EXCURSION

The Wrekin, Shropshire

Leader: Susan Beale

22nd September 1996

This very well-attended field trip to a classic geological locality was fortunate to have, as leader, Susan Beale, co-author with Peter Toghill of G.A. guide No. 48; '*The Ercall Quarries*'. The EMGS party benefited considerably from Susan's expertise and local knowledge of the sections, and the geology of the localities was explained in a most articulate and interesting manner. The weather was much kinder than during a previous Society field trip to the Shropshire region, ie. Wenlock Edge in June 1995, when flippers and wetsuits would not have gone amiss.

After parking in the Forest Glen car park (SJ 639 093), which itself has much to offer in the way of interesting geology, including a dolerite dyke and andesitic tuffs, the morning was spent in the Ercall quarry complex. There, within a relatively small area, a wide range of geological features were studied. The complex consists of five quarries, of which numbers one to three, on the northern side of the access road, were visited during the morning.

Quarry No. 1 exposes Uriconian volcanics, and the party spent some time studying the rhyolitic lavas, pyroclastic rocks and a basaltic dyke, parts of which could be seen through the vegetation. *Quarry No. 2* exposes an excellent section of the Ercall Granophyre and its contact with the Wrekin Quartzite. There is another fine section of the Wrekin Quartzite on the north-west side of the Quarry, at the top of which is what is believed to be an unconformity between the Pre-Cambrian and Cambrian. A slickensided fault plane was observed on the eastern side of the quarry, close to the entrance; the direction of movement of the fault could be clearly determined by running one's fingers along the exposed fault plane, the 'smoothest' direction indicating the direction of movement. *Quarry No. 3* also displays a fine exposure of the contact between the Pre-Cambrian Ercall Granophyre and the Wrekin Quartzite. Ripple-marked bedding planes occur within the Quartzite although, unfortunately, the exposure had been damaged by so-called graffiti 'artists'.

Following a pub lunch, the afternoon's first stop was Maddock's Hill Quarry, to observe the Shineton Shales and the remains of an intrusion of camptonite, most of which has been removed by quarrying. The contact between the camptonite and the Shineton Shales, which have been baked hard adjacent to the intrusion, was seen on both sides of the quarry. The Shineton Shales dip almost vertically and contain specimens of *Dictyonema flabelliforme*, a dendroid graptolite. A couple of specimens, of which one was a particularly fine example, were found by members of the party. The final visit of the day was to Lyth Hill to examine the Pre-Cambrian conglomerates of the Bayston Group, notably including the Stanbatch Conglomerate which is well exposed at the top of the Hill. As a bonus, the view from the hilltop was breathtaking, even though visibility was not at its best, and on a clearer day it would have been fantastic.

In conclusion, the day was a great success and I am certain that all who took part enjoyed a most pleasant and instructive field excursion. This was due in no small measure to the leader Susan Beale to whom, on behalf of all who attended, I say thank you very much.

Anyone wishing to visit the quarries at Ercall or Maddock's Hill should seek permission from:

Ercall Quarries: Lord Forester, Estate office, Willey Park, Broseley, Telford, Shropshire TF12 5JJ.

Maddock's Hill Quarry: Johnson Brothers, Leaton Quarry, Leaton, Wellington, Telford, Shropshire.

Hammering is not permitted at these exposures. In addition, it would be advantageous to obtain a copy of The Geologists' Association Guide No. 48, "Ercall Quarries", by Peter Toghill and Susan Beale, published by The Geologists Association, Burlington House, Piccadilly, London W1V 0JU.

L. R. Hall

EXCURSION

The Lower Cretaceous of Speeton, Yorkshire

Leader: Dr Allistair Lomax

19th May 1996

Twenty four members travelled with Dr Lomax by coach to the Reighton Sands caravan park and walked down to the beach on a bright and sunny day. *[It should be noted that this cliff section has frequent cliff falls, climbing on the unstable cliffs can be hazardous, hard hats should be worn and care must be taken not to get caught by the incoming tide.]* Dr Lomax provided members with some excellent notes and these have been used in the preparation of this report.

Speeton has the finest continuously-exposed section of Lower Cretaceous strata in Europe and is designated as the type locality (stratotype) for several individual parts of that succession. The strata seen at Speeton range from Kimmeridgian (Late Jurassic) to Barremian (Early Cretaceous) in age and are assigned to the Kimmeridge Clay and Speeton Clay formations. The section studied was located between Middle Cliff and Speeton Beck, and is overlain by Boulder Clay deposited by the last (Devensian) glaciation.

The Speeton Clay Formation was formally subdivided by G. W. Lamplugh in 1889, unusually starting from A at the top to D at the base, rather than the usual convention in stratigraphy which is to number beds from the base upwards. The subdivisions were based on belemnite faunas; other workers have added the E and F units and further subdivided Lamplugh's beds.

A beds — *Neohibolites*
B beds — *Praeoxyteuthis, Aulacoteuthis* and *Oxyteuthis*
C beds — *Hibolites*
D beds — *Acroteuthis*
E bed — The Coprolite Bed
F beds — Kimmeridge Clay

The excursion itself consisted of a walk eastwards (up-sequence) along the beach, from the F beds to the A beds and the Red Chalk. Each of the subdivisions was located and described, and fossils were collected from many horizons. An abundance of fresh material is available due to the frequent cliff falls and erosion by the sea. Keen collectors found examples of most of the principal fossils described by Dr Lomax, although the fragile state of preservation of the fossils makes conservation for a collection very difficult.

Kimmeridge Clay Formation (F beds)

This dark grey organic-rich clay contains calcium carbonate nodules, often nucleated around one or more fossils. These strata have been substantially folded due to pressure from the overlying North Sea glacier during the last ice age.

The Coprolite Bed (E bed)

This rests unconformably on the Kimmeridge Clay and is made up of internal casts of ammonites and bivalves coated with phosphate and the winnowed remains of fossils. It represents a long break in deposition spanning several million years at the beginning of the Cretaceous.

The D beds

These contain thin beds of yellow bentonite, representing the breakdown products of thin layers of pyroclastic volcanic material. Numerous ammonites and large bivalves were seen and collected.

The C beds

These beds are divided into eleven subdivisions and are particularly highly fossiliferous, with the ammonites *Endemoceras regale, Aegocrioceras, Paracrioceras* and *Isocrioceras*. Also found were fossil wood and a fossil prawn, *Meyeria ornata*.

The B beds

These include the Cementstones, consisting of up to seven distinct layers of large calcareous nodules, often enclosing huge ammonites. The nodules were mined in the last century for use in cement-making. Below the Cementstones, the clays contain pyrite-rich laminae and, compared to the rest of the Speeton Clay, are poorly fossiliferous. This was probably due to increased water depth and the absence of dissolved oxygen in the waters close to the sea bed at the time of deposition.

The A beds

These were poorly exposed due to slipped Boulder Clay from above masking the cliff face. The A beds merge upwards into the Red Chalk, sections of which were heavily landslipped.

Dr Lomax explained how the comparisons made between the Speeton faunas and those of comparable age in North Germany and Russia had enabled early Cretaceous faunal migration routes and oceanographic changes to be interpreted.

The higher beds of the Speeton Clay and the Red Chalk were seen to contain many interesting and puzzling structural distortions. The possibility of land-slipping and other causes for these was discussed. The subsequent lecture to the Society by Dr Dave Roberts on 2nd November 1996 provided a further insight into the formation of these structures by a range of glacio-tectonic processes.

Soon after reaching the A beds the incoming tide persuaded most members to make their way back along the beach to the coach, which was conveniently parked by a tea shop. The interesting flora was studied along the path back from the beach. The really dedicated fossil hunters returned a little later along a rather muddier route, to reach the coach on time but forfeiting their tea!

The leader was thanked for a very interesting and well-structured excursion.

Inga and Alan Filmer