

GEOLOGICAL TOUR OF THE EAST MIDLANDS

Leader: Dr. F.M. Taylor

Sunday, 3rd May 1964

About 55 people attended this second field excursion to be held by the East Midlands Geological Society. The excursion was concerned with the establishment of a general picture of the geology of the East Midlands area, rather than with details which would be filled in with later excursions. The programme was ambitious - to make a transect of the Mesozoic rocks from Nottingham to the coast at Skegness. The geology of the route was described as the coach travelled over the outcrops and selected quarries were visited.

The route can be followed by use of Ordnance Survey One-Inch maps Nos. 112, 113, 114, 104, and 105 and the $\frac{1}{4}$ inch to 1 mile Geological Survey Maps Nos. 11 and 12.

The first part of the journey followed the A.60 to Mansfield, passing through Harlow Wood. In this locality there are a number of old quarries in Bunter Pebble Beds; but the beds were in fact examined at a road side exposure on the southern boundary of Mansfield.

The underlying Permian beds were encountered north of Mansfield, and the Red Mansfield Sandstone, a red sandy dolomite, was examined in the Chesterfield Road (A.617) Quarry. The Magnesian Limestone was traversed to Mansfield Woodhouse (along B.6033). At the junction with the Mansfield - Warsop road (A.60) the Trias beds are again seen, beginning with the Mottled Sandstone, passed over quickly as the road climbs the escarpment onto the Pebble Beds.

The journey to Edwinstowe, along B.6033, passes through some of the old parts of Sherwood Forest, following the outcrop of the Bunter Pebble Beds. In order to see the Eakring Oilfield the bus made a detour via Edwinstowe (B.6034) and the Rufford Estate (A.614). Collieries sunk through the Trias were seen and their geology explained by Mr. R. E. Elliott. The journey continued eastwards for a short time along A.617, climbing up the Waterstones escarpment just west of Kirklington. The pumping wells (nodding jennys) were seen on the minor road leading to Eakring village, skirting Dukes Wood. The road northwards through Wellow to Boughton (east of Ollerton) crosses and re-crosses the Keuper Marl/Waterstones junction. At Boughton a quarry, situated just off the Boughton-Laxton road, is being excavated in the lowest beds of the Keuper Marl. Some of the sandstones from the quarry were tipped close to the road and sedimentary structures, including very large salt pseudomorphs, evoked considerable interest.

The Keuper Marl outcrop was followed through Laxton (3 - field systems and first Lincolnshire Limestone church) and Egmanton to Tuxford. Features indicate the positions of Skerry Beds. The A.1 was crossed and the Trent Valley reached (via A.611 and A.57) at Newton-upon-Trent. East of the Trent there are extensive sand and gravel deposits which extend towards the Lincoln Gap. There was plenty of visible evidence of the working of these deposits, which cover the Trias/Jurassic boundary.

Approaching Lincoln, excellent views were obtained of the Lincoln Gap, an old overflow channel cut in the Lincolnshire Limestone escarpment. It had been intended to make a slight diversion to see the Upper Lias Clays at Bracebridge, but as we were a little short of time, the Lincolnshire Limestone (Inferior Oolite) escarpment was climbed immediately and lunch eaten close to Lincoln Cathedral.

From Lincoln the party drove across the extensive clay vale formed by the Great Oolite, Oxford and Kimmeridge Clays. Little can be seen of the harder beds of limestone, (the Great Oolite Limestone, the Cornbrash and Kellaways Rocks.) The route chosen passed through Wragby (A.158) to Hainton (A.157). From this village the coach took the minor road to North Willingham. This road skirts the escarpment of Lower Cretaceous rocks, notably the Spilsby Sandstone. This sandstone was examined at a roadside exposure (A.631) just east of North Willingham.

Continuing along the A.631 to Louth, we were fortunate to see a recently ploughed field whose colours clearly indicated the outcrop of the Red Chalk and its junction with the overlying white Chalk. Comparisons were made concerning the vegetation and agriculture of the Chalk areas with the Clay areas east of Lincoln.

From Louth the coach travelled southwards (via A.157, B.1373 and A.1104) to Alford. This route took us along the Pleistocene outcrops, east of the chalk which forms the extensive area to the coast at Sutton and Mablethorpe. Tempting though it was to continue to the coast, we followed instead the old chalk cliff line, passing through it just prior to Alford.

The journey westwards now commenced, following the A.16 to Spilsby. A number of rivers have excavated below the chalk, so that the road is a bit of a switch-back, dropping down on to Lower Cretaceous deposits and then climbing back on to the Chalk. Just before leaving the Chalk for the last time, near Dalby, we had a glimpse of the first Chalk quarry to be seen on the route chosen.

Lower Cretaceous deposits (particularly Spilsby Sandstone) were crossed in the Spilsby area, although the village itself is in a valley cut through into underlying Kimmeridge Clay. The main outcrop of this division is met along the A.155 at West Keal and it continues to Tattersall. On the south side of the road is the extensive area of the Boston Fen. At Tattersall there is a 15th century tower (remains of a fortified manor) from the top of which panoramic views can be obtained of the Fen country to the south and east, the chalk escarpment, (recently traversed) in the north east and westwards to the Lincolnshire Limestone escarpment.

The northern part of the Fen is crossed between Tattersall and Billingham and those with a discerning eye noticed the change of level when the Upper Jurassic Clays were crossed near Anwick.

The route from Sleaford to Grantham (A.155 and A.607) passes through the Ancaster Gap. This physiographic feature is similar in origin to the Lincoln Gap. The Great Oolite Limestone was noted in a quarry near Quarrington: and the Lincolnshire Limestone was seen in a roadside quarry close to Ancaster. Sands and gravels associated with the channelling of the gap were noticed at the western end of the overflow channel.

The road from Grantham to Nottingham (A.52) begins in beds of the Middle Lias. Excavations for the Grantham By-pass (A.1) cut through the Marlstone Ironstone and examples of it could still be seen on the various approach roads. The Marlstone Ironstone in this area makes an excellent escarpment, increasing in height southwards. Nothing was seen of this escarpment on the outward route, since the Ironstone thins out northwards. The basal Lias (Hydraulic Limestones and Rhaetic) escarpment, which was crossed at Elton on the homeward journey, was also not crossed on the outward, since it is concealed by the sands and gravels in front of the Lincoln Gap.

And so back on to well known Trias with the Keuper Marl of Bingham and Radcliffe-on-Trent, the coach crossing Trent Bridge, Nottingham, in failing light. A successful type of excursion for the touring geologist.

F. M. T.