

THE GEOLOGY OF EDALE, DERBYSHIRE

Leader:- Mr. W.H. Wilcockson, M.A.

Sunday, 5th June 1966

The party assembled at Edale about 10.30 a.m. Before moving off, the leader gave a short general account of the geology of the area. Edale is situated in the valley of the River Noe, which rises at Edale Head and is fed principally by streams flowing from the southern slopes of the Kinder Plateau. The rocks exposed all belong to the Namurian and the succession is as follows:-

Kinder Scout Grit	250 feet
Grindslow Shales	300 feet
Shale Grit and Mam Tor Sandstones	600 to 800 feet
Edale Shales	650 to 750 feet

The Kinder Scout Grit is a coarse massive rock. It underlies the Kinder Plateau to the north of Edale, where it forms the striking crags of the Edges. The Grindslow Shales are fine grained and sandy shales devoid of fossils. The Shale Grit and Mam Tor Sandstones are a series of sandstones, sometimes massive with shale bands in the upper part and becoming more flaggy, with more frequent shale partings, in the lower portion. The Edale Shales are fine grained dark shales, often carbonaceous, with thin bands of nodular earthy limestone. They have many thin beds containing marine fossils, notably goniatites. The upper shales belong to the R1 zone while the lower contain fossils of the H and E1 zones.

Geologically the Edale valley is a broad anticline with its axis trending roughly ENE-WSW and along the axis the River Noe has exposed the lower beds of the Edale Shales as far down as the E1 zone. It was in the core of the anticline, between Upper Booth and Barber Booth, that a trial boring for oil was made some years ago. To the north, the Kinder Scout Grit lies in a very shallow syncline forming the plateau; to the south is a similar syncline, in the core of which the Shale Grits are preserved as a narrow ridge extending from Lose Hill, through Mam Tor to Rushup Edge. To the south the syncline is bounded by the northern limb of the Derbyshire Dome, bringing up the Carboniferous Limestone of Castleton. From the work of Jackson, Hudson and Cotton, numerous fossil localities are known along the River Noe and its tributaries but, since groups of people crossing the fields are not welcomed by the farmers (especially on Sundays in the summer), it was decided to omit the shale exposures and to concentrate on the higher ground, where the harder rocks are exposed and views of the country can be had.

First, therefore, the party set off along the Castleton footpath that crosses the southerly sandstone ridge at Hollins Cross (National Grid reference SK 136845). From here the ridge was followed westwards to the summit of Mam Tor (SK 128836). Here, on the south face, the cliff exhibits an excellent section of the thin bedded Mam Tor Sandstones from which fragments are continually falling, giving the hill its local name of "Shivering Mountain". The cliff is the back of the great "scoup" whence have come the landslips for which Mam Tor is famous and which give so much trouble in the maintenance of the road from Castleton to Chapel-en-le-Frith. From the top of the hill, a wide view is obtained over the limestone country to the south and of the Edale Valley and the Kinder Plateau to the north. On the south-facing slope of the plateau, the horizontal attitude of the strata can be seen very clearly and also the typical form of the escarpments of this region. Here, as elsewhere, there is the summit edge of the Kinder Scout Grit and below it, separated by the Grindslow Shales, the underscarp of the Shale Grit Series. The massive Kinder Scout Grit often makes sharp outstanding crags, while the softer Shale Grit Series gives rounded shoulders with little or no rock showing, except where the sandstones have been exposed as a result of landslips, as on Mam Tor and Back Tor (on the south side of the Edale Valley between the former hill and Lose Hill - SK 147850).

From Mam Tor, the descent was made past extensive but less spectacular landslips to Edale, where lunch was taken. After lunch the destination was Kinder Scout by way of the valley of the Grindsbrook (approx. SK 122861 to SK 110872). After leaving the north end of the village, the stream is crossed by the "log" bridge where, in the banks, there are good exposures of the Edale Shales (black in colour, with much ochreous deposit from the oxidation of pyrites). The path proceeds through the Grindsbrook Meadows with no further exposures till, after passing a small wood, outcrops of Shale Grits are seen in the banks of the stream below. These show alternations of harder and softer rocks giving a number of small waterfalls. Nearer the edge of the plateau, the valley narrows and a good exposure of the Grindslow Shales can be seen in the bank and bed of the stream. A little further on, the crags of the Kinder Scout Grit tower above the valley; from the base of this grit, springs are thrown out. Through the edge the stream has cut a narrow gorge where the Grit is exposed in high cliffs. Here it is a very massive thick bedded variety.

Higher up, where the gorge widens, it can be seen to cut down into an underlying thin-bedded grit, which suggests that the massive grit is situated in a channel eroded into an earlier grit. In confirmation of this it can be seen that the massive grit extends as a narrow belt for more than two miles along the southern edge of the plateau, where it gives rise to many curiously shaped weathered rocks.

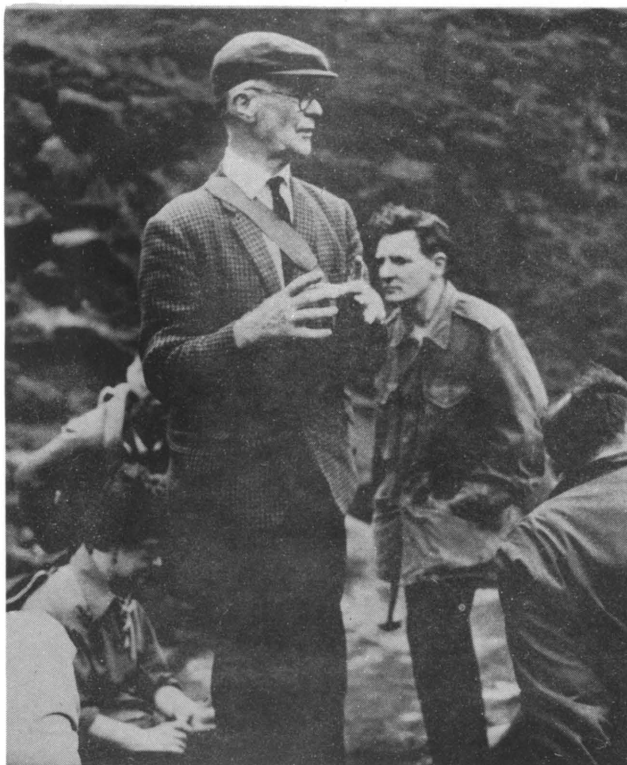
The plateau is covered with a thick deposit of peat, up to ten or more feet in places. Near the top of the Grindsbrook gorge, the stratification of the peat was examined in one of the deep channels that have been cut through it.

Return was then made to Edale over Grindslow Knoll (SK 109868) and along the "Peat Road", a track made by bringing down peat which, until the coming of the railway, was the only fuel available in the village.

W.H.W.

REFERENCES

- JACKSON, J.W. 1927. The succession below the Kinder Scout Grit in North Derbyshire.
J. Manchester Geol. Assoc., vol. 1, p. 239.
- HUDSON, R. G. S. and COTTON, G. 1945. The Carboniferous rocks of the Edale anticline, Derbyshire.
Quart. J. Geol. Soc. Lond., vol. 101, pp. 1-36, pl. 1.



Upper:- Mr. W.H. Wilcockson addressing members in Grinds Brook.
(The Secretary of the E.M. G.S., Robert W. Morrell, behind)

Lower:- A rock on the margins of Kinder Scout, possibly undercut through
wind erosion in periglacial conditions. (Mrs. A. M. Sarjeant acts as scale)

Photos: W. A. S. Sarjeant