

HORSEBUTTOCK, SHACK, LITTLE, DRAKE AND PITTS MINES, WINSTER

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Abstract: Workings on the Horsebuttock, Shack, Little, Drake and Pitts Veins at the eastern end of Winster village which were explored and surveyed during 1989 to 1998 are described.

INTRODUCTION

Ten years have elapsed since the interim report on the southern part of this mine complex was published (Penney and Dixon 1990). Many new lead-mine workings have since been found and although not all the mine passages have been fully surveyed, and about nine-tenths of what has been found is described here.

Fig. 1 (below) shows the layout of the veins taken from the Barmaster's plan and the layout of the surveyed area of the mine. The shaft numbers are taken from the Derbyshire County Council Planning Department's maps. Horsebuttock Vein trends NNW/SSE but from the Main Shaft DCC 64 the trend is more NW/SE. Drake, Shack and Little Vein run almost N/S. For convenience directions are usually referred to as north and south. Figs. 2 and 2a show a plan and projected profile taken through Shaft DCC 64 and DCC 55. Fig. 3-4-5 show the veins and the un-surveyed (as sketches) and surveyed mine to date. Fig. 1 also shows the possible drainage of the veins in the Winster area up to 1760 (Rieuwerts 1981- updated).

GEOLOGY

Most of the exploration has so far has been in limestone, much of which appears to be dolomitised. The general dip is to the north under the Longstone Mudstones cover.

There are several volcanic horizons and the shales of the Longstone Mudstones are encountered at the most northerly point in the large chamber on Shack Vein. (Penney and Dixon 1990). The shale is also encountered at the top of all the other shafts on the mines situated to the north. There is a very distinctive shale bed which plays an important role in the development of the mine in the area of Shaft DCC 54 and 12a.

DESCRIPTION

Horsebuttock Shaft DCC 48 to Winster Pitts. Fig. 3.

From the base of the shaft the passage can be followed south for 16.3m with a general size of 1.2mx 1.5m high. Two passages enter here, one from the east which terminates after a short distance (becoming too low to continue). The one to the west is open and appears to continue for some distance. The main passage goes on under a low section for 1.5m where it opens up into a large worked out area (No.19, Fig. 3). To the east the vein wall can be seen very clearly with the stream flowing along the base of the wall, but to the west there are very large boulders that are propped up with rotten timbers. The roof in this area is not good: working has taken place between the boulders and these have been wedged against the vein wall with no visible means of support. The way on finally ends in a large fall/boulder choke with water pouring out of the upper west wall.

A large hole in the roof was climbed but was judged too dangerous to pursue (it may be a shaft) DCC 19 (Fig. 3). Returning back to the passage on the west wall (No.20), this leaves the much smaller main passage 1m above floor level. It follows a smooth vertical wall to the north but to the south it is made up of deads and very large boulders with small access holes which then lead off in all directions. Eventually the way on was halted by one of the large boulders that had slipped out of the wall. This took a lot of removing, access being limited to one person with a lump hammer at a time. Access was eventually gained and it was found the passage continues west for a further 15m where it meets the west wall of the vein and turns south. The width of the

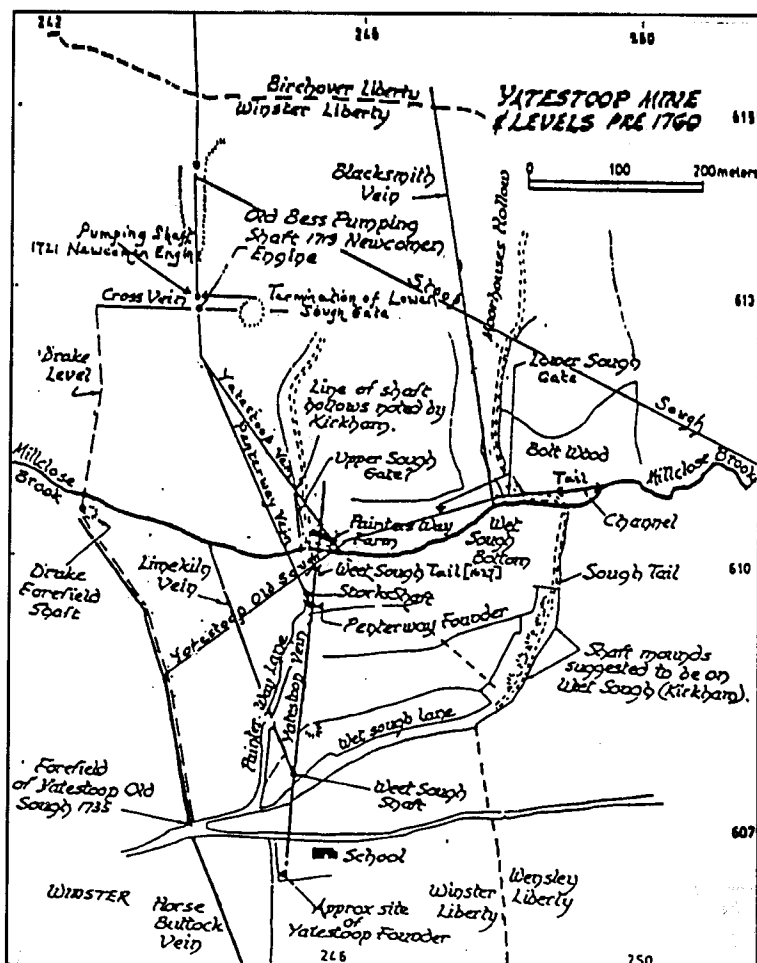


Fig. 1 (left). Veins and soughs prior to 1760 at Yatestoop, Horsebuttock and nearby mines. Plan supplied by J.H. Rieuwerts.

vein/mineralised ground in this area is 30m and extends for a known distance of 60.6m. A small stream is encountered here and disappears down a small tube to the north. In a small cavity at the side of the passage two pottery jugs were found (Penney and Dixon 1990). The west vein wall is very clear here and, as it is followed, the floor rises with buddles having been constructed along part of its length.

its length with the remains of a wooden aqueduct over the top of the shaft. South, it connects with passage No.12 (Fig. 4). North it extends for 15m. After 9m there is a large worked out area to the east. There is evidence of a blocked shaft entering through the roof, No. 24 (Fig. 4). In the east wall is a small coffin level that has been driven east to connect up with the extension of passage No.12 at Bradderhat Junction.

Along the length of the east wall are small openings which lead into what can only be described as a warren of small workings, with the mineral being removed from between the boulders. After 60.6m the passage reduces in size to 0.6m high by 1m wide and turns again to the east with workings going off on both sides as just described. The passage remains at about this size for 30m before it eventually enters a large streamway which runs north/south. At this point a saw left by the "old man" was found.

To the north the stream can be followed for about 9.1m at which point a new passage leads off to the east, with the water continuing along the north passage. After only 3m the water sinks into the floor which is here made up of large boulders (No.22). This water is the same as mentioned in the main passage earlier though no physical connection could be made. To the east the size of the passage increases before it ends in a large hole. The bottom of this passage was dug out until the boulders became too large to remove. South along the stream way the east wall can be seen again with some evidence of the vein and stoping in the roof. The width of the passage is 1m to 1.2m wide with walls of deads built along the lower part. The passage terminates after 30.3m in a blockage with the water coming in on the east side (No. 23).

Partial removal of the barite silt from the floor for some 30m x 1.2m x 1.2m was undertaken so that access could be gained under where the roof had been reduced in height at the blockage. This was successfully completed but with the removal of the silt the wall on the west side of the passage collapsed and tons of barite silt flowed down into the level leaving an enormous hole in the roof on the west side. The whole of this area to the west of the passage is made up of large blocks of limestone which have been worked out between and then back filled with very fine barite. There must be a large dressing floor in this area as the amount of barite silt increases the further south the passage extends.

SHAFT 13 to Bradderhat Junction

From the top of the internal shaft No.13 (Figs. 1 & 2) there is a passage trending north/south that has a lead running along

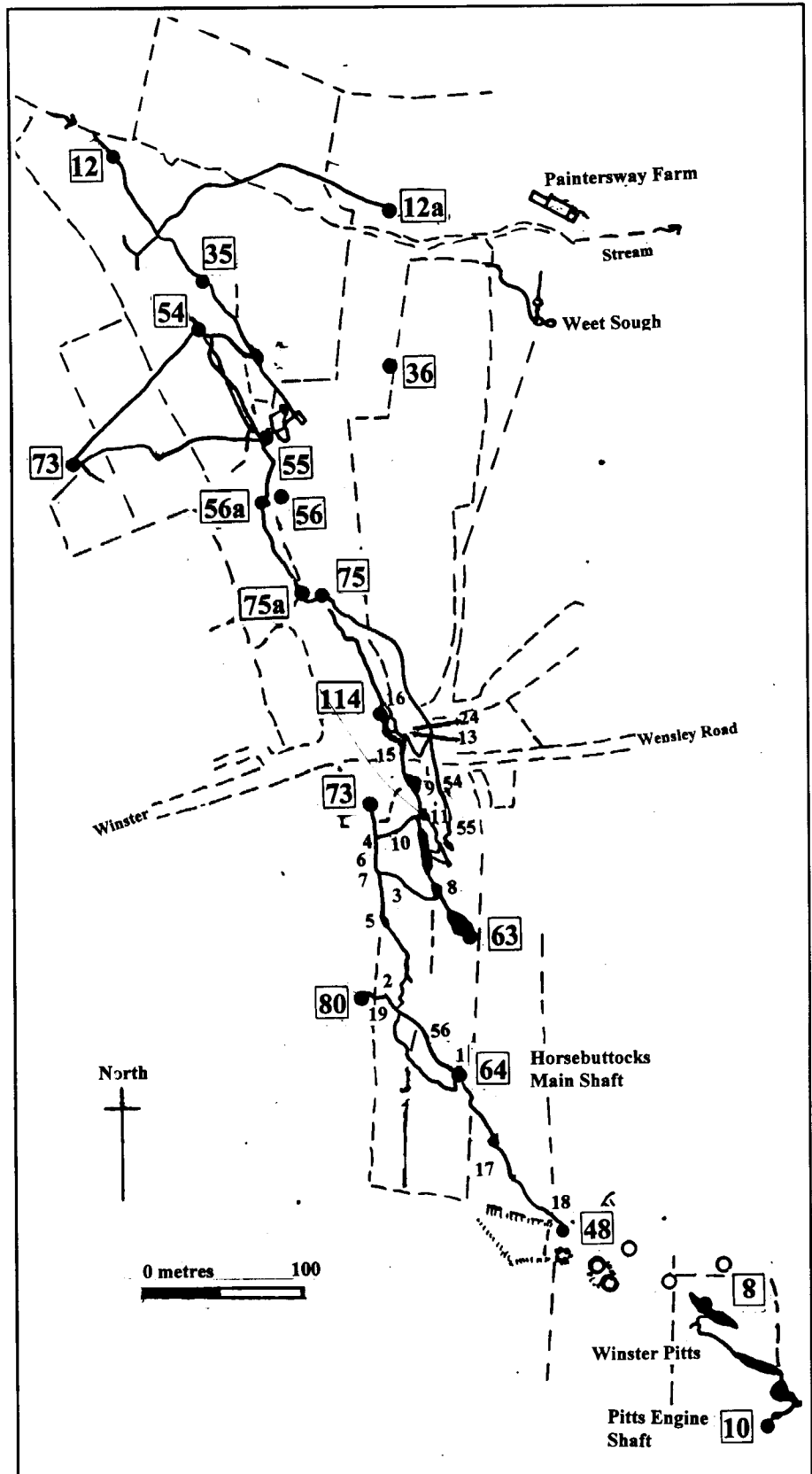


Fig. 2a (above). Survey of Horsebuttocks and associated veins and mines.
 Fig. 2b (opposite page, bottom). Long section northwards from Main Shaft at Horsebuttocks.

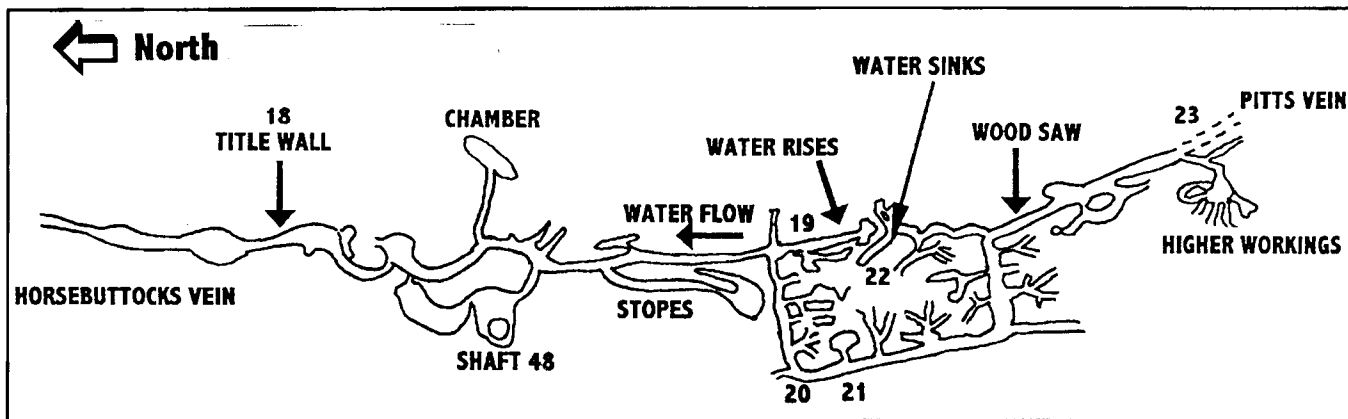


Fig. 3. Workings on Horsebuttocks vein from Shaft DCC 48 to Winstar Pitts. NOT to scale.

In the passage north the leat changes its position from the west to the east wall, and is built on top of a stone wall 0.7m high in a channel lined with clay (No. 25). The "Old Man's" finger marks can still be seen. orthwards the leat follows the east wall, but the wall built to carry it becomes smaller in height until it eventually reaches floor level. This passage varies in size and shape from a lofty 9m near the shaft to a small 1m x 1m pipe where it connects with passage No.12 at No. 26.

Bradderhat Junction to Bad Shaft DCC 75

As the name implies a Bradderhat was found at this point, along with a wooden tub with wooden wheels that have iron strips on the rims, and a small cache of tools. To the east a small passage leads off into extensive flat workings, all the ore having being won out of the barite clay infill. All the workings eventually become too tight to pursue any further. There are good examples of wooden scrapers and other tools. A 2cm thick seam of coal has been observed within the limestone (Coal Flats). The northward extension of the pipe No.12 (Fig. 4) continues for a distance of 25.5m where the Coal Flats are re-entered. There has been a lot of activity around this area with the shape of the pipe-type passage being lost within the flats. Eventually the passage returns to its normal size of 1.2m high x 1m wide following the dip of the limestone in short steps. After about 21.2m the passage narrows and there is a larger step in the floor, under which is a small passage running back under the above pipe for a short distance before terminating in a large hole. From the step the shape of the passage changes, the width is 1m to 1.2m with a height of 2m to 4m The leat passage re-enters after 16m and is at roof height. There was an aqueduct across the passage at this point to allow the water to connect with a small tube which runs on the east side of the main passage. The two passages now run parallel until Bad Shaft DCC 75 (Fig. 4) is reached. Here the small passage continues on the other side of the shaft but is too small to follow after 18m

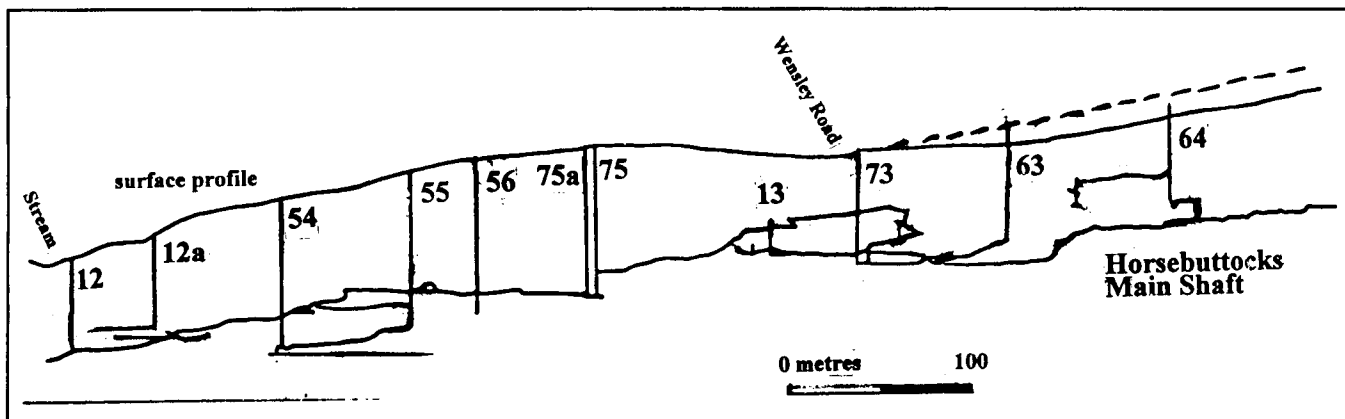
Bad Shaft DCC 75 to Lager Can Junction

This shaft is blocked to the surface but an intermediate portion is still open. With the aid of fixed ladders the lower workings can be explored. It soon became clear that this lower part of the shaft was in fact a second intermediate level. The passage at this point is 3m square by 6m long with a second filled shaft entering in the northwest corner Shaft 75a. A large amount of shale forms a cone which reaches the east wall. Halfway along the west wall is a crosscut that has been blasted throughout and is 9m long by 1.2m high x 1m wide. This enters a very large area of mineralised ground ranging west for a considerable distance. There is a 3m diameter hole 9m deep dropping down under the south wall (No.27). At the bottom there is a large flat-working which is covered with a thick layer of mud: the result of Bad Shaft becoming blocked. The workings trend in a east/west direction, with an inaccessible streamway at the eastern end. The point were the stream is located is also the base of the lower filled part of Bad Shaft.

Returning to the northeast corner of the square passage opposite Shaft 75a. There is a small level 1m x 0.7m wide with vertical walls, the length of which is 70m and has a number of very tight and wet difficult places to negotiate. After which the gour pools at Lager Can Junction are reached (No. 28, Fig. 4)

Lager Can Junction to Shack and Little Vein.

There are two shafts at this point; one filled 56a, the other is open and is numbered DCC 56 (Fig. 4). Shaft DCC 56 is 3m diameter at this level and is entered at 10m from a false floor made up of boulders that are calcited together. Pearl Chamber leads off to the south at this level and as the name implies it is very well decorated and supports a very large display of cave The large passage with its very flat roof leaves Lager Can Junction (No. 29) in a northward direction for 18m with the remains of a leat along the east wall. The leat terminates at the



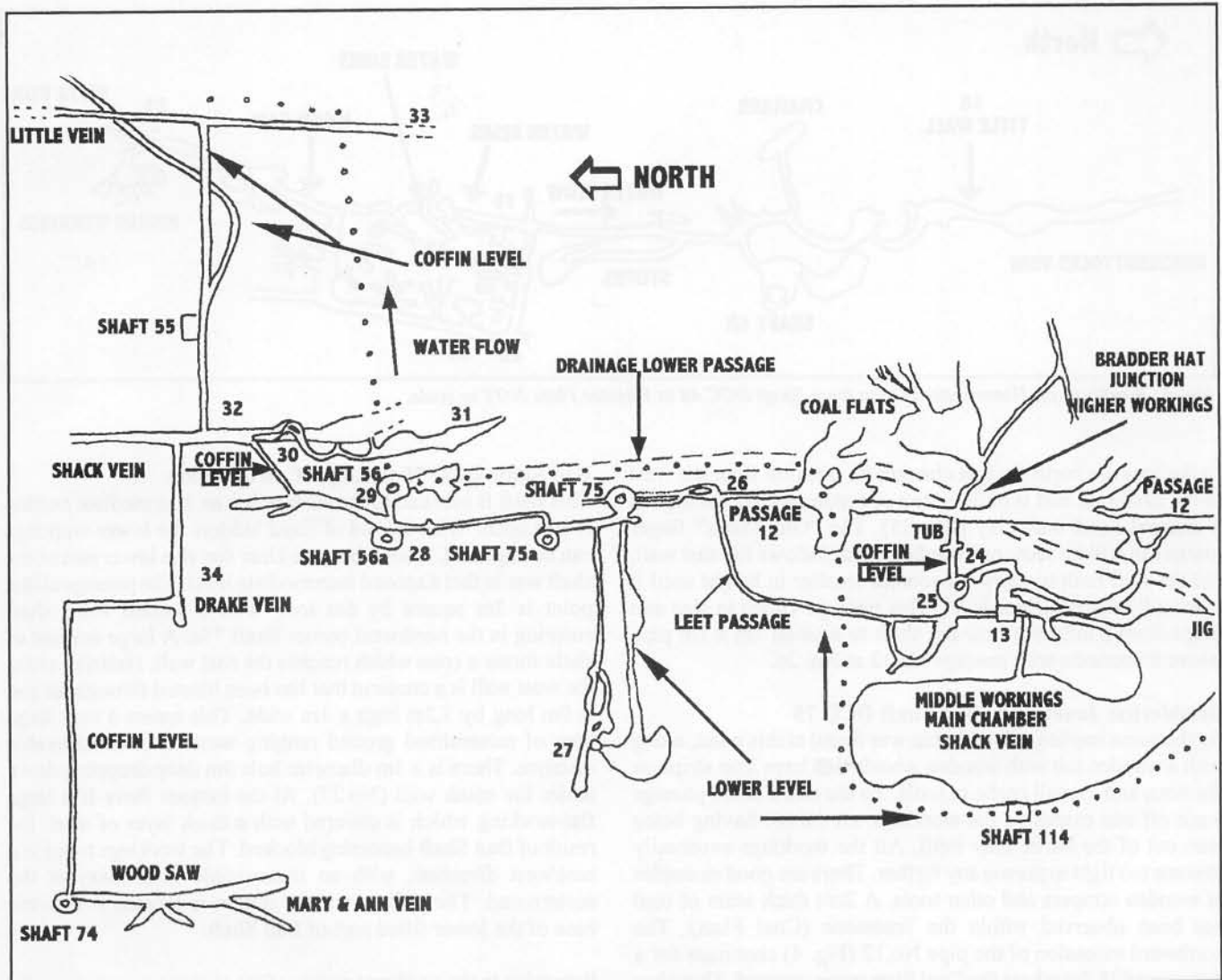
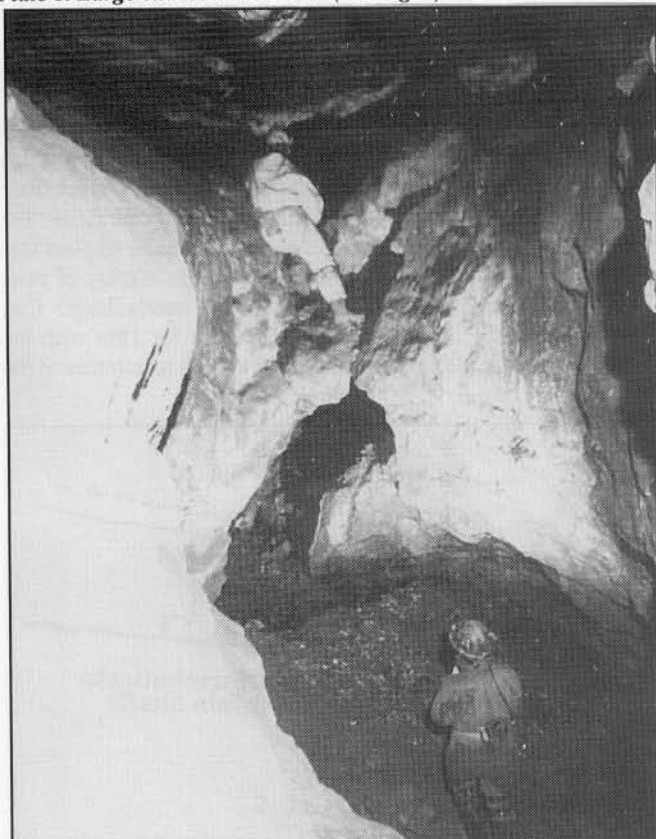


Fig. 4. Workings associated with Shack vein and Mary and Ann Veins. NOT to scale.

Plate 1. Large chamber at No. 32 (see Fig. 5).



end of a small coffin level (No 30). There is a small amount of working to be seen to the north at this point but it only extends for 9m The coffin level is cut through limestone and enters into Shack Vein/Pipe on its west wall. There is a small stream flowing out of the workings to the south which extend for 21m before becoming too low, but a number of holes in the roof lead into a large upper pipe that has been extensively worked out (No. 31). This upper pipe can be followed for 45m its maximum width being 2.5m. with the height varying to as little as 0.7m The lower portion to the north with a width of 1.5 x 2.5m high reaches a large coffin level after 18m (No. 32). The coffin level is driven east for 7.2m where a 1.2m square hand picked shaft 20m deep enters on the north wall DCC 55 (Fig. 4). There is a remarkable garland cut in this shaft to bring the water out of the shaft into the coffin level. The coffin level continues east and increases in height to 2.5m After a further 11.4m it reduces again beneath the floor. (Penney and Dixon 1996).

This coffin level could form part of the Lower Sough Gate (Rieuwerts 1987). There is a smaller coffin level which continues to the east from this point for a further 14.7m where it intersects Little Vein.

Little Vein to Waterfall Chamber

Little Vein can be followed in both a north and south direction, to the south it is a typical pipe with a diameter of around 1.2m

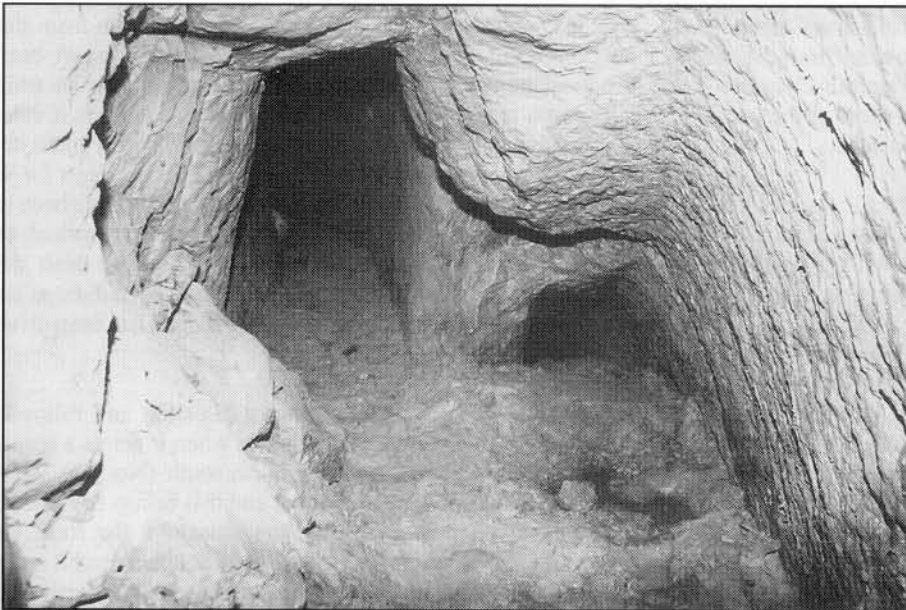
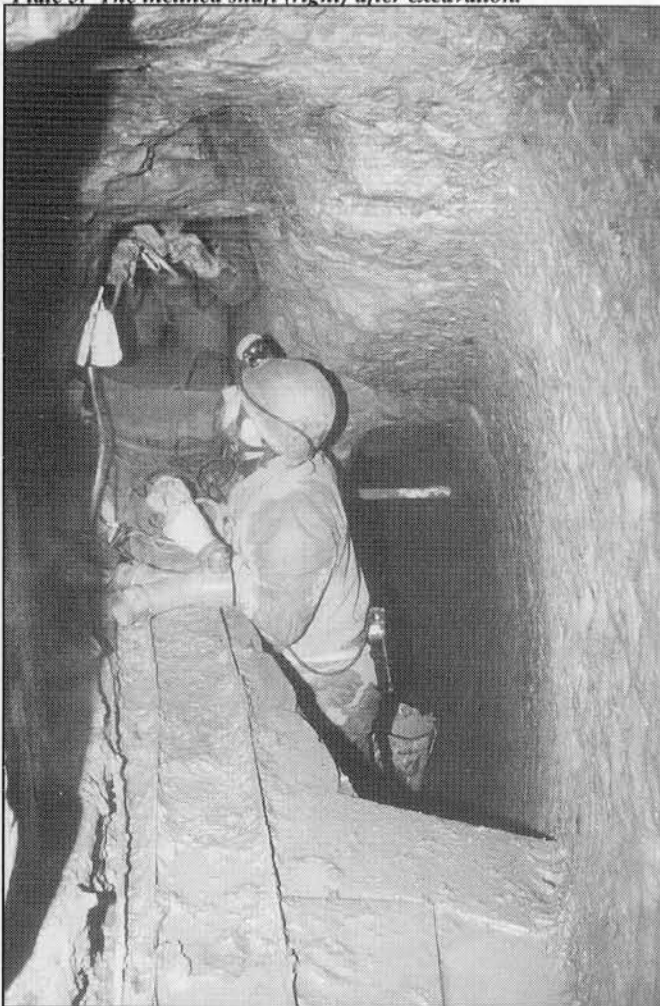


Plate 2. Inclined shaft at No. 45 (see Fig.5). Before excavation.

in the roof to the north leads up into the continuation of Little Vein. After a small squeeze the passage becomes walking height with pockets of mineral having been worked out in the roof. Slowly the width increases until a small step in the floor increases the passage to 2.5m by 1.2m. There is an inscription on the east wall at this point which reads "IJ" (No.39). To the east are workings in cavities and small pipes. The main pipe continues north for 50m with little change until shaft DCC 35 enters from the west wall. This is called Motorbike Shaft

Plate 3. The inclined shaft (right) after excavation.



because of the remains of a motorbike that has found its way down the shaft along with a lot of other rubbish. The shaft has been hand picked and is 1.5m square with a good 1.8m by 1.5m gritstone ginged collar. There is a small cut-out in one of the walls of the shaft 36m down which is just big enough to get into. Three metres from the bottom of the shaft in the east wall is what looks like the start of a coffin level but it only extends for 2m. It is not known whether the shaft continues down in to lower workings.

Motorbike Shaft DCC 35 to Shaft DCC 12

From the bottom of the shaft the pipe continues north with a pipe-type passage entering from the east wall (Limekiln Break No. 40). From this point northward the main passage changes in character. Most of the workings have

been in small to moderate sized pipes which contain large amounts of barite on the walls, floor and roof, but from here north nearly all of the passages are large and have been drilled and blasted along a large joint.

There is very little of the mineralisation to be seen along the remainder of this passage. The size of the passage north of Shaft DCC 35 is 1.5m high by 2m wide. After 3m the passage referred to earlier (No. 38) enters from the west, the size now increasing until a large chamber is entered. The size of this is 6.8m wide by 14.1m long. There are large amounts of washing debris stacked against the walls, which have been deposited here from a large buddle that is situated in the centre of the chamber. The small stream that flows along the passage being utilised for this purpose.

There are two passages running off from here; one to the east and the other to the west, both of which are 1.5m dia. with a distinct bedding plane in the centre and large drill holes which show the direction of driving, which in both cases is out from the chamber. The west passage is 49.3m long x 1.5m diameter and ends at the intersection of what could possibly be Drake Vein (there is no pipe here, only the vein). There has been a small amount of work carried out in the roof. The east passage can be followed for 36.7m where it intersects a vein, which is probably Little Vein at Pramwheels Junction (No.41). Down-dip, north from the large chamber, the passage maintains a size of 2.5m high by 2m wide for a distance of 58.2m, at which point there are two more passages that enter from the east and west. The one to the west is a 1.3m diameter drilled and blasted passage 49m long and intersects what could be Drake Vein, there is a little more evidence of work here with the workings going in both a northerly and southerly direction. There has also been some stoping in this part of the vein and again there is no evidence of a pipe. The passage to the east (No.42) connects with what is possibly Little Vein.

Back in the main passage a filled shaft enters from the west wall DCC 12 where there is a large bank of shale, sloping from the roof where the shaft cuts through, which runs out into the centre of the passage. Just past the shaft the roof drops down to 1.3m high and turns west, with a drop in the floor of 2m into a passage of the same size, 1.3m

On dropping down it can be seen to run back south and intersect the shaft at a lower level, (this could be a pump outlet for the Newcomen engine). From this point a further 21.7m of passage can be followed before the final sump is encountered; the size varying in height from 2.5m down to 1.5m but maintaining its width of 2.5m. There are two small workings to the east but little can be seen in these because they are coated in mud as this part of the mine floods.

Pramwheels Junction to Bottle Shaft (12a)

The passage east from Pramwheel Junction (No. 41) begins to reduce in size until it becomes a flat-out crawl with a width of 1m. After 15m it turns south for 3.6m with the floor rising slightly before turning east. The direction of drive (drill holes) in this section of the passage is from west to east. This short southward section is in fact a crosscut, and where the two passages intersect there is a change in the direction of the drill holes. There is also a small fore-field to the west end of this passage which had been extended before the crosscut connected the two passages together (No. 43). An internal shaft is reached after a further 15m which ascends 3.5m into a coffin level. The shaft has been sunk through the floor of the coffin level and it has removed the sides to the width of the shaft 2m. There is a small extension to the coffin level to the west of the shaft, the fore-field of this shows the method of driving in the form of a 5cm wide cut being driven in advance with the sides being trimmed away until the full width was achieved (No. 44). The coffin level is 2m high by 0.7m wide with well dressed walls and roof, and runs eastward for 93.6m. There is water flowing along it against the direction of the drive.

It terminates at the foot of a filled shaft (Bottle Shaft 12a) (Fig. 5). It had been sunk to intersect a shale parting where the lower half of the coffin level/passage was driven along its weakness until the shale parting slowly disappeared into the floor with the remaining 50.8m of coffin level driven in solid limestone. What the purpose of this level was is not clear: perhaps the miners thought that the shale parting was the same as that seen in Waterfall Chamber and if followed would connect with it and give an easier access rather than having to climb a 75m shaft. Shaft 12a sited in the valley floor, would have reduced this by 30m. Shaft 12a has been the focus of the group's fore-poling activities through the years 1995/6/7 to find out if the coffin level had been driven up the valley as a sough. Unfortunately it had not. There was no continuation of the level on the east side at the shaft foot.

Pramwheel Junction to Motorbike Shaft DCC 35

The return to Motorbike Shaft south from Pramwheel Junction is along a large pipe with workings in the roof and small pockets in the east wall. As the pipe nears Motorbike Shaft it reduces in size but becomes more complicated with small workings going off in different directions. With a west turn the main passage returns to the shaft area DCC 35. To the south east on this corner is a pipe which extends for 24m before becoming blocked (Limekiln Vein?). (No. 40, Fig. 5).

Pramwheel Junction to North Sump

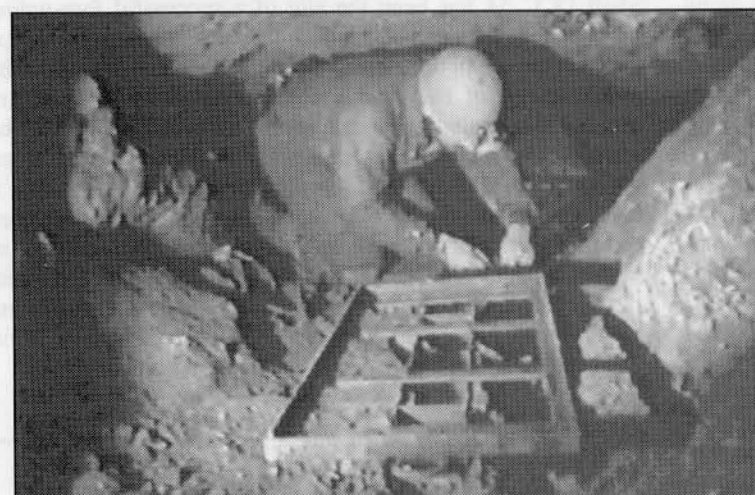
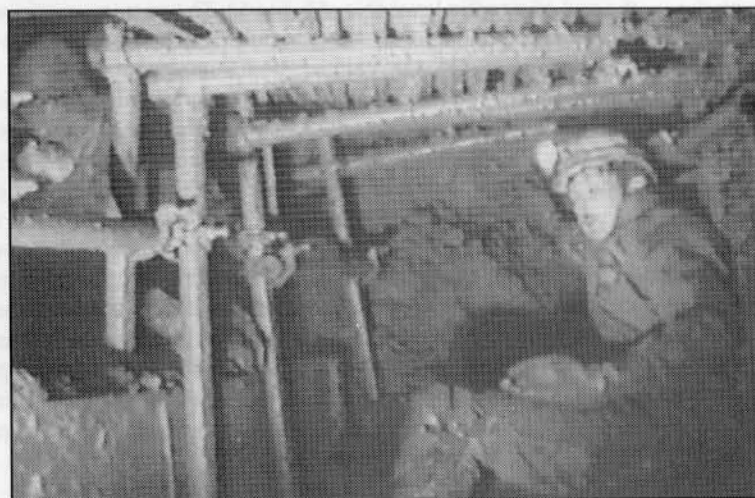
The mineralisation in this pipe is predominately barite but this is lost just north of Pramwheel Junction. As the pipe from Pramwheel Junction is followed north two passages are encountered, one on the east wall (No.45), the second up a small climb. This is a cross-cut made to connect the two veins at Shaft DCC 12. It is 1.5m diameter drilled and blasted from west to east. The passage to the east at (No.45) slowly ascends until the barite horizon is encountered leading into a pipe with workings going off in all directions. There could be upper workings in this

area as there seems to be a blocked shaft at the end of a short passage. The remainder of the passage north from (No.45) is large, 2.4m high by 2m wide. The passage splits into two smaller passages which have been drilled and blasted, they then run side by side before finally sumping.

SHAFT DCC 55 to SHAFT DCC 54 (Bottom level)

At the bottom of Shaft DCC 55 there are two pipe-type passages leading off, the first (No. 46) running in a eastward direction with a diameter of 1m. After 6.5m a sharp bend brings the passage in a southeastward direction. This is followed for 6.5m until a pipe enters from the north. This pipe has been walled up and sealed with clay. It can be followed for a distance of 30m before it enters a large chamber on the east at roof height. The main pipe continues southeast for 45.4m with an increase in size to 1.5m by 1.2m. At the same time it is slowly swinging round to the north until it enters the large chamber but at its southern end. Just before the chamber on the east wall, there is a small 1.5m round natural tube that descends 6.5m into a large natural passage running north/south (No.47 Fig 5). The chamber is entered down a steep 3m slope, the dimensions of the chamber being 4.5m high by 9m wide by 18m long. There is a large cavity in the northwest wall lined with large dog-tooth calcite crystals. At roof level at the north end of the chamber is a small pipe running off to the northeast for a short distance before becoming too low to follow. A 1.2m passage leaves the chamber from the northeast end and intersects with the roof of the large natural passage mentioned earlier. The width increases to 2.5m with the floor filled with barite silt. Eventually the roof and floor meet but there is a very tight squeeze out of the natural passage into a small pipe (No. 48, Fig. 5) which continues north for 9m where it connects with a further pipe running in a east-west direction. This 1m diameter pipe has two further 1m diameter pipes which range north and re-connect at the end of a coffin level (No. 49, Fig 5). The passage continues north but the diameter has been reduced by barite silt. The silt is not stable as it is waterlogged, which makes investigation in this area very difficult. The pipe has been followed to a point where it enters a large natural passage which is situated to the east (No.50, Fig. 5). A 6.5m pitch can be descended into the natural passage which is 2.5m wide by 9m long with a thick layer of barite silt covering the floor. Water could be heard to be running at the southern end. The east end of the coffin level is running in an east/west direction. This can be now be followed west to the foot of Shaft DCC 54. There are a number of small passages in this area that are as yet unexplored because of the difficulties encountered with the silt. The second pipe (No. 51) that runs north from the foot of Shaft DCC 55 is 1.5m high by 1.2. wide with signs of a vein on the east wall. The pipe terminates at the foot of Shaft DCC 54 after 87.5m.

Shaft DCC 54 has been the site of a successful fore-poling operation which gave access into the continuation of the pipe and also the end of the coffin level just mentioned (No. 49). The northern part of the pipe can be followed for 15m before becoming completely blocked with barite silt (No. 52). The entire length of this pipe from Shaft DCC 54 has been enlarged by blasting. Three metres before the pipe ends there is a cross-cut driven out of the west wall (No. 53). It has been completely drilled and blasted leaving rough walls that are 1m apart. The true height is difficult to assess because of the barite silt that has deposited along its entire 135.4m length. This cross cut terminates at the filled Shaft DCC 74 on Mary and Ann Vein and there are no workings to be seen in this area.



DRAINAGE

No small early sough has been identified to drain the upper Horsebuttock /Pitts Mine complex, although the dates in Shack Vein/Mine show that it was in work in 1727. Horsebuttock title in 1706 consisted of two founder meers, a Lord's Meer and fifteen taker meers (J. H. Rieuwerts pers comm).

To what distance north the pipes could be worked with only the natural drainage is unknown. In the upper small pipe complex of Shack Vein (No. 12, Fig. 1) there is evidence of three small shafts entering the workings along its length. Two are located in the pipe itself (Nos. 54 and 55, Fig. 1) with the third located at the western end of the short coffin level (already discussed earlier in this article) at the top of Shaft 13 (No. 24, Fig. 1). If the leatpassage was already carrying water as a natural drain, this would afford a considerable amount of ground to be worked at this high level. The leatpassage near Shaft 13 is known to extend north to Shaft DCC 75 (Fig.1). There is further evidence of early drainage in the large chamber area of Shack Vein. This is the level that runs from Shaft DCC 63 (Fig. 1) to junction (No. 8), then along the main passage to the junction with the eastern end of coffin level (No. 10, Fig. 1) (Penney & Dixon 1990). From here the level follows the lower workings of the main pipe along its west wall with signs of pick-work through restricted areas. At its northern most accessible point under the main chamber there is still evidence of the level continuing in the form of a silted up passage.

The next phase of drainage was in 1722 when a branch was driven from the Lower Sough Gate (Yatestooop [Old] Sough) to intersect Drake, Shack, Mary and Ann, and Little Veins. This is seen at Shaft DCC 55 along with its coffin levels. The drainage afforded by this sough was considerable, with the exception of a number of short distances the upper pipe that was followed and used as the sough can be traced into Pitts title. However there is no evidence of an upper pipe or workings in Pitts Mine. This upper pipe would confirm that the sough was extended in 1728 from Drake to Pitts. The shafts serving this upper sough would have been:- DCC 36, 55, 56, 75, 63, 64, 48, 8, 10 along with the small intermediate shafts at numbers 24, 54, and 55 (Fig. 2 and 2a).

The last phase of drainage was in the 1760s and 1770s, when an agreement was made to drive a branch level from the Yatestooop/ Cowley Sough into Drake Mine (Drake Level). (Rieuwerts 1999) (Fig. 10). There is little evidence of this sough in the northern lower workings of the Drake, Shack & Little Veins other than the passage leaving Shaft DCC 12 (Fig. 5). This could have been the discharge point for water being pumped from this very large shaft. If this was Drake Engine shaft

Plate 3 (top). Lower level at 52.

Plate 4. Sump passage below shaft 12

Plate 5. Forepoling at Shaft 12a (Bottle Shaft).

Plate 6 (bottom). Upper Level at 31 (see Fig. 4).

this would have been feasible. The size and the way this passage has been driven indicates that it was driven when black powder was readily available. What was being followed with regards to mineral is not clear but there are some signs of fluor spar in pockets along its length. If it was a natural pipe being followed then all the evidence has been obliterated. It could have been driven as a drainage level but the size of 2.3m high by 2m wide is a little out of proportion to the normal size in use for this purpose seen further along its length. The direction of drive is not clear as the drill holes go in all directions.

The lower level (No. 53) that has been driven from the lower workings in the area of Shaft DCC 54 is further evidence of drainage being carried out in the lower part of Mary & Ann Vein this could have been driven as part of the 1760/1770 drainage.

DEEP DRAINAGE - 1760s and 1770s

Starting at the southern most explored end of the Horsebuttock pipe (No. 23, Fig. 3) the water flowing along this pipe is likely to be the same as that in Pitts, although this is not proven. Along its course there are a number of shafts DCC 10, 48, 64, 114, 75 and 56. with two very distinct upper levels which act as aqueducts, one at No.17 the other at No. 56 (Fig. 1). These passages have been very well maintained to keep the water from descending to the working areas below. The water follows the full length of Horsebuttock vein until it finally disappears down a hole at the east side of the passage at No. 7 (Fig. 1). It is next seen at DCC114 (Figs. 1 & 4) and is situated to the west of the large chamber No.16 (Fig. 1). From this point there is a deep level of which parts can be followed down through the workings to the natural pipe at No. 50 (Fig.5). Its course from DCC114 is not certain but the water is seen to enter from the west wall of a lower passage that runs from the east floor of the chamber at No. 15 (Fig. 1). This passage is a good size throughout its 124.3m length and carries all the water away from the system. It can be followed north to the foot of the filled Shaft DCC 75. The continuation of the passage can be seen on the other side of this blockage but access into it has not yet been possible (see earlier notes No.27). The next shaft on the line of the level is DCC 56 although there is no proven connection. As mentioned earlier in this paper, evidence underground shows that there are two shafts in close proximity to each other, DCC 56 and DCC 75. This could suggest that one of the shafts at DCC 75 and one at DCC 56 were sunk down to the drainage level (sough) with the other being used for mining and so relieving the miners of any wayleave payments that would have to be paid if the sough shafts were used (Shaft DCC 75 does have a false floor and this two-shaft-situation is also to be seen at Weet Sough).

The route of the level north from Shaft DCC 56 (Fig. 1) is also uncertain although it must run eastward to the natural cave passage which runs below and parallel with Little Vein No. 57 (Fig. 5). The last known location of the water is in the continuation of this natural passage to the east of Shaft DCC 54 (No. 58, Fig. 5). The miners were aware of the drainage afforded by the natural pipe well before the Drake level was driven as demonstrated by the coffin level at Shaft DCC 54.

What the course of the water is from (No. 58) is not known: there is no further evidence of the main flow of water within the lower parts of the mine complex. The northern area beyond Shaft DCC 12 and around Shaft DCC 54 are prone to flooding with water noted within 15m from the bottom of Shaft DCC 55.

SHAFTS

DCC No.	
114	Upper part filled, hand picked 1m square 9m. deep
75	Upper and lower part filled with access midway & bottom, depth of open part of shaft 10m x 3m dia.
75a	Filled.
56	Open dia 4m 73m deep with a false floor 26.5m from the passage.
56a	Filled.
55	Open 1m x 1.3m with gritstone ginging, hand picked, 75m deep 1.3m square with two intermediate levels :- 41.5m & 60m with a garland at the first level. This shaft has two upper shale gates (part filled). These shale gates could have been for drainage as the shaft was being sunk.
74	Filled.
54	Filled.
35	Open 2m x 2.6m diameter with gritstone ginging.. Depth 75m.
12	Part filled 3.3m. diameter. It has a water pipe from the sewage works at the top of the shaft.
12a	Filled.
8	Open Newcomen Engine shaft 83.3m deep. (Old Bess).

HISTORY

Horsebuttock title in 1706 consisted of two founder meers, a Lord's Meer and fifteen taker meers. [J. H. Rieuwerts pers comm]. Drake or Burning Drake Mine first appears in mining documents in 1711 but could be older.

An agreement was made in 1722 [Wolley 6680, ff59-60] to extend Yatestooop Sough to the Burning Drake mines. This is almost certainly a branch driven from the Yatestooop Lower Sough. This sough was draining Drake pipe by 1728 because Drake Mine started paying 1/5th of their ore as composition to the Yatestooop partners.

At the end of December 1735, the partners at Burning Drake entered into articles of agreement with the partners at Pitts Mine to extend a drainage level already brought up to Horsebuttock Mine as far as the ninth taker meer at Pitts in order to unwater their ground [Chats, Dev Coll]. This level must be the Yatestooop Sough mentioned in 1722.

For 1747 there is a solitary reference to a Water Engine situated at Drake forefield [Chats, Bar Coll] and there was a fire engine operational at Drake Mine by 1750, but unfortunately the location of the pumping shaft is not known.

An Agreement was entered into in 1758 between the owners of Yatestooop Sough and the partners at Drake and other mines in Winstar. Thee detailed plans by the surveyor Nuttall show what is termed Drake Level ranging from Old Bess Vein in Yatestooop title, due south to the probable position of the Drake Engine Shaft. This level probably reached the Drake title in 1771 because the owners of Yatestooop Sough were then demanding composition ore (Fig. 10).

Possible Chronology

- 1640s? Pitts Old Sough began to unwater the Upper Pipe.
- 1702 Shack Vein was discovered and possibly Drake or Burning Drake Vein or Pipe was discovered at much the same time [PRO, DL 1/461].
- 1706 Horsebuttock Pipe had been discovered.
- 1711 First documentary evidence mentioning Burning Drake Mine.
- 1722 The Old Yatestooop Sough was to be extended to

- unwater mines in the Drake title [Wolley 6680, ff 29-60].
- 1728 Composition of 1/5th begun to be paid by Drake to Yatestooop [Chats, Bar Coll].
- 1735 The sough carried to Drake Mine from Yatestooop was to be extended through Horsebuttocks title as far as the most north westwardly taker at Pitts Vein.
- 1750 A Newcomen Fire Engine was at work at Drake Mine (Chats, Bar Coll).
- 1758 Agreement to extend Yatestooop Sough to the Drake Mine and others in Winster [Wolley 66, ff 218-219].
- 1770 Drake Level shown ranging south from Old Bess Vein to the Drake northern forefield. Nothing is known about this level, but presumably it was a sub-branch of the main Yatestooop (Cowley) Sough which reached the northern end of Yatestooop Pipe in 1766 [Rieuwerts, 1981].

LEATHER AND TEXTILES FOUND IN (SHACK / DRAKE VEIN) WINSTER. (Penney & Dixon 1995/1996)

Leather

Several pieces of leather were found in the incline coffin level east of Shaft DCC 55. These were taken to The Central Museum, Northampton and what follows are the comments made by Ms V Wood, formerly Keeper of the Boot and Shoe Collection.

Insole: probably from a man's shoe c.late 18th to early 19th Century; straight but probably worn on the right foot; stitch holes show it was from a welted shoe. (A illustration of a shoe of this type in "Schuhe" by Saskia Durian-Ress gives a date of 1790-1800).

Piece of sole leather; possibly belonging to the insole but unlikely.

Piece of upper leather: removed from a shoe with a knife as all the stitch holes are missing; could belong to the insole but might not.

Roughly triangular-shaped piece: if it is part of a shoe it could be a heel stiffener, part of the lining. The very small, widely spaced holes indicate that it could not be from any other part of a shoe. It might even be from something like a purse.

Miscellaneous pieces of leather: not welts as there are no stitch marks; almost certainly just off-cuts.

There were also a number of leather washers.

Textiles

Three torn fragments of wool clothing were found in the same level as the leather. These were sent to Penelope Walton Rogers and George Taylor of Textile Research Associates of York for analysis and comments. This is a summary of their findings. The full report can be seen at the Peak District Mining Museum.

One piece, consisting of five layers, is almost certainly a padded pocket flap. The lower edge of the outer and inner layers has been cut into a double curve with a central point. The layers between are more ragged. The outer layer is woven in 2/2 twill, yarn S-spun in both warp and weft; the outer face is worn and the inner face is matted; there are traces of a red or tan dye. The other layers are woven in a 2/2 twill, yarn Z-spun waft and warp.

This fabric is slightly matted and the dye is almost certainly red

sanderswood which would give a dull red, chocolate brown or maroon colour. The smaller piece of woven fabric is 2/2 twill, yarn S-spun in warp and weft, slightly matted on both surfaces with possibly a red dye.

The third fragment is from the back seam area of a knitted stocking. It has a vertical line of moss stitch with an increase stitch either side every four rows.

Pocket flaps of this shape can be seen in mens' coats and long waistcoats of c.1680 to 1780 (or possibly 1790). Several of the early examples seem to have padded pocket flaps of the type described here.

Penelope Rogers final summary is:-

The garments in which these shaped pocket flaps occur seem to have been worn by all ranks of society and are found in embroidered silk as well as the more mundane wool fabrics. It would be difficult to pass judgement on the status of the textiles in the pocket flap, since such fabrics were so widely used, but the knitting of the stocking is relatively coarse. Since the textiles come from a mine, it is not impossible that they originated in the clothing of a miner or some other labourer. The dating of the fragments seems to be a little earlier than the boot, dated to about 1790, which was found in the same levels as the textiles.

SUMMARY

Although we have named some of the veins in this mine according to the Barmaster's Plan we cannot be certain that they are correct. The very nature of the complicated pipe workings within this mine complex makes it very difficult to say exactly which pipe/vein is which. Even the Barmaster and the Twenty-four men had great difficulty deciding which pipe or vein the miners were working, with the pipes not being directly under each other and ranging north/south and east/west.

We have included the articles which appeared in the Newsletters of April 1996 and Dec. 1995 for reference.

The names Bottle Shaft, Motorbike Shaft, Bad Shaft, Pramwheel Junction, Lager Can Junction, Waterfall Chamber and Bradderhat Junction are those given by the group.

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Surveying:- S. Rodd, D. Cambridge and G. Wood.

Photography:- I. (Buster) Wright and D. Penney.

Video:- I. (Buster) Wright.

Computer Graphics:- D. Cambridge

Exploration and support :- M. Burrell, I. (Buster) Wright, A. Hays, P.Goodliffe, S. Rodd, D.Cambridge and G. Wood. Please note that this land is privately owned and permission must be obtained through PDMHS Ltd.

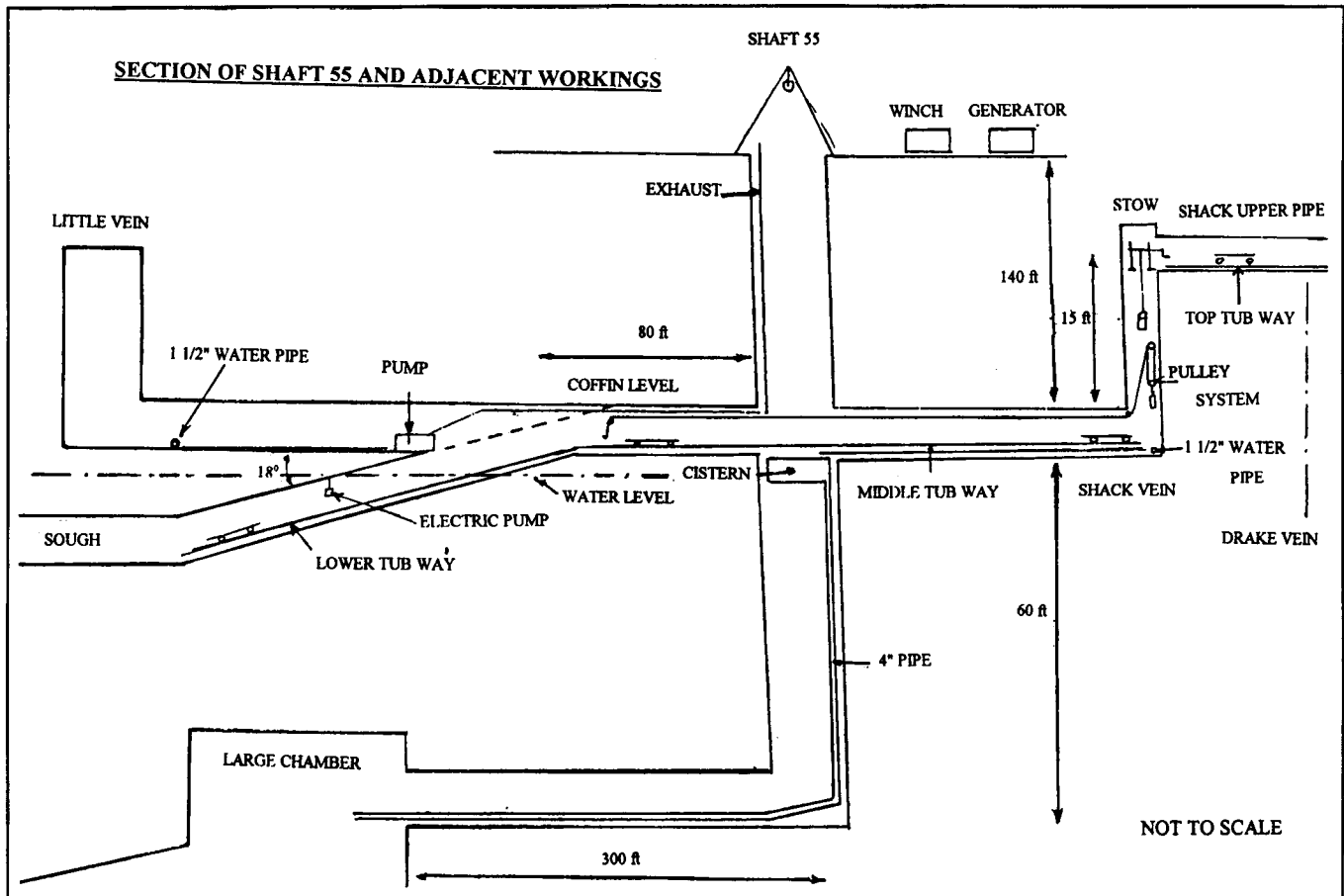


Fig. 6. Layout of the mine near Shaft 55, with details of equipment used to re-open the inclined section of the sough.

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APPENDIX

LEAD MINES, WINSTER, DERBYSHIRE - Originally published in Newsletter No 78, April 1996. This is included here since it gives details of the practical aspects of the exploration of the mines in the main article.

Two years ago the group completed the two fore-poling projects that it was undertaking. Attention was then focused on unblocking the inclined coffin level which lay 60 feet to the east of Shaft 55. Shaft 55 is square in section and is band picked, having been sunk by the soughers to gain access to the sough that was being driven up the valley (from a point not yet known) to intersect Shack and Drake Veins, with extensions to Little and Mary Veins. We estimate that the sough was driven in about 1680. Currently the sough is not active, being left high and dry when later drainage levels were driven from a lower contour.

The first attempt we made was to pipe water from Little Vein into the sough in the hope that if the water would flow down the sough and wash away the mud etc. it could save a lot of work. This was not to be, the sough just filled up to the top and took

some weeks to subside. After a long debate it was decided to dig the silt and mud out, but there was a lot to be done in the way of preparation before the digging could be started.

A small gauge railway had to be installed along the coffin level, which connected Little and Shake Veins, to the point where the inclined level is situated. Because the floor was made up of mud and was very spongy, a wooden floor had to be laid before the railway could be installed. A second railway was also installed in the upper pipe working of Shack Vein, where suitable space was available for the disposal of the more solid waste. Access from the lower workings of Shack Vein to the upper pipe had to be made, and this entailed drilling and chiselling out large amounts of vein wall. A stow was manufactured and installed at the top to enable the buckets to be transferred.

The main problem was going to be the very large amount of mud that had run into the sough over the years that it was in operation. The solution was to move it to a large worked out chamber some 300 feet away from the bottom of the shaft. A cistern was installed in the shaft with a 4 inch pipe in the bottom which then descended down the shaft and on into the chamber. To assist the mud flow down the pipe, two one-and-a-half inch pipes were laid, the first was from a dam built in Little Vein and the other from a dam in Shack Vein. A mesh was placed on top of the cistern to separate rock and wood from the silt, this then being transferred up into the vein

Work started with the removal of silt and rock, together with large quantities of barites, which was moved by tub into the upper part of Shack Vein. Everything went well until we returned for the next onslaught only to find that the sough was full to the top with water.

Overcoming this meant purchasing a 110 volt generator and pump, and cable which had to run down the shaft to where the pump was installed. There also had to be a two inch pipe laid from the pump to the cistern in the shaft. The pipe proved to be a nuisance as it had to be removed every time the tub was wanted, as there is so little room in the bottom of the coffin level.

The pump worked well at first but was very slow, so a second pump was installed. This improved things but the pumps soon became blocked with barites, and we could find no cure to this problem. As the sough got deeper the water volume increased and the two small pumps were taking up to three hours to remove the water. A large siphon system was tried but without success. If the project was to succeed drastic measures were needed.

A two inch mono pump and a one horsepower 110 volt motor were purchased and coupled together, but it was found that the motor was not up to the starting load. The next thing to be tried was a three horsepower Petter diesel engine running at 1500 rpm This was successful so the pump and engine were dismantled and shipped to Winster and reassembled in the coffin level at the top of the sough

During the time the pump was being assembled and tested, a lot of other underground work was needed. With a large pump comes large diameter pipes and it was obvious from previous experience that there was not enough room in the level to accommodate these and the railway. The rails and wooden floor were removed to facilitate the installation of the pipes underneath. This meant that the mud and rock had to be removed then the floor and rails could be relaid.

A diesel engine 200 feet underground has its problems as the exhaust has to be dealt with. First it has to be cooled before it can be piped to the surface. This was achieved by passing it through a coil of copper pipe placed in a steel container full of water. With the water pumping problem under control we could now proceed.

A third railway has been installed into the sough to reduce the amount of effort that was required to pull a drag-tray up the 50 feet long 18° slope. The transfer of buckets from the lower railway to the middle one was also causing trouble, so a pulley system has been installed to overcome this.

At the time of writing (20 January 1996), the incline sough is now 50 feet long and has just started to level out. On an average weekend we are removing 30 buckets of infill and this should now increase. As the work has progressed a several artefacts have been found: leather boots, leather washers (from rag and chain pumps), two long wooden handles, a three-feet long shot-hole scraper, parts of cloth and wool garments and the wooden floor which is still *in situ*. The wooden floor is having to be removed to facilitate digging, but is being stored safely underground.

The leather boots have been sent away for dating and the results were 1843. We are in the process of having the dye in the cloth tested with the hope this will help reveal its date.

Dave Penney

Evelyn M. Dixon,