RYKNIELD STREET.
EXCAVATIONS NEAR HIGHAM.

By MARGARET SAUNDERS.

OPENCAST coal-mining destroyed a ¾-mile long stretch of Ryknield Street Roman road in the autumn of 1955. While the bull-dozers and giant excavators were irrevocably at work churning up the northern fields through which the road lay, further south an emergency excavation to examine the construction of the road was carried out by the writer and four workmen on behalf of the Ministry of Works, Inspectorate of Ancient Monuments.[1]

THE SITE.

Ryknield Street ran almost due south-north through the Midlands from the Foss Way near Bourton on the Water (Glos.), across Watling Street at Wall, south of Lichfield (Staffs.), to Templeborough Roman fort near Rotherham (Yorks.).[2] The stretch which has been destroyed lay between Oakerthorpe and Higham in Derbyshire. After leaving Oakerthorpe the Roman road is overlaid by the modern Ripley-Chesterfield road for almost a mile, but by the Amber Hotel at Toadhole Furnace it continues straight on along the Amber Valley, whereas the modern road turns eastwards along a high scarp and through Hallfield. The Roman and modern roads converge once more a mile further on at the southern tip of Higham village, and for about 300 yards before this point a minor modern road follows the line of the Roman road. Except for the field between the Amber Hotel and the railway-siding leading to Shirland Colliery, the whole

[1] My thanks are due to Mr. A. D. Saunders, Dr. M. W. Thompson and Mr. J. E. Bowler, all of the Ministry of Works, for their help and advice, and to Mrs. E. Wilson for redrawing the sketch map.

[2] I. D. Margary, *Roman Roads in Britain*, II, map 1, 14, and 15-17, 19-21, 38-41, and 143-5.

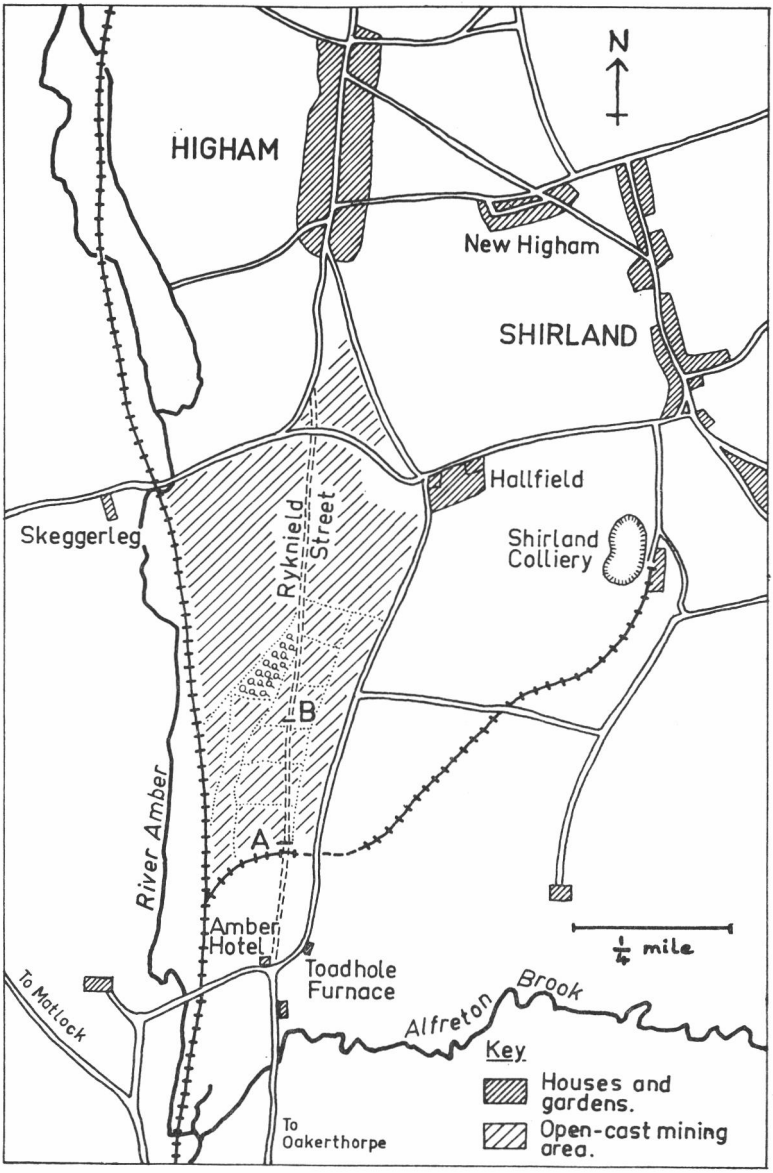

FIG. 14. Map of Ryknield Street near Higham.

of the area where Ryknield Street was untrammelled by modern roads has been used for coal-mining (Fig. 14).

The road's state of preservation varied along the length destroyed, although even where ploughing had done most damage the road could be clearly seen in the hedges. The best preserved stretches were in the field immediately north of the Shirland siding and that south-east of the small copse shown on the map. Even these fields, however, were ploughed during the Second World War — if not before.[3] The first one sloped steeply from east to west and the road was built on a terrace, whereas the second was comparatively flat and the road appeared as a low bank or *agger* (see Plate VI*a*, *b*). Sections were cut across the road in both these fields in order to see how the Romans adapted their methods of construction to suit the different types of terrain. Section A was taken at Nat. Grid Ref. SK 390573, and Section B at SK 390576.

THE EXCAVATIONS.

The two sections told a single story about the building history of the road, and the evidence of both can be considered together. The stages of construction were the same in each case, despite differences of detail due to the slope of the ground in Section A. There were two distinct periods of building, leaving aside minor repair work.

Period I. The foundations of the first road were laid directly upon the natural clay, which was a streaky orange and grey colour, except at the east end of Section A where it was black and mixed with coal outcrop. Above the natural was a layer of beaten or compacted clay. This stretched almost the whole way across Section A, but was only laid under the edges of the road in Section B. It was not easy to distinguish this layer from the natural as it was almost the same colour, but it was variegated rather than streaky and had black specks throughout. Above it, and over the natural where it was still exposed, was a hard layer of yellow clay packing. In both sections these clay foundation layers were much wider than the road itself. At the west edge of the road in Section A, where

[3] Local information.

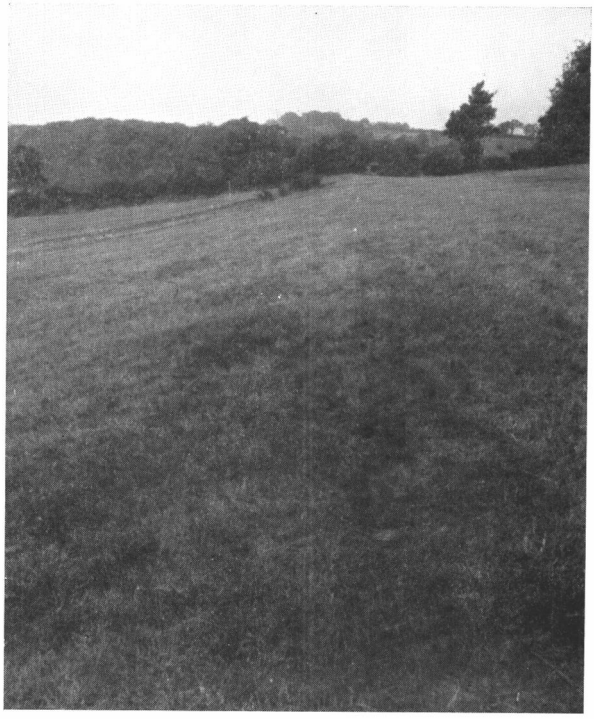

PLATE VIa. Ryknield Street looking north from Section A before excavation.

PLATE VIb. A view of Section B from the hill on the east.

the ground sloped steeply away, a terrace of boulders and large stones was built into the foundations. On the extreme edge were boulders wedged in black clay and about 2 ft. high with a roughly shaped outer face; inside these, large stones about 1 ft. by 7-10 ins. but irregular in shape stretched under the road for roughly 8 ft. This feature was faintly echoed in the construction of the road in the flatter ground at Section B by a small pile of stones set above the clay foundations on the west edge.

The main core of the road was formed of fawn clay mixed with closely packed small stones, nearly all of the local white sandstone. This core was 2 ft. 6 ins. deep at the edge of the terrace in Section A and in the centre of the bank in Section B, giving a height above natural of approximately 4 ft. and 3 ft. respectively. The road was surfaced with a hard black substance between 1 and 2 ins. thick, which analysis has shown to be weathered bituminous or sub-bituminous coal mixed with clay (see Appendix below). Its surface showed traces of wear and embedded earth. Originally, the road must have been 14-16 ft. wide at Section A and 18-20 ft. wide at Section B, where it appeared to have been cambered. A ditch about 1 ft. deep, and so above the clay foundation layers, flanked the road on the east or upper side.

The boulder reinforcements did not prevent trouble on the downhill edge of the road at Section A. The first collapse took place before the road was even surfaced, as witnessed by the small patch of core material and dark brown soil found west of the boulders, perhaps the product of a single stormy night. The edge of the terrace was built up again with an orange clay pack strengthened with stones and held in place by a kerb of worked rectangular stones about 1 ft. 3 ins. by 9 ins., and 7 ins. high. During the delay while this repair work was done, a thin layer of grey silt collected in the ditch at the upper edge of the road.

The second collapse was more serious: the edge of the road was completely washed away in Section A, and even in Section B it slipped downhill. There was no clue as to the length of time which elapsed between the completion of the road and this second collapse, because the traces

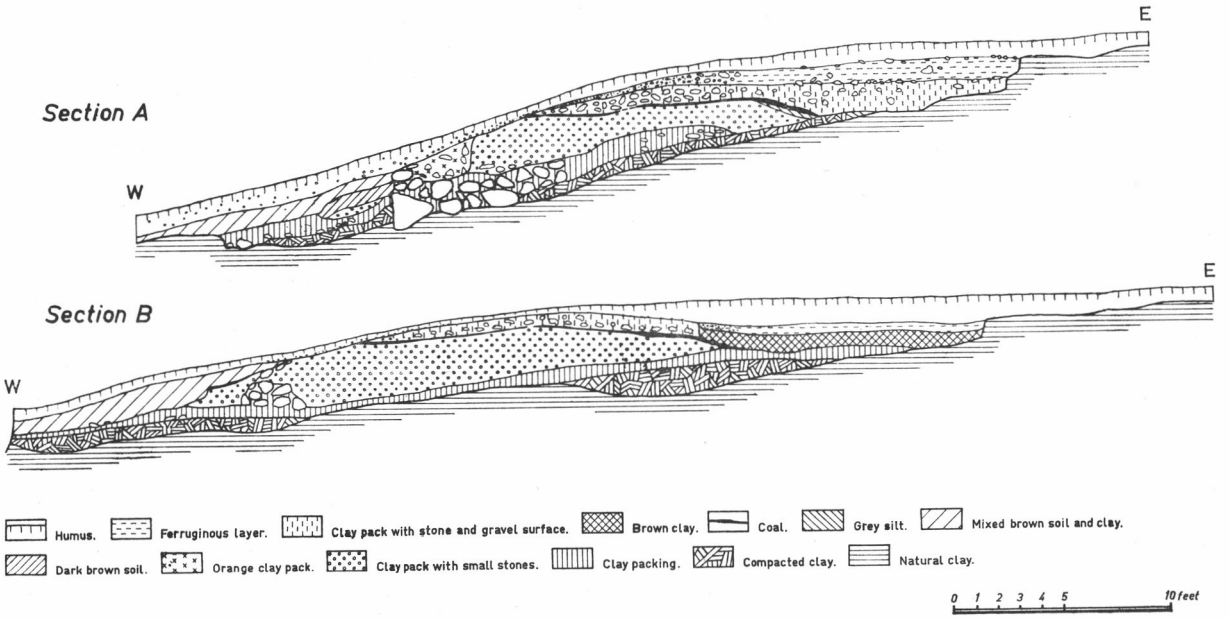

FIG. 15. Ryknield Street — Sections A and B.

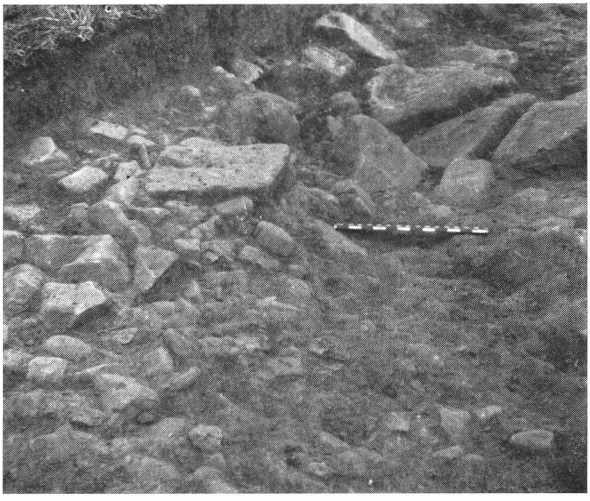

PLATE VIIa. The east edge of the later road surface at Section A.

PLATE VIIb. Section A showing the coal road surface.

of wear on the coal surface, and a deposit of black washed into the ditch, may not indicate more than a few years, or even months, of use, but could have been the work of a century or more if the ditches were regularly cleaned out and the traffic not too heavy.

Period II. After this disaster, the road was rebuilt slightly further east. In Section A the ditch was cleaned out down to the clay foundations, and extended by cutting into the natural up the hill. It was then filled with a clay and stone pack, which was continued over the coal surface of the surviving part of the road. The clay used in this pack was many hued: white and grey predominated in the ditch filling, and yellow with more closely packed stones over the original road. Above the ditch the pack was levelled off with small stones and gravel, which may have formed a road surface for a time. Alternatively, they may have been put down simply to provide a firm base for the final layer of packing, which was largely composed of ferruginous material and stones. It was topped with a very definite road surface of small stones set very closely together with occasional flat slabs, including one 3 ft. long. These stones were about 3-5 ins. across, but at the upper edge of the road were larger pitched stones (see Plate VII*a*). The way these stones were set showed that the road was rebuilt from the south to the north. The "cobbled" road surface may have been smoothed off with gravel, later washed away. It was roughly 10 ft. across, but the road itself was very much wider as it continued over the early road as well as over the ditch filling. The surface, however, changed character and the cobbled stones gave way to a layer of gravel and very tiny stones. The west edge of this surface had been so badly eroded by time and ploughing that it was impossible to estimate the original width of the later road, but it cannot have been less than 20 ft.

The rebuilding work was carried out in a slightly different order in Section B. The coal surface of the early road was first covered with a clay and stone pack, similar to that used over both ditch and road in Section A. This was then cut into on the east side, and the old ditch was cleared out down to the coal layer and the clay founda-

tions. As in Section A, the ditch was extended by cutting back into the natural. It was then filled with a thick layer of hard brown clay, covered by a thinner layer of ferruginous material. This was more compact than the similar layer in Section A, and appears to have been used as a road surface. It was mixed with gravel on its east edge, but there was no trace of the stone cobbled surface found in Section A. The clay and stone pack over the early road was apparently surfaced with gravel, but the top soil was so shallow at this point that nearly all trace of it had been ploughed away. If the new road extended over the whole of the old road and the ferruginous ditch filling, it must have been about 30 ft. wide.

The use of an identical technique in clearing out the ditch down to the clay foundations in the first stage of the work in Section A and the second stage in Section B suggests that there was no long break between the different stages of the work, and that they formed part of a single rebuilding operation. It may have been divided, however, into two phases. In the first, the road was moved eastwards in Section A and a surface was provided by the small stones and gravel over the clay and stone pack (see above); while in Section B the road was not moved but merely resurfaced with a similar pack and top dressing. Then in the second phase, in Section A part of the road was resurfaced with ferruginous material and cobbled stones, while in Section B, in addition to similar resurfacing, the road was moved eastwards by building over the early ditch.

FINDS.

No Roman material was found associated with the road. Eight sherds of gritty, buff pottery were found lying on or trodden into the cobbled surface of the later road in Section A. One of these sherds had traces of green glazing, and they are similar to 14th century pottery from Belper.[4] The position of these sherds suggested that the road was in use in the Middle Ages, but there was no evidence that the road was rebuilt or resurfaced then. The

[4] I am indebted to Mr. J. Hurst of the Ministry of Works for this observation.

work carried out in Period II was done systematically and thoroughly in a characteristic Roman manner, and was apparently started very soon after the collapse of the first road.

DISCUSSION.

It was the Roman practice to use local material wherever possible when building roads, with the result that a single long road, such as Ryknield Street, may vary in its composition from place to place. The road was surfaced with flat stone slabs near Bourton on the Water, with gravel and pebbles at Sutton Park, near Birmingham, and with large "teacake" stones at Brinsworth (Yorks).[5] There were other variations, but none of the other sections across this road has shown a similar use of coal for surfacing. As the coal outcrop lay only a few feet away from the road near Section A, it may have seemed the most convenient local material. It was used deliberately throughout the length of the road destroyed by the modern opencast mining, for not only did it appear in both sections, but when the mechanical excavators were stripping the ground, the coal road appeared as a long straight black line running right across the site. There is no evidence as to whether the coal outcrop in this area was mined or not. Coal was mined further north in south Yorkshire[6] and may well have been here. A section across Ryknield Street near Chesterfield[7] showed coal dust silt in the side ditches, which may indicate that coal was carried along the road. The chief economic importance of this region, however, was its lead mining.[8]

APPENDIX.

Analysis of the black road surface by DR. B. SKIPP.

A sample of material from the road section was subjected to petrological and chemical examination. Under a low power microscope small black cuboid material of

[5] I. D. Margary, *Roman Roads*; *Yorks. Arch. Journal*, XXXVIII (1952), 112-6.
[6] R. G. Collingwood and J. N. L. Myres, *Roman Britain and the English Settlements*, 232.
[7] Margary, 41.
[8] Collingwood and Myres, 230.

about 1-2 mm. could be seen in a clayey matrix. On scratching these black particles a fresh shiny surface was exposed. About 5 gm. of the sample were heated in a combustion tube. Yellow oily fumes were produced which could be ignited at the mouth of the tube. A quantitative examination showed that the sample lost 45.3% on ignition, and that the organic content by wet oxidation was 44.5%. These two figures are in excellent agreement. Wet oxidation does not reveal the presence of high rank coaly material in normal circumstances, but the correspondence of the oxidation and ignition figures, together with the optical evidence, indicate that the black material is a weathered bituminous or sub-bituminous coal, so altered as to render it less resistant to wet oxidation than a freshly mined coal.