

THE GEOLOGY OF THE AREA WEST OF NOTTINGHAM

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The object of this excursion, attended by 49 members and friends, was to study the Pemo-Trias rocks west of Nottingham. The route included a number of localities shown on the text-figure accompanying the paper on the oil seepage at Toton Lane, Notts. (p. 25)

The excursion commenced at the Nottingham Castle Museum, SK 569394, which is built on the high bluff of Bunter Pebble Beds, overlooking the confluence of the Leen and Trent Valleys. The Bunter Pebble Beds are yellow or buff in colour, ill-cemented, current bedded coarse sands, containing pebbles arranged in layers or scattered throughout the deposit. Fragments of marl are not uncommon. Exposures of these beds can be seen at intervals along the length of Castle Boulevard.

Sandstones underlying the Bunter Pebble Beds, the Mottled Sandstone, were seen in the grounds of Nottingham University (SK 540384). These rocks are finer in grain size than the Pebble Beds, are devoid of pebbles, and are red in colour. Irregular patches of yellow or green sediment are present. Harder beds said to contain dolomite occur near the base of the section located behind the Maths-Physics building. At the level of the road above this locality is the junction with the Pebble Beds, which can be seen close by in the grounds of Wortley Hall.

Between Hugh Stewart Hall and the Biology Departments runs the Clifton Fault. This can be seen as it crosses Cut Through Lane, where exposures of Mottled Sandstone, adjacent to Pebble Beds in turn juxtaposed against Keuper Marl, indicate the position of the two parts of the fault. The fault was traced again at the back of the Biology Building.

West of the Trent Building Bunter Pebble Beds form a fine lake-side exposure. The lithology is identical to that at previous localities; structurally, however, it is on the south side of a second (University) fault and past exposures have shown it to separate Bunter Pebble Beds on the south side from Keuper Marl on the north.

The party then travelled to the Chilwell Brick Works (SK 513358: see p. 26). The main part of this quarry is in the Lower formations of the Keuper Marl. Mr. R. E. Elliott demonstrated the sedimentary structures which led him to conclude that the thick skerry beds at the top of the quarry were the equivalent of the Plains Skerry of the Nottingham area. These structures included ripple marks, salt pseudomorphs, irregular nodular shaped structures and a bed containing irregular ramifying purple patches with green centres. The greater part of the quarry is made up of dark red marl and fine grained red siltstones. The beds possess uniform lithology and are not laminated. By contrast, the southern part of the quarry showed a series of green-grey sandstones and siltstones. Many of the beds contained abundant mica whilst others were dolomitic or contained calcite. The Keuper Marl on the north side is separated from the green-grey beds by the Chilwell fault.

The party next examined exposures made by the road cutting at the top of the hill at Bramcote (SK 510370). The position of the Beeston Fault was pointed out just north of the Alderman White School and the upper part of the Bunter Pebble Beds were seen on its north side. Although similar in lithology to previous exposures, the beds here are red in colour - the more usual colour for Bunter Pebble Beds. The overlying Keuper Basement Beds, a group of alternating red marls and buff sands, yielded at least one very small pebble.

After lunch, the party walked along the eastern part of the Sandiacre-Stapleford By-pass (SK 503375). At the eastern end, the first rocks encountered are the lower part of the Bunter Pebble Beds.

The junction with underlying Mottled Sandstones is almost at road level here; the beds seen were well bedded, without pebbles, but still coarse grained. A trench cut to a deeper level has been seen to pass into typical Mottled Sandstone lithology with depth. About 200 yds. east of the first bridge, the position of the Beeston fault was located. A skerry bed within Keuper Marl on the south side of the fault was thought to be the same as the bed located in the Chilwell Brick Works quarry. After crossing Toton Lane, an oil seepage in green-grey beds was examined near the footbridge (SK 492361). These beds, similar to the ones on the south side of the Chilwell Brick works quarry, are thought to be situated on the Waterstones-Keuper Marl boundary.

Attention was next concentrated on the nature of the junction between the Trias and Carboniferous. It was first seen at Stoney Clouds, Sandiacre (SK 475376) where Bunter Pebble beds are faulted against Coal Measure Rocks.

After the drive across the Erewash Valley the party climbed Stapleford Hill, Bramcote (SK 498387). The path ascends from the south-east side, passing the stack of red Bunter Pebble Beds known as the Hemlock Stone. In common with the greater part of the Stapleford and Bramcote Hills, the stack contains barytes as a cement. It could well be an ancient quarry remnant composed of harder rock and not easily removed, compared with the surrounding friable rock but, as the name suggests, it is locally considered of supernatural affinity. It is now being actively eroded by wind, which has etched out the softer beds.

From the top of the hill a panoramic view of the surrounding country can be obtained. The relationship of Trias to Carboniferous, in part faulted, elsewhere unconformable, was pointed out. The region of Permian rocks to the north, sandwiched between Carboniferous and Trias outcrops, was appreciated.

The remaining exposures were concerned with Permian strata. At Strelley (SK 505423), the quarry near the church exhibits a sandy littoral facies of the Magnesian Limestone.

The base of the Permian is seen at Kimberley, in the old London Midland Railway cutting (SK 503453). The basal Permian breccia rests on discoloured Carboniferous shales. Dolomitic flagstones containing plant remains are found above the breccia. These beds have been correlated with the Marl Slate of the Yorkshire area. As the Marl Slate is considered to be of Zechstein age, the Nottinghamshire Permian is also of Upper Permian age.

The topmost Permian beds, the so-called Middle Permian Marls and the mineralised top surface of the Magnesian Limestone can be seen at Bulwell, in the old quarry of Sankeys Ltd. (SK 533450).

The last quarry visited was Wilkinson's Quarry, to the north of Bulwell (SK 535460), to see the character of the Magnesian Limestone which occurs in the area between Mansfield and Nottingham. It is a coarse dolomitic limestone with only a trace of detrital silica. One or two horizons made up of the casts of lamellibranch shells were found.

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