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Joint Field Excursion with the Manchester Geological Association to Werrington Anticline, Stoke on Trent, led by Dr. David Thompson

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DOLAMORE, L. & JONES, G. (1984). Joint Field Excursion with the Manchester Geological Association to Werrington Anticline, Stoke on Trent, led by Dr. David Thompson. *Proceedings of the Shropshire Geological Society*, **4**, 22-23. The whole day was spent within the confines of the 400 acre park administered jointly by Staffs County Council and Stoke on Trent District Council and lying between Weston Coyney and Hulme, northeast of Longton.

This had recently been reclaimed from derelict gravel quarries on the Werrington anticline, in the Triassic, with good exposures of Bunter Pebble and sandstone beds, 600 to 1000 feet thick, lying approximately horizontally. In the same location there are disused mine shafts along the line of an assumed fault, which bounds the eastern side of the Potteries syncline. The "five towns" run along the line of the Coal Measures outcrop (Black Band Group) with clay, limestone, coal and ironstone all along its length.

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Report of the joint excursion on 13th May 1984 led by Dr. David Thompson of Keele University

The whole of the day was spent within the confines of a 400 acre park which has recently been reclaimed from derelict gravel quarries. The area has been used (and misused) for industrial waste tipping, including some dangerous material. Reclamation was helped by a grant of £750,000 to cover the wastes, grading, planting and stabilizing, laying out car parks and putting up signage. A golf course is in process of slow evolution. The area is for pedestrians only, and appears to be well used as there are fixed facilities for events such as concerts (pop), picnics and adventure playgrounds. Some of the names given to particular sites are a bit fanciful (Khyber Pass and Spion Kop are typical). The Park is administered jointly by Staffs County Council and Stoke on Trent District Council and lies between Weston Coyney and Hulme, northeast of Longton, access by Park Hall Road, map ref. OS 119: 9244 to 9345.

The whole area is on the Werrington anticline, in the Triassic, with good exposures of Bunter Pebble and sandstone beds, 600 to 1000 feet thick, lying approximately horizontally. In the same location there are disused mine shafts along the line of an assumed fault, which bounds the eastern side of the Potteries syncline. The "five towns" run along the line of the Coal Measures outcrop (Black Band Group) with clay, limestone, coal and ironstone all along its length.

The first location visited was the spoil heap of one of the disused mineshafts at Ganimore, where coal was extracted from a ten foot seam. The spoil was pretty typical and contained lamellibranchs, fish scales, pyrites, iron carbonate, vegetable material, all of non-marine origin, from the Middle Coal Measures.

There is no direct evidence for the assumed fault, but there is an abrupt change from Triassic to Carboniferous on a steep slope and no unconformity is exposed.

The next location was a quarry in the Lower Trias; no spores or fossils have been found, so that the only possible correlation for dating, even approximately, is by the similarity with deposits in other areas. Because of its contents it has been included in the same member as Freehay (Cheadle) of the Hawksmoor Formation in the Sherwood Sandstone Group (Scythian). This puts it about 243 to 248 million years. Typically these are soft sandstones, pebbly sandstones and conglomerates with mudstone and siltstone bands. The absence of locally derived clastics, found in the Huntley Formation, narrows the correlation down to a slightly younger derivation.

Dr. Thompson explained briefly the evidence of current bedding in the exposures which indicated that the direction of the palaeocurrents was to the NNW, and not NE as Wills had shown in 1948, thus giving evidence for "Rudyard Valley". The minor faulting in this quarry from the evidence of slickensiding was parallel to the face and normal to the bedding.

From this location we walked up to the highest point in the area to get a better impression of the

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structure of the Potteries and the Triassic morphology. The next trek was downhill off the Trias onto Coal Measures, where an adit for a disused coal mine was evidence of the proximity of the productive seams, and on down into the village of Hulme and a suitable "quiet" spot to eat our lunch and get to know the Manchester members.

After our lunch we retraced our steps to the top of the park and made our way to a quarry which is the "pop concert" venue, an almost oval amphitheatre, oval because of faulting following up the strata and dipping to the east.

Nearby is Play Canyon, where you would not be in the least surprised if John Wayne rode up to you and told you to put your hammer down and drink your milk, so much does it resemble the landscapes epitomised by Western films. This canyon, again following fault planes, was found to be in the Hawksmoor Sandstone, an obviously soft sandstone, silicified, blocks of mudstone, conglomerate, and some siltstone bands. We were able to see the direction of the palaeocurrents.

The structuring of the alternate layers of conglomerate and clay layers and evidence of slough ponds where clay and mud settled, showed that rivers were advancing but with quiet periods indicating seasonality.

We were fortunate to see pressure pitting on pebbles, where pebbles in contact lose silica in the beds forming the silicified sandstones. The pebbles have a rather decayed appearance at the contact points with the formation of slight surface depressions.

Dr. Thompson explained the principle of pebble counting to help determine the origin of the pebbles within the Bunter Beds. Taking 50 random pebbles of roughly similar size and then sorting them into groups of different .rocks, we were able to determine a number of different lithologies, amongst them quartzites coloured from white through to pink, and dark brown, some brecciated quartzites, some white veined quartzite often with laminated tourmaline layers. More unusual finds were black quartzite, some igneous rocks, porphyry, rhyolites, Carboniferous chert highly decomposed, corals or brachiopods. It was generally accepted that the general direction of the derivation of the pebbles was from the SW peninsula of England.

In the final quarry, "Skinners Canyon", which is very elongated in a North-South direction due to faulting, the dip still being to the east, the uppermost levels of the face were found to be equivalent to the Hodgedale Group. It was plain to see in this quarry that the interest in the quarrying operations was for gravel, as large blocks of sandstone had been left lying about and quarrying stopped as soon as the pebble beds reduced to an unworkable quality.

A final look at the sedimentary structures of the sandstones we had visited during the day revealed that we had traversed upwards through three different formations of the sandstones, firstly the oldest Huntley Formation, then the Hawksmoor Formation and finally the Hodgedale Member.

From Skinners Canyon we walked across the centre of the park past the very pleasant visitors' car park to Hopper Fort, where we began our day.

Our day ended in the car park noting the structures at the back of the cliff face. It was possible to see a strong gravel bed suddenly changed to a sandstone bed, the two placed almost side by side like bricks in a wall, presumably being caused by a large fall of energy in the river, the force of the flow being unable to carry larger pebbles, resulting in the immediate change of horizons.

The day was most pleasant and we look forward to the possibility of a further joint field trip with the Manchester Geological Association. Our thanks for an excellent day go to Dr. Thompson for his erudite explanation of the formations. It was noted that at any one time, Dr. Thompson was unable to get more than 300 yards ahead of the rest of group - is he slowing down, or are we getting fitter?

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