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THE MINERAL VEINS OF SWINDEN KNOLL

J.M. Dickinson

Location

Swinden Knoll lies west of the B6265 rood at NGR SD976l, some two miles south-west of Grassington, Yorkshire.

Geological Setting

The Craven Lowlands, bounded to the north-west by the Millstone Grit of the Bowland Fells and to the south-east by that of the Pendle range and the Mid-Pennine Moors, is an area of Lower Carboniferous rooks built into a series of ENE-WSW trending folds, the most noticeable of which are the Clitheroe-Skipton and the Slaidburn-Cracoe anticlines. The north-eastern end of the Slaidburn-Cracoe anticline is crossed by the Mid and North Craven faults, the latter separating the reef limestones from the shelf limestones to the north. This north-eastern end of the anticline has been called the Eshton-Hetton anticline which includes the Cracoe reef knoll area where the anticline degenerates into a series of smaller folds of which one is the anticline of Swinden Knoll. At various horizons in the succession of the Craven Lowlands thin bedded black limestones and shales are replaced by reef limestones of a much greater thickness, such as around Cracoe.

Quarrying

Swinden Knoll has been quarried for limestone since the 1840's when an open-type kiln was built. In the 1900's four large coal-fired kilns were built and operated by P.W. Spencer Ltd, until the quarry was taken over by Tilcon Construction Services in the 1960's who replaced them by modern oil-fired kilns; a large gas-fired rotary kiln is now in the early stages of construction (January 1972). The quarry is now highly mechanized and outputs of 9,000 tons per day are planned for the near future: with this in mind it is thought necessary to record the few remains of mining on the Knoll.

Mineral Veins

In all some eight veins have been traced, five running NW-SE and three NNW-SSE cross veins. At the western end of the knoll, as yet unaffected by quarrying operations, the main group occur between 955 and 900ft AOD. Starting from the west numbers one and two veins trending NW-SE, have been tried by small pits and some

open trenching but do not appear to have been followed to below 800ft AOD. The only mineral to be found in the spoil heaps is calcite. Number three vein is of a much stronger nature showing widths of up to 4ft at the surface and has been worked by three bell-pits at its intersection with a NNW-SSE running vein (No.4) at about 900ft AOD. Several lengths of opencut have been made at its NW end; again the mineral content is calcite with specks of galena in places. This vein has been seen again at about 675ft AOD in an excavation for a limekiln; at this point the vein is one foot wide and carries dirty brown calcite, in the centre of which extremely small patches of malachite have been noticed. The vein hades to the south as do all other NW-SE veins on the Knoll.

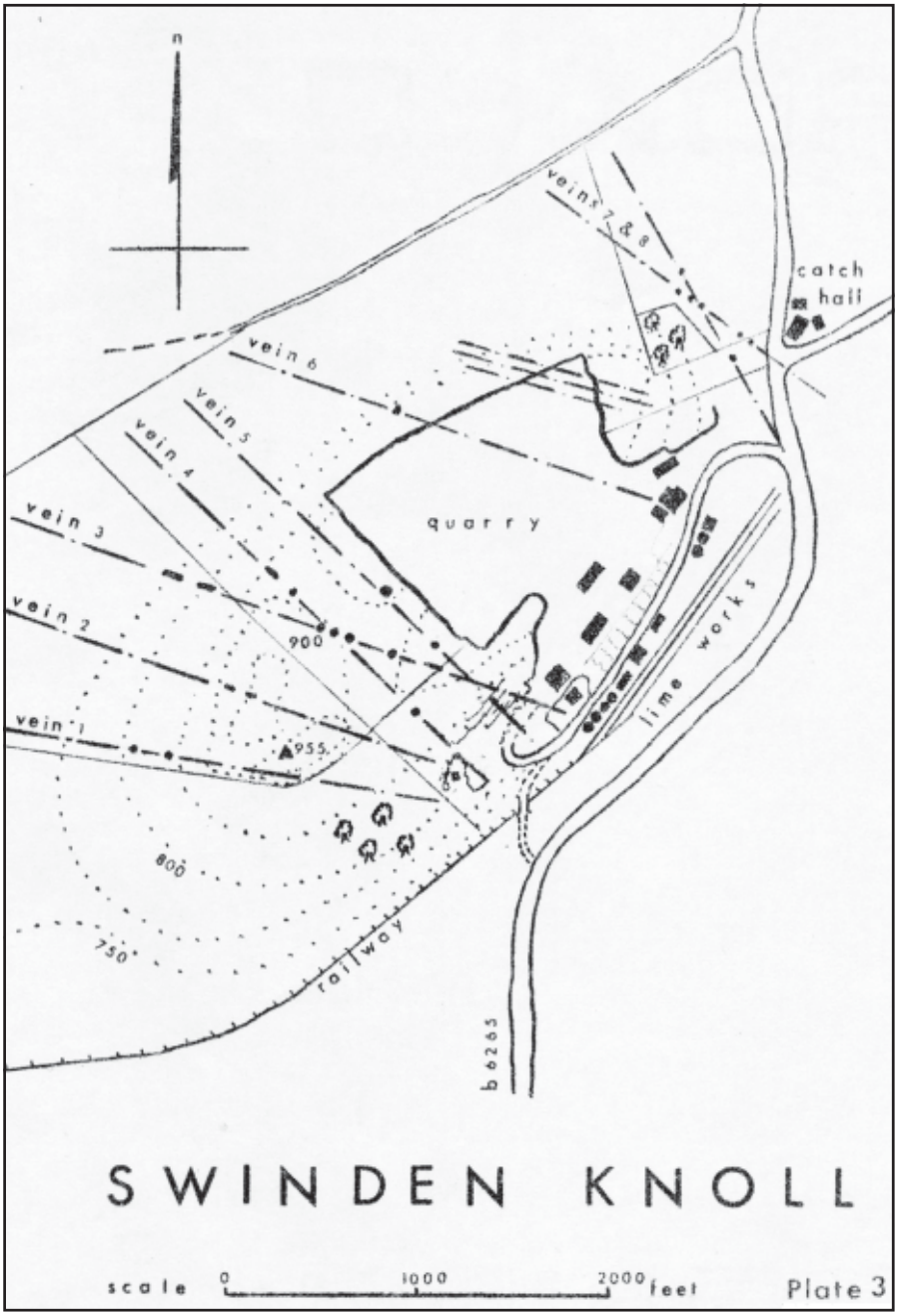
The two NNW-SSE running veins (Numbers 4 & 5) occur 150ft apart, almost at the centre of the knoll; number four vein has only been worked as earlier described in conjunction with number three vein but number five vein has been worked at a ‘blow-hole’ on its outcrop at about 920ft AOD; galena and calcite are present in the spoil heap. A further pit has been sunk on this vein just south of its intersection with number three vein.

The number six NW-SE running vein has now almost been quarried away and only a small trial pit can be found at its northern end. The vein can still be seen in the quarry face down to about 735ft AOD and carries aragonite for its full width of eighteen inches from the outcrop to the latter level. Towards its. south-eastern end the vein swells to an undefined width and large amounts of malachite and some galena have been revealed during quarrying. The matrix of the vein at this point is aragonite and massive calcite, the latter either a light yellow or a dirty brown black in colour. The brown calcite has been analysed and found to contain a non-crystalline iron-carbonate-silicate. The malachite is unusual in that the samples obtained are of a crystalline structure.

At the eastern end of the quarry several NW-sE strings can be seen with a purple fluorspar as a thin selvedge on their northern cheeks. Numbers eight and nine veins can be traced from the road side at Catch Hall (catch-all), which in earlier days was a public house until closed by the quarry owner for obvious reasons. Several pits and some trenching have been carried out on the veins which appear to carry only calcite.

History

The age of the mining on the knoll is not known but it must be closely related to that carried out on the other reef knolls on the south-eastern branch of the anticline. Here the main activity



SWINDEN KNOLL

scale 0 1000 2000 feet

Plate 3

has been on Elbolton Hill starting with the monks of Bolton Abbey, and some fourteen veins were worked by means of shafts and two levels. The Elbolton level driven from the Thorpe end of the hill was still being worked in 1894 and is said to be closed about 1908. The Escoe level driven from the northern side of the hill near to Escoe house is not shown on maps until after 1894 and was presumably driven by a Mr Mason of Gargrave, who worked the mines up to their closure. The veins are extremely narrow but have produced ore from wing deposits and small flats. On Langerton and Carden Hills some mining has been carried out by pits and opencuts and the veins, in general, on all three hills follow the pattern of those on Swinden.

Production figures for all the mines mentioned are only known from 1860 to 1881: during these years the annual production of ore averaged 4.8 tons With two peak years occurring in 1861 and 1865 when 13.5 and 16.9 tons respectively, were raised.

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