THE COAL MEASURES AND MILLSTONE GRIT OF THE DISTRICT NORTH-WEST OF NOTTINGHAM

Leaders: J. G. O. Smart and D. V. Frost — Sunday, 1st October, 1967

The object of the excursion was to examine the Coal Measures and Millstone Grit rocks of the district north-west of Nottingham. The party, 34 strong, travelled by coach to the Cromford Canal Opencast Site (SK 455487), about a mile and a quarter north-west of Eastwood, where and easterly dipping sequence of Middle Coal Measures are exposed. After the topographical and geological features of the neighbourhood had been pointed out, the party examined the Top Hard Coal, which averages about 7 ft. in thickness. This coal had previously been worked and the collapse of the roof measures into the old workings could be clearly seen. The undisturbed section of the upper part of the seam was observed close to the plane of the Cinderhill Fault. The party then split into two groups, one remaining to collect plants from the roof measures of the Top Hard Coal while the other scrambled up the face to examine the Comb and Mainsmut Coals lying respectively about 40 and 85 ft. above the Top Hard. The Comb and Mainsmut Coals could be seen in close proximity on both sides of the Cinderhill Fault, which here downthrows to the west about 35 ft. The fault plane was seen in plan truncating the Comb Coal.

After regrouping the party walked across the partially restored area of the site to a face opened in the Waterloo Coals (SK 450490). The exposed sequence here, measured prior to the excursion was as follows:-

	ft.	in.
Mudstone, grey with ironstone nodules and lamellibranchs	c. 8	
Mudstone, dark grey, carbonaceous		4
Coal, Waterloo Marker		8
Seatearth, mudstone with carbonaceous streaks		8
Seatearth, mudstone grey	1	5
Sandstone, fine silty and mudstone grey, interbedded and interlaminated	8	
Mudstone, pale grey, ferruginous bands, lamellibranchs as base	10	
Coal)	2	6
Dirt) Top Second Waterloo		1
Coal)		9
Seatearth, mudstone	1	
Sandstone, fine with mudstone laminae	up to 7	
Mudstone, grey with ironstone nodules	12	
Coal, Bottom Second Waterloo	1	3

By the time of the visit the excavation had been deepened to include about 30 ft. of strata down to the Third Waterloo Coal. The party collected fossils from the roof measures of the Third Waterloo and Waterloo Marker Coals and there was some discussion on the origin of the impersistent sandstone lying between the Bottom and Top Second Waterloo Coals as a typical levee deposit.

The party then travelled westwards in the coach to stop briefly at the tip of Denby (Drury Lane) Colliery (SK 383473), where plentiful bullions or nodules from the Alton Marine Band containing uncrushed pyritised specimens of Gastrioceras listeri and Dunbarella sp. were collected.

A further short journey in the coach brought the party to the Salterwood Opencast Site (SK 381482), where Lower Coal Measures are being worked. The Low Main seam was examined and fish remains and ostracods collected from the 1-ft. of canneloid mudstone lying immediately above the First Piper Coal. The measures between these two coals were indifferently exposed, but the position of the Cockleshell Coal was demonstrated as a horizon of rootlets with a large Stigmaria within the Tupton Rock Sandstone. The abundant non-marine lamellibranch fauna normally associated with the Low Main and Cockleshell Coals (Calver in Smith and others 1967, p. 134) is only feebly represented at Salterwood by the few lamellibranchs in the mudstones overlying the Low Main Seam. The party then rejoined the coach for lunch.

After lunch at Belper the party travelled north to the Ambergate area. From Nodinhill, (SK 35705100) the topographical expression of the Lower Coal Measure and uppermost Millstone Grit rocks was observed, in particular the bold features made by the Chatsworth Grit, the Crawshaw Sandstone and the Wingfield Flags. The positions of old opencast workings in the Alton and Belperlawn Coals were pointed out in the valley to the east.

The party proceeded on foot northwards along the scarp of the Crawshaw Sandstone to Ridgeway Quarry (SK 35855145) where a massive buff cross-bedded medium-coarse arkosic sandstone was exposed. Pink and purple staining was a common feature. Percolation of water from the Permo-Triassic rocks once overlying the region was suggested as a possible cause. Twenty feet of shale separate the Crawshaw Sandstone from the Rough Rock, which is exposed in the lower part of the quarry. In the past the Crawshaw Sandstone of this area has been confused with the Rough Rock, but immediately overlying the Rough Rock in this quarry is an inch of weathered shale, containing sporadic specimens of Lingula sp., Orbiculoidea sp. and fish scales which is referred to the horizon of the Pot Clay Marine Band. The thin development of this marine band is unusual and of local occurrence, as it has been proved in borehole cores, with a good goniatite fauna, over much of the coalfield to the south and east. Various theories were discussed to account for this apparent weakening in marine conditions. A few inches above the marine band, a thin layer of contorted mudstone was pointed out and a tectonic origin for this was suggested.

The next quarry visited (SK 36055175), some 500 yards to the north, belongs to the Ambergate Brick Company, which extracts the Crawshaw Sandstone and the underlying shales. The Crawshaw Sandstone bears little similarity to the last exposures at Ridgeway and, in the original 6-inch Geological Survey by Wedd in 1902, was confused with Coal Measure sandstones higher in the succession. The Crawshaw Sandstone is predominantly fine-grained, massive only in the basal 15-ft and split into numerous siltstone and silty mudstone partings towards the top. A small fault was exposed at the southern end of the quarry. The Belperlawn Coal, some 36-inches thick, was examined at the top of the quarry. Part of the seatearth was ganisteroid. Variable sandstone lenses were observed beneath, gradually passing down, by alternation with shales and siltstone, into the top of the Crawshaw Sandstone.

From the top of the quarry a fine view westwards across the Ambergate anticline was afforded.

The northern end of the quarry exposed the Pot Clay Marine Band overlying a ganister and with an intraformational deformed band some 7 inches above it. The Crawshaw Sandstone here develops well defined posts of fine-grained sandstone up to 18-in thick separated by silty mudstone partings. This silty facies of the Crawshaw is also known from a bore near South Wingfield.

The coach was rejoined at Bullbridge and the final call of the day was made at the East Midlands Gas Board Site half a mile down the Amber Valley. The steeply dipping rocks near the core of the

Ambergate anticline were examined from the top of the Ashover Grit for some 500-ft downwards in a continuous exposure.

Swinnerton (1946) recorded the R. superbilingue Marine Band in a water bore at Stevensons Dye Works, some 50 feet above the Ashover Grit. After a careful search, specimens of this goniatite together with numerous Lingula sp. were discovered here in a temporary excavation for an oil tank (SK 35515201).

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The leaders wish to thank the National Coal Board Opencast Executive at Cinderhill for permission to visit the two opencast sites, and the Area Director, North Derbyshire Area for allowing the party onto the Denby Colliery tips.

Additional note to the October Excursion

Fossil Lycopods found in Derbyshire

Shortly after the Society's excursion to Eastwood and Ambergate, reported in this issue of the Journal (p. 439) fossil lycopods were found in Upper Carboniferous rocks at two of the localities visited.

Cromford Canal Opencast Site, Brinsley near Eastwood (SK 460481)

On this site a very long section of tree trunk of Lepidodendron was carefully uncovered by the contractors. About 40 feet of the trunk, which was not quite perpendicular to the beading was exposed. Originally the bark detail was well preserved in coaly material but it rapidly deteriorated on exposure. It was assumed that the base of the tree rested close to the underlying Top Hard Coal, some 15 feet below the lowest exposed position of the tree. Although a considerable length was exposed, the girth was only about 18 inches. The tree is illustrated in Plate 25, figure 1.

Salters Wood Opencast site, Morley Park (SK 381493)

At this locality three or four smaller tree trunks were exposed during excavations for the Silkstone Coal. Lepidodendron was represented here also, but in addition there was a very fine example of Sigillaria, (Plate 25, figure 2). At this locality about 25 feet of tree was exposed and again the girth was approx. 1½ feet, but spreading out towards the base, where it passed through the coal seam.

In all cases the tree trunks were in their approximate position of growth and the subsequent sedimentation of shales, siltstones and sandstones had little effect upon the position of the trees.

The well preserved bark, usually coalified still showed excellent detail. The internal parts of the trees were filled with fine sediment.

It can only be concluded that sedimentation must have rapidly followed upon submergence of the peaty layers, and that the sedimentation probably kept pace with subsidence. There was little time for decomposition of the bark, or the collapse of the trees.

I am indebted to Mr. G. Jago and other members of the Nottingham Division of the N.C.B. Opencast Executive for informing me about these trees and also Mr. P.N. Laird who kindly showed me around the sites. MacGreggor and Sons and Curral, Lewis and Martin, Contractors, readily gave permission for me to visit their excavations.

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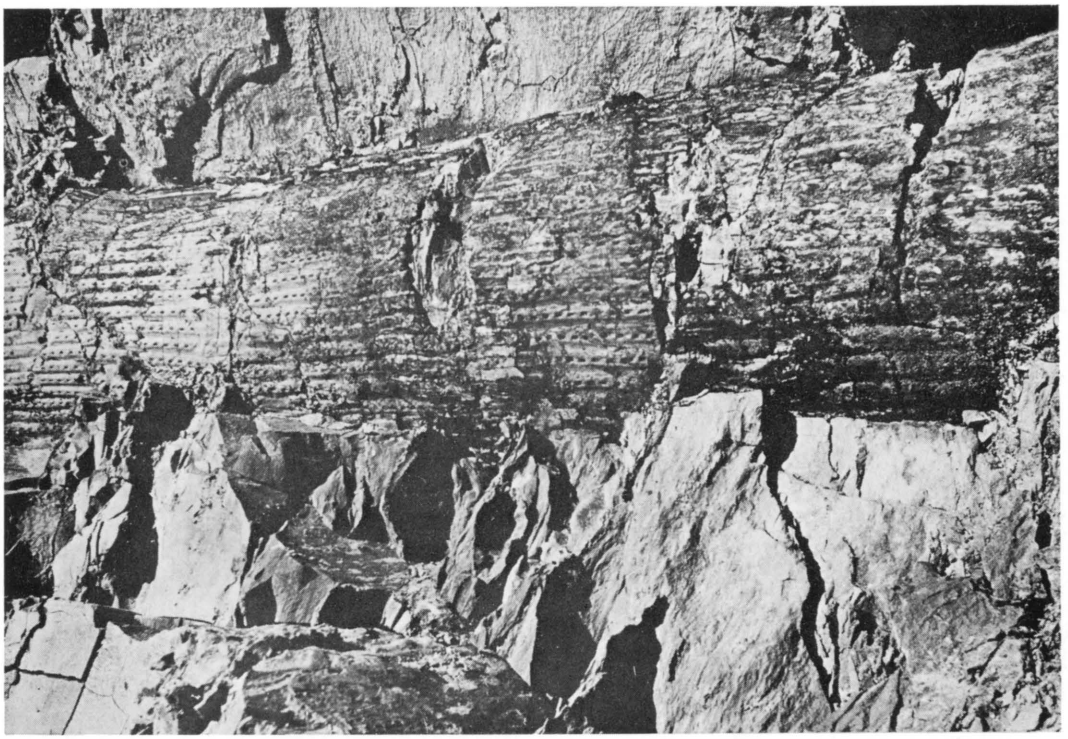

Fig. 2. Sigillaria at Morley Park, Ripley.

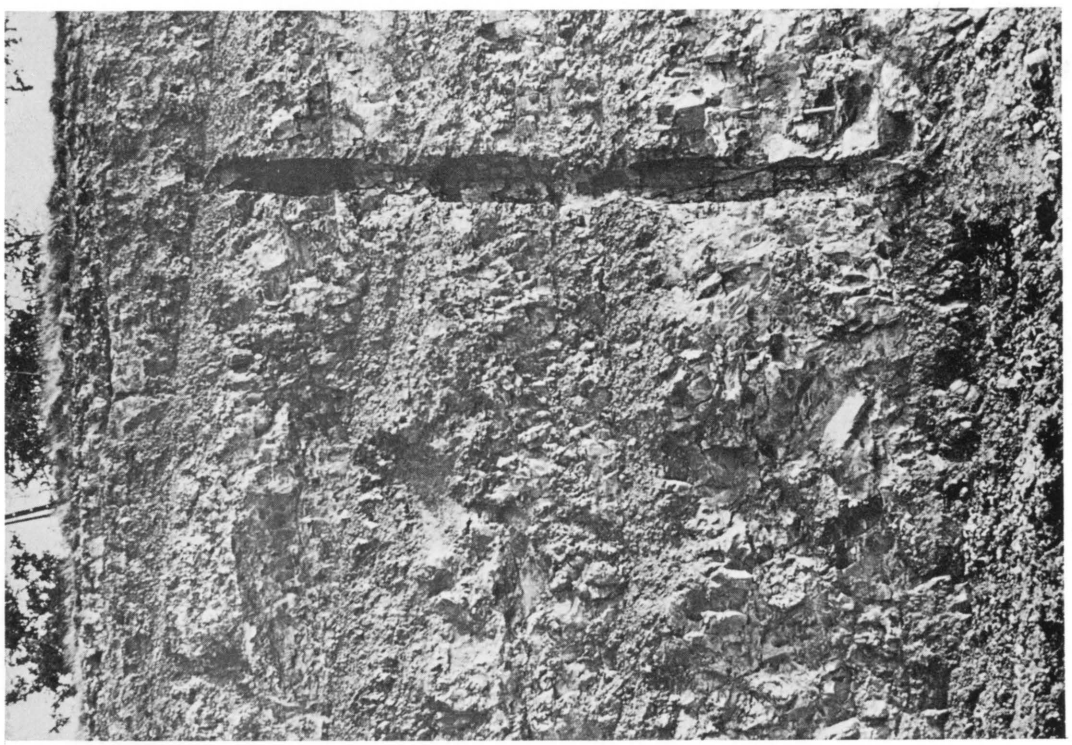

Fig. 1. Lepidodendron at Eastwood.