

A VISIT TO MILLCLOSE MINE IN 1934

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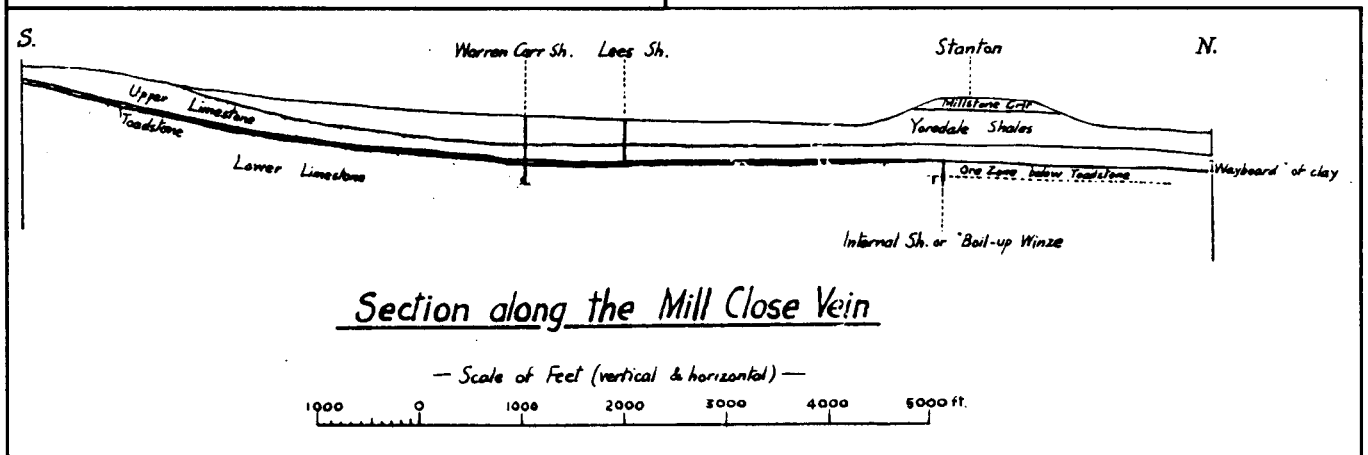
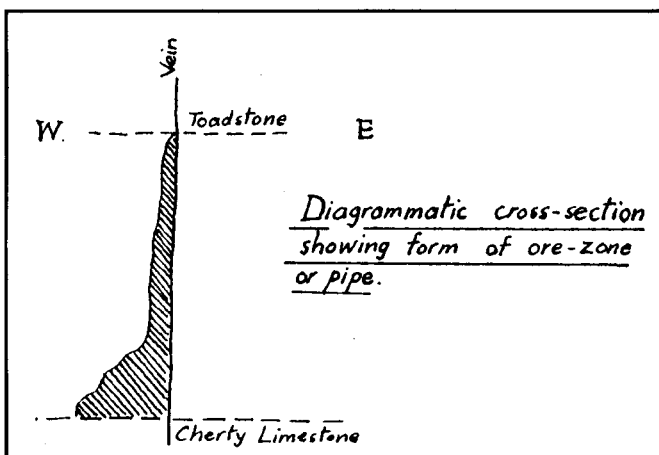
INTRODUCTION: This following was a handwritten account of a visit to Millclose Mine found amongst a miscellany of notes and photos of a long career in mining donated to PDMHS. by the writer's niece, Mrs Stringer of Waterlooville, Hampshire. It yields a number of significant points about the mine which were not previously available (see Willies, Gregory and Parker 1989), and is a particularly clear account of the operation of the mine at its peak. The visit, on the 25th of September 1934, is five years after the discovery of the large deposit under the toadstone, found at the "boil-up", and prior to the inundation that, by 1939, led to the decision to close the mine. The opportunity is also taken to publish two photographs of miners in the workings of Millclose from the collection of Keith Gregory which includes one of George Gregory of Winster. The date is not known, but the sepia toning of the originals suggests the period 1900-1920.

Millclose Lead Mine which is situated at Darley Dale on the right hand of the Derwent, is the property of The Mill Close Mines Ltd., a company formed in 1920. The capital of the company is £150,000, 51% of which is now held by the New Consolidated Goldfields, the remainder being held, mainly locally, by about 20 shareholders. According to A. Strahan in the Geological Survey Memoir (1887), the mine was first worked about 1743, but subsequently lay idle for about 100 years until 1859, when it was reopened by Mr Wass. Production started in 1861, and the mine has been at work ever since., although about five years ago it passed through a difficult time and was in danger of being closed down. This mine has produced the greater part of the lead output of Derbyshire. From 1859 to 1887 it produced 36,085 tons of lead ore worth between £340,000 and £350,000, and its output is now 40,000 tons of 82% lead concentrate per year. For the year ending 31st March 1934, 81,629 tons of ore has been milled, producing 39,757 tons of dressed galena. Operations resulted in a working profit of £90,128, of which £10,000 was allocated to a

depreciation reserve and the remainder added to the sum brought in, giving an available total of £115,001. Of this £40,195 was distributed as dividend (2/6 [12.5p] per share) and £74,806 carried forward. The sum paid to the Duke of Rutland (the principal landowner) in royalties amounted to about £25,000.

The Millclose Vein, which strikes slightly east of north, is a steeply inclined fault, with an easterly downthrow. A section across it given in the Survey Memoir (Strahan 1887) shows a throw of nine feet. The country rock consists of basic lava known locally as toadstone, overlain by Yoredale beds (shales) and Millstone Grit, as shown in the longitudinal section of the vein. The vein was first worked at its outcrop in the limestone area about three quarters of a mile south of the shafts of the present mine, but is now being worked over a mile and a half further north, beneath a capping of Yoredale Shales, in which it has no outcrop. Apart from local variations the country dips very gently to the north, at two or three degrees.

The principal shafts are the Millclose (south of the present mine and no longer in use), 80 fathoms; Warren Carr, 103 fathoms; Lees, 70 fathoms; and the internal shaft from the 70 fathoms level to the 103. The chief levels now in use are the 70, 93, 103 (main tramming level) and 112. The deepest point so far reached is 50 feet below the 112, in a winze south of the internal shaft. The most striking feature of the workings is not their depth, which is comparatively small, but their lateral extent (over two miles). A section of the Millclose shaft, given in the Survey Memoir, shows 150 feet of limestone above the toadstone, which is about 60 feet thick. At Lees Shaft the top of the limestone is entered at a depth of 40 fathoms, according to the assistant manager of the mine, 32 fathoms according to the Survey Memoir, and the top of the toadstone is cut in the 70 fathom level a short distance north of the bottom of the shaft, which gives at this point about 180 feet of limestone above the toadstone, but in 1930 large orebodies were



found below it and all the ore is now being got from this source. A characteristic feature of the mine has always been the occurrence of large irregular orebodies or pipes branching off from the vein, which have yielded most of the ore. Some of them are entirely filled with galena and gangue minerals, but many are only partially filled and have central cavities lined with large projecting crystals of calcite. Apart from galena, which is very abundant in some of the orebodies, sulphide minerals are scarce, but blende occurs in some of the poorer parts of the mine. Calcite is the principal gangue mineral, but fluor and barytes are also found. The silver content in the galena is only about one ounce per ton of lead.

The workings which were examined were those below the toadstone, as no mining is being done above that horizon. These are reached from Lees Shaft, which is used solely for hoisting men, all the ore and waste being hoisted at Warren Carr. The ore-zone now being worked was found about five years ago, when the mine was in danger of being closed down for lack of ore. A winze put down through the toadstone (here represented by a thin "wayboard" of clay) about 3000 feet north of Lees, struck a strong stream of water, boiling-up under foot. This was considered a promising indication, so sinking was continued and a zone of rich ore-body was soon encountered. The ore-zone is a huge irregular and branching pipe, or system of pipes, dipping north from 2° to 3° in the course of the vein, and is clearly the result of infilling of cavities formed by solution in a favourable bed in the limestone. The roof is formed by the toadstone and the floor or "sole" by a rather cherty limestone. The impermeable clay formed by the toadstone has prevented solutions from extending further upwards, and it is probable that it has had a blanketing effect resulting in the formation of the large ore-bodies. Derbyshire lead veins do not, however, usually expand in this way beneath the toadstone cover. The cherty limestone forming the sole of the pipe is no doubt less soluble than the normal rock, which accounts for it marking the lower limit of the ore zone. The pipe is usually widest near the sole, because of a tendency to branch and open-out along the top of the cherty limestone, and the greatest concentration of the galena is found in this part of it. The branches are all towards the west, and not on the other side of the vein. The reason for this is doubtful, but it has been suggested by the management that the presence of some clay in the vein has protected its other wall from solution. The main pipe tends thus to have the form of a letter L, as shown in the cross-section.

The ore-bodies are of a remarkable appearance. Many of them when first broken into are narrow and bristling with projecting crystals of dog-tooth spar from six to ten inches long. These crystals are in many places coated with a reddish-brown film of hemimorphite. On breaking through the calcite galena is found lining the sides of the pipe. The stopes are necessarily very irregular and are often of large size and as a rule they require no support. Some of the better ones carry about 80% of galena, which may have an apparent width of three or more feet. The top

of the ore-zone is slightly above the 93 fathom level, and the bottom is below the 103. Most of the ore is broken down into the 103, for tramming to the Warren Carr Shaft.

So far development results have been very good north of the internal shaft, but less encouraging on the south side of it. The winze down below the 112, already mentioned, was 50 feet deep when the mine was visited, but was partly flooded and could not be examined. Some yellowish clay material had been got at the bottom of it, and was thought to be perhaps a lower toadstone bed.

A cross-cut has been put out west from the Millclose Vein at the 93 fathom level, and has cut a parallel vein 600 feet away. This vein is barren where cut, but was productive at the 60 and is being driven on north and south with the hope of getting another rich zone. The chances seem to be best for the north drive, assuming that the ore zone pitches gently north, like that of the Millclose Vein. This parallel vein is very heavily watered.

The mine is worked through Warren Carr and Lees Shafts. Warren carr, which is used for ore and rock only, is a vertical two-compartment shaft, with cages worked by a geared electric winder. Lees is a vertical elliptical shaft, bricked near the surface in the softer part of the Yoredale Shales. It has two cages, used for raising men only, operated by a single cylinder geared steam winder working at 40 lbs. pressure, which has been in use since 1869. There is a pump station in the old 50 fathom level in this shaft. The ore trams underground are hauled to Warren Carr Shaft by battery locomotives. The mine is very heavily watered, and is drained by electric pumps handling 6000 gallons per minute. The water is discharged into the Yatestooop Sough, an old adit which is here only about 40 feet below the surface. All the power used on the site is bought from the Grid. The pumps cannot be stopped for much more than three hours without being drowned, and two 500 kw. Crossley-Diesel sets have been installed at the surface, as a stand-by source of power for the pumps in the event of breakdown on the Grid.

The ore from the mine is picked, crushed and jigged. The slime galena is caught on Wilfley tables and is at present being stored away, against an improvement in the market. Up to the present the jig concentrates have mostly been sold to German smelters, but a smelter (six blast furnaces) is now being built at the mine and will be in operation in a few weeks time. The cost of this smelter, about £40,000, has been met from last year's profits.

REFERENCES

Strahan, A. 1887 *The Geology of the Carboniferous Limestone, Yoredale Rocks and Millstone Grit of North Derbyshire*. Geological Survey Memoir.

Willies, Lynn; Gregory, Keith and Parker, Harry. 1989 *Millclose: The Mine that Drowned*. Scarthin Books, Cromford and PDMHS Ltd.

Millclose miners underground: George Gregory extreme right.

