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THE MINES OF DOWNHOLME MOOR AND THORPE EDGE, SWALEDALE.

by J.L. Barker

The mining fields of Downholme and Thorpe Edge, although in pastoral lower Swaledale, provide a bleak and windy aspect for much of the year. Part of the moor lies within the Yorkshire Dales National Park and this offers an element of protection for the mining remains. The whole terrain is now controlled by the Ministry of Defence (MoD) as a military training area, but the nature of this training is such that what remains of the mining activity is almost completely undamaged other than by the elements. These areas represent a relatively small mining field compared with those in upper Swaledale.

Much of the land was owned by Coverham Abbey until the monastery was dissolved in 1537. Eventually, Downholme Moor passed to Lord Bolton of Wensleydale and Thorpe Edge to D'Arcy Hutton of Marske. In 1927 Downholme Moor and Thorpe Edge were bought by the MoD from their respective owners. A further purchase of part of Downholme village was completed in 1931.

Visual and documentary sources show that only four important veins were explored and these appear to be only a few hundred yards long. Most of the ore was mined in the Main Limestone and in the Richmond Cherts above. Two discoveries of considerable interest have occurred in the last few years: that of an ore-hearth at Downholme in 1987 by the staff of the Department of the Environment; and the identification of three bale smelting sites in 1991 by the writer.

The earliest known reference to lead mining is in the Victoria County History, which states that in 1396 Thomas De Percy had licence to dig for lead in his field.[1] Later, in 1560, Leonard Loftus of Downholme itemised lead to the value of £98 15s 0d. Loftus was probably a merchant who was also buying lead elsewhere in the area. Further references are, to say the least, sketchy, but nevertheless indicate an industry which operated over several centuries and was comparable with other lead mining fields in the upper Dale, although on a significantly smaller scale. The published Wharton papers refer to a lease of 13 years of Mines of Lead and Coal at Ravensworth, Feldom, Whashton, Applegarth, Thorpe and Thorpe Edge.[2] "*Rents to be paid to Sir Thomas Wharton as well as an equal share to Swale and Barker*". Later, in 1680, the papers record Robert Barker leaving his mining interests to his Derbyshire partners "*for stock on Thorpe Edge works due to all partners there concerne which rested in Robert Barker's hand at his death as his bookes of accounts appeared* £93 19s 7d". There are further references to both Thorpe Edge and other mines in the accounts. One of these refers to money from R.B. (Robert Barker) to his brother Adam, the first ancestor of the writer to settle in Swaledale.

Robert Barker, with his partner Philip Swale, Lord Wharton's agent and steward, and Frances Smithson, a wealthy landowner, had lead mining interests in many areas including Old Gang, Lownathwaite, Applegarth and Hartforth, as well as investments and a managerial role in Kettlewell and Derbyshire. In March 1680-1, Philip Swale

in a letter to Thomas Taylor, a Quaker friend, struck a rather despondent note. He states, "*About the time of R.B's sicknes and decease all oure concernes for lead in Swaledale Craven and Thorpe Edge seemed to declyne like him*". How much truth there was in this statement is a matter of conjecture.

It is necessary to move forward to June 1st 1767 for the next reference to mining, which is a "*lease for 21 years, Harry Duke of Bolton, to David Bradbury and John Berwick, a piece of ground for mining lead ore in the manor of Downholme*".[3] There is nothing to indicate which veins were to be cut. Mining leases of 12 or 21 years were normal from the 17th to the 19th centuries in Swaledale.

An interesting entry in the estate book of William Saddler, Lord Bolton's steward, for April 3rd 1803, states that a new string was cut on Downholme Moor, three to four inches wide "*with a good deal of ore*" "*The man and his wife (they it being all that are employed at present) had got in a few days nearly 1/2 ton very near the surface of ye ground, about 150 yards [137 metres] to the west of High Rock Point or Nab, opposite Mask, which Mr Foss had such made in showing your lordship) think at the boundaries riding*" '*Hope it will bear better in lower and stronger beds. Trial made by Wm Robinson of Downholme Park Farm, with others from Richmond*'.[4]

The reference to "*his wife*" is the only one in which a female is referred to in the digging out of ore that the writer has come across to date, although women were commonly employed for winding, washing and dressing. The quotation marks and brackets are the Steward's own and the general impression given by the entry is of a considerable amount of enthusiasm with regard to potential development of the mine and, therefore, of royalties for Lord Bolton. The "*trial*" by William Robinson seems to be unrelated to the rest of the entry.

Saddler's enthusiasm was justified to some extent, as further entries in August 1803 indicate development, i.e. "*Downholme improving. The lead mines in Downholme continues to grow more and more prosperous. Three lets of mines are now employed. Hope air long it may rise a good deal of metal*". On February 14th 1804 it was noted, "*Downholme continues decently*" and on December 20th 1804 "*Downholme Co have cut something 100 yds west of their old string*". The final two entries still indicate a considerable amount of productivity. On May 21st 1805 Saddler notes "*the Downholmites, who yet continue to be the first in respect to profits and we have nearly 100 pieces of their duty lead either at Hull or on the river from Boroughbridge, which may be sold on arrival*", and on September 5th 1805 "*new mine at Downholme promising the old mine continues*".

These entries cover only 2 1/2 years and should, therefore, be treated with some caution. Lead mining was highly speculative and it is possible that the 2 1/2 years of prosperity could have been followed by several of low productivity. Saddler's entries are very similar in tenor to those of Edward Cherry, agent to the Denys family of Old Gang and Lownathwaite, a few years before the mines finally closed.

The danger of jumping to conclusions, even with considerable supporting evidence, is highlighted by the fact that in the 1851 census no miners or colliers were recorded in Stainton, Downholme or Hudswell, thus apparently justifying the conclusion that both lead and coal mining had ceased on Downholme and Thorpe Edge.[5] A further extract from Lord Bolton's mine book from July 13th 1850, however, showed that mines were worked by Thomas Siddale and William Alderson, both common local names, between February 29th 1856 and November 19th 1864.[6] The details are set out as follows:-

WORKED BY THOMAS SIDDALE

Downholme pigs marked TS

	MARKET LEAD				DUTY LEAD		TRANSFER OF DUTY	
Date	Pcs		Mark	Cwt	Pcs	Cwt	Pcs	Cwt
1856 Feb.29	38	3	SS	38	7	7	-	-
May 10	27	2	-	27	5	5	-	-
Nov. 7	5	-	-	5	1	1	13	13
	70	5	-	70	13	13	-	-
1857 May 30	10	-	-	10	2	2	2	2
	80	5	-	80	15	15	-	-
WORKED BY WILLIAM ALDERSON								
1864 Nov.19	18	3	-	18	3	3	3	3
	98	8	-	98	18	18	-	-

It should, nevertheless, be pointed out that neither Siddale nor Alderson is recorded in the census for Downholme, Stainton or Hudswell, which means that they either travelled daily from elsewhere, or had moved into the area subsequent to the census. It was rare for a miner to work on his own and it is, therefore, safe to assume that both men had partners. The 1861 census for the three villages records one lead miner, George Russell, aged 46, who was born at Castle Bolton in Wensleydale. The overall output for the period is extremely small and it is likely that lead mining in the area finally came to a close shortly after 1864.

THE MINES

Four fairly important lead veins were explored, two at Downholme and two at Thorpe Edge. Between these known veins are several trial shafts at various places on the moor. Three of the mines were worked initially by shallow shafts and subsequently by levels driven to explore the lower strata and also to serve as drains. The fourth was explored by shafts and open cut. The displacement of the veins varies between one metre at White Earth and 26 metres at High Spring Vein on the Marske Fault.

The Downholme Village Vein starts at the level situated in the village at NGR SE116979 and runs in an east-north-east direction for approximately 100 metres up the hill side. The lack of mineral of any sort on the vegetated spoil heap at the level, added to the fact that neither the tithe nor the first edition 1/10560 Ordnance Survey

maps show the level, seems to suggest an early mine, the production of which is probably not included in any statistics mentioned in the text. The level was driven on a fault into the Richmond Chert. Also on the fault, a short length of vein south of How Hill was explored by a shaft at approximately SE108978. The shaft debris provides a few samples of limestone and chert, and traces of calcite. There is nothing visible to indicate the extent of what has obviously been a very small mining operation.

White Earth mine has two short veins running almost parallel in an easterly direction. They converge on the east side of the road to Hudswell near the disused quarry at SE115986. A small hush is visible on the most easterly of the veins. On the top of the first rise is a heavily worked area of what appears to be a quarry and, indeed, the first edition of the Ordnance Survey map shows two small quarried areas. A careful study, however, reveals a number of channels which have the appearance of small hushes or at least open trench mines. The presence of vein mineral adjacent to the trenched areas supports the theory that quarrying and open cast lead mining were undertaken on the vein.

This view is further supported by the nature of the mine on a similar horizon at Red Scar and also at Thorpe Edge, the only difference being the much shallower excavation. The level was driven into the Main Limestone opposite the church at SE113986. This mine was probably the last to be worked, judging by the relative lack of vegetation and the presence of minerals, including calcite and a small amount of barytes, as well as the odd bit of galena, which was of course the only mineral in which the miners were interested at that time.

The Thorpe Edge Vein, which runs south-south-west from the level at NZ126006, represents an equally complex situation. The group of shallow shafts immediately to the south of Thorpe Edge Plantation had all the hallmarks of coal pits because of their haphazard distribution. A further complication is the fact that there is a vein shown on the geological map which runs at right angles to the vein explored by shafts, hushing and, ultimately, an adit. This adit, or level, is situated in the middle of Thorpe Edge Plantation, which also has a proliferation of shafts scattered above the level entrance. Like White Earth, the Thorpe Edge Level was driven into the Main Limestone which is where most of the richer veins in Swaledale were exploited. On examination, Dr David McMahon was unable to find evidence for a coal seam that could possibly be exploited on the horizon of the shafts. It may be that this vein was intruded not only vertically, but also horizontally into “flats” or “flots”. This form of intrusion occurs at a few places in Swaledale, notably at Devis mine on Grinton Moor and also on the western end of the Copperthwaite Vein on Fremington Edge. There seems to be little doubt, however, that the shafts scattered about the fields between the road to Hudswell and the higher ground to the south-west are coal pits. The amount of spoil from them is small, indicating fairly shallow excavations.

The fourth area which was excavated is High Spring Vein at Red Scar in West Wood, centred at NZ118003. There are upwards of 60 shafts very close to each other with considerable quantities of limestone and chert and a little calcite and barytes in the upcast spoil. This mine is on rocks which are heavily disrupted by a fault which has

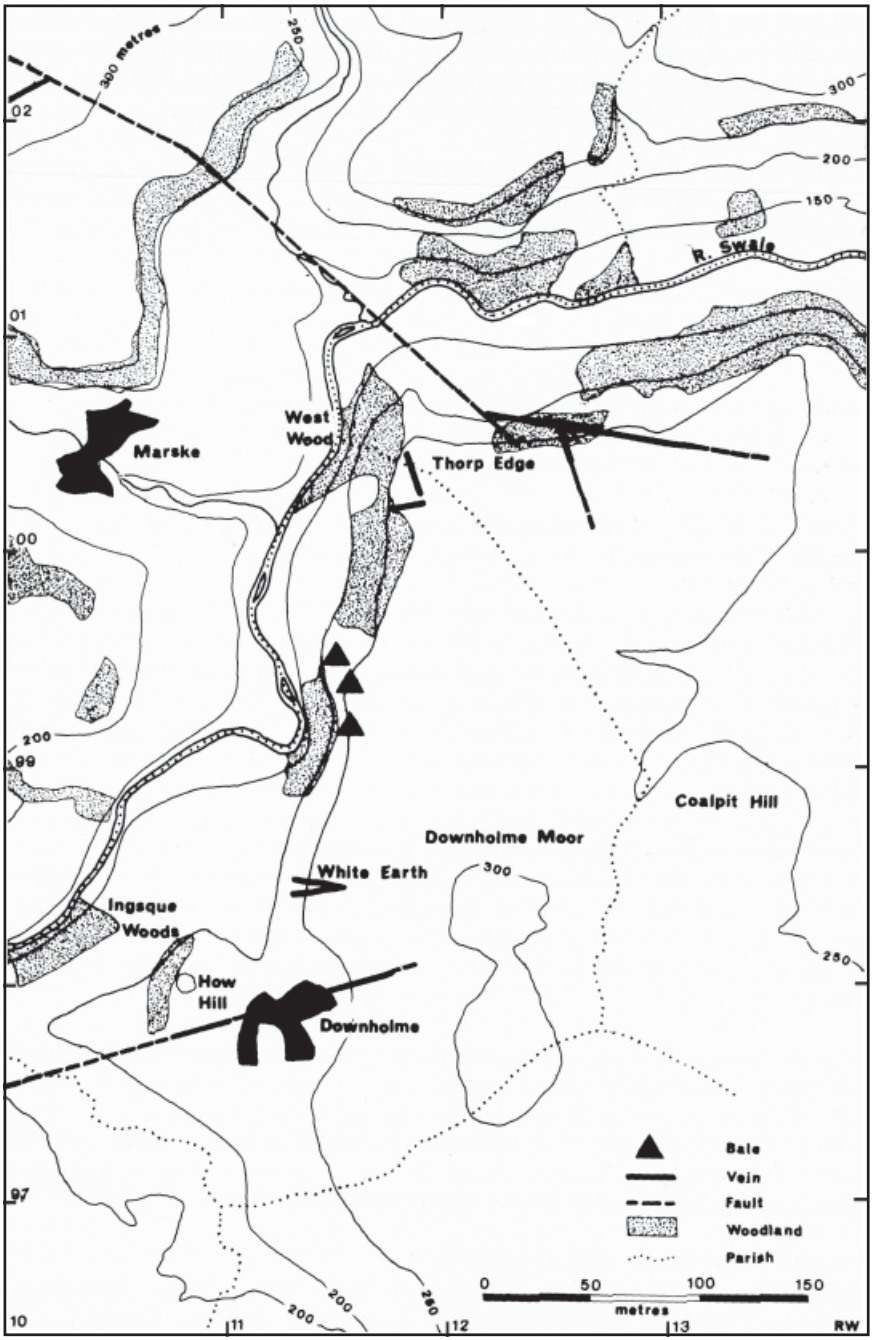
produced numerous strings. These were explored from the shafts 45-90 metres to the south-east of the scar, and the main vein was exploited to a considerable depth and width by open cut, leaving clefts which are visible from the main valley road from Reeth to Richmond. High Spring mine is connected to Thorpe Edge by a vein running along the scar edge and has been mined at intervals by shallow shafts showing very little mineral. Amongst the group of shafts is a small coe, or shelter, and the unusual sight of fragments of wall built with mine spoil on the edge of two of the shafts. These would also provide shelter in a very exposed situation. About 150 metres to the north of High Spring Vein is a quarry, a stone mine and possible small scale underground excavated mineralised veins.

Downholme and Thorpe Edge differ from mines further up the valley in that hardly any dressings are visible, either at the level entrance or adjacent to the shafts. In the earliest phase of the industry, particularly for smelting in bales, large pieces of bing ore were only very roughly dressed, thus leaving very little in the form of fine waste material. Later, the introduction of ore-hearths enabled more efficient dressing techniques to be used. Even in the 17th century, however, dressing to a gravelly size was not universally adopted. Nevertheless, the mining operations of the 1860s should normally have produced material from the better dressing techniques usual in this period. To date only a small amount of dressed material on White Earth Vein has been exposed as a result of rabbit and sheep scratching. The mines are, of course, on a relatively low horizon, as much as 200 metres lower than those, for example, on Grinton How Rake. This fact, coupled with a consequently milder climate, may have provided better conditions for more rapid revegetation.

BALE SMELTING SITES. SE115995, 116994 and 116992

The bale sites, as already stated, are of considerable interest as they fit nicely into the pre-Barker, Swale, Smithson era. They also add to the number of bale sites identified in an earlier survey by Barker.[7] Tyson reproduces a 16th century plan of Marrick which shows four bales near Fremington Edge, but, by and large, little is known about the subject in the Swaledale and Arkengarthdale area.[8] Charcoal taken from a bale on the southern flank of Calver produced a calibrated radio-carbon date of 1439-1469 AD.[9] This does not of course prove that the Downholme Moor bales are 15th century.

The primitive ore-hearth, identified by Barker and White in 1989, may suggest the presence of an as yet unconfirmed lead smelting mill in Downholme village (see below). There is some evidence of what may have been part of a hearth at the SE116992 bale. A number of glacially rounded sandstone cobbles from 180-230 mm across are coated with oxidised lead. Three of these are on the flat area above the 'slag run'; others are further down the hillside. This is one of the very few sites in Swaledale which provides evidence of a bale structure. Unfortunately, the distribution of the stone does not supply evidence of the size or shape of the hearth. At all three sites the evidence is primarily in the form of slag and/or faint traces of fuel. The latter would be mainly chopwood from coppiced areas and occasionally coal. Obviously smelters would use the fuel most readily available. This was not a problem on Downholme Moor, as both coppiced wood and coal were to hand. Unfortunately, no lead production figures survive from this period.



The Principal Veins of Downholme Moor

The woods throughout the length of the escarpment from Downholme to Thorpe would provide timber for all mining requirements, not just fuel. This is highlighted by a further extract from Lord Bolton's accounts for December 16th 1808.

A statement of Groove or Mine timber now growing in the woods near Downholme of a proper size to be cut.

In the Inskew Wood about 10,000 dozen
In the Water & Wall about 3,300 dozen
In the Side Bank 2,000 dozen
In the New Pit 240 dozen

This is a fairly substantial amount of timber which is likely to have been used as stemples in the stopes and for propping unstable strata.

The subject of mining on Downholme Moor and Thorpe Edge would seem to provide an appropriate opportunity to raise the question of the rather confusing term "bell pit", which is often used to described lead mine shafts. The name appears to have crept into lead mining vocabulary in this century and is more accurately used to describe the form of the underground excavation of a small coal pit rather than the "bomb crater-like" shape of both lead shafts and the rather more grassed over coal pits. A matter of further confusion to the mining historian, particularly in the Downholme and Thorpe Edge area, is the unusually casual way in which the Ordnance Survey has changed its symbols and definitions of the coal pits and mine shafts. This lack of consistency between the first 1/10560 edition map of 1854 and those of 1956 and later has resulted in considerably more field work and consultation being required. This is not necessarily a bad thing in itself, but the change of symbols may be worrying to anyone carrying out further research.

Although the mining of both lead and coal was on a small scale, it has nevertheless proved to be a thoroughly interesting and useful exercise for the writer. Very few of the larger mines in upper Swaledale and Arkengarthdale have provided evidence of the industry over such a protracted period in such a small area. I am grateful to have had the opportunity to see what my ancestors and similar prospectors have done over several hundreds of years.

THE DOWNHOLME ORE-HEARTH

A block of cast iron, discovered during clearance of a derelict outbuilding at Downholme, has been identified as an ore-hearth base. It is now on display in the Richmondshire Museum. When unearthed by a mechanical excavator, it was apparently lying face up, slightly below the ground surface at SE1126397845.

The hearth, which weighs some 600 kilograms, is 710 mm long, 500 mm wide and 300 mm deep, with a full length projecting lip, the 'workstone', 160 mm wide. There is a hollow 550 mm long, 290 mm wide and 260 mm deep in the main part of hearth stone. A shallow channel, or riggot, some 60 mm wide, runs from this hollow across the front left corner of the lip or workstone.

It is probable that, when in use, the hearth stood on a stone plinth and that the sides and back of the hearth were carried up by rectangular blocks of cast iron. A fire of peat, chopwood or coal could be made on top of the hearth and, when well alight, a mixture of ore and brouse (partly fused lumps of ore) would be added. The heat of the fire would be regulated by adjusting the force of the draught from the bellows (generally powered by a waterwheel). Throughout the smelting process, pieces of brouse would be pulled on to the workstone for inspection and either re-inserted into the best place in the fire or put on one side. Molten lead would flow through the fire into the hearth and, when this was full, down the riggot, across the workstone and into a sumpter pot. At the end of the shift, the fire would be closed down and the workstone and the sides and back of the hearth cleaned. The hearth would normally be left full of lead at the end of the shift.

The Downholme ore-hearth is a very crude casting which suggests that it may date from as early as the late 16th or early 17th century. The site where it was discovered was inspected subsequent to the removal of the hearth, but no firm evidence to indicate whether the site is that of an early smelt mill has been found. The position, beside a small stream, would have enabled water-powered bellows to operate, but there is little evidence of slag, the principal waste product of smelting. This may be because of later disturbance of the site, especially by deposition of domestic rubbish in the last century. A few fragments of slag were found at intervals some 300-600 metres downstream and further traces were found in a soil sample taken from the site, which is currently awaiting analysis. The presence of significant quantities of smelting slag is the best indicator of a smelting site.

No documentary evidence for a lead smelting mill in Downholme village has yet been discovered.

It is conceivable that the hearth could have been brought to Downholme and that the hollow was subsequently used as a basin or trough. It is, however, surprising that a heavy block of cast iron like this has not been melted down and recycled as scrap. This is what happened to most ore-hearths and so the Downholme hearth is an important survival which is thankfully conserved and on public display in Richmond.

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I am particularly grateful to Dr David McMahon for accompanying me on field trips to establish the structure of the veins and the location of the coal pits and other geological issues.

I am also grateful to Robert White for comments on the text.

REFERENCES

1. *Victoria County History*, Vol.I, 1914.

2. Ashcroft, M.Y. (Ed.) *Documents relating to the Swaledale Estates of Lord Wharton in the 16th and 17th Centuries* (Northallerton, North Yorkshire County Record Office, publication No.36, 1984)

3. Lord Bolton estate papers. Lease of 01/06/1767.

4. NYCRO Lord Bolton's estate book - ZBO 1/16/107, 17th August 1803; ZBO 1/16/101, 3rd April 1803; ZBO 1/16/111, 25th October 1803; ZBO 1/18/5, 14th February 1804; ZBO 1/18/31, 29th December 1804; ZBO 1/18/54, 21st May 1805; ZBO 1/18/66, 5th September 1805, 16th December 1808

5. Barker MSS. Census returns for 1851 and 1861

6. NYCRO Lord Bolton's Mine Book - ZBO 1X/1/24, 13th July 1850.

7. Barker, J.L. "Bale Hills in Swaledale and Arkengarthdale" *British Mining*, No.8 (1978), pp.49-54. See also: Barker, J.L. & White R. "Early Smelting in Swaledale: A further look" and Murphy, S. "Smelting residues from boles and simple smeltmills" in Willies and Cranstone (Eds) *Boles and Smeltmills* (Historical Metallurgy Society, 1992)

8. Tyson, L.O. *A History of the Manor and Lead Mines of Marrick, Swaledale* (Sheffield: Northern Mine Research Society, British Mining No.38, 1989).

9. Details of C14 date. Queens University Belfast, Ref. No:2249 15/06/1978. 68% accuracy = 1464 +/- 15 AD; 95% accuracy = 1464 +/- 25 AD. NB: This date has been corrected slightly from that quoted in earlier papers, which was 1460 +/- 10 AD.

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