

CLEAR-THE-WAY OR BLACK HILLOCK MINE
TIDESLOW MOOR

by S. G. Walters

SUMMARY

An exceptional thickness of some 200 metres of "toadstone" was intersected at Black Hillock Mine near Peak Forest. A study of contemporary documents and the geology of the surrounding area has shown that the "toadstone" was in fact a dolerite intrusion, possibly related to a complex sequence of lavas and tuffs in adjacent mines. Old man's workings were enlarged and an engine shaft was sunk to a depth of 98 fathoms in 1764-1771. Water was raised by a tub engine and turned into a swallow in the toadstone at 60 fathoms. A further episode of deepening carried the shaft to 120 fathoms in 1789-1793 when water broke in, though it is not known whether the toadstone had been bottomed.

INTRODUCTION

Clear-the-Way or Black Hillock Mine (SK 141 782) was situated on the Hucklow Edge-Tideslow Rake system in the western portion known as White Rake. White Rake had been followed into what was thought to be one of the lava horizons of the area, the 'third toadstone at its basset (outcrop)' according to Farey (1811). At Black Hillock Mine the vein had persisted into and had been worked in at least the upper part of the 'toadstone'. It was logical, therefore, to suppose that this would be the ideal site to follow the vein through the toadstone in the hope of discovering virgin ore in the underlying limestone.

Unfortunately, the toadstone proved to be of exceptional thickness and the predicted rich veins were never discovered. The failure of the venture was documented by Whitehurst (1778) in which he contrasted the great thickness of toadstone at Black Hillock Shaft (183 m not bottomed) with the thin toadstones seen in adjacent mines (Fig. 2). His account has been reiterated many times and created doubts and confusion which may now be examined in the light of recent investigations.

Information of the 'tryal' is found in two reckoning books (Bagshawe Collection 401 and 402) together with a number of Barmasters' Books for the liberty. In the earlier reckonings the mine is known as Clear-the-Way, and only later did the predominance of dark toadstone on the spoil heap earn it the alternative name of Black Hillock (only this latter name will be used to distinguish it from another Clear-the Way mine on Moss Rake).

BLACK HILLOCK MINE, 1764-1771

The initial deep sinking of the Black Hillock Shaft dates from 1764 to 1771, but earlier and later episodes of activity can be recognised. Evidence for the former is from numerous references to the 'old man' in the reckonings of this period. Prior to shaft sinking unworked veins in the vicinity were 'possessed' to form a consolidated 'Black Hillock Title'. These include portions of White Rake, Little Calfestones and Old Calfestones Veins, Chap Maiden Rakes, Bull Rake at Tideslow Top, Stoney Low Vein, Dawsons Rake and the Rattock.

By December 1764, the foot of the Engine Shaft stood at 20 fathoms, still in toadstone. Details of the 'engine' are sparse; for example an entry for

March, 1765, noted that:

A new tub engine - £30 0s. 0d.

Later entries recorded new ropes and kibbles for this engine which seems likely to have been a simple balanced horse-whim. Water was not initially a problem due, no doubt, to the impervious nature of the toadstone. At deeper levels water was drained into a swallow, at 60 fathoms. It is difficult to envisage a swallow in the 'toadstone' at such great depth. It may have been a cavernous portion of the vein draining towards Peak Forest. Water was drawn up from below this level by a horse-whim.

In March, 1767 the 'old man's sumps were opened for air and climbing' by connecting them with a cross-cut from the foot of the engine shaft at 54 fathoms. It becomes increasingly obvious that the miners had little or no idea of the extent of those old workings. In June, 1768, with the engine shaft foot at 82 fathoms, still in toadstone, an investigation was made of both new and old workings (Bagshawe Collection 401). This recorded the 'old man' as descending in a series of typical shallow climbing shafts, variously referred to as sumps or turns. The upper turns were sunk at a particular hade or inclination and suggest they were following the vein. At a depth of some 74 fathoms this vein appears to have been lost in the head of a 20 fathom perpendicular sump. at this time partly flooded. The results of this investigation indicated that 'the old gates stood at 96 fathoms deep' (Fig. 1).

The flooded sumps had been pumped dry by September 1768, as shown by the entries:

Geo. Boam and Co. emptying the old mens sump 22 fathoms and 4 ft. at 22/6 per fathom	£25 10s. 0d.
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Widow Rawlin's horses drawing the water out of the old mens sumps	£ 2 2s. 0d.
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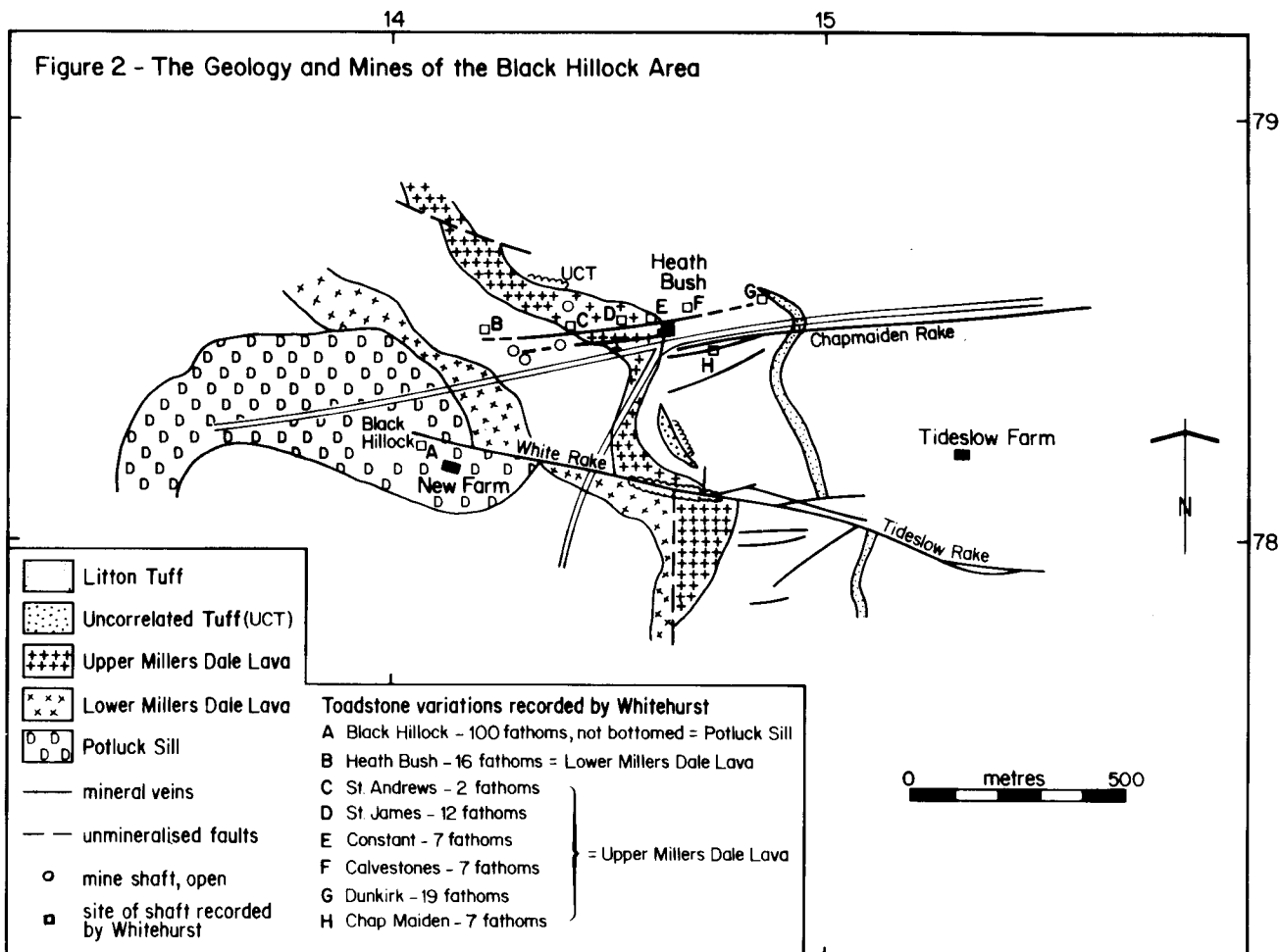
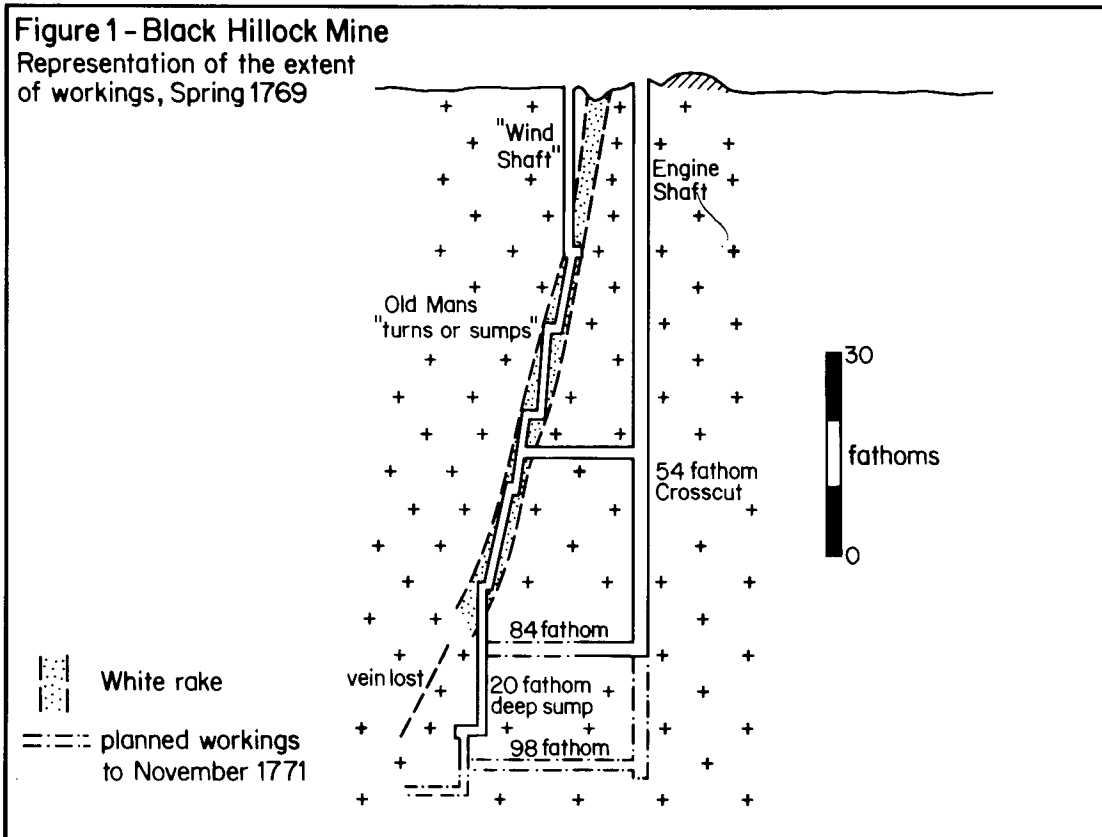
When pumped dry the bottom of the sump was resurveyed as 94 fathoms deep and discovered to be connected via a short drift to another sump of 4 fathoms giving a total depth of 98 fathoms. This was some 16 fathoms lower than the foot of the Engine Shaft and presented somewhat of a dilemma. The first option was to abandon sinking the engine shaft and concentrate work in the deeper parts of the old sumps. This would entail having to raise water from the sumps by hand to a cross-cut driven from the Engine Shaft foot at 84 fathoms to draw it up to the swallow. The second option was simply to carry on sinking the engine shaft to connect first with the old man at 98 fathoms and then to carry the trial even deeper, a more expensive proposition.

Eventually, however, both plans were put into action in order to provide two interconnected shaft systems which would help considerably with deep ventilation. (Fig. 1).

By the end of 1768 work was in hand to drive the 84 fathom cross-cut to continue sinking the engine shaft and enlarging and deepening the lower reaches of the old sumps. Clearly the fact that the workings were still in toadstone at this depth had not dampened their enthusiasm for the trial. Indeed a short note seems full of optimism:

'... the 16 yard drift lies at or near 94 fathoms deep to which place we must let down our shaft, and then enlarge the 16 yard drift, and from the head of the 20 fathom sump bring our vein with us to the bottom of the toadstone, there we stand prepared with everything for a full trial of the under Lime, and for air to carry on afterwards.'

This optimism is puzzling. There is a strong implication that either the base of the toadstone had been reached or that there was some indication that it soon would be encountered. Whether or not Black Hillock Shaft



ever did reach the limestone has been a point of dispute. Whitehurst (1778) clearly stated that the workings were abandoned in toadstone at 100 fathoms, but Farey (1811) attributed a sudden inundation at the foot of the shaft to a breaching of the limestone.

Although during 1769 work continued at depth to try to intersect the vein, all was not well. The veins within the 'Black Hillock Title' had lain idle for many years and on a number of occasions the Barmaster threatened to give these to other miners. To prevent this, the Black Hillock miners had periodically carried out some semblance of work at each of the veins.

In the period 1770-1771 activity at the mine entered into decline. In the final reckonings there are few details as to why the venture was finally abandoned after so much effort. There are vague references to an increase of water but nothing that matches the sudden inundation noted by Farey. Despite continually 'driving towards the vein' no ore output is ever recorded and it is more likely that this failure to find mineralisation at depth was the deciding factor. The Barmaster became no longer satisfied with their 'sham' workings of the vein, and gave these away in November, 1771, and this may also have been a major factor. The total losses incurred by the shareholders amounted to £5,532 (B.C. 401).

BLACK HILLOCK MINE, 1789-1793

This did not, however, mark the end of activity at the mine. If water had been a problem in 1771, it presented no difficulties in 1789 when sinking was recommenced at the foot of the engine shaft. In the three months ending November, 1789, over 15 fathoms were sunk making the engine shaft in all some 120 fathoms deep. Following this there was a sudden and dramatic drop in activity. The final reckoning was for a 3¼ year period to September 1793, and contained a short note of great interest:

'..... drawing water and endeavouring to sink at the shaft foot but the water could not be managed though as dry a summer as can be remembered.'

This implies that the inrush of water recorded by Farey (1811) was encountered in the summer of 1790 at a depth of 120 fathoms, twelve years after Whitehurst's (1778) initial account.

The abandonment of this second venture with a loss of £60 marks the end to all deep activity in Black Hillock Mine. Sporadic hillocking took place along White Rake from 1794-1824, with small profits from belland ore whilst there is a brief period of mined ore production (December, 1806 - June, 1807).

There is little in the way of surface remains today other than grassed over hillocks and a few open shafts. The most obvious relic is the large mound of dark toadstone at Black Hillock from which the mine was named.

RECENT ACTIVITY

The area has not been without one last surprise. In recent years the White Rake east of Black Hillock has been worked opencast revealing a strong fluorite-rich vein up to 1.5 m wide that persisted into the Upper and Lower Millers Dale lava. Such a strong continuation of a vein through a lava is unusual and the high grade fluorite fill contrasts sharply with the more typical calcite-baryte dominant assemblages seen in the Tideslow Rake portion of the vein system to the east.

GEOLOGY OF THE BLACK HILLOCK AREA

The geological situation at Black Hillock, is far more complex than could have been envisaged by Whitehurst or Farey. Green et al (1887) considered the great thickness of toadstone as due to the shaft being sunk into a feeder structure to the lava. Bemrose (1907) was the first to recognise that the 'lava' at Black Hillock was in fact intrusive dolerite, part of his Potluck Sill. Farey had correlated this sill and the Cressbrook Dale

lava encountered in High Rake Mine further east as his '3rd toadstone'. The stratigraphic level of the intrusion is considerably below the horizon of the Cressbrookdale Lava. This provides an explanation for the thickness variations recorded by Whitehurst and Farey's four 'chance toadstone' beds in Chapmaiden Mine. The map first produced by Whitehurst (1778, incorporated into Fig. 2) shows the mines in question to lie within the areas underlain by the Lower and Upper Millers Dale Lavas. An eastward continuation of Potluck sill towards Chapmaiden Mine may correspond to the third of Farey's 'chance beds'. The presence of four beds, however, in the absence of any fault repetition requires further explanation. The fourth horizon may correspond to the small tuff outcrop outlined by augering on recent Geological Survey maps (Stevenson et al., 1976) from south of Chapmaiden Mine (Fig. 2). Bemrose (1907) recorded tuff from a similar horizon below the old quarry north-west of Heath Bush, now obscured, and the author has collected tuffaceous limestone from shaft spoil near to Bemrose's locality. Another possible explanation can be seen in the recent White Rake opencast. The Lower Millers Dale 'lava' shows two distinct flows separated by a limestone unit some 3 m thick. Seen underground this could have given rise to the interpretation of two or more 'chance beds'. Unfortunately, Farey gave no details as to the thickness and relative position of his 'chance toadstones'. There are a number of open shafts in good condition in the area (Fig. 2) which may give access into the mines and the author would be interested to hear from anyone who has descended these.

Thus, it seems that the Black Hillock Shaft was sunk into a dolerite sill not related to the thin lavas seen at adjacent mines. A thickness of over 215 m however, is still remarkable for a Derbyshire Sill and must represent a sill feeder structure or a 'step down' similar to those seen from the Whin Sill in the North Pennine Orefield. Green et al. noted (1887, p.135):

'..... the toadstone (dolerite) contained many fragments of limestone, differing scarcely at all in appearance from the parent rock. Specimens abound in the hillock.'

This is a peculiar and highly unlikely statement. Many blocks of unaltered limestone can still be found in the hillock strongly suggesting the limestone had been reached. No specimens can be found of limestone caught up in the dolerite in an 'agglomerate' texture.

Apart from the variety of igneous horizons the area is also geologically important for the unusual persistence of mineralisation in these horizons. Farey (1811) recorded a number of mines in this vicinity which 'worked ore in the toadstone' and the recent White Rake opencast supports these observations. At Chapmaiden Mine galena-fluorite-calcite-baryte vein samples within blocks of bleached and altered vesicular and non-vesicular basalts are present. The White Rake at Black Hillock Mine is known to have persisted to at least a depth of 135 m within the Potluck Sill. Occasional specimens of mineralised dolerite can be found on the dump. Adjacent to these veins the dolerite shows zones of bleaching and argillisation producing an altered rock very similar to the 'White Whin' of the North Pennine Orefield.

CONCLUSIONS

The Black Hillock trial failed due to the complexity of the intrusive and extrusive activity in the area and the understandable failure of the miners to recognise the attendant implications. As far as a trial of 'under lime' it is an unfortunate fact that without realising it, mines such as Chapmaiden had already followed the veins down to beneath the lowest lava horizon of the area. It was, as Farey recorded, although he himself failed to recognise the real situation:

'..... a trial suggested only by the grossest ignorance of the stratum.'

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