Doulton's Claypit

Highlights

Doulton's Claypit provides the best exposure of lower Westphalian coal-bearing strata in the southern-marginal part of the Pennine Basin. It clearly shows a typical marginal-type facies representing continuous emergent conditions (Figure 7.6).

Introduction

This exposure [SO 936 871] near Lodge Farm Reservoir, Brierley Hill, West Midlands is the remains of a disused quarry in the southern part of the South Staffordshire Coalfield. It is part of what used to be called the Saltwells Clay-field, which was worked for the extensive fireclays developed in this part of the coalfield, and here used for the production of sanitary ware. The geology of the pit, when it was still being worked, was summarized by Whitehead and Eastwood (1927). By the late 1940s, the clays were worked out here and the pit abandoned. However, unlike so many of such disused workings in this part of the Midlands, it was not reclaimed and built on. Instead, it became incorporated into the Saltwells Local Nature Reserve, established to preserve the wildlife habitat that had developed there, as well as conserving part of the geological exposure. The geology of the nature reserve is summarized by Cutler (1981).

Description

Lithostratigraphy

It is impossible to establish a coherent sequence from the available exposures, due to tectonic disturbance and weathering, but there are probably about 150 m of strata represented. The bulk of the sequence consists of grey palaeosols, some iron-rich mudstones, and cross-bedded sandstones. Three coals can still be seen in ascending stratigraphical order, the New Mine, Stinking and Lower Heathen seams. None of these were thick enough to justify commercial working. However, in the eastern part of the quarry, burnt shales mark the position of the commercially important South Staffordshire Thick Coal, which was about 10 m thick.

Biostratigraphy

Marine bands

Elsewhere in the coalfield, a marine band occurs just above the Stinking Seam, and hence is known locally as the Stinking Marine Band. This is generally identified with the Vanderbeckei Marine Band, and thus marks the Langsettian–Duckmantian stage boundary.

Plant macrofossils

Kidston (1914) described the plant fossils from several horizons in this claypit, as originally exposed. The most diverse assemblages were associated with the Bottom and Fireclay coals, not now exposed. From the roof of the New Mine Coal, he listed *Neuropteris beterophylla* Brongniart (probably a misidentification of *Laveineopteris loshii* (Brongniart) Cleat *et al.* — see comments by Cleat and Shute, 1991), *Mariopteris muricata* (Brongniart) Zeiller, *Eusphenopteris obtusiloba* (Brongniart) Novik and *Sigillaria elegans* Brongniart. A specimen identified by Kidston as *Alethopteris integra* (Gothan) Kidston was figured by Crookall (1955, pl. 5 fig. 3), but it is a lobing fragment of a frond, which is virtually impossible to identify in isolation (Wagner, 1968). However, the rest of the assemblage can be assigned to the *Laveineopteris loshii* Subzone (upper *Lyginopteris hoeninghausii* Zone), and is thus indicative of the upper Langsettian.

The only fossils recorded by Kidston from the exposed part of the sequence here are from just below the Thick Coal. He identified them as *N. heterophylla* (*again,* probably a misidentification of *L. loshii*) and the fructification *Whittleseya*

elegans Newberry, from the Ten-foot Ironstone. This assemblage is not biostratigraphically diagnostic.

Interpretation

This is the only remaining exposure of coal-bearing strata in the southern part of the South Staffordshire Coalfield. It demonstrates the characteristic sedimentology in this marginal part of the Pennine Basin in the upper Langsettian and Duckmantian, which is referred to by Besly (1988) as the Alluvial Coal-Bearing Facies Association. According to Besly, this association represents deposition in continuously emergent conditions, allowing the extensive development of swamp soils, while the sandstones are fluvial channel deposits. Such a sequence is intermediate between typical Productive Coal Formation and the more consistently red deposits of the Etruria Formation; however, as grey strata seem to predominate (at least here) they are probably best assigned to the Productive Coal Formation.

Another feature of this type of basin-margin deposit is that each of the coal seams divides into more than one seam in the more central parts of the basin. Of the seams still represented at Doulton's Claypit, the New Mine divides into the Yard and Bass coals in the northern part of the coalfield, the Heathen divides into an upper and a lower seam, and the Thick Coal divides into the Park, Eight Feet and Benches coals (Haim and Horton, 1969).

Extensive ironstone development is associated with this type of sedimentary regime. This had important consequences for the industrial development of this part of the English Midlands, since it provided the combination of fuel (coal) and raw material (iron ore) that was necessary for the development of this area.

Conclusions

Doulton's Claypit is the best exposure of rocks of early Westphalian age (310 million years old) in the southern-marginal part of the Pennine Basin. It clearly shows features that are typcial of such rocks formed in a marginal setting, characterized by a slow rate of sedimentation, and where flooding was a relatively rare event.

References

(Figure 7.6) Lower Westphalian rocks exposed at the now disused Doulton's Claypit, Brierley Hill. (Photo: C.J. Cleal.)