

BRITISH MINING No.45

MEMOIRS 1992



Fairbairn, R.A. 1992
"Alston Moor Hushes"
British Mining No.45, NMRS, pp.17-27

Published by the
THE NORTHERN MINE RESEARCH SOCIETY
SHEFFIELD U.K.

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ISSN 0309-2199

ALSTON MOOR HUSHES

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SYNOPSIS

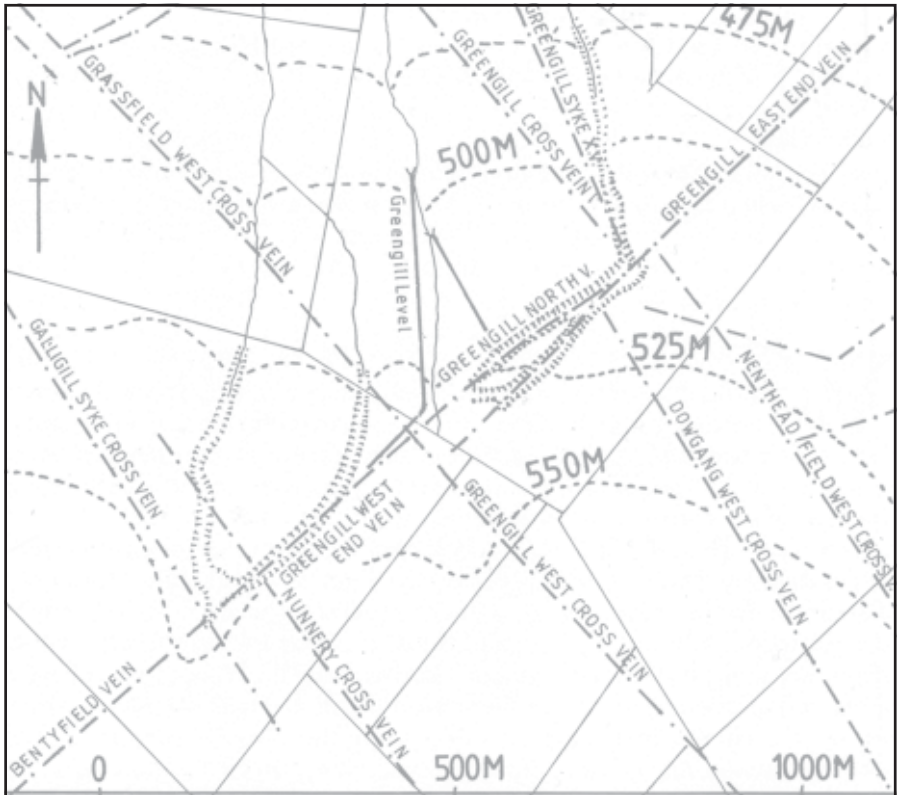
Many hushes scar the landscape of the northern Pennine Orefield, and frequently they dwarf the features left by the underground mines. For many of the underground mines detailed plans and records have survived from the 18th and 19th centuries, yet references to hushes are rare.

Westgarth Forster, 1801,¹ described the basic method used to work a hush, water was impounded in a reservoir, then released down a prepared gutter washing away the loose material. The ore which is the more dense mineral present remained in the bottom of the gutter where it could be collected, while the less dense wastes were washed away.

Hushes were used for three main purposes, exploration, exploitation of ore deposits and reworking the wastes from underground workings. Westgarth Forster wrote that “where circumstances are favourable, it is undoubtedly the most frugal method of trial for making discoveries”. When the run of a vein was already known, the hush would be aligned along the vein as far as the gradient would allow. Hushes to work mine wastes are usually small and situated among the waste heaps, having no relationship to the ore deposit, in effect they were a crude running buddle.

A hush was a benefit to a mining company, but was a mixed blessing to the owner of the ground, for while the owner would benefit from the duty on the ore that probably would not have been worked any other way, the damage to the land and rivers could be substantial. The problem for the landowner, assuming he also owned the mineral rights, was to balance the gain from the ore against the cost of the damage caused. Clauses were often inserted into mining leases controlling or prohibiting hushing. An example of this was included in a lease of 1820 for the Lune, Holwick and Mickleton district near Middleton in Teesdale which said “The Lessees not to hush or make any dam for hushing without the previous consent in writing of the Lessors or their agents”.

On the outer margin of the orefield, land owners were often inclined to offer inducements to encourage the exploration of their property for mineral. The manor of Knarsdale in the South Tyne valley is in such a position, and the Lady of the Manor issued a tack note² to George Atkinson of Redwing near Garrigill in 1785 that included the liberty to make a hush dam and to cut and hush to discover some mineral veins.



Map 1. *Greengill Hushes and adjacent vein systems.*

The value of hushing to work mine wastes is illustrated by the comments of Beaumont's chief agent³ made when enclosures were being proposed in 1799, he said that they should not be deprived of the liberty of hushing wastes as it was not only the best way of working them, "but also does least damage to the Ground, as by that means they are continually conveyed to some Burn".

Veins that had already been tried by underground mining could sometimes be worked by hushing; as early as 1737 Liddle⁴ noted that in Thorngill Hush they had holed into the old man.

Written accounts suggest that hushing was falling from favour by the middle of the 19th century, and may have been in decline in the 18th century. Wallace⁵ wrote in 1769 that in Weardale they formerly mined by hushing, and still did near Rookhope. Bainbridge⁶ 1841', writing specifically of the North of England, stated that hushing "is now seldom resorted to, and is usually prohibited in mining leases".

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The most recent grant of permission to hush known to the author was given in 1803 for the working of Smittergill Hills Sun Vein; grid ref 35 691 398; on the east bank of the Black Burn, 4½ miles SSW of Alston. According to Dickinson⁷ in 1821 Christopher Stout ~as given liberty to work the vein by hushing, and he got 13 bings of ore.

Against this background of a poorly documented method of mining, several hushes in the region around Alston were visited, two of which were selected for detailed study; both are situated on Middle Fell, the area of high ground the south east of Alston between the River South Tyne and the Nent.

The Middle Fell Hushes

Strata from the Four Fathom Limestone up to the Fell Top Limestone is present over the high ground of the fell. Several mineral veins cross the fell in a north westerly direction, some of which have proved to be very rich in lead ore. Cross veins, running in a north westerly direction intersect the veins and in some instances affect their ore bearing. The throw of the strata by the veins is small, and the strata is nearly horizontal. The oxidation zone penetrates the mineral veins to a greater depth than is normal for the region, resulting in the presence of secondary cerussite and smithsonite in the veins as well as the primary galena and sphalerite. The main gang minerals are quartz and limonite. A layer of glacial drift is present over most of the north facing slopes of the fell.

Three of the veins have been worked by major hushes, Natrass Red Groves, Greengill and Dowgang, the first two were selected for study.

Greengill Hushes 35 766 435

Location

The hushes are situated on the SW side of the Nent valley one mile west of Nenthead and were developed to exploit the Greengill Vein.

Recorded History

Prior to the 1736 lettings, Greengill was leased to a Mr Bacon,⁸ probably the same that had the smelt mill at Allendale prior to 1765. Colonel George Liddle proposed for and gained the lease of the vein when the Greenwich Hospital leased their Alston Moor vein in 1736. Liddle's papers⁹ refer to an old level at the east end that was being reopened at that time, but make no mention of a hush. Between 1745, when Liddle withdrew from his Alston Moor leases and 1777 when the Earl of Carlisle and Company leased the veins, it is recorded¹⁰ that 40 bings of ore were obtained from Greengill Hush at a cost of 35 shillings per bing in 1768, by whom is not recorded.

Joseph Hilton¹¹ 1778, mentions Greengill Hush, he also records that a level was driven upon the Great Limestone in Greengill East End but found the vein to be unproductive due to the presence of a cross vein. A shaft was also sunk for a whimsey but never completed.

The Earl of Carlisle and Company raised 901 bings of lead ore from Greengill West End prior to their withdrawal from the area in 1798, probably from underground workings.

It is thought that major development of the Greengill hushes took place at about the end of the 18th century. In 1821 Dickinson wrote that the West End had been worked in recent years by hushing the top part as deep as they could get the water to run off and then they cut out the vein and strings about seven or eight yards wide taking out the material by horse and cart. It was also noted that the vein had previously been worked by sinking shafts and cutting drifts, but because of the great width and the softness of the ground considerable quantities of ore had been left in by the old man. Thomas Shaw held the lease of Greengill West End at that time, producing substantial quantities of ore, e.g. 142 bings from Michaelmas 1819 to Michaelmas 1820. Both Dickinson and Westgarth Forster mention the presence of float ore lying on top of the High Slate Sill under a cover of clay, Forster recorded the production of "a great quantity of white lead ore".

Greengill West End production Michaelmas to Michaelmas¹²

Date		Date	
1818-19	162 bings	1828-29	50 bings
1819-20	142	1829-30	24
1820-21	101	1830-31	1
1821-22	115	1831-32	1
1822-23	78	1832-33	0
1823-24	92		
1824-25	38		
1825-26	52		
1826-27	49		
1827-28	56		

These figures include the result of underground workings, but according to Dickinson the quantity produced by workings in the Great Limestone by Thomas Shaw and Company was negligible.

After 1831 the lease was held by Thomas Shaw and Thomas Milburn but production was low never exceeding 16 bings in a year, until production ceased in 1839.

The Site

By observing the interaction of the various mining features on the site it has been possible to place the various features in a chronological order.

From the map it will be seen that the site consists of two major systems of hushes. The SW hush is the one referred to by Dickinson and others as Greengill West End, and straddled the boundary between Bentyfield and Grassfield leases, though production reports indicate that at the time it was covered by a single lease. According to Wallace's map, 1861, Greengill East End lease ran from Nent River up to Greengill West Cross Vein, and thus included the NE hush, the West End lease seems to have extended from the West Cross Vein to the watershed. If this is correct it means that there are no records relating to the working of the NE hush, unless the production of 1768 was from this source.

Greengill NE Hush

The hush has two branches that were developed to work Greengill Vein and Greengill North Vein. A thin strip of original land surface is preserved between the two hushes, but the separation is such that they would fall within a single lease.

The earliest features are lines of small shaft heaps at 35 to 40 metre intervals along the veins. Associated with these shafts are a series of shallow gutters and spreads of fine wastes. The gutters were supplied with water from two reservoirs R2, R3, R4 that are now isolated on the SE side of the hushes. The comparative age of the shafts relative to the hushes has been established by the way some of the heaps have been partially removed by the hushes.

Several large whimsey shafts are present on the site and it is believed that these were the next phase of operation, again the chronological succession is based on the interaction of the hush and the waste heaps of shaft mines, though it seems probable that one or two may have been worked after hushing.

Finally there remains the main hushes, the outflow from the hush is by means of Greengill Syke. Grassfield Mine was driven out of Green gill Syke at Hayring in 1803. If the hush were active at that time the mine would be in danger of flooding; this suggests that the hush was idle after 1803. Because the vein runs across the natural drainage it must have been necessary to excavate a substantial channel across the fell before it was possible to use the power of the water to work it. It seems that a hush was made along Greengill Syke Cross Vein thus gaining a fall to run the gutter along the vein. Two reservoirs R1, R2, were constructed near the head of the hush. On the evidence of the interaction of the head of the hushes it seems that the

North vein Hush was abandoned before the main hush reached its maximum development.

Greengill SW Hushes

Two hushes are present, both start from a large sunken area in the fell; one follows the line of Bentyfield Sun Vein, the other is not related to any vein, and is probably on the line of a natural stream. Originally the two hushes were probably separated. Using reservoirs 1, 2, and 3 the area at the head of the westerly hush was worked out. Reservoir 1 is later than reservoir 3, cutting off the original feed to reservoir 3. The easterly hush was developed from reservoir 1. Both hushes were worked until there was insufficient gradient to hush. After that the vein was opencast joining the two systems and creating a depression now filled by a small lake. A fourth reservoir was made to feed into the side of the west hush; the reason for this is not known.

Many small shaft heaps are present on the site, in particular there is a concentration of minor workings between the two hushes; these may have worked float ore or strings. Some larger shaft heaps are present along the north side of both hushes, the purpose of which is not known. The ground to the east and west of the area worked by hushing has been worked by shafts.

A spread of slag accompanied by an area of ground devoid of vegetation is present on the NW side of the vein hush. The slag is only partly vitrified. This is believed to be the site of a bale. An unusual feature of the site is the presence of a small quantity of coal. The actual position of the bale has been removed by the hush. The bale indicates that the vein was being worked prior to the 17th century.

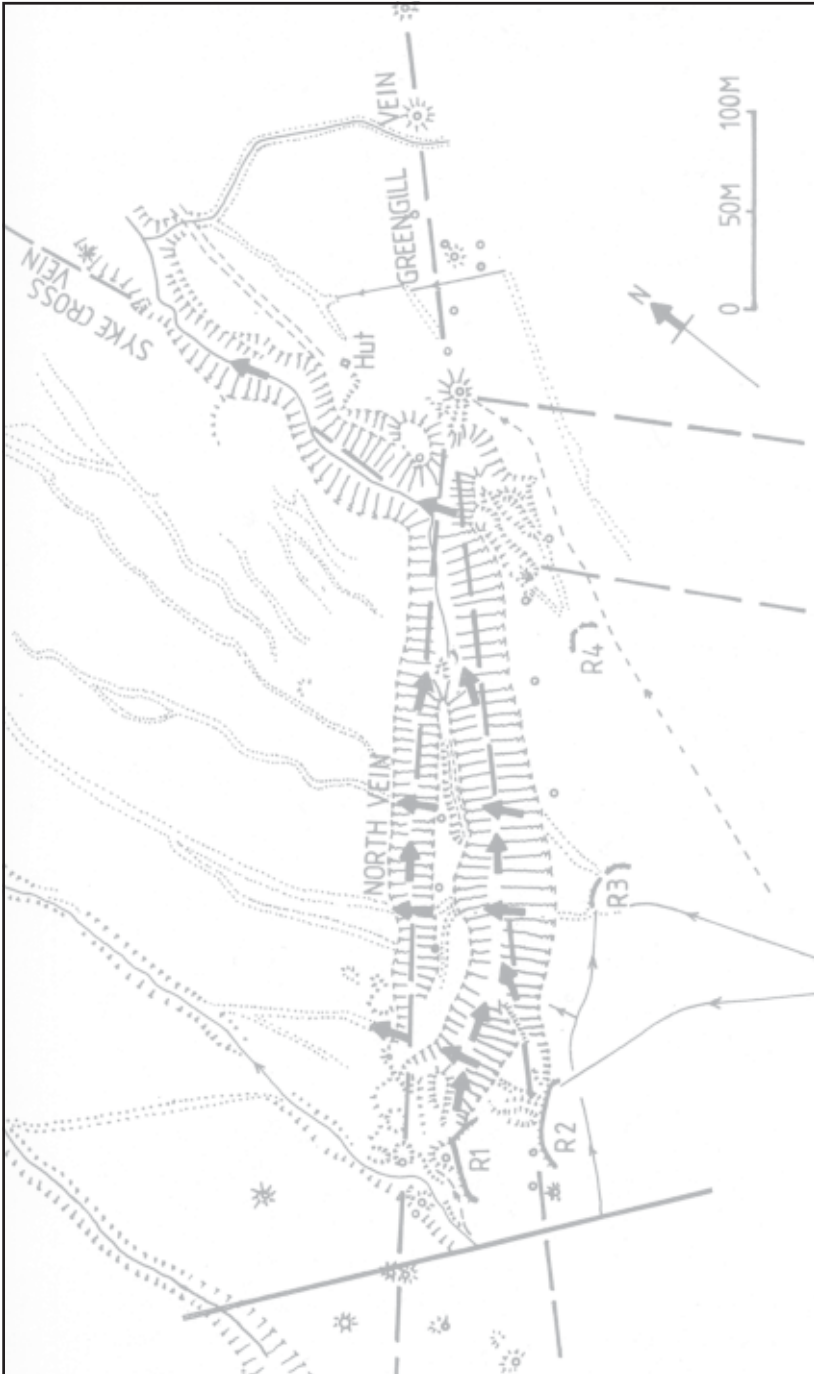
A small ruin that includes knock stones is situated in the area joining the hushes, and a road climbs away from the building on to the original land surface, only to be terminated by the west hush. The building and road and the over deepening of the hush must belong to the early 19th century workings described by Dickinson.

NATTRASS REDGROVES HUSH 35 740 449

Location

The hush is situated on the west slopes of Middle Fell 1½ miles SE of Alston. It was developed to work Natrass Redgroves Vein in strata from the Firestone Sill up to the Slate Sills.

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Map 2. Greengill NE Hush



Map 3. Greengill SW Hush

Recorded History

Prior to 1736 the lease was held by Thomas Atkinson, when it passed to G. Liddle. In his notes Liddle makes no mention of a hush at Natrass.

According to Dickinson¹³ nearly all the ore produced from 1790 to 1820 was got by hushing the vein in the Slate Sills and Firestone. George Millican and Ralph Vipond were working the vein in 1819-20 producing 25 bings of ore. A small vein that leaves Redgrove hush to the NE is known as Andrew's String or Millican's Vein, this has been worked by shafts. By 1830 the lease had passed to John Brownrigg, producing 14 bings of ore, but by 1832 notice of forfeiture was given.

The Site

Other minor hushes are present on the site, but Redgroves hush dominates the location. A smaller hush that joins the main hush from the ESE was used to work the Middle Vein, and a very small hush that joins the main hush from the south was developed to work mine wastes. A further minor gutter is present on the north side of the hush which also appears to have been used to dress ore from underground workings.

Water to work Redgroves Hush was impounded in a reservoir at the head of the gutter. The remains of an earlier reservoir can be seen on the south side of the main gutter, which was probably associated with the small gutter on the north side of the main gutter, though it may have been used in the early development of the main hush. The other hushes have small reservoirs to feed them.

Because of the difference in levels it seems that the small hush on the Middle Vein predates the full development of the main hush, yet the fact that it leaves the line of the Middle Vein to enter the main hush indicates that there was already a channel on the line of Redgrove Vein when it was initiated. A diversion of the Middle Vein gutter was made when shafts were developed in the bottom of the original gutter, showing that the hush was still required, probably to wash the wastes from the shafts.

The shafts and gutters on the north side of the main hush predate Redgroves Hush, while the small hush entering from the south must be contemporary or later than the main hush based on its level of entry.

The shaft mines mostly predate the hush; this is indicated by the way the water supply to them is cut off by the hushes.

Below the hush, where the slope decreases, there is an extensive accumulation of waste from the hush. Stone has been cleared out of the channels and now forms piles on the sides of the channels. This would enable the recovery of lead ore from the hollows in the channels.



Map 4. Redgroves Hush (Part of)

CONCLUSIONS

The surveys proved to be of value in two ways, they showed how hushes could be developed in various circumstances, and they showed that it is practical to put the workings on an old established site into a chronological order by studying the interaction of the features. Both Greengill and Redgroves hushes were developed late in the 18th century and continued to be worked up to about 1820-30. They may have been the last hushes to be in production on Alston Moor. No evidence has been found at either locations for the presence of a grated pit to collect the ore,¹⁴ it was probably collected from hollows that would develop in the floor of the gutter.

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