the west, in the immediate foreground, a field showed two roughly parallel lighter coloured bands of grass which mark the position of two dolerite bands close to the surface. (*Photo 3*) We were to see these at outcrops later.



Photo 3: Dolerite intrusions shown in field

Having spent some time enjoying the views and relating them to the underlying geology, we descended the very steep slope down the north-west slope of the hill to Whiteleaved Oak, the hamlet nestling in the narrow valley between Chase End Hill and Hollybush Hill. We walked some distance to the field with the lighter bands of grass we had seen from the hilltop but, although the dolerite bands were not exposed, a sheep scrape in the Whiteleaved Oak Shales (*Photo 4*) on the north edge of the field marked the contact of the volcanic intrusion with the Cambrian shales. Supposedly fossiliferous particularly with trilobites, we briefly turned over the shale fragments but no fossils came to light. The pale colour of the shales is put down to the baking caused by the dolerite intrusions.

We enquired as to how the hamlet got its name of Whiteleaved Oak and it transpires that, in the 18th century, a large oak displayed 'white' leaves and was a tourist attraction for a time – until the landowner became fed up with so many people coming to view the phenomenon and cut it down! In these more enlightened times, we now know it to be caused by a white fungal rust. Indeed, we saw leaves on oak trees around the area which had white fungal rust on the leaves, no doubt caused by the wet summer and the rather dank nature of the valley. In the hamlet, the notice board showed some unusual and amusing postings with one concerned at the erosion of Chase End Hill and the action to be taken by walkers. Another recorded the finding of an atomic accelerator!!

The White Leaved Oak Residence Consortium

The White Leaved Oak Residence Consortium

It is a report coming from an informed resident it has been established that the chase end hill is 4.5cm less in height than it was in 1956. This means that if a further loss of 0.54cm occurs then the European Courts will downgrade the Malvern Hills from Hills to Uplands.

We as a community cannot stand by and let this happen. It is up to you as visitors to do your bit.

Please from today would you insure that if you are walking to the summit, please fill your pockets with soil from the lower slopes and deposit at the summit. That way you will be preserving the landscape for future generations.

Director

In a recent survey by an informed resident it has been established that the chase end hill is 4.5cm less in height than it was in 1956. This means that if a further loss of 0.54cm occurs then the European courts will downgrade the Malvern Hills from Hills to Uplands.

We as a community cannot stand by and let this happen. It is up to you as visitors to do your bit.

Please from today would you insure that if you are walking to the summit, please fill your pockets with soil from the lower slopes and deposit at the summit. That way you will be preserving the landscape for future generations.

Director

Found on the hills

One 2 MeV Linear Van de Graff atomic particle accelerator, in blue with one wheel missing.

Plate on side says it was made in Welland.

In full working order (seems to be still running)

Would suit the military.

Presently running Brian's Central Heating.

Phone: Whitehall 1212

Found on the Hills

One 2 MeV linear Van de Graff atomic particle accelerator, in blue with one wheel missing

Plate on side says it was made in Welland

In full working order. (seems to be still running)

Would suit the military.

Presently running Brian's Central Heating

Phone : Whitehall 1212



Photo 4: Whiteleaved Oak shales

A short walk from Whiteleaved Oak took us down into a valley to a small quarry at Coldhill Cottage. We struggled through waist-high undergrowth, over a fence and a tree or two to arrive at the small quarry hidden under a large yew tree. Here, a late Ordovician dolerite sill has intruded into the early Ordovician Bronsil Shales. In fact, the sill was becoming attenuated as it pushed through the shales such that it lenses out after only a short distance in the quarry face.

Photos 5, 6 and 7: Coldhill Cottage Quarry dolerite sill



Photo 6



Photo 6

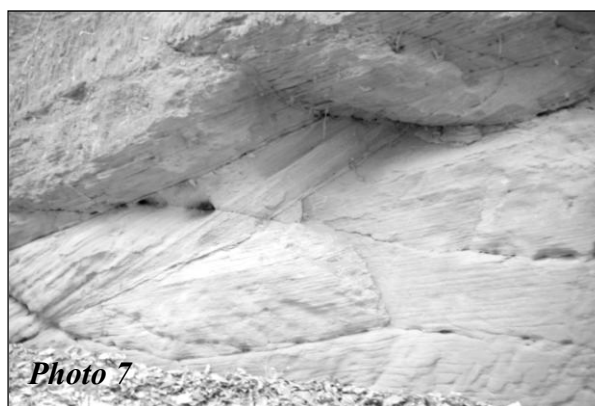


Photo 7

Shortly afterwards, we strolled up a gentle slope with a wood in front and behind us and sat on the grass for lunch. Apart from the occasional bird call and the scrunch of crisps, it was silent – an unusual oasis in our increasingly noisy world.

Once fed and watered, Dave then led us up the steep path through the wood and some of us realised that we had lunched too well and it was weighing us down and making the slope very hard work! Eventually, we topped out on Howler Heath which was open fields. The wood marked the unconformity between the Ordovician Bronsil Shales and the early Silurian, Upper Llandovery, May Hill Sandstone. Two facies are found in this formation – the lower Huntley Hill Formation composed of pink to purple sandstones, grits and conglomerate and the higher beds of the Yarleton Sandstone consisting of purple to green mudstones with fossiliferous horizons.

A specimen of the coarser Huntley Hill Formation was found on the hillside and the sudden change from sandstone to conglomerate was well displayed in the blocks collected (*Photo 8*).



Photo 8: Huntley Hill Formation

As we descended the hill, a piece of fossiliferous Yarleton Beds was found with large brachiopods (?*Costistricklandia*) seen in the rottenstone (decalcified) rock (*Photo 9*). The Yarleton Beds represent a marine incursion into conditions that had been terrestrial from the end of the Ordovician while the Huntley Hill Sandstone was a flash flood event producing gravels and coarse sands.

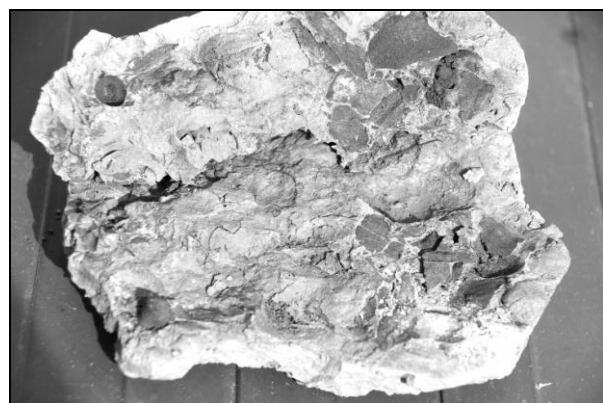


Photo 9: Fossils in the Yarleton Formation

Leaving Howler Heath we descended by a green lane until we reached the narrow Bromsberrow Lane. This led us down between walls of the coarse Haffield Breccia. In leaving the hill, we had passed through an unconformity marking a time lapse of about

150 my, from the lower Silurian to the middle Permian. On both sides of the lane, hard red breccia with quartz pebbles provided an unforgiving surface for those passers-by straying from the centre of the lane. The breccia is probably a scree and alluvial fan resulting from the erosion of the Malvern Complex washed out by flash flooding. Further down the lane, we moved into the Bridgnorth Sandstone Formation which is cross-bedded aeolian sandstone which vividly displays the cross-bedding in the poorly cemented sandstone cliffs along the lane (*Photo 10*). These enabled us to determine the prevailing wind direction at the time of deposition during the late Permian (255 my). This locality was the last on our tour of the southern Malverns so from here, we walked back to the cars across the fields.



We thanked Dave Owen for giving his time to lead us on a varied day, both scenically and geologically in an area away from the busy parts of the Malvern Hills.

Photos: Charles Hiscock

*Cause of mass
extinction - - 'the Earth
was hit by a giant
ammonite'*

