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RECENT EXPLORATIONS IN SCALEBURN VEIN (NENTHEAD, ALSTON MOOR, CUMBRIA)

by John Lawson.

SYNOPSIS

This paper gives a detailed description of the effort needed to reopen workings on Scaleburn Vein and of the discovery of what may be the only surviving underground horse whimsey in the country. The history of the mine is also discussed.

INRODUCTION

In August 1991 a group of PDMHS members, including the author, decided to look at the southern workings of Scaleburn Cross Vein. This part of the vein is now only accessible from Rampgill Horse Level, which was formerly used to bring out the ore and rubbish from Rampgill, Scaleburn and Scaleburn Cross Veins. The Vieille Montagne Zinc Company also used the level to carry ore from its West Allen Mines, in Northumberland.

The aim was to find a sump linking the Rampgill workings on Scaleburn Cross Vein to a recently explored part of the same vein. This area was about 18 metres below and was then only accessible from the Brownley Hill or Broomsberry Horse Level, but, fortunately, we found a shaft between these two major horse levels (See plan 2).

Like many Nenthead mines, the first 100 metres of Rampgill Level are lined with dressed stone, from the quarry on Flinty Fell. The level is driven straight, in a south-easterly direction, until Brewery Shaft is reached. The London Lead Company probably sank this shaft in order to try Rampgill Vein in depth. These early attempts do not seem to have been too successful, however, and John & Thomas Dickenson remark of them that:-

> *"they sank a sump to the top of the four fathom limestone, but on account of the hardness of the vein and the quantity of water, they gave £20 per fathom, besides eight shillings to each workman, which last sum at the time it was done was nearly a workman's wage so that not much of a trial was made."*[1]

The link from Brownley Hill Mine to Rampgill Vein probably gave the London Lead Company the drainage needed to work this strata, and Brewery Shaft did not reach its full depth until 1844, when the Nent Force Level was driven up to it.

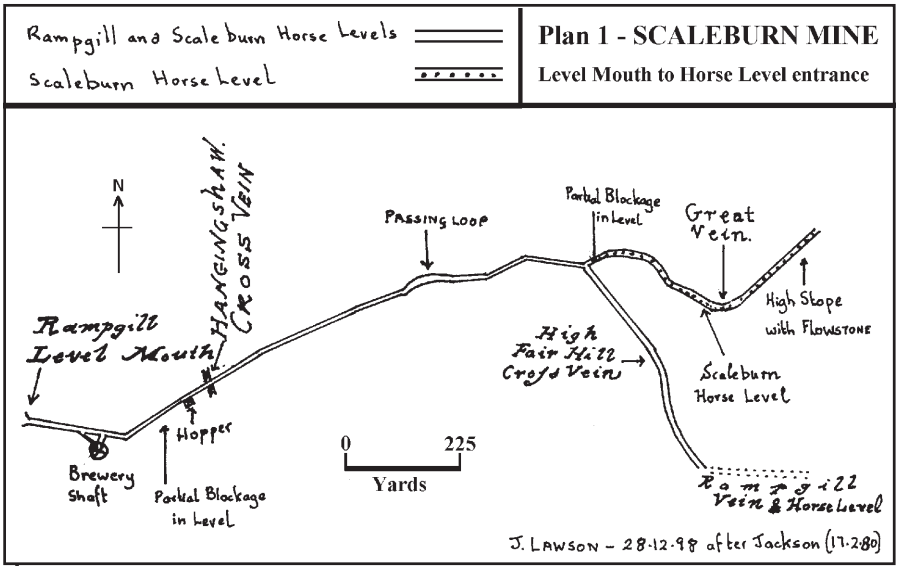
Brewery Shaft was completely refurbished by the Vieille Montagne Zinc Company, who had it concrete lined in the most part. On the surface, a 27 metre high tower was built over the shaft. This gave extra head to the water, which fell 100 metres down pipes in the shaft, and was used to compress air

for rock drills.[2] If the Northern Pennine Heritage Trust's plans come to fruition, the public will be allowed access to the point where the shaft meets Rampgill Level - (See Plan 1).

Beyond Brewery Shaft are the remains of an air door on the left. This was used to alter the airflow along the horse level, which depended mainly, but not exclusively, on the barometric pressure outside the mine.

Around 60 metres further, on the right, is a hopper. Usually dripping with water, this connected with the surface and presumably served as an air shaft in the early days of Rampgill Level. In the 1914-18 War, it was also used to bring material from the Firestone dumps to the Vieille Montagne Mill in the village.[3] Owing to a shortage of miners, the mill could not be supplied with enough mined ore and so literally anything which might contain lead or zinc was processed for the war effort.[2] This process was uneconomical, however, and the government gave the company a subsidy, the removal of which, after the war, led to the closure of the Nent Valley mines.[4]

This section of level, although usually stone arched, twists and turns. We think that it follows Scaleburn North Vein and that the little holes seen in the roof are small stopes. It now has about 50 cm of water, caused by a partial blockage near the hopper described earlier. Seventy metres beyond the hopper, the level has been widened to allow waggons to pass. One hundred metres beyond this, on the left, is the junction of the Scaleburn and Rampgill Levels. Its entrance is partially blocked with debris, which probably dates from the World War I workings on Rampgill Vein, as Scaleburn Vein was considered to be exhausted by then.[5] Scaleburn Level also has the original

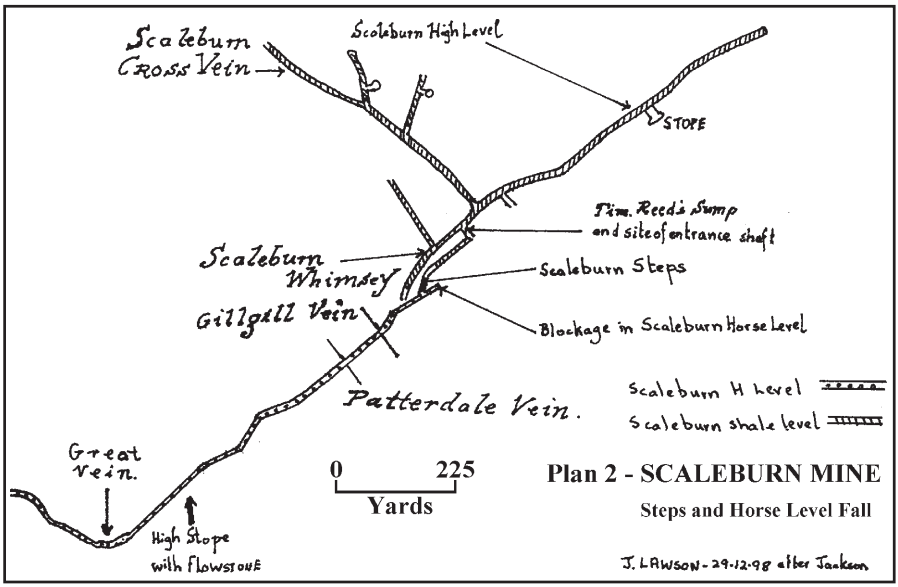


rails, and we can only speculate why they were not removed at the same time as those in Rampgill Level. Perhaps the Vieille Montagne Company was considering working Scaleburn if the price of zinc and lead improved. It did not, however, and the rails are still in situ. This level is almost completely arched for the first 100 metres and then enters a fairly high stope, with a large flowstone deposit on the left side. The next 180 metres of level is often lined and has collapsed rises and side passages, which can be seen through gaps in the stonework. The level may have been re-aligned in this area owing to roof falls etc, but this is hidden behind the arching. Beyond this, a series of rather wet, steep steps leads up from the left side of the level, giving access to workings in the shale in both Scaleburn and Scaleburn Cross Veins (See Plan 2). This shale level was probably driven both to explore Scaleburn Vein and for ventilation. Sumps were sunk from the shale level to the limestone, where the vein was worked.

At the top of these steps, the initials of long dead miners can be seen carved on a shale wall. One inscription clearly reads '*J.P.1795*'. Further to the right is a large, open chamber which was the site of Scaleburn Whimsey. This presumably led to Broomsberry Horse Level, some 18 metres below, but is now blocked by collapses (See plan 2). Further inbye, the second turning on the left gives access to shale workings in Scaleburn Cross Vein. It was in this area, eight years ago, that our group found the sump leading to Brownley Hill Horse Level. This discovery, which has been described in the *West Cumberland Mines Journal*, linked the two mines.[6]

The next turning on the right, in the plate drift, is partially blocked and leads to Reid's Sump which was three metres deep in 1991. Beyond the sump is an area of collapsed stopes. In August 1991, instead of going up the steps into this area, some of the party went straight ahead on the main horse level and, to our surprise, we could hear them through the debris in the stope. Clearly, therefore, this stope was only a little above Scaleburn Horse Level. The latter was blocked by a major fall, some 40 metres from the steps' junction. This was the situation until the end of 1991.

The fall in the main horse level had been unsuccessfully dug before and a brief examination showed that it would be difficult to clear. There were large pieces of shale where the roof of the arching should have been and, if they moved, they might cause severe damage to anyone digging underneath! We thought about the problem in the next few months and decided that a possible solution was to build a wooden box in the area of the collapsed stope, below Reid's sump, which was then about two metres below the top of it. The walls of the cavity were shale and appeared to be very loose and unstable. It was hoped that, by removing debris from inside the box, the digger would have some protection against an inrush of shale. An account of what was done from December 1991 to September 1993 follows.



Monday, December 2nd 1991. Robert Bunting and I assembled a two foot wide wooden box in the stope. It was made from four, 3 x 2 feet by ¾ inch, plywood boards, three, 2 x 2 feet, kitchen work tops and four 8-foot-long Dexion posts. It took four journeys to manhandle these items to site, following the route described above.

The box was built and positioned where, we hoped, it was directly over Scaleburn Horse Level. Inside the box, loose shale was put in a bucket and dumped behind a shale wall that we had made in front of the box. From time to time, the Dexion posts were tapped with a hammer in order to bed the structure into the debris which made up the floor of the collapsed stope. This, we hoped, would prevent unwanted material running into the hole we were making inside the box and, at the same time, lower the whole structure towards the Scaleburn horse level.

April, 13th 1992. We took in a two metre drill steel and knocked it into the base of the box to establish where it was in relation to the horse level. It appeared that the box was directly above the blockage, which was at least three metres below. As the boulders in the roof appeared to be stabilised by the drill rod, we decided to buy some pieces of angle iron and knock them into the base of the box to hold the boulders whilst removing them.

Tuesday, April 21st. Having acquired four steel-angled pieces, we drove them into the base of the box. We then began digging at the main blockage in the horse level below. Using the drill rod, we removed several large shale blocks, then broke them up and placed them at the side of the level.

Eventually a very large block fell and was followed by a large rumble. Above, the bottom of the box had sunk about 30 cm and a small hole had appeared in its left side. At this stage we decided to leave the fall to stabilise.

Monday, May 4th. Robert Bunting and I took four, six-foot-long, pieces of steel angle, an old wheelbarrow, a steel stemple (made by Robert) and various lengths of 2 x 3 inch timber to the dig. The pieces of steel angle were knocked into the floor of the box and loose pieces of shale were added to the wall in front of it. We then fixed the steel stemple to the left wall of the horse level, using a 24 volt Bosch S.D.S. drill, and drove the 3 x 2 inch timbers over it, in order to stabilise the roof. Some large boulders were taken out and broken up and several rumbles were heard from the stope above. On examining this area later, we found another hole had appeared in the floor, near the box. We resolved to widen the box and strengthen it.

Sunday, October 4th. Three of us found that part of the shale wall above the box had fallen on it, causing severe damage its left side. We broke up two boulders and removed the damaged board. Another of Robert Bunting's adjustable stemples was rawl-bolted to the wall and used to secure the rebuilt box, which now looked more like part of a broad arc. This steel and wooden shield was made more rigid by driving in wooden wedges. We began digging inside the shield, using large pieces of shale to build walls in front of the sump. Smaller pieces of shale were put in Reid's sump. We could find no sign of the steel angle pieces that we had knocked into the floor and assumed that we had not dug far enough. Before leaving we had a good look at the fall in the horse level where large pieces of shale, some the size of grandpianos, dangled from the roof. The fall, besides severely damaging the box, had reaped havoc in the level where there appeared to be no easy way to dig through. All future work would have to be done in the stope above.

Friday, October 15th. Robert Bunting and I took in more material to strengthen and deepen the sump, for that it is what the structure was becoming. A plywood board was placed in front of four lengths of steel channel, and lagged with 6 x 1½ inch planks. These boards, which came from a factory floor, were soaked in oil, making them ideal for our purpose.

The method of working was simple. When about 50 cm of rubbish was dug out, the steel channels were driven further into the floor and wooden boards fitted. Shale was disposed of as before. During digging, we found the tops of two of the angled lengths driven into the floor on April 21st.

Sunday, October 17th. All three of us took part on this day, when more plywood and a length of steel pipe were taken to the new sump. We uncovered three lengths of steel angle, which were removed and used to stabilise the shale wall around the sump head. Whilst removing them, a hole appeared in the floor of the shaft, but it rapidly filled with debris, which I thought I had heard falling down on the far side of the fall. It was very encouraging. At

this stage, debris was removed in two ways. Large boulders were passed up to the sump head, whilst rubble was put in a bucket and pulled up on a nylon rope. Before leaving, we re-examined the horse level and confirmed that there was good voice contact with the dig, confirming that the sump was in the right place.

Sunday, October 25th. Robert Lawson and I took a Hitachi 7.5 volt drill, some steel half-hinges and more 6 x 1½ inch planks to the dig. The halfhinges were used to tie the boards together and stop them moving down the shaft. Whilst drilling and fixing them to the boards, I dislodged some lumps of shale from the wall and passed them up for disposal. On lifting the last one I was amazed to see a hole, about three or four metres deep, leading to the horse level. Robert could hear water dripping in the distance, so we thought that the level might be open for some way. That day we left the mine feeling extremely elated. The sump was almost open and nothing could prevent us entering Scaleburn workings, which no living person had seen.

Saturday, November 7th. Robert Bunting and I took two steel stemples and two sections of steel channel, to strengthen the shaft, to the dig. We also took plywood to make a shaft top. One steel stemple was drilled and fixed at the bottom of the sump and four wooden boards were fixed to the bottom of the last ones using the steel half-hinges. Because water, dripping from the stope above, was making the right side of the sump unstable, we added extra 6 x 1½ inch planks and 3 x 2 inch timbers to strengthen it.

At 14.15, after four hours of digging, a piece of shale was removed to reveal a hole big enough to allow Robert Bunting to pass. Whilst digging we had strapped ourselves to the side of the shaft to prevent either of us from falling into the horse level. I suggested to Robert that, before he went through the hole, we should fix an electron ladder to make the ascent easier.

Though initially rather tight, we dropped through the hole onto a greasy slope which was about 1½ metres above the horse level. It was very exciting. What would we find? The project had taken between two and three years, during which I had acquired four plans of the mine. From these we knew that, at the foot of the sump, the horse level should intersect levels which would go left and right following Scaleburn Cross Vein.

We found the water in the horse level to be about 40 cm deep and the rails were still in. This immediate area, like that before the fall, was extensively stone arched, suggesting that, even when the mine was working, it had been protected against roof falls. Our plan of exploration was to ignore any left and right junctions and go as far as possible along the main horse level. The right turn was there, but the left one was not and we only stopped when Robert noticed what appeared to be a waterwheel in a chamber off the main level (See Plan 3). We entered this chamber, which was a worked-out flat, to examine the wheel. The level entering the flat is some 50 cm below it.

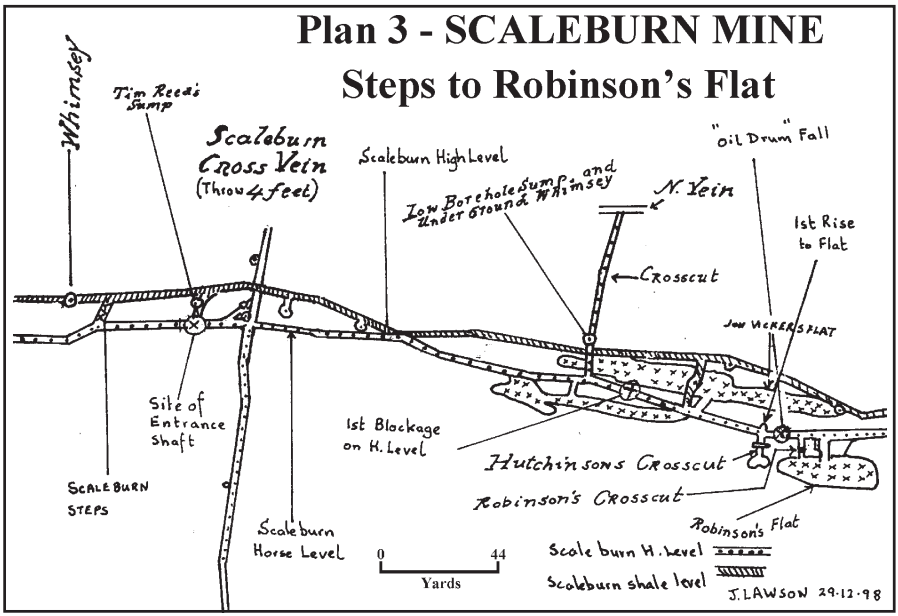
At the far end of the flat, just before a climb described later, is a flooded shaft covered with rails. This is Low Borehole Sump which once led to Brownley Hill Horse Level. Before us was an easy climb, of between one and two metres, into a limestone crosscut leading to North Scaleburn Vein. At the end of this is a collapsed hopper and manway, at least 20 metres high, which presumably leads to workings on the North Vein.

When we returned to the main level and went further inbye, we saw the remains of a trap-door covering a sump on the right. Twenty metres further on, the level was partially blocked where some rotting timbers in the roof had allowed debris to fall (1st blockage on horse level - see Plan 3). It was a little disappointing, but we still had exploration possibilities. After all, it would be stupid to venture under the poor roof timbers not knowing what would happen if they moved!

Just beyond Low Borehole Sump Flat there was a banjo-shovel and a long steel poker, complete with handle, on the left. I surmise that the poker was used to clear blockages in the hoppers.

We carefully examined everything as we returned along the horse level. A small working was noticed on the left and, almost immediately opposite it, there was a miners' "bait" area, where four clay pipes were found and left in situ. Closer to the entrance sump was a crosscut filled with timbers and another clay pipe was found and left in situ.

Plate I. The horse whim, lying as discovered, on its side (R. Fellows, 1999).



Returning to Scaleburn Cross Vein, we decided to look at the left-hand branch, going outbye, as mentioned earlier. On entering the level we found a small working to the right and, after about 50 metres, a hole in the floor which may have been a sump. The roof of this level shows small workings and presumably all visible ore was removed. Fifty metres further and the level became very low and was eventually completely blocked. The very nature of this blockage seemed to preclude digging from the Rampgill Horse Level side of the blockage, but without accurate surveying I could not be sure. After we returned to the main horse level and examined the wall opposite, it appeared that the Scaleburn Cross Vein horse level had been completely walled up. Five metres from this, another right-hand passage led to a sump after 10 metres.

Having completed our initial exploration, we returned to the foot of the entrance sump and spent some time clearing away debris. The wet shale proved very difficult to stand on and so the electron ladder proved invaluable for, without it, climbing the first part of the sump would have been far from easy. On reaching the top, we decided to make a lid for it from one of the plywood sheets we had brought in for that purpose.

The main reason for covering the shaft was to stop debris falling into it and perhaps damaging its sides. This took some time and we left the mine at 19.30, resolving to return the next day, with Robert Lawson and more material to stabilise the roof at the end of the main level. We were all very excited, having found an underground waterwheel, at least two flats and a fair number of artefacts. What would be in the next section of level?

Sunday, November 8th. We took two large boards, assorted lengths of timber and a steel stemple (made by Robert Bunting) into the mine. Once we had shown Robert Lawson the waterwheel, we set about removing the first blockage on the horse level (see plan 3). We started the work by jamming the steel stemple across the top of the horse level. Before we could put the wooden boards on top of it, however, part of the roof, including the rotten timbers we had first seen the day before, came down. We cleared some of this debris and forced the boards over the steel stemple to prevent more from falling. We also reflected on what would have happened if we had tried to go through the fall the previous day. We had erred on the side of caution and it had paid off!

Once through the fall, the horse level, which is completely arched from leaving the waterwheel flat, veered to the right and ended after 47 metres in yet another fall. This is called 'oil drum' fall on plan 3. This blockage was much more substantial than the first one as we could not see over it and everywhere seemed to ooze moisture. It fell from the roof. It was under our feet and quite definitely in the debris ahead. To dig through this would certainly be a challenge!

On the right of the horse level, just before this fall, was a stone lined rise, between three and four metres high. This is shown on plan 3 as '1st Rise to Flat'. An arched level at the top of the rise, called Hutchinson's Crosscut, slopes upwards to end at the remains of a hopper-way (See plan 3). Progress to the foot of the hopper was barred by a large boulder, which had to be removed before we could get further. I made slow progress at undermining it, but it eventually moved when levered with a two metre long drill rod. At the foot of the hopper-way, the next major obstacle could be seen. This was another large boulder, wedged firmly across the hopper. We tried to dislodge it with the drill-rod, but it refused to move and eventually I decided that the only way on was to climb on top of it. I did this and, in this safer position, I was able to remove any loose debris around me. Once I was satisfied that most of it had been dropped, I checked the boulder again for any possible movement and found none.

The top of the hopper was in a small, worked-out flat, about 1½ metres high, which, apart from a crawl-way, had been backfilled with deads. Readers who have been through Hethrington's Cross Cut in Smallcleugh Mine have already experienced such a level. After crawling for 30 metres, we entered a larger, worked-out flat which has a blocked sump in it. This is one of the hopper-ways, which are seen just before the waterwheel chamber. Another pile of debris came from a blocked hopper-way leading upwards and presumably connected, via a blocked off sump and crosscut, to the shale level above.

We returned to the horse level to examine the blockage ahead. We gave it a quick prod with the two metre long drill-rod and the results were encouraging.

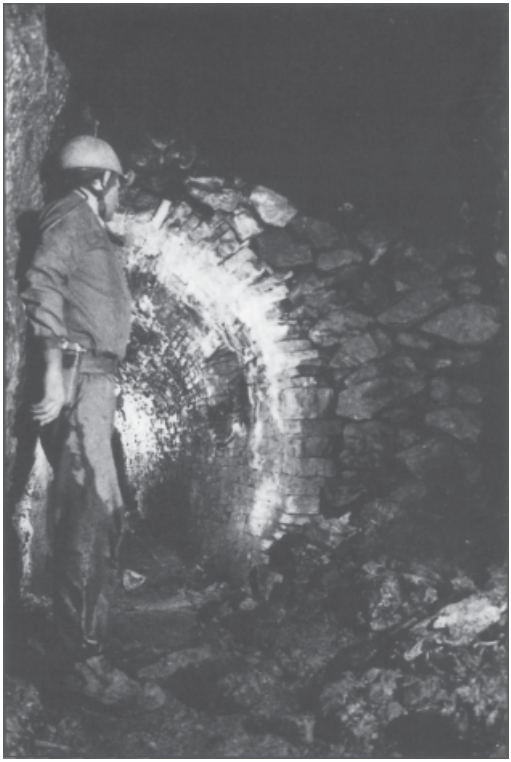


Plate II. Stone arching in the horse level just before the oildrums (R. Fellows, 1999).

We could hear debris falling down the other side, suggesting that the blockage could not be too long. We resolved to return with another steel stemple and boards to tackle this fall too. From our dig we had reopened 160 metres of horse level and many side passages and workings. We had achieved a lot, but realised it was much better than that for the waterwheel was actually a horse-gin – perhaps the only one in the country surviving underground.

December 13th 1992. The basic plans on this visit were to:-

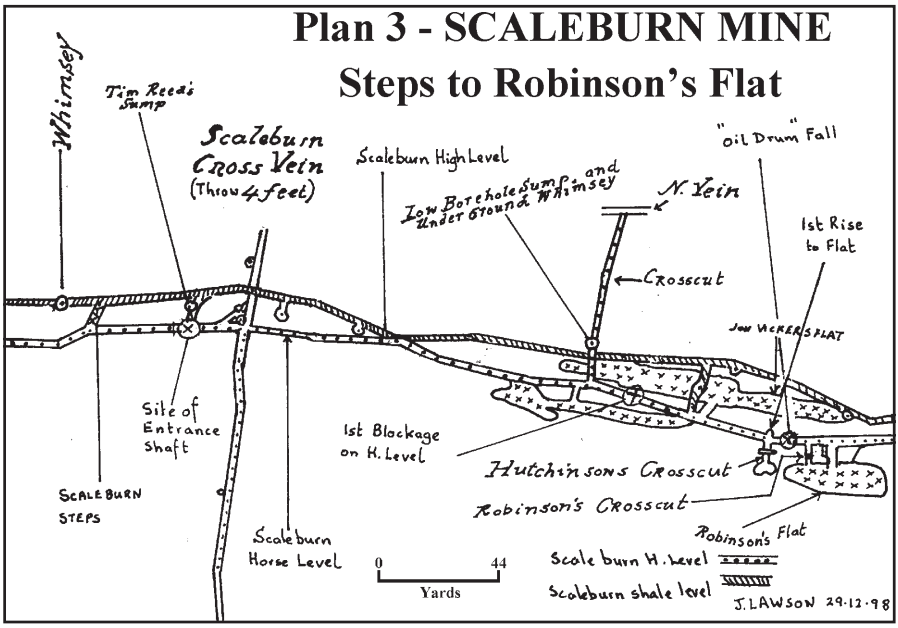
1. Stabilise the 1st blockage on the horse level (See Plan 3).

2. To make safe the second fall on the horse level and dig it.

As usual, we each took in materials. Robert Bunting had made two more steel stemples and these, together with the 24 volt drill, two, 6 x 1¼ inch, boards and three lengths of 3 x 3 inch wooden spars were taken into the mine.

We went through the first fall on the horse level and used the drill to fix another stemple across the arching. The lagging boards, which had been balanced on the one stemple fixed on the previous visit, were moved across both steel pieces. This was necessary to make absolutely sure that the roof remained stable for the near future.

The next task, at the second fall on the horse level, would be more difficult because it had rained and the fall was slimy. We drilled and fixed both ends of the steel stemple into opposite walls of the level. The right wall was in solid limestone and the left one was stone lined, but just beyond this there was a hole in the arching which allowed debris to get in to the horse level.



Once the stemple was fixed, the boards were fore-poled off the top of it. This probably stabilised the roof, but the material from the left-hand side was like porridge and flowed into the horse level, preventing us from going through the fall. We could see stone arching beyond it, but felt it would be far too dangerous to explore the level at this stage.

It was very frustrating and we were wet and very cold. Nevertheless, on leaving the mine, we decided to explore the shaft on Scaleburn Cross Vein, which is on the left of the level on descending the entrance sump. We went down six metres to a small working, where we discovered a slot in the floor. This might be another sump, which might connect to Brownley Hill Horse level, but unfortunately we did not have any more electron-ladder and so had to leave investigation of this area for another time.

Sunday, January 4th 1993. On this visit, the plan was to fix an oil-drum in the fall to prevent the wet slurry flowing into the level. I had sawn a 40 gallon oil-drum into two pieces and drilled it in four places so, that by putting nuts and bolts through the holes, it could be re-assembled more or less in its original shape. We were joined by Roy Fellows, an old friend, and his girl friend, Maureen, and felt that with the larger party we should be able to carry all of this extra equipment into the mine. As usual, we took in wooden boards and spars to enable us dig through future falls.

We assembled the drum just before the 2nd fall on the horse level (Oil Drum Fall on Plan 3) and put it in the hole in the fall. The latter appeared to be

more stable than on our last visit and somehow I had a feeling that someone had already been through it. We wedged the drum in place by packing stones around it and then I crawled through.

At the other side, on the left, I could see an arched level in the roof of the horse level, which I felt was a crosscut to another flat. In order to get into it, I began digging at the debris in the floor. This was a mistake! The crosscut appeared to be like the one (Hutchinson's) we had explored on the other side of the fall. As I removed the unwanted material from the foot of the crosscut, more and more wet tailings, mixed with rather large boulders, showered down. Robert Bunting came through the oil-drum to help me move this unwanted material as we confidently expected it to stop. Unfortunately, it did not and our position became rather parlous for we could no longer get into the oil-drum, because of the debris in front of it. Despite our efforts to avoid doing so, we had sealed ourselves into the horse level!

The area around the oil-drum dripped with water, soaking us both, and our immediate problem was to escape. Before doing so, however, we explored our prison and found it to be stone lined except for an area, some 20 metres inbye, where a large stope was met. Here we saw what appeared to be a level, high up on the left. This, I think, is Robinson's Crosscut, which should lead to Robinson's Flat (See Plan 3). A further five metres brought us to yet another fall in the horse level. This fall seemed to have come out of an orechute from workings above. I felt that the only way we would escape was to build something on top of the oil drum to try and deflect the debris

Plate III. The horse whim, lying as discovered, on its side (R. Fellows, 1999).

that fell onto it from the crosscut. The most obvious thing to use was a piece of rail from the horse level. Fortunately, I often take a 800 mm long steel bar with me when exploring mines and I used this to pull up lengths of rail. The cast iron chairs, which held the rail to wooden sleepers, were smashed off using a hammer and the rail was jammed into the front edge of the oil-drum. Robert Lawson also managed to pass a 6 x 1¼ inch board and a length of 3 x 2 inch timber to us through the oil-drum. Both of these were cut with a bow saw and jammed above the oil-drum to try and prevent more rubbish falling in front of it. The combination of timber and rail had the desired effect, but, when we cleared the material from the front of the drum, we found a large boulder had wedged itself inside it. Robert Bunting managed to squeeze over the top of it and the two Roberts pulled it out of the way from outbye. I then crawled through the drum, having been confined for 1½ hours. We were now certain that someone had been through the oil-drum before us because:-

1. The timber, which had covered the sump top near the junction of the level to Low Borehole Sump and the Scaleburn Horse level, had been moved to the 2nd Fall on the Horse level.

2. We had seen footprints in the mud on the floor, beyond the oil-drum, which were there before we had entered this part of the mine.

We decided to examine the area around the horse-gin to see if we could find any clues to the identity of these explorers and, in the crosscut to North Vein, beyond the Whimsey Chamber, we found a discarded boiler suit and a recent copy of the Ilkeston & Ripley local newspaper.

Before leaving, we re-examined the sump on Scaleburn Cross Vein (described on our last visit), but the final slot in the floor appeared to be far too dangerous for any more exploration.

I gave considerable thought as to who had been through the partially supported fall before us. They must have an iron-nerve, for we had decided that it was far too dangerous. The condition of the boiler suit suggested that they had a nasty experience on the other side - perhaps worse than our own! There was only one person in the whole country likely to have done this – Cheg, otherwise known as Stuart Chesters. Having made discreet inquiries amongst my friends and obtained his telephone number, I then rang him up and asked him about his visit. He was surprised and it seemed to him that I had carried out the perfect Sherlock Holmes detection.

On overcoming his initial shock and reticence to tell a complete stranger about his recent discoveries in Scaleburn Mine, he confessed that he had gone through the fall and, as he did so, it fell in around him! He then had the problem of how to get out, and it was only by breaking up the boards that we had noticed earlier, that he had been able to escape!

Sunday, March 13th 1993. A large party was needed to bring in further materials in order to improve the oil-drum fall and examine the rise to Robinson's cross cut (see plan 3), so I contacted a number of friends. The two Roberts (Bunting & Lawson), George & Kevin Farr, Roy Fellows, John Salmon, Norman Thompson and myself had two basic tasks for this visit:-

1. To take in yet another oil-drum (split in half like the first one, but with 10 cm of it removed), the idea being that it should fit inside the oil-drum, which was already in place.

2. To take four lengths of aluminium scaffolding pole into the mine so that we could enter the workings we hoped would lead into Robinson's Flat.

We took everything to the front of the oil-drum fall, in Scaleburn Horse Level, where the new oil drum was assembled. To my surprise, it was the same width as the one in the fall! I was not amused for, having removed 10 cm, it should have fitted. We re-examined the area behind the horse gin (shown on plan 3 as John Vicker's Flat), hoping to find a way round the fall in the horse level. Most of the flat had been stowed with deads, but a small level through them ended at some planks in the floor. This looked like an area where ore was sorted before being trammed out of the mine, but other possibilities, including a rise or a sump, were considered. After examining these prospects, I decided that to try to explore them would be very dangerous and, in any case, I had come up with yet another solution to the oil-drum problem.

Returning to oil-drum fall, we decided to undo one side of the drum and jump on it so that its reduced diameter would fit inside the other oil-drum. Initially the new drum did not seem to want to move inside the existing one. By hitting it with a piece of wood, however, and digging out the debris which had fallen inside the drum, the

Plate IV. The horse level, just before the 2nd rise to the flat. Roy is shown opposite one of the blocked-up hopper ways. (R. Fellows, 1999).

smaller drum was slowly edged forwards. Eventually it came out of the drum and would go no further forward because it was wedged against the railway-line I had used to jam the drum on the previous visit. We managed to push this back into the mine using a large spar of 3 x 3 inch timber.

The fall seemed fairly stable so I crawled through the two drums and found a largish boulder was supported on the wooden board which had been placed above the drum. I rammed the rail against the roof and surrounded it with stones. The second drum was pushed forward another 40 cm and two more boards were placed on it. The effect was not very aesthetic, but it would prevent more material being rained on it from the roof and would give us access to the Robinson Cross Cut area (see plans 3 & 4). We made a maypole from three aluminium scaffolding poles and stood it on top of a platform of limestone deads and pieces of wood on the left of the horse level. The top of the pole jammed into the pack-wall, just below where we expected the crosscut to be. At this stage, the 10 metre long electron ladder was hanging vertically against the pack-wall. When I reached the top there appeared to be a rotten, wooden stage in front of a low wall. I was about to consider what to do, when the platform below started to collapse. Reacting instinctively, I clung on to the ladder and, fortunately, both the pole and I settled through the platform which had been reduced to a heap of boulders and pieces of wood. The foot of the pole seemed to be stable, however, so I re-climbed the ladder and looked around at the top. A chute, which fed rubbish into the horse level, could be seen and everything looked decidedly unstable. Boulders were wedged in the roof and, if Robinson's crosscut was up there, I could see no safe way of entering it. Since I had tempted fate once that afternoon I did not feel like doing it again.

I had seen the next fall, which was at the foot of a hopper, from the workings above. The two metres of debris inside the walled chute needed clearing before we could enter the level beyond. Robert Lawson and Roy felt that it could be done and they began to do so whilst I was up the maypole. Both said that they had seen over the fall.

Sunday, May 16th. Roy had dug the third horse level blockage by himself on the previous Sunday and telephoned me a few days later to tell of his success. Robert Bunting had made two more stemples (one was already in the mine and the other had to be taken in). We also had a good supply of timber in the mine. A lot of it came from the collapsed platform and was at least 100 years old, but was useable. We thought we had enough materials for any dig here.

On reaching the third horse level blockage, we could see that Roy had done a good job. The debris I had seen from the maypole had been almost cleared from the hopper and the digging materials would not be needed. In view of the work he did there, it was called Roy's fall. There was a slope up to the foot of the hopper-way and a smaller one down the other side. Further inbye,

Plate V. The wooden chute, which is reached from the 2nd rise to the flat. (R. Fellows, 1999).

along a well arched level, was the foot of a blocked off hopper-way on the left, and, 45 metres from this fall, there was a slope on the same side of the level. Between these two places, there was another blocked hopper-way, presumably from workings in the flat above.

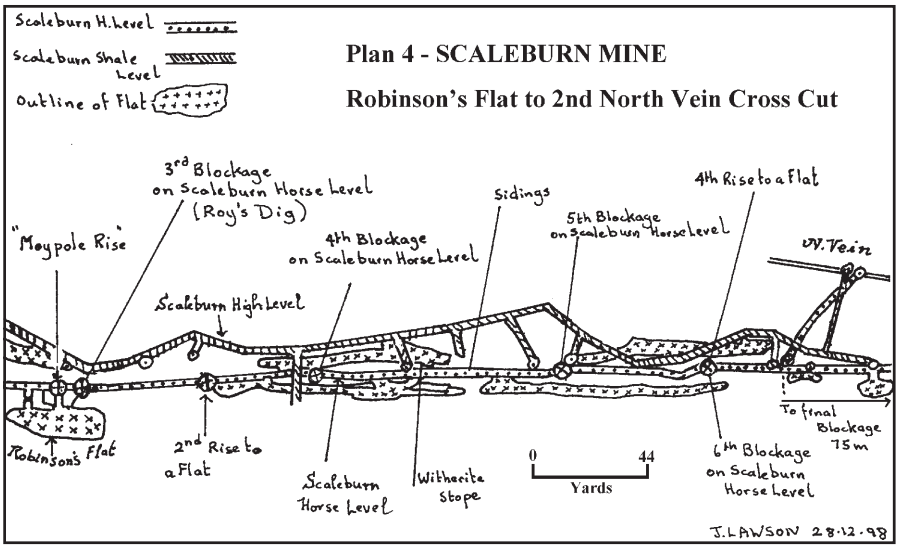
We decided to look at the flatworkings which seemed to begin at the end of the arching, where there was a gentle slope down to the horse level (2nd Rise to Flat - see plan 4). At the top of this slope was a short barren crosscut and one or two open areas. The most important artefact in this part of the workings was a wooden chute from higher workings. It is difficult to see why this was built, as there were at least two hoppers through to the horse level. The latter might have become blocked, however, between the time of the Nenthead & Tynedale Lead and Zinc Company's working the mine and the Vieille Montagne Company's taking it over, and the latter company might have felt that this was a quicker solution than trying to re-open them. Despite our being the first explorers in this part of the mine for at least 100 years, we saw no obvious crystals in the cavities that we found.

Going further inbye, in limestone, led to the inevitable arching after 40 metres and, after five more metres, to another fall. On the left of the fall was a small area, between the end of the limestone and the start of the arching, where the miners had had a 'bait` stop and we intended using this to tip debris from the fourth blockage on the horse level (See plan 4). We fixed a stemple across the level and drove four long timbers into the fall with a large hammer. Once these were firmly in place we could dig and be fairly confident that the roof would not fall. Unfortunately, we reached the end of the boards and it was folly to dig beyond them. The main problem then was to stabilise the right-hand wall, where material seemed to be coming from a hopper-way.

Sunday, May 27th. The week before, Roy had tried using welded pieces of bicycle tubing as props in the dig and so he, Robert Lawson and I went to see what he had achieved. We found the props to be less than desirable as they had no strength in them. By making a crude frame from them, however, we could support the ends of the planks, which were hanging off the stemple. We reasoned that at least two more of Robert Bunting's stemples were needed for this fall and the project would have to wait until he made them.

Sunday, July 11th. As well as the three of us, we had the assistance of Roy Fellows and David Sargent, so we took advantage of this to take in more materials, including three 6 foot and four 5 foot lengths of 3 x 2 inch timber. We also took two of Robert's steel stemples and his new A.E.G. 12 volt S.D.S. drill. Our plan was to dig through the final blockage (See plan 4) and to measure the newly discovered part of the mine in order to relate them to the plans I had acquired (see later) and we found that we had reopened nearly a fifth of a mile of workings.

We fixed the first stemple to the level walls using Robert's drill, which had the advantage of only needing 12 volts to drive it, and fore-poled timbers off it. When the debris under the timber had been cleared and stacked behind a wall we had made on the left of the level, we had to put in the third steel stemple. This proved to be rather difficult as the AEG drill only had the Ni-Cad batteries supplied with it and we had virtually exhausted them. The only way the next stemple could be fixed was for someone to return to the vehicles and bring our 24 volt drill, which we had brought with us as we were unaware that Robert had bought a new one. We persuaded Roy to do this and, on his return, we fixed the third piece of steel into the sides of the level. All our remaining timber was then used in fore-poling off it.



By 16.00, Robert Bunting managed to see through a hole in the blockage. We could see pieces of rotten timber holding up boulders in the roof and it seemed to be the same old story. Not enough roof supports! As we dug, other debris was dropping beyond the fall. Once again, we could not go through the fall without setting another stemple and more roofing materials.

Sunday, August 8th. The two Roberts, Roy, Dave Warriner, an old friend from Mansfield, and I planned to take enough material into the mine to complete digging the 4th blockage on the horse level. We carried yet another stemple, four planks, nominally 6 x 1¼ inches, and three more pieces of 3 x 2. When we arrived at the 4th horse level blockage, we dug as much from the floor as possible and placed two of the wooden boards on the floor as shovelling plates. The stemple was very difficult to fix to the arching, which I attributed to using 24 volt Ni-Cad batteries, which did not appear to have the voltage of the lead-acid ones. As a result of this, the drill had difficulty in boring the hard rock of the arching.

After three hours' hard digging, we had cleared most of the fall and the two Roberts set off to explore. They were back after 10 minutes, complaining that they had found yet another fall! I had been left to clear more of the 4th fall, which I left to go and look at what they had found. Immediately through the fall was a boarded up hopper-way, followed by a hopper-cum-stope in which a large heap of deads was supported on very little. I thought that I could climb on top of them and enter the stope. I climbed cautiously and, in the process, purposely knocked one of the supports to make sure that, when I descended, stones and other waste materials would not fall on me. In part of the stope I found a vein of white mineral, which was very interesting as any mineral at all was virtually absent in the other workings. Initially, I thought it was a variety of aragonite, known as "Floss Ferri", and, to check this, I took a few samples and descended to the horse level.

A little further inbye, a wider portion of the horse level had been used as a siding and had the first points we had seen in the mine. A few metres beyond this on the left was a hopper, shown on Plan 4 as the 5th blockage on the horse level, which had fallen into the horse level. I could see through the blockage, which appeared to consist partly of rather large boulders, so I began prising at them with my 500 mm steel bar. After a few minutes, I could hear someone coming along the level behind me. I knew it would be neither of the two Roberts as they had volunteered to clean up the area of the 4th fall. Instead, it was Dave Warriner, who suggested that, if we could move some of the smaller boulders out of the way, then a very large boulder, at the back of the hopper-way, could probably be used to hold back the rest of the rubbish. He suggested that we made sure it would not move by spragging a piece of wood across the horse level to ensure that the rest of the rubbish stayed inside the hopper. I returned to the 4th fall and spoke to Robert Bunting, who selected a suitable piece of timber and took it and the bow saw to help Dave fit the sprag. Robert Lawson and I spent some more

time cleaning up this area, by removing rubbish to improve access to this part of the mine.

When Dave and Roy arrived, we all went to look at the new extension to the horse level. Although we had made the fall safe, it was still rather a squeeze because it was too dangerous to remove all the boulders. On the other side of this blockage (5th on plan 4), a blocked rise was seen on the left and yet another fall at the base of a stope. In this stope, some 10 metres above the horse level, another level (4th rise to a flat - on plan 4) could be seen. The fall (6th blockage on Scaleburn Horse Level – see plan 4) consisted of fine dry debris from the stope and was soon cleared. Beyond this fall, the horse level was again completely arched and there was another rise on the left. A few metres beyond this was a shaft on the left, with a crosscut beyond it, presumably to North Vein, but, because of the shaft's width, we did not attempt to verify this. A little further inbye was yet another fall, with deep water backing up behind it. Roy, who was wearing part of a wet suit, volunteered to see how much further the level went, but he soon returned to tell us that it was blocked after 75 metres.

Sunday, August 22nd. Today the two Roberts, Roy and I were present and planned to remove some more of the mineral which I had found in the stope for examination and recording purposes. Although it had initially appeared to be aragonite, closer examination revealed it to be partially witherite, or barium carbonate. This was an exciting discovery because witherite had not been reported from the Nenthead area itself and the nearest deposit was in the Admiralty Flats in High Raise 2nd Sun Vein, at Nentsberry Haggs Mine. The acquisition of further samples would help to clear up this matter. We also intended to examine at least two rises using our maypole. The rises we planned to look at were the one at Roy's dig and the one on the right of the level, just before the final crosscut to North Vein. Another purpose of the visit was to lower the water at the final fall to enable us to examine this section of the horse level.

We put the maypole up the first rise, but found that it could not be climbed safely because of debris which constantly fell on us. We took a number of mineral samples from the stope and they confirmed that the white mineral was indeed witherite. Subsequent examination of the fine crystals on top of the mineral proved them to be a growth of baryte crystals and not aragonite as I had first thought. The deposit has partially been described by Robert Bunting, but his description does not made absolutely clear the 'pod' or lens nature of the deposit, for the white mineral appears on the footwall of the vein some two metres high narrowing to around one metre.[7] I carefully searched the whole of this large stope for signs of other interesting minerals and found some quartz crystals and a little sphalerite and galena, but nothing else. The expected fluorite mineralisation was absent.[8] The last people in this section of the vein must have removed any larger and more spectacular crystals and this could only be the Vieille Montagne Company's miners. I

crossed the entrance rise and climbed the steep shale on the opposite side. At the top of this is a sump going down through the debris, but it looked very dangerous and, in view of the delicate nature of this part of the stope, I stopped exploring it.

We then went to the second rise, where we put up three sections of maypole (about 10 metres) and I climbed up it into a small working or flat. As far as I could see, however, there was no easy way out of it, so I descended to the horse level once more and we went to the area in front of the final blockage.

This fall appeared to consist of large boulders intermingled with thick clay. We dug the right-hand side of the level, using the force of water (underground hushing) to cut a channel through the debris. We lowered the water to about knee depth and went to look at the final fall. On the left of the level, two rises led, presumably, up to Scaleburn Sun Vein workings. Unfortunately, these were both blocked and so this could not be verified. On the left of the level, rises led up to more stopes on Scaleburn Vein, which again were not examined. The final fall was disappointing as we were still some way off the county boundary, where Scaleburn Vein becomes Low Coalcleugh Vein, and the large flat which was found just before it.

Sunday, September 26th. The whole group was present and had two main objectives. The first was to monitor the oxygen level throughout the mine. The results, which were quite disturbing, are given in appendix 2 and discussed later in this paper. The second was to use the maypole to enter the level first seen on August 8th and shown on plan 4 as the 4th rise to the flat. We erected the maypole and, to prevent the danger of the base collapsing, we stood it on a substantial piece of timber. At the top of the rise, a slope led to a very wide, arched level leading to another rise. This one was interesting since at some time it had been largely boarded over to form part of a wooden dressing floor. Climbing this rise, with its poor timbers, however, was quite dangerous. At the top there were levels leading left and right to a complex of flat and stope workings on what was presumed to be Scaleburn Vein. One point of interest was that, on one level, flats can be seen in three parts of the Great Limestone, presumably corresponding to the Low, Middle and High Flats. Yet another crawl led me to the top of the rise I had entered on the previous visit. The majority of these levels are completely backfilled with deads and are very low, making progress through them extremely difficult.

Another area in this complex was an old man's bait area where discarded water bottles and detonator boxes had been left on the ground

CONCLUSION

A brief examination of the oxygen levels in Appendix 2 will inform the reader that these were very low, especially near the final fall. Working in these low oxygen levels could lead to brain damage and the prospect of digging out a

major fall so far from the portal led us to abandon this part of the project. As well as working in low oxygen levels, we would also have to carry materials from the portal, which would mean a considerable effort.

We have been back into the mine several times over the last few years and, other than some deterioration in the entrance sump, all of the falls seem to be stable. We have looked other parts of the mine, but have not made any further discoveries than those described here.

THE HISTORY OF SCALEBURN MINE

INTRODUCTION

Whilst aware that it is far from complete, the author has used various sources, especially from individual mine plans and plans of the Nenthead area in general, to prepare this history.

WHEN DID THE LONDON LEAD COMPANY ACQUIRE THE MINE?

Fairbairn states, without citing his source, that the London Lead Company acquired the lease of the mine in 1756.[9] Like Wallace, who was writing around 1860, I have been unable to check this statement.[10] He thought that the acquisition date was 1756, basing this on the knowledge that Robert Percival, the London Lead Company's principal agent before Mr Dodds, renewed the lease on November 8th 1777, and the assumption that they had already held it for 21 years. Wallace also tells us that the Blackett Company discovered Scaleburn Vein in the Coalcleugh Mines around 1735. They also found that the veins were richest in the Great Limestone, so initial exploitation should have been directed at that strata.

The earliest known plan of the mine, dated 1773, calls the vein Scaleburn Moss Vein and shows it running more or less to the county boundary.[11] It shows none of the whimsey shafts, which may have been sunk later, with earlier exploitation being done from either the higher levels or via the crosscut from the Rampgill Engine Shaft (see below).

Hilton's critical account of the London Lead Company's trial of the vein in 1778 states that the:-

> "*original trials at Scaleburn Moss I believe has been very trifling, both at the East and West ends. I must confess the trial began at the West end from Rampgill Low Level was well planned; had it been executed according to the intention as it appears to me, for they have carried a very good level so far up that vein as a little above the Inclosures and why it was left there I know not but do suppose that it had been occasioned by their facing some Cross Veins.*"[12]

This statement suggests that the vein had only been worked in the upper strata, presumably from shallow shafts. The London Lead Company had

driven Rampgill Level towards the vein, but stopped when they met one of the cross veins, possibly the Great Cross Vein. It is also possible that the direction of the drive was lost, for, as plan 1 shows, the horse level twists in this area. Yet another possibility is that the limestone was too hard and a cheaper option was sought. Hilton, who believed that Scaleburn would turn out to be another Rampgill Bonanza, was critical:-

> "*they began the Crosscut from Rampgill Engine Whimsey, taken up that level which communicates with Rampgill Low Level, and in the first place made it a dead level from where it crosses Carr`s Vein.* [Made] *it a waggon gate and fixed a Whimsey so much above the Inclosures as to leave room for a washing convenience. In my opinion they would before now have saved three times the additional expense. I mean the difference between what the crosscut from Rampgill and the present Whimsey cost, and what this level and Whimsey would have cost. They should also have made in different places as they went forward sidings of ten or fifteen fathoms in length for the waggons to pass each other. Whereas they are obliged to make a new* [level] *upon the Pattison* [Grit Stratum above the Little Limestone], *into which they will be obliged to have sumps down to the Limestones below. The washing floors* [presumably around Scaleburn Whimsey] *will also cost some hundreds of pounds for it is situated on Moss several feet in depth and once the ore gets into it will remain there.*"[13]

The foregoing is an abridged account of Hilton's criticism and suggests that he thought that either the level should have been continued, or a shorter one driven from Rampgill Engine Shaft, to the vein. Clearly, the London Lead Company decided to drive a crosscut above the Pattison Sill to prove the vein. William Wallace's plan of Scaleburn shows two levels driven from Gilgill Burn.[14] One is either on, or in, the Firestone Sill, which is above the Pattison Sill, and one is below the Firestone Sill, but could still be above the Pattison Sill. Wallace states:-

> "*that a hydraulic engine was placed at the bottom of the Engine Shaft* [Rampgill Mine] *to pump water from Scaleburn Vein, in the Great Limestone*".[16]

This was presumably around 1770, and represented a cheaper way of reaching Scaleburn Vein in the Great Limestone. Hilton was correct in the respect that it was not a really cheap option. Wallace describes it as follows:-

> "*the bouse was brought out of the works by hand to the sumps in jaunting kibbles, drawn up the various sumps by hand and carried upon a wooden Tramway to the Whimsey up which it was drawn by horses to the surface*".[10]

Such double-handling of material was expensive and the obvious way of working the mine was to complete the Scaleburn Horse Level from Rampgill Mine. According to Wallace, this was begun under Mr Dodd's direction a few years before the close of the 18th century.

The quarterly returns from the London Lead Company's agent, now in the Northumberland Record Office, give a concise account of activities between 1806 and 1819. This large book was compiled by the chief agent, Thomas Dodds, and may have been written by him. It could, however, be a clerk's copy of his correspondence with the Court in London. Each copy is signed by Thomas Dodds and, after his death, by the new chief agent, Robert Stagg.

The first entry is on April 19th 1806, when they were driving both the horse level and a level above the Great Limestone. The latter level, from which they were sinking into the Great Limestone, might be the shale level described earlier.[17] Scaleburn North Vein was cut in 1807 and, by December that year, they were sinking an air shaft (from the surface?).[18] In July 1808, Dodds wrote to the Court:-

> "*Thomas Havelock & Co. are driving a Cross Cut to the North to look for the discovery of Strings & Flatts in the Great Limestone*".[19]

This is probably the crosscut next to the sump in the whimsey chamber.

On February 18th 1809, Dodds wrote to the Court that:-

> "*John Eels & Co. are driving an upper level which is necessary for laying the vein open for trial in the Coal Sills, and the Upper part of the Great Limestone*".[20]

Later that year they were trying the Little Limestone for ore.[21] The labour costs for driving the horse level in the Great Limestone are given in Appendix 1 and, on April 21st 1810, Dodds wrote:-

> "*This level is extremely hard and require high prices.*"[22]

Ore from the North Vein had apparently maintained the mine. The limestone in the Main Vein, i.e. Scaleburn, was very hard and difficult to work, however, and Wallace describes it thus:-

> "*The ground on the North side of Scaleburn Vein was much richer. The veins or strings were narrow in the limestone, they however were filled with pure lead ore.*"[10]

Unfortunately for the miners, on July 10th 1810, Dodds wrote to the Court describing the failure of the North Vein:-

> *"Scaleburn Moss is very much failed by the North Vein scattering and separating into several parts and from which we have been raising the principal part of the ore, however we are using every effort to find the vein where the scattered parts are collected together."*[23]

The reports on the mine were very pessimistic after this and, on several occasions, he told the Court that the lease would have to be relinquished.[24] In 1812, therefore, dead work was cut to a minimum and the price per bing of ore was increased to the maximum (38 shillings) that they could afford to pay.[25] Things seem to have improved a little towards the end of the book, however, as, for example, at Christmas 1818, when Robert Stagg described driving the horse level as follows:-

> *"the prospects are somewhat brighter and we obtain as much ore as we proceed as to repay the cost of the level, we continue this trial in full security that if we don`t gain much, we can lose nothing and have a fair chance of obtaining a profitable mine in due time, two or three years."*[26]

Stagg's last entry, on Lady Day 1819, was even more optimistic, although the hardness of the rock continued to deny them much profit:-

> *"We have discovered a new flat lying alongside of this vein and near the forehead of the level, which although very hard and far from rich is likely to raise a good deal of ore at high prices as we proceed."*[27]

This is presumably the same flat as that described by the Dickensons in 1821:-

> *"A very promising Flatt has lately been discovered on the south side of this vein in the Great Limestone in which they are getting ore very well."*[28]

The next information comes from a London Lead Company plan of Scaleburn Mine.[29] This gives an exact date for the position reached by the miners in driving the various levels towards the county boundary. For example, by December 21st 1821, Scaleburn Horse Level had reached the position of the third blockage on the horse level (see plan 4). This also suggests that the flat referred to above is Robinson Flat (see plan 3).

The plan also allows us to estimate the rate at which Scaleburn Horse Level was driven. On December 27th 1821 it was just beyond Roy's dig and it took until January 12th 1829 to reach the 2nd crosscut to North Vein. This is a distance of 262 metres in just over eight years and gives an average rate of advance of 33 metres per year. Unfortunately, this plan gives no information on the level being driven in the shale above the limestone which is shown on plans 3 & 4. A lower level, omitted for clarity, is now flooded.

In the spring of 1809 Thomas Dodds, the London Lead Company's main agent, began the long drive from the Broomsberry, or Brownley Hill, Horse Level via Scaleburn Cross Vein to drain both the Scaleburn and Rampgill Veins.[15] The level was in the Quarry Hazel when Scaleburn Vein was reached on August 6th 1823 after 14 years. This reflects Dodds' vision as his main objective, Scaleburn Vein, was not reached until seven years after his death in 1816. Presumably writing before Nent Force Level reached Rampgill Vein, Wallace confirmed the importance of this link:-

> "*The engine placed at the random of the Patterson in Rampgill Vein had long ceased to work; in consequence the old works in the Great Lime below Rampgill Branch Level in Scaleburn Vein were filled with water which was suddenly drained away. The crosscut from the Engine sump is a few fathoms below Broomsberry Level and still remains full of water.*"[10]

There is a gap of 12 years before the next date is given on this low level, which was just beyond Low Borehole Sump in July 1835. We can only speculate on reasons for this delay, but it is possible that the cost of removing the rubbish from the level, presumably via the Broomsberry Horse Level, was prohibitive. In order to reduce this, they built the whim chamber and left us with the horse gin. This would not have taken 12 years, but the chamber is part of a flat, which had to be worked, and the shaft might have needed refurbishing – see later. Broomsberry Horse Level ends just after the 2nd Crosscut to North Vein, and so does not go as far as either the main horse level or the shale level above it.

William Wallace's plan, dated 1860, is probably the one used to write his report on the London Lead Company's Alston Moor Mines (see below). It shows two levels, one above the Firestone Sill and another below it. It also shows a connection, driven above the Four Fathom Limestone, from the Engine Shaft, on Rampgill Vein, to Low Borehole Sump. These workings were drained using a hydraulic engine, but this was probably too expensive and the company decided to work the mine more conventionally by driving Scaleburn Horse Level. The plan also shows that the upper shale drift was driven within 50 metres of Scaleburn Bounder Shaft and that it was reopened to that point on April 9th 1833. Some surface features, including part of Gilgill Burn, are also shown. This crosses Scaleburn Horse Level near the 'oil-drum' fall, so no wonder this part of the level is so wet! Paradoxically, Wallace states that the richest deposits of lead ore in Scaleburn Vein occurred "*some 30 fathoms on each side of Gilgill.*"[10]

Wallace, the London Lead Company's deputy area agent, wrote a report on "*The untried portions of the Nenthead Mines*", dated December 1st 1856.[30] He was pessimistic about the prospects for Scaleburn Vein which:-

"*is in much the same condition as Rampgill Vein* [i.e. exhausted in all the ground above the horse level, most of it having been worked two or three times over]. *It however contains more unworked ground in the Great Limestone but such ground is generally hard, and, 'As hard as a Scaleburn twitch' is a common saying of our Nenthead miners. Some of the twitches will probably be picked at for many years, and small quantities of ore will be produced from them. This vein in the Firestone and the Slate sills has been proved barren. A great portion of it in the Quarry Hazel is also either worked or proved unproductive.*"

The Quarry Hazel is entered from Brownley Hill and its poverty might explain the 12 year gap in continuing this level. Wallace then describes Scaleburn North Vein:-

"*This vein is also a weak one, with some 18 inches of throw north side up. Excepting in a short piece of ground in the Dowgang Mines, it has scarcely produced any ore. It has twice been crosscutted to from Scaleburn Vein for its proof in the Great Limestone, but in each case it has a hard, unpromising appearance. We have nothing to hope for from veins like this in any stratum, except under very extraordinary circumstances. But from the Nent river to its intersection with Scaleburn Vein I know of no circumstances to lead us to suppose that ore may be deposited in it.*"

These are clearly the crosscuts mentioned above and Wallace obviously did not know of the earlier successes in North Vein. He goes on to consider the prospect of driving Nent Force Level up to the forehead to work the lower strata and again adopts a very pessimistic view:-

"*The probability of mining with success in the lower beds is also equally contrary to all reasonable expectation. Below the richest patch of ore in the Quarry Hazel some trial was made of the vein in the Four Fathom Limestone. I had then not the opportunity of seeing what was done but admitting that the trial was not an effective one, still so far as it was made; it was confirmatory of the principal deduced from a number of facts, viz; that when the Quarry Hazel has been enriched from the strata above. The Four Fathom Limestone may have been enriched by the same superabundance of ore, but more frequently it would have been found barren. Without sinking, the Six Fathom Hazel would scarcely be proved by the continuation of Nent Force Level to the East boundary.*"

The prospectus of the Nenthead and Tynedale Lead and Zinc Company Ltd, which took over the London Lead Company's leases in 1882, mentions that five men were raising ore in Scaleburn Vein.[31] A later plan and section of Scaleburn Vein, made by the Vieille Montagne Zinc Company which took

over the Nenthead leases in 1896, is similar to the earlier ones, but the plan shows that some of the flats had been worked further and the section shows increased stoping throughout the mine.[32] The plan also shows the position of the Nent Force Level, in the Slaty Hazel below the Five Yard Limestone.

There are two more Vieille Montagne plans, both dating from around 1920. The first is an abandonment plan of Rampgill Mine, and the second, of Barney Craig Mine, is presumed to be one too.[33, 34] According to Dunham, the Vieille Montagne Company did not work Scaleburn Vein as it was exhausted. In view of the 1882 plan, however, it is the author's opinion that this company removed any zinc ore left in the stopes. Moreover, experience of similar workings suggests that what we found is typical of the Vieille Montagne Company, the most telling features being the lack of metalliferous ores in the workings and the very high use of timbering. Perhaps, as mentioned in the introduction, the company did not remove the rails because it felt that, even after the latest working, there might still be ore in the mine. Since Scaleburn was not profitable, the loss of the wartime subsidy on metal production killed any last chance of reworking it.[35]

APPENDIX 1

PROFIT & LOSS REPORT, 1791 TO 1808

Documents in the Cumbria Record Office give specific information on the mines' profitability. Unfortunately the information is only available for the years listed.[36]

Year	Net Profit/Loss			Profit/Loss	Wages		
	£	s	d		£	s	d
1791	246	6	0	Profit	1928	19	7
1792	237	10	11	Loss	1379	11	5
1793	514	8	6	Profit	2875	13	6
1794	252	12	9	Loss	2077	10	3
1795	296	14	2	Profit	1716	0	6
1796	93	16	11	Profit	1292	11	10
1797	78	19	11	Profit	1010	11	1
1798	30	4	1	Profit	1248	5	11
1799	22	5	11	Profit	1446	19	9
1800	152	3	7	Profit	2721	15	10
1801	871	0	8	Profit	2097	11	8
1802	798	15	9	Profit	2449	2	l
1803	445	4	8	Profit	2763	7	10
1804	778	11	11	Profit	4340	4	4
1805	692	10	2	Profit	3800	19	3
1806	1360	10	3	Profit	4775	12	3
1807	2473	7	4	Profit	5701	8	11
1808	4968	3	5	Profit	5669	4	1

The labour costs listed above are some of the highest in these accounts and probably reflect the costs of driving in the hard limestone which makes up the country rock of this mine.

Appendix 2

OXYGEN LEVEL DETERMINATIONS.

These were made on Sunday, September 26th 1993, using a Neotox oxygen detector.

Position in the mine	Oxygen Value %
Main Horse Level	20.8
Top of the sump to the Horse Level	20.7
Bottom of the sump, in the Horse Level	20.5
Horse Whim Flat	20.4
Oil Drum	20.3
Outbye of Roy's Dig	20.1
Inbye of Roy's Dig	19.8
Horse level at 2nd Rise to Flat	19.7
4th Blockage on the Horse Level	18.9
Inbye side of 4th Blockage	18.2
5th Blockage on the Horse Level	17.7
Inbye ie of the 5th Blockage	17.4
Horse Level 4th Rise to Flat	17.3
Stope above 4th Rise	17.1
Final Fall	16.9

SUMMING UP

This level of oxygen is deleterious to health and it is hard to imagine an easy way of increasing it. It is likely, therefore, that it will not be possible to enter the workings on Scaleburn Sun Vein, some of the crosscuts to which are seen in the last accessible section of the horse level. It will also be impossible, at this stage, to see the final large flat, on which the horse level appears to end, or to visit the forehead of the mine. With further exploration, however, someone may just find a way ahead that we have missed and I look forward to hearing from these brave explorers.

On a more positive note, we have opened up a completely new part of the Nenthead ore field and all visitors to the area now include a visit to the horse-whim as one of the area's highlights. **Nevertheless, the 'shaft diggers' add this warning about the use of their entrance sump. The steel stemples used in the sump are only supported in the shale wall and are not meant for climbing on. Whilst the stemples and the timber make a coherent unit, it cannot be assumed that this will always be the case. We suggest that the descent of the sump should be made by belaying a 10 metre**

electron ladder from the top and using a lifeline to make sure that all explorers take care on their descent.

The exploration of the horse level beyond the oil drum involves taking extra special care for the oxygen level, as shown above, is poor and major exertions should be avoided.

ACKNOWLEDGEMENTS

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I am also grateful to the Archivists of Cumbria, Durham & Northumberland Record Offices for allowing me to publish extracts from documents in their possession, and, finally, to the staff of the Wigan Heritage Centre for allowing publication of extracts from the Mulcaster papers.

ABBREVIATIONS

Mul Mulcaster papers. Wigan Public Library.
Lt Letter Book of quarterly reports from the district agent at Nenthead.
N.R.O. Northumberland Record Office.
C.R.O. Cumbria Record Office
D.R.O. Durham Record Office

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3. Personal Communication from the late Eric Richardson of Nenthead, a retired miner.

4. C.R.O. DX 955/9 Wilson collection – Nenthead papers.

5. Dunham, K.C. *The Geology of the Northern Pennine Orefield, Volume 1. Tyne to Stainmore* (H.M.S.O., 1990) p.142.

6. Lawson, J. "Some further explorations in Brownley Hill Mine 1988-1991" *West Cumberland Mines Research Group Review*, No.15 (1994), p.6-8.

7. Bunting R.J. "Witherite from Scaleburn Vein, Nenthead, Cumbria, England" *Journal of the Russell Society* Vol.5 Pt.2 (1994), pp.119-120.

8. Dunham, p.142

9. Fairbairn, R.A. *The Mines of Alston Moor* (Keighley: British Mining No.47, 1993) p.60

10. Wallace's notes on Scaleburn Mine. These are notes written by William Wallace and originally attached to the abandonment plan. They were lost when the plans were moved around the country and are no longer with this plan (Ref. 14). Peter Jackson kindly lent me a copy of these notes, which have been used in the historical account.

11. Plan of part of the Estate of Alston Moor, probably made for the Greenwich Hospital Company, dated 1773, a copy of which is in the C.R.O.

12. Mul p.129

13. Mul p.130

14. Plan of Scaleburn Mine, made by William Wallace, dated 1860. This is in the collection of Cumbria Abandonment Plans, which are currently in the British Geological Survey Offices in Edinburgh.

15. Lawson, J. "Thomas Dodds – 18th Century Mining Visionary or Profiteer?" *British Mining* No 61 (1998), p.119-128.

16. Wallace W. *Alston Moor Its Pastoral People its Mines & Miners* (Newcastle: Davis Books, 1986) p.142

17. Lt. p.1

18. Lt. p.14

19. Lt. p.34

20. Lt. p.42

21. Lt. p.49

22. Lt. p.54

23. Lt. p.57

24. Lt. p.79

25. Lt. p.72

26. Lt. p.191

27. Lt. p.197

28. Mul. p.133

29. N.R.O. Map of Scaleburn Mine in the London Lead Company Map Book. (Map No.42)

30. N.R.O. Wallace W. A report on the untried portions of the Nenthead Mines, 1856

31. Prospectus of the Nenthead and Tynedale Lead and Zinc Company Ltd, 1882.

32. D.R.O. Vieille Montagne Zinc Co. – Map of Scaleburn Mine (D. Dun 6/13) – Probably printed when V.M. took over the mine lease from the Tynedale Zinc Co.

33. Rampgill Abandonment Plan.

34 Barney Craig Abandonment Plan – copy in the Lawson plan collection.

35. C.R.O. Wilson Collection DX 955/9

36. C.R.O. Walton Collection D/Wal/17.

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