

PERMO - TRIASSIC ROCKS OF THE NOTTINGHAM AREA

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In order that this excursion would differ somewhat from that of September 1964 (Taylor 1964) the opportunity was taken to demonstrate to Members of the Society, recent research work undertaken by the excursion leaders in the Trowell and Bramcote area and published in this issue of the journal, (Taylor and Houldsworth 1972 a, b). A full bus left Nottingham and travelled direct to Kimberley, where the lowest beds of the Permo - Triassic sequence are exposed. The excursion then visited localities in an ascending stratigraphical order up to the Mapperley Plains Skerry in the Keuper Marl. The route and the description of the localities, follow this ascending sequence.

The Kimberley Railway Cutting (SK 503453). Since the 1964 visit, an extensive landslip had taken place, exposing rocks on the north side of the cutting. The following sequence was seen:

Magnesian Limestones	2.8 metres
Dolomitic Siltstones	5.0 metres
Basal Breccia	0.8 to 2.0 metres
- - - - - unconformity - - - - -	
shales of the Coal Measures	

Although the age of the Coal Measures rocks could not be proved, the shales immediately underneath the breccia are coloured red, green and grey. The breccia contained angular fragments of many Coal Measures rocks and good specimens were collected. The Dolomitic Siltstones were full of plant fragments, none of them well preserved, though their carbonaceous remains covered the bedding planes. These rocks pass upwards into the Magnesian Limestone. Water was seeping out of the base of the breccia and the waterlogged slip material gave ample evidence of the instability of the side of the cutting. The water collecting points, constructed by the Kimberley Brewery for their water supply, were seen further to the east along the cutting.

From Kimberley, Members travelled by bus to Bulwell.

Wilkinson's Quarry, Bulwell (SK 532455). This quarry is a few metres south of a quarry visited in 1964, which is now closed and filled with rubbish. The coarse dolomite, typical of the Bulwell Magnesian Limestone is well displayed. The beds of dolomite are separated by thin green clay seams. Cross-bedded layers can be seen on the weathered quarry walls. Two bivalve beds, only the moulds being preserved, were located, one close to the top of the quarry and a second, more persistent bed midway in the quarry face. Dolomite crystals, in geodes were found by some Members.

An attempt to see the mineralised top bed of the Magnesian Limestone and the overlying marls at Sankey's Pit (SK 433450) was thwarted by locked gates, irate property owners and large dogs.

Stonepit Plantation Quarry, Strelley (SK 513422). The quarry at this location is at the southern end of the Magnesian Limestone outcrop and exhibits the littoral facies of the formation. The dolomite is coarse grained and contains a large amount of sand and small quartz pebbles. Some of the layers resemble a shingle beach. The beds are cross-laminated. This quarry is larger, less overgrown and shows the littoral facies of the Magnesian Limestone, much better, than the quarry near Strelley Church, visited in 1964.

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Swancar Quarry, Trowell (SK 491393). South of the Nottingham - Ilkeston road, there is a marked facies change and the Magnesian Limestone Formation is not recognised. Instead, the Mottled Sandstone Formation, normally seen above the Magnesian Limestone in the Bulwell area, now rests directly on Coal Measures. The unconformity, seen in Swancar Quarry is described in detail, elsewhere in this issue (p.165).

From the quarry, the party crossed the canal and walked along the tow-path for a short distance to the east. On the way, the position of the Nottingham City Water Department Pipe-Line (Derwent Abstraction Scheme) was pointed out and also the position of the Clifton Fault, as revised after the hard labour carried out by certain Members of the Society, excavating trial pits to prove its location. Crossing the railway bridge a short visit was paid to another old quarry (SK 493391), containing sandstones with both dolomite and barite cement. Cross-bedded units and ripple-marks can be seen here (Taylor and Houldsworth 1972 Plate 12 fig.1). The leaders, then led the party up the west face of Stapleford Hill.

Stapleford Hill (SK 498387). A pause was made, close to the summit, to see the iron rich sandstones exposed a few metres below the trig. point. On the top, the well cemented pebbly sandstones contain both calcite and barite as cementing minerals and are extremely hard. The hill makes an excellent view point and details of the Coal Measures rocks to the west, Permian rocks to the north, in the area already visited, and Triassic rocks to the east and south were pointed out. Members of the excursion then walked down to the Hemlock Stone.

The Hemlock Stone (SK 499386). This isolated stack (cover of this issue) is made up of sandstones with an irregular barite cement. Weathering has removed the softer layers emphasising the cross-bedded characteristics. Flaggy sandstones, outside the fenced-off stack were seen to contain barite crystals. The name - Hemlock Stone - indicates one possible origin of the stack and also its use, but glacial, arid and marine erosion have been postulated for its origin. It is almost certainly an ancient quarry remnant, too hard for the equipment of the time, and left, accidentally or otherwise, for nature to erode. This was the opinion of Stukely (see Shipman 1884).

Bramcote Sand Quarry (SK 504387). This large quarry on the east side of Coventry Lane had already been seen from the top of Stapleford Hill. The sequence of Mottled Sandstones and Pebble Beds were to be examined in the quarry so the party had not been given much time to examine these lithologies so far on the excursion. Details of the quarry are given elsewhere in this issue (Taylor and Houldsworth 1972 a, b). Members examined the lithology, the junction of the formations, the occurrence of barite and the faulting. Those who were a bit sceptical about the occurrence of barite up to this point on the excursion, were impressed by the large specimens of barite cemented sandstones at the top of the quarry. Despite all offers, copper minerals either in this quarry or on Stapleford Hill remained illusive.

Nottingham Castle Rock (SK 569394). The stop below Nottingham Castle Museum was brief, merely to point out the buff coloured Pebble Beds, typical of much of the City of Nottingham, in contrast to the red sandstones seen at the previous locality, and to note the similarity of structures.

Colwick Road, Nottingham (SK 592397). At one time, a railway bridge spanned Colwick Road at this point and the original excavations were re-exposed when the bridge was demolished in 1965. The top bed of the Pebble Beds is exposed here, said to be the lowest bed in the cutting below a thick red marl, but this layer is followed by sandstones of similar grain size and with rounded pebbles. There is no obvious erosion surface, or a layer, well cemented with calcite, which would indicate the junction between the Pebble Beds below and the Keuper Basement Beds above. Starting at the floor of the cutting, there is a thick bed of typical Pebble Beds, followed by a layer of red marl. Another sandstone follows with smaller but well rounded pebbles. Above, a second marl layer occurs and then thin sandstones, still coarse but with much smaller and flattened pebbles. Thin marls separate these sandstones. Higher in the sequence, the sandstones become finer grained and greenish-yellow in colour. This type of sandstone then alternates

with thin marl seams until the sandstones become micaceous, brown in colour and finer grained. These sandstones at the top of the cutting are at the base of the Waterstones Formation.

Colwick Wood (SK 601398). At this locality, the top of the Waterstones Formation forms a high cliff adjacent to the railway. The fine grained, brown, micaceous sandstones with interbedded marl were examined and a number of sedimentary structures, noted.

Gunthorpe Wier (SK 688735). A fine river cliff on the south bank of the River Trent exposes the Keuper Marls, with fibrous gypsum, above the Mapperley Plains Skerry, which is located at the foot of the cliff and in the river bed. The skerry was examined and its characteristic sedimentary structures eventually found. These include two types of ripple marks, salt pseudomorphs, and slump bedding. The coach returned to Nottingham.

#### References

- SHIPMAN, J. 1884. The Story of the Hemlock Stone. Trans. Nottingham Naturalists Society 1884 pp.11-16.
- TAYLOR, F.M. 1964. The geology of the area west of Nottingham. Mercian Geologist Vol.1 No.1, Excursion report, pp. 73 and 74.
- TAYLOR, F.M. & HOULDSWORTH, A.R.E. 1972a. An unconformity at Swancar Farm, Trowell Moor, Nottinghamshire. Mercian Geologist Vol.4 No.3. pp.165-170, 2 Plates, 2 text-figs.
- 1972b. The distribution of barite in Permo-Triassic sandstones at Bramcote, Stapleford, Trowell and Sandiacre. Mercian Geologist Vol.4. No.3. pp.171-177, 1 Plate, 1 text-fig.