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GREENSIDE EXPLORED

by V. Landless.

By 1837, £100 invested 10 years earlier in the Greenside Mining Syndicate was worth £1000 and it was said a 100% dividend had been paid for a three month period. Even in 1935 when lead prices were at a miserable low (£5 to £6 per ton), it was quoted, "Generally speaking the property is one of the most valuable lead propositions in the country, there is undoubtedly plenty of scope for investigations on a large scale which will in the opinion of the writer prove enormous reserves. The surrounding country abounds in water, making for cheap power, and should operations be carried on in a sufficiently large scale, there is no reason why a very large output equal to any mine on the continent should not be obtained".

Greenside Lead Mine lies on the western side of Ullswater in the Lake District. The remains of the mill etc. can be located about a mile up the valley from Glenridding Village, at map ref. NY865175

The main entrance amongst the mill ruins has been blocked and walled up, but the rear emergency exit can be found at the head of the next valley to the north, Glencoyndale. To get there requires an arduous fell-walk of a mile, and the interior of the mine itself requires stamina and perseverance. A full day is required to casually explore the main workings, and more for a close study. The entrance is at NY359188.

The Glencoyndale entrance commences with a short 12 foot crawl over loose rock which has fallen from limited surface workings above. These are visible at grass as a narrow, partly overgrown fissure next to the fell track. To gain entrance to the main crosscut, which extends 80 yards to the vein, one is obliged to negotiate an inflow of water which cascades down a rock face the full width of the level, and seems intent on running down either neck, jacket or boot openings. There is then an expanse of water in the level which begins about two feet deep, shallowing to dry ground when the main drive is reached.

At the head of the X-cut a four way junction is encountered. To the right (northwards), the level continues in search of the vein for 160 yards, where it was abandoned in 1873. Straight ahead the forehead is reached after 35 yards, in the centre of which is a bore hole from where water issues in a continual stream.

The left and southerly junction is the direction which leads to the main workings, of which the vertical extent that is accessible totals nearly 800 feet. The first ladder descent is met at a distance 120 yards, at the end of the Glencoyne Level. The ladder is of all wood construction, in good condition and drops a distance of about 20 feet to the High Horse Level. The only direction along this level is southwards as the ladder is at the northerly limit of the drive. The vein can now be seen clearly in the roof, being a mixture of sometimes hard quartz and at others, clay. The next series of ladders are found on the right in a small chamber after a further 150 yards.



PLATE I. GREENSIDE MINE. ENGINE ROOM AT COLLAR OF SMITH'S SHAFT, LUCY TONGUE LEVEL. THE SHAFT IS BENEATH THE CORRUGATED SHEETS (CENTRE) AND IN THE FOREGROUND IS THE FLOODED WINDING ENGINE EMPLACEMENT. (PHOTO: R.H.B.)

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This area is of interest as it is from these upper workings that water was drawn to power a hydraulic engine used for pumping and winding in the lower sections of the mine. In order to accumulate sufficient quantities of [66] water, dams were built to seal off various areas. The remains of them are plainly seen around here. The reason for access being possible through this part of the mine – an area that became worked out and abandoned nearly 100 years ago – lies in the Mines and Quarries Act, and states that at least two exits must exist from a mine. The only feasible route was up through the stopes and out of Glencoyndale. The old disused dams were therefore holed through (no mean task as they consist mainly of white brick up to 18" in thickness) and new ladderways installed. It can be observed from the accompanying diagram that there were three brick dams and one iron curved dam, from the remains of which it appears water was stored in the northerly workings from where the pipe leads, and the other dams were built as a safeguard to prevent water entering the lower workings should the main dam fail. As to the reason for an iron dam, (incidentally, the only one actually marked on the old plans) is not wholly clear. One possible explanation is that this was the original, but the blockage shown, which contains some large slabs of rock, prevented its successful operation continuing. Questions still remain unanswered, such as the use of the aperture one third the way up, which is just too small to get through easily and also whether there was other pipework connected with this dam going southwards instead of down the rise in the chamber. Another dam of similar construction is to be found in the Low Horse Level below and this was used at a later date for the same purpose.

There is an on/off valve and a pressure valve situated at the top of the pipe before it descends the rise. The pipe diameter is approximately 10 ins. and where it is fractured near to the top, has a wall thickness of $\frac{3}{4}$ inch.

The descent down the ladderway of 210 feet is interesting in that it follows the underlie of the vein, an angle of approximately 15 degrees to the east. The ladders are sound with an average length between stagings of 25 to 35 feet. These are in such close proximity to the pipework that they weave about it like ivy on a tree, making examination of the fitting, positioning and structure an easy job. The final 40 or so feet is by way of a peculiar form of loose link all metal ladder, which ends at the Low Horse Level.

It is possible, when studying the old plans, to trace progress down to that last ladderway, but from there on the passageways do not correspond with the plans. This is due to the clearance work which would be been required in order to achieve the safe emergency exit previously mentioned.

Here a length of the level for the first 50 or so yards is stacked along the sides with rubble, and since other passageways were no longer required these would have been backfilled with the remains of falls in the main tunnel. The Low Horse Level does in fact extend a reported 140 yards further than the Glencoyne forehead, but no trace of the level in this direction can be found.

Piles of loose rock and areas of mud occasionally hide the position of the hydraulic engine pipe, but it can be traced to where it finally disappears, beneath stacked deads on the right of the level, after about 25 yards. Its continuation cannot be traced as it is this area which contains the blocked off-side levels and stopes.

Walking southwards along the Low Horse Level, which on average is 8 feet high and 6 feet wide, one comes to the next series of ladders which will, after a descent of 490 feet, come to the lowest level accessible, namely [67] the Lucy Tongue Level. Continuing on further for another 120 yards, past the ladderway is a large fall of rock. From the floor of the level it appears as if it is possible to go on if the fall can be climbed, unfortunately after a struggle over two particularly large boulders it is found that further progress is totally blocked by a severe fall about 20 yards long.

Near the top of the ladderway on the opposite side of the level is a large round opening in the floor. Into this a ladder of the same metal link construction as found earlier, hangs. This descends about 50 or 60 feet to what appears to be a flat floor of rubble; but when the ladder is descended this 'floor' is actually found to be a slope of 30°, which ends in a huge stope of which the true extent can be judged later. The metal ladder has not been installed by the miners, as it is secured to bits of wood and metal, wedged with rocks on the level floor. The level which extends at 90° to the Horse Level from this area and continues for a fair distance, is not shown on any plan so far studied and therefore cannot be used to position the area in relation to these plans.

None of the workings previously explored give any indication as to the extent and size of the stoped areas below, but by going about 80 feet down, the first of the large caverns, formed when the ore was removed, is encountered. This takes the form of an area, estimated to be in the region of 20 to 30 feet across and going up and down further than a helmet lamp will shine. The circumstances in which the viewer comes across this stope is sudden but safe, in that a short level leads round a corner only to open into the cavern – fortunately there are two stout chains across preventing any accidents.

In a small chamber near the ladderway are many short lengths of rotting Blue Sump safety fuse and detonator tins. This would appear to be where dynamite was primed and fused when this area was being worked. Why these are here though, is odd, as this part of the mine was worked around the period 1850 to 1870 and dynamite did not come into regular use much before 1874.

Numerous pipes and stop valves are still in position in this area and can be followed down to the Lucy Level. Galena is here present in the vein matrix and in the sides of the ladderway which is sometimes sunk through the vein but mainly in dead or unproductive ground between the main ore shoots.

The 36 fathom level is reached next. Its length can now be measured in about 75 paces to the forehead, as southwards nothing but a vast chasm remains. Into it have been dumped deads etc., which slope away at 30° into blackness. These stopes extend

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over such a large area that in 1936 when the mine was changing hands a report stated:- “The point I wish to bring out is that there exists in the mine great stoped-out chambers, separated by somewhat soft and yielding rocks, that these empty stopes have great vertical dimensions, being one above the other, and that there is surface evidence in the form of recent fissuring of the rock, of the instability underground. It would seem therefore, that below the deepest workings a certain thickness of ground should be left unworked”.

An idea of the great depth can be gained from a stone rolled down the slope. It is heard to echo and reverberate as it falls for sometimes up to half a minute. Finally these noises become so faint as to trick the ears into not knowing whether it is still moving.

[68]

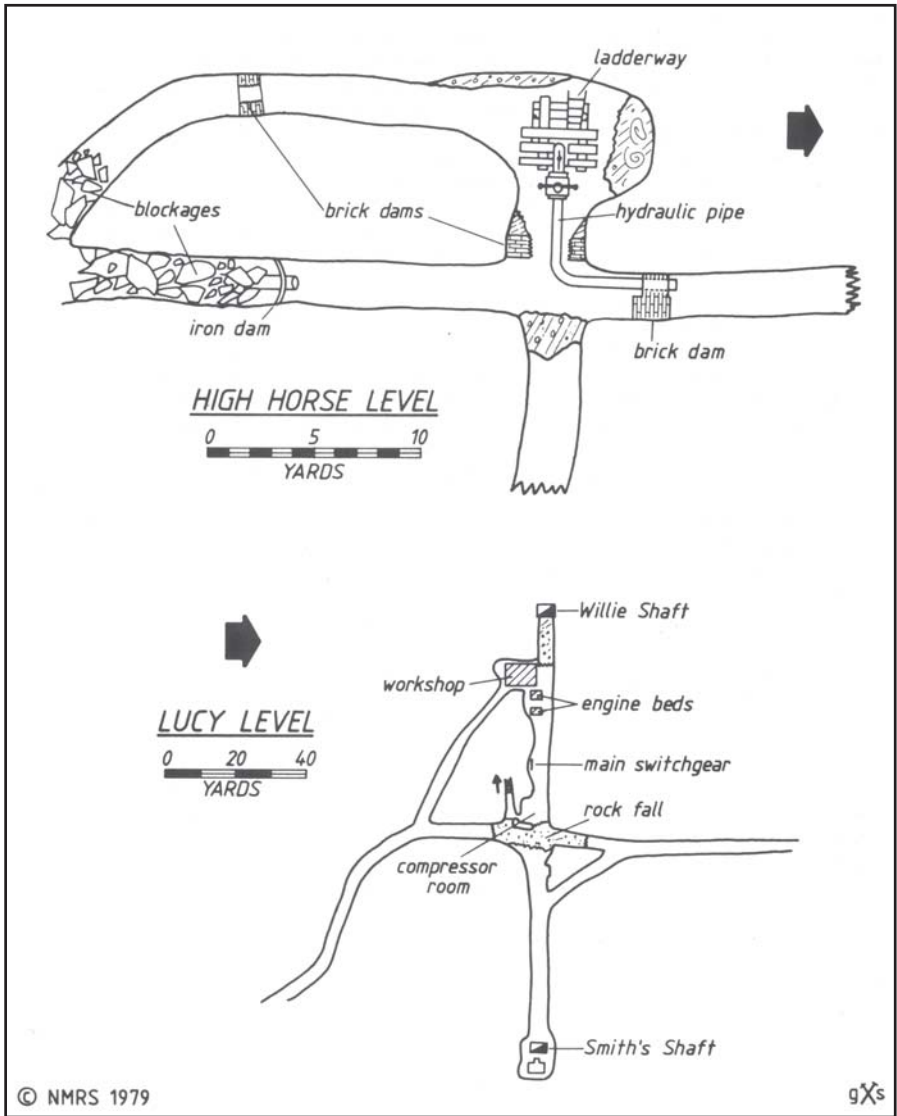
The first wood of any quantity is to be seen on this level; it is used in hoppers, platforms and partitioning, but never as roof supports. On the whole the country rock needed practically no support, even though the above report mentions soft and yielding rock.

A descent down the next series of ladders brings one to the 48 or 50 Fm. Level, depending on which plan is consulted. The most fascinating object in here, (now only a short level due to the stope dimensions) is a curtain of the dark brown string-like growth often seen down many deep mines. This originates from wooden overhead hoppers and extends from roof to floor over a distance of 6 feet. Just past this, a run of fine rock crushings, probably trammed in from the mill, now blocks further progress. Until recently one could climb easily over these to enter yet another downward extension of the seemingly endless stope. There are two end-tipping ore trucks standing in this level.

Down the ladders again on the next and final leg to the Lucy Level. Most of the descent is through a haulage way and therefore of bigger dimensions than the previous rise. Considerable timbering has been used in this area for staging, shuttering etc., and at one point near the bottom there is an impressive construction on the left side, consisting of huge steel girders on which have been laid large sections of timber to a height of maybe 10 feet but its purpose is unknown. Part-way down, at the top of one ladder is a signalling clapper made up of a large pivoted hammer above which is a metal plate. A wire connects with the hammer shaft and when pulled from below would give the required number of knocks for lowering or raising a kibble in the shaft. The winch may have been mounted on the timbering mentioned above.

On the whole, the ladders are all in sound condition but the last 40 feet to the Lucy Level has dry rot and care is needed, in fact the very last section has fallen, so an electron ladder of the required length is needed for the final few feet.

Somewhere between the Low and the Lucy Level one's sense of direction is reversed and when the Lucy Level is reached, one is convinced that the route to the entrance of the mine lies in the direction of the sealed-off areas. The latter are the northern



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reaches of the mine and long abandoned. Here, in the direction of a chain hanging across, with a notice in red letters, DANGER KEEP OUT, is a large tunnel littered with rock falls and deep water and is probably best left alone.

Following the level southwards is an easy walk as this was the main roadway for the mine. Up to now very little water has been encountered, though here there are frequent showers of water from the roof, but nothing troublesome. Greenside, considering its size, only makes 3000 gallons an hour. As one proceeds, there are small side levels

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which lead to more ladders. These are mostly chained off with warning signs, but are now flooded to within feet of their tops, so no entrance is feasible. A large covered sump is situated on the east side of the level. Water from the level flows into this and it is full to within 4 feet from the top. This is Hicks sump which was used for ventilation. Various pockets of ore have been worked on the Lucy Level, but on average this horizon turned out to be poor and a disappointment to the adventurers, as it had been 17 years in the driving.

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Further still along the level, a main junction is found, but just before this a side level to the east ends in a small chamber. The walls and roof are riddled with boreholes and it was in here that drill steels and air pressures were experimented with to find

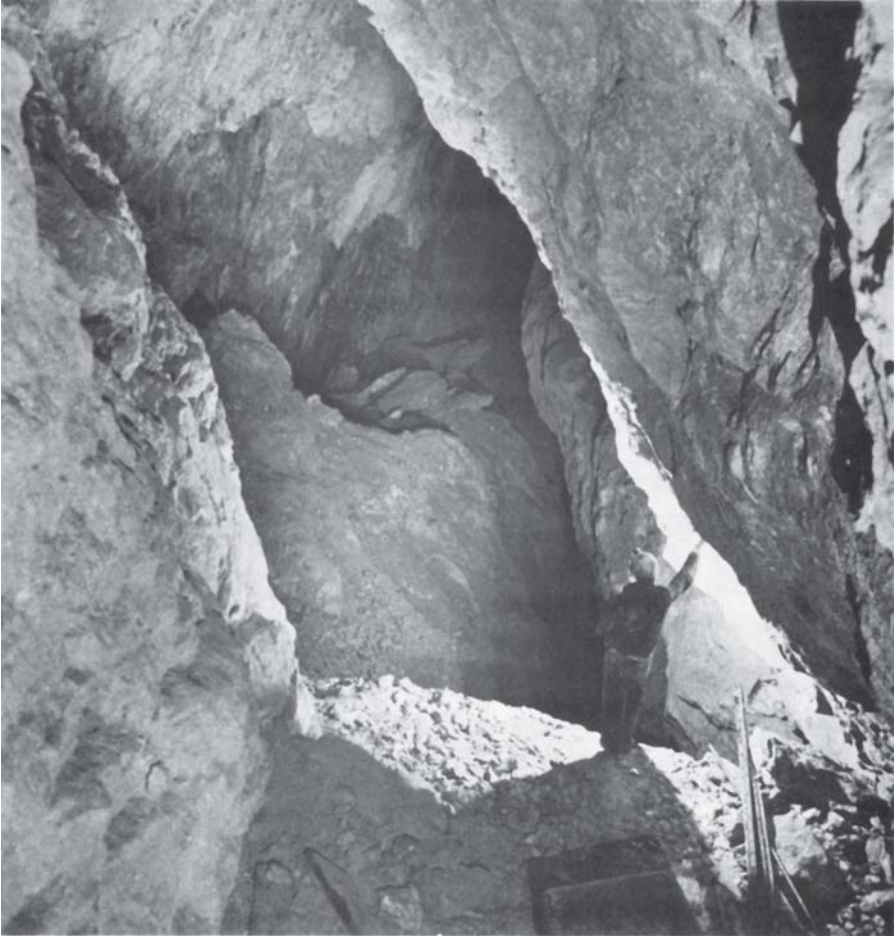


PLATE II. PART OF THE HUGE STOPES AS SEEN FROM THE LADDER ROAD. (PHOTO: R.H.B.)



PLATE III. VARIOUS ARTEFACTS IN THE ENGINE ROOM, SMITH'S SHAFT. (PHOTO: R.H.B.)

the optimum performance for drilling shot holes. The way ahead requires a scramble over a fall but the left branch is clear and quickly leads to another junction; to the left heads back to the fall, the right to a large chamber.

The headgear for Smiths Shaft, which is covered over in the centre of the chamber, was housed here. At the far end is the sump for the winding engines, now full of evil brown water. The walls have been whitewashed for better illumination. Various tools and miscellaneous objects, like oil cans and sweeping brushes are still here, and there are also two leather safety helmets and remains of a jacket hanging on pegs. All traces of the winding and pumping gear have long gone. The shaft itself, which went down to 90 fms. was equipped with the first electric winder to be used in a metal mine in Britain (1896).

Walking back from the winding room straight forward to the fall and climbing over to the left, a short level leads to a ladderway upwards, as yet unexplored as it is considered slightly dangerous. This is thought to lead to the 50 fm. level, previously

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passed en route. In the right hand wall is a small opening, not unlike a window; through this can be seen a chamber which housed a compressor. Access can be gained by proceeding back to the main level, turning right and walking to the next junction, about 20 yards, turning right again down the low roofed level into a chamber as large as the winding room. In here is one solid concrete bed surrounded by a form of gutter. Again the walls are whitewashed and as this was the workshop, quite a few small remains are still in situ. In the farthest corner is a partitioning wall; behind and now completely blocked, is Willie Shaft which comes down from Low Horse Level. A short passageway runs from the other corner to the compressor room seen before and in the passage are two more engine beds. There was also another larger compressor housed here, together with all the switchgear for the electric motors used in the mine, a total of 325 horse power.



PLATE IV. GREENSIDE MINE. THE STOP AND BLOW-OFF VALVES AT HEAD OF CLIMBING WAY, HIGH HORSE LEVEL. ONE OF THE BREACHED DAMS IS VISIBLE TO THE LEFT. (PHOTO: R.H.B.)

All that remains is to follow the Lucy Level as far as possible before the water gets too deep. When back at the main level, turning southwards and walking for about 150 yards, a wooden gateway is found on the right hand side. It opens on a small chamber half filled with a rock fall from beneath which water flows. This was Lucy Shaft and was sunk to 60 fms. All the water flowing through the workings and down the old sumps etc. in the Lucy Level eventually rises here and flows to the entrance.

To reach the entrance would require a walk of nearly a mile. The furthest explored by the writer is about half-way, when time and sufficient wet gear were not available, as the water gets progressively deeper the nearer the entrance travelled.

Many different forms of roof and wall supports have been put to use in this section. To make the fastest progress when the level was driven, a soft area called the Clay Vein was followed. This enabled the driving to take place at three times the speed of that in hard rock, but had of course to be supported. Much of this was done with stone, but there are also stretches using ring arching flat roofs with steel girders and areas of concrete.

Summary:- The frustrating fact of this mine is that one walks a mile up and over a mountain, descends 800 feet, walks nearly another mile to where one cannot be more than a few hundred yards from the car; then to climb back the 800 feet and walk over to the car again, a total of almost four miles. As stated previously, this is a mine for those with stamina, for the ladders are tiring when going down, but absolutely exhausting when ascending and frequent rest periods are needed to recover. There is plenty to see, although minerologists will find it poor. More exploration is required towards the entrance to Lucy Level in order to ascertain where the water exits, as the entrance itself is completely blocked and the 3000 gallons an hour must escape somewhere – maybe another possible point of entry saving the long track to Glencoyndale.

18 Birchwood Drive,
Hambleton,
LANCS.
FY6 9AQ

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PLATE V. LADDER ROAD IN THE HAULAGE-WAY NEAR ADIT LEVEL. (PHOTO: R.H.B.)

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PLATE VI. LADDER ROAD THROUGH THE STOPES. NOTE THE TWO FIGURES ON THE LADDER; IT WAS FROM THE LOWER SOLLAR THAT THE VIEW OF THE STOPE (PL.IV) WAS OBTAINED. (PHOTO: R.H.B.)