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THE CLIFFS: QUARRY AND CAVES, LITTLE HAYWOOD, STAFFS.

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Abstract: The quarry and caves at 'The Cliffs' were excavated for good quality building stone probably during the middle of the 19th century. The geological background of the site is described and evidence for the dating of the quarry and use of the stone is discussed. A survey of the existing workings is presented.

INTRODUCTION

This sandstone quarry, which extends underground into 2 small excavated workings, is situated immediately adjacent to the railway between the villages of Great Haywood and Little Haywood in Staffordshire. The site (SJ99982182) can be approached by footpath from the A51 but permission needs to be obtained both from the National Trust and the local tenant farmer before visiting the locality. The workings, which are overgrown with a mixture of ferns and rhododendrons, lie within a small copse of sycamore and horse chestnut. The quarried site covers an area of 1120 square metres of which approximately 128 square metres is represented by the underground caves.

GEOLOGY

The workings have been excavated from the upper lithologies of the Sherwood Sandstone Group (Lower Keuper Sandstone). The beds, which are extensively cross-bedded, dip at an angle of 3 degrees to the north-east and the best exposures of the lowermost units can be sen by the entrance at the south-western end of the quarry. A detailed geological section for the locality was given by Stevenson and Mitchell (1955) and this is repeated below.

	ft	in	
(Top)			
Marl, silty dark red	3	0	(0.91m)
Sandstone, massive	4	0	(1.22m)
Sandstone, fine-grained dark red and variegated	3	6	(1.07m)
Sandstone, massive, white with some mottling at top and with marly lenses	26	6	(8.08m)
Lenticular bed of white argillaceous sandstone, fine-grained and finely bedded	0	5	(0.13m)
Sandstone, massive, hard white medium-grained (base)	3	4	(1.02m)
Total thickness	40	9	(12.43)

As evident from the above section, the main building stone bed to be quarried is a little over 8m in thickness and it is from this unit that the caves marked on the 1:10,000 Ordnance Survey sheet (SJ92SE) have been excavated. There are some small lithological variations within the quarry, in particular the thin lenticular bed of argillaceous sandstone clearly seen associated with water seepage on the north-western side of the excavation appears on the opposite south-eastern wall to have died out and been replaced by a thicker (up to 0.5m) conglomerate band. The main sandstone unit is buff-cream in colour and the grains have been cemented by both calcite and dolomite.

Although most of the quarry walls are hidden under a thick coating of moss, algae or graffiti, there are a number of areas where iron and copper minerals occur (see survey). Some of the best examples can be seen on the comparatively clean walls within cave 'B'. The presence of these metals was noted by both Steward (1982 - Geological Records Centre for Staffordshire) and Beasley (1973). Malachitic deposits can be found in small patches within the main sandstone unit. The presence of copper was confirmed by the County Chemical Laboratory, Stafford (Beasley). The malachite is found within the matrix of the rock occurring either in association with laminations in the cross-bedding or as an irregular 'shell' enclosing a kernel of white sandstone (Beasley). Detailed examination of the latter deposits has shown that the 'shells' encrust pipe-like cavities which, it has been suggested, could be poorly preserved plant casts possibly similar to Calamites (Beasley). Much of the mineralization is found near to the base of the main building stone bed. It should be noted however that this is also the most accessible section! In addition to the deposits already described, flakes of malachite can be seen in association with mica within the thin band of white argillaceous sandstone found on the north-western walls of the quarry. Small deposits of azurite (also noted by Beasley) can be found on the walls of cave 'B'. Haematite can be seen occurring both as small nodules and in association with the current bedding (Beasley). In addition thin veneers of haematite can be found infilling fissures on the quarry walls. Areas of mineralization have been shown on the survey.

As mentioned by Beasley, the Cliffs quarry lies close to the junction of three faults (one of which is the West Shugborough fault sketched in Hull's 1896 memoir) and it is possible that this very limited mineralization could be associated with them.

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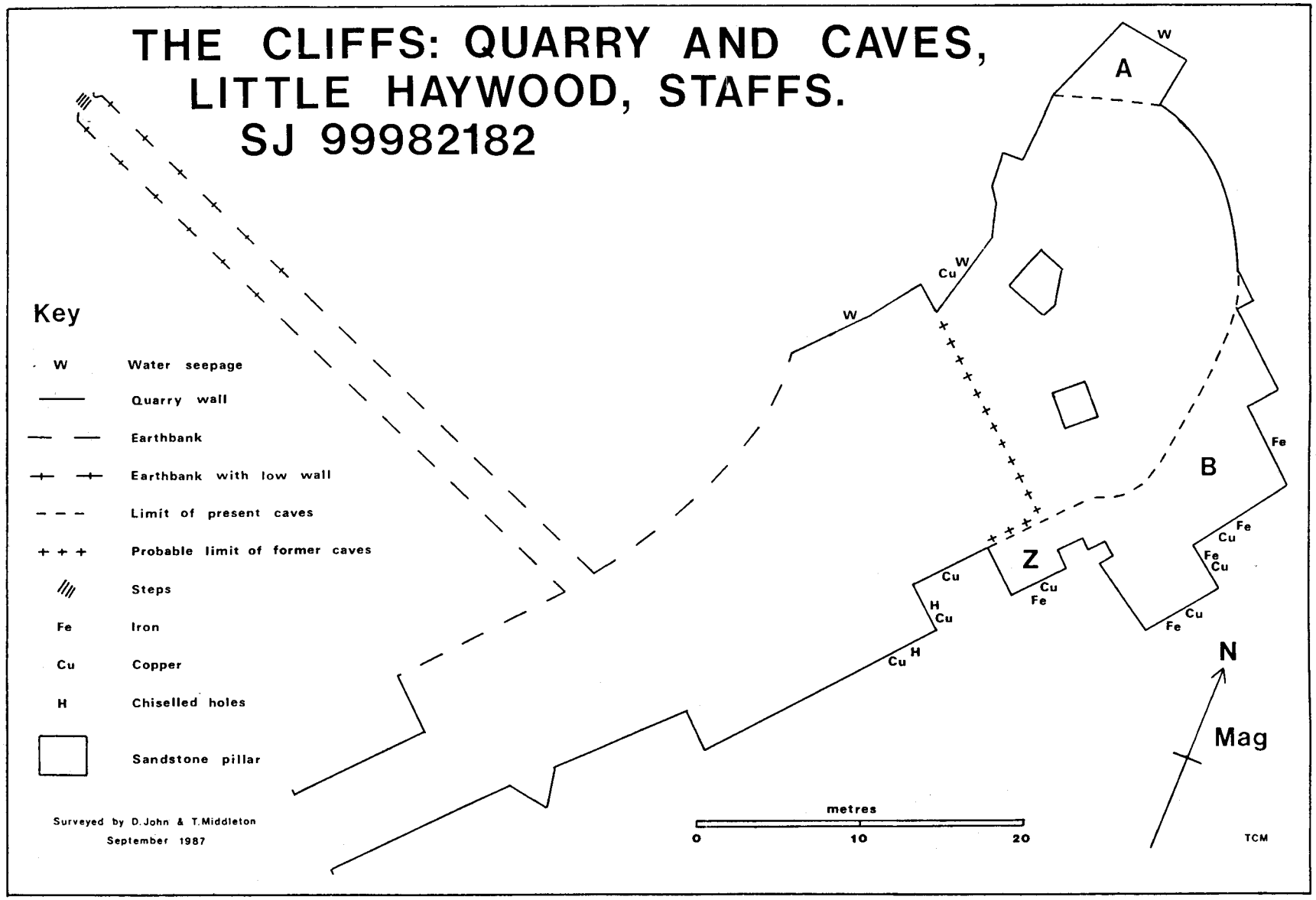

HISTORY

There appears to be virtually no documentary evidence relating to either the date of the workings or the use of the building stone. In addition, no inscriptions were apparent within the workings to aid the dating of the excavation. However some information can be gleaned from the study of maps of the area. The quarry does not appear on the maps of Yate (1775), Teesdale (1832) or the first 1 inch : 1 mile edition of the Ordnance Survey (1836). However it should be remembered that all 3 maps are of comparatively small scale and that the workings are relatively minor; nevertheless the Ordnance Survey sheet clearly shows a number of small marl pits between the settlements of Great Haywood and Little Haywood. There are also 2 large scale maps for the same period which show details of the area - the Shugborough Estate Map by J. Hubbersty (1833) and the Tithe map for the Parish of Colwich by J. Lofthouse (1839). Neither of these large scale maps shows any evidence of quarrying at the Cliffs. The first map to show the excavation is the 6 inch to 1 mile Ordnance Survey sheet of 1890. Thus it would appear that stone was being worked sometime between the dates 1839 and 1890.

Both Stevenson and Mitchell (1955) and Plot (1686) refer to the Lower Keuper Sandstone as "well resisting the action of water" and as a result it was often used for the building of structures associated with canals such as bridges and locks. However, the Grand Trunk Canal (later known as the Trent and Mersey Canal), which lies just beyond the railway immediately adjacent to the site, was authorised in 1766 and completed in 1777 (Pugh 1967). In addition, most of the buildings on the Shugborough estate were completed during the late 18th century (Pevsner 1974). Thus it is very unlikely that stone from the quarry was used for either the canal or the main buildings on the Shugborough estate.

The middle part of the 19th century, however, is a period associated with the construction of the railways and large amounts of good quality building stone would be required for tunnels, bridges and other associated structures. The former North Staffordshire Railway lies just 35m south-west of the main quarry entrance. Construction of the railway within the valley of the Upper Trent was authorised in 1846 and the line opened in 1849 (Pugh 1967). The Shugborough tunnel (SJ98832159 - eastern end) through which the former London and North Western Railway passed, was constructed in 1847 (Pevsner 1974). The tunnel lies just over 1km from the quarry. It is interesting to note that there is a distinct lack of spoil associated with the workings and it is possible that much of the broken stone could have been used as footings for the railway.

In addition to the railways there are two other major structures which were built during the same period. The church of St Stephen at Great Haywood (SJ99752254), which lies just 750m north north-west of the Cliffs, was extensively restored during the early part of the 1850s. The bridge (SJ99632243), which formerly crossed the river Trent as well as the railway and canal, was shown for the first time on the 1890 Ordnance Survey sheet. This bridge lies 700m north-west of the quarry.

All of the structures mentioned above - the bridge, church and railway buildings, are all made from a good quality cream/buff-coloured, albeit weathered, sandstone and may well have been the recipients of stone from the Cliffs. A search was made through the Shugborough Estate Agents Accounts for the years 1847, 1848, 1849 (railways), 1852, 1853, 1854 and 1855 (church) but no trace of quarrying activity at the locality had been recorded.

The large mature sycamore trees which rise out from the floor of the quarry suggest that the workings have been closed for many years. Indeed it would appear that they were not worked during the lifetime of Mr Wallace Hill of Park View Farm (1899-1977) (Mr F S Hill pers comm). Thus what little evidence is available would suggest that it was closed during the latter half of the 19th century.

The military (probably Royal Artillery), who were camped in the local fields during 1942, used the caves for storage of munitions and the south-western end of the quarry for a tented cookhouse (Hill pers comm). The local farmer has a number of documents relating to the hire of his father's horse and cart by the army during that period. At the end of the military occupation it was decided that the caves had become unsafe and so the major part of the underground workings were destroyed by explosives (Hill pers comm). The probable former extent of these caves can be estimated from the large debris slope at the north-eastern end of the quarry (see survey and photo). Further evidence to support the use of explosives is discussed in the next section.

The excavation is 68m in length with a maximum width of 26m and covers a total area of 1120 square metres. The main body of the workings trend in a north-easterly direction and, in addition, a narrow partially walled section 42m in length joins from the west. The quarry face reaches a maximum height of 8.2m.

Two caves occupying a total area of approximately 128 square metres are located at the north-eastern end of the quarry. These underground workings were, at one time, considerably more extensive in area, and, as the sandstones are inclined to the north east, they represent the logical continuation of the excavation downdip into the hillside.

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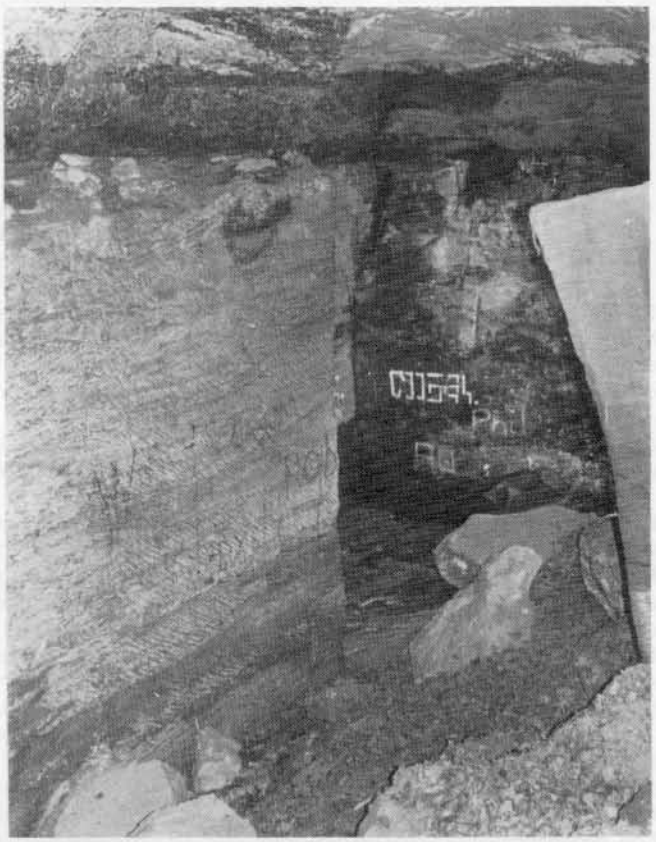
1) View of the north-eastern end of the quarry. Note the two cave entrances at either side of the ravine ('A' to left, 'B' to right), the large debris slope and the two sandstone pillars (centre).

2) Interior view of cave 'B'. Note the pick marks on the walls, the debris slope which fills most of the floor of the cave and the prominent ledge at the top of the main building stone bed.

3) Cave 'A' from the debris slope. Note the prominent ledge close to the roof of the cave and the small outcrop of marl and fine sandstone at the base of the building stone bed.



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Cave 'A':

This is the smaller of the two caves with an area of approximately 28 square metres and a maximum height of 5m. It is located at the north-north-eastern end of the quarry (see survey). A steep debris slope runs into the square-cut workings from the south and reaches the backwall of the cave. Bands of fine-grained sandstone and marl outcrop in the lowest part of the cave and lie immediately below the main building stone bed. These finer units are associated with a seepage of water which probably supplied the 'wishing well' described by Mr Hill. A bed of fine-grained mottled sandstone can be seen near to the roof of the cave. The comparatively incompetent nature of this unit is clearly shown by the prominent ledge which runs around the walls of the cave. Numerous pick marks can be seen in the cave but there is no trace of mineralisation.

Cave 'B':

This larger cave is located at the east north-eastern end of the quarry (see survey) and can be entered from either side of a large detached block. The cave has a maximum height of 6.5m and a floor area of 100 square metres. Most of the floor of the cave is littered with debris which has falled in from the north west. The cave has been excavated out of the main building stone bed and the prominent ledge formed at the junction with the fine grained mottled sandstones can be seen near to the roof of the cave. The walls are covered with pick marks and small deposits of malachite, azurite and haematite can be seen.

As already mentioned, much of the former underground workings appear to have been destroyed by the military during the Second World War and there would appear to be sufficient field evidence to support this statement in the form of:

1) the large debris slope at the north-eastern end of the quarry which has infilled parts of both of the remaining caves.
2) the two sandstone blocks (probably roof support pillars) which are located at the north-eastern end of the workings.
3) the "remarkable cavernous weathering" of the roof in cave 'B' refered to by Beasley which in fact probably resulted from the explosion.
4) the logical underground continuation of the workings following the dip of the beds.

The probable extent of the original cave has been marked on the survey. It should be noted, however, that the actual shape of the quarry portrayed on the various 6 inch : 1 mile O.S. sheets does not appear to have changed with time! The only difference that does occur is that the location of the two caves is far more clearly shown on the more recent 1973 edition.

Just south of the entrance to cave 'B' the quarry wall contains numerous rectangular chiselled holes which probably housed the timbers for a small building (see survey and photo).

No shot holes were found in either the quarry or the caves. Thus it would appear that explosives were not used during the quarrying operations and this was probably because of the damage that would have been caused to the building stone. Instead, the stone would appear to have been worked by hand with the aid of picks and chisels. Much of the detail of the quarry walls is hidden under a veneer of moss and algae. However, as with the mineralisation, the best wall sections showing details of the working techniques are located within the caves. The clearest example can be seen in cave 'B' on the backwall of the zone marked 'Z' on the survey. Here, the pick marks indicate that two narrow headings 10cm - 20cm in width were driven on either side of the backwall in a south-easterly direction into the outcrop. The rock was then worked parallel to the former backwall to connect the two headings. The incompetent mottled sandstone bed which lies immediately above the main building stone unit would have provided a natural line of weakness for the miners to work along. Similar pick marks can be seen elsewhere in both of the caves although the direction of working is not necessarily the same.

A carved head of a man with a beard can be seen on the corner of the main bay just south of cave 'B'. The carving, which is partially hidden behind some rhododendron shoots, lies approximately 7m above the floor ofthe quarry. A second carving was in existence until comparatively recently on the corner at the opposite end of the bay (Hill pers comm). The former site of this second carving can still be seen. It is rumoured in the village that these carvings and candle niches (chiselled holes) were associated with 'black magic' rituals attended by Thomas Anson (1695-1773). The date is however incompatible with the evidence gleaned from the maps and thus this tentative connection is very unlikely. Anyone wishing to pursue this doubtful mystical link should consult Andrew Baker's lengthy paper entitled "The Shepherdess's Secret - Shugborough, Thomas Anson, and the Priory of Zion" which is available at the William Salt Library, Stafford.

Just beyond the south-west entrance to the quarry the land, which today is very overgrown, falls away steeply to the railway. A footpath trending north-west/south-east passes the entrance to the quarry and it is possible that the stone could have been transported by horse and cart along the footpath in a north-easterly direction towards the church or bridge at Great Haywood. However the bend which connects the entrance with the footpath is fairly tight and it is possible that the partially walled gulley which joins the main workings from the west was driven to facilitate the transportation of the stone. Although at the moment the gulley is partially blocked at its western end by a small earthbank, the walled depression does continue beyond for several metres.

CONCLUSION

Although this is only one of a number of small quarries in the Stafford area which produced stone for the locality it is of interest both because of its underground extensions and because of the presence of copper minerals. However, unless further documentary evidence is forthcoming much of the history of the site will remain an enigma.

ACKNOWLEDGEMENTS

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