

NANTYMWYN MINE.

If estimates of ancient gold production from Ogofau (Dolaucothi) are discounted, Nantymwyn has been the most important non-ferrous metal mine in South Wales, for its recorded sales of galena between 1775 and 1797, and from 1824 to 1900, amount to 80,000 tons, while there was certainly a large output before 1824 for which figures have not been preserved. Only the Snailbeach and Van mines are known to have produced more galena, an eminence due both to the richness of the lodes, and, as Murchison remarked, the topographical situation of the mine, which allowed development to a considerable depth by an extensive system of adit levels.

Most of the workings are situated in the valley of the Nant-y-Bai, a minor tributary of the Towy, but the Deep Boat Level, and a number of other adits and shafts, are near to, and in the hillside above, the village of Rhandirmwyn, separated from the Nant y Bai by the east-west ridge called Cnwc. The crag of Pen Cerrig-mwyn, ca. 1,250 ft O.D., which overlooks Rhandirmwyn, and forms a prominent feature when seen from the south, lies at the junction of this ridge with the main mass of moorland, and is in fact the southern end of a massive outcrop of quartzitic rock, which can be followed north for some distance before being lost in the moor.

In the Nant-y-Bai valley the deepest adit is the Upper Boat Level (608 ft. O.D.), and important adits above this are the Angred, Maescarhyg (701 ft.). Tan (809 ft), and Footway, but at least six others have been driven. The Angred Shaft, with the ruins of its engine-house and chimney, is prominently situated on the hillside in the angle between the slopes of Pen Cerrig-mwyn and Cnwc. In the 18th century it was sunk to the 10 fm. level below the Upper Boat, and at a much later date continued vertically to the 35 (?) fm. level below the Deep Boat.

150 yards north-north-east of Angred is Circle shaft, down to the 14 below Maescarhyg. 110 yards beyond Circle is Shaft Newydd, sunk to a level a few fms. below Maescarhyg, 65 yards north-north-east of Newydd is Red Shaft, not so deep as Maescarhyg, and 30 yards further is Conscience Shaft, which reached the old 20 fm. level. There have been a number of other shafts from surface, some still further north-north-east, but few of these adits and shafts can now be traced among the extensive and confused piles of waste development rock, churned up by the Forestry Commission.

Underground the Walled Shaft, 90 yards south-south-west of Angred, was sunk well before 1800, from the Upper Boat to the 16 fms. below it, and, sometime in the first half of the 19th century, a shaft was put down on Pugh's branch of the Principal Lode from the Deep Boat to the 30. This last is some distance south-south-west of, and according to the plans, did not connect with, the deep levels from Angred shaft, which were apparently developed in the last decades of the 19th century. It will be appreciated that the normal practice of measuring levels by their depth in fathoms below a deep adit has been here confused by the use of different datum points at different periods, an arrangement no doubt due to the long life and unusual layout of the mine. The old 20 fm. level, in the far north-north-east part of the workings, presumably related to one of the shaft collars in that area, while groups of deeper levels were counted below the Upper Boat, and again below the Deep Boat Level. This last

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(430 ft. O.D.), which enters the hillside between the village of Rhandirmwyn and the Towy, was started in 1785, and, according to an old plan, reached a sump below the Upper Boat on July 5th, 1798, a drivage of 800 yards in 13 years.

The other important level on the south side of Cnwc is the Pannau, which starts behind the village, at about the same altitude as the Upper Boat, and there are other levels above it, on Roderick's and Cowling's lodes.

In the 18th century a stamp-mill and smelting house were in use close to, and on the south bank of, the Nant y Bai, opposite White Hall, and near the mouth of the Maescarhyg level. At later dates dressing floors were built by the mouths of the Maescarhyg, Upper Boat, and Deep Boat Levels, at each of which sites there are large heaps of tailings. The appearance of these indicates mid or late 19th century work, and suggests that the various floors were to some extent contemporary rather than successive. This supposition is consistent with the known history of the mine, and is supported by the remains of a jig – probably post-1870 – embedded in the Maescarhyg level waste.

The main group of lodes strikes 30° east of north, and outcrops in the Nant y Bai Valley at the foot of the steep upper slopes of Pen Cerrig-mwyn. Two lodes (Roderick's and Cowling's) strike north-south and, crossing the high ground, approach the village of Rhandirwyn, while in the north part of the mine other lodes strike 50° east of north. For convenience these strikes will, in the remainder of this description, be simplified to N.N.E., N., and N.E. So far as is known all the lodes dip north-west, and none of the subsidiary ones persist north-west of the main group.

Not surprisingly, in view of the great length of time the mine was at work, and the number of agents who have been in charge, the nomenclature of the lodes is somewhat confused. On a plan dating from before 1800, which appears to be of a fairly high standard, presumably the work of John Rolley, the two main N.N.E. lodes are called the North and the Comet, or Yellow. These are shown as parallel for some distance, with the North on the north-west, but about the position of Shaft Newydd the Comet swings abruptly N.E., and near the Walled Shaft they form a junction. The South Lode strikes N.E., and joins the N.N.E. group between the Circle and Angred Shafts. Old Vein crosses the South, and meets the Comet and North near Shaft Newydd.

Murchison referred to three main lodes, the Red (N.N.E.), Master (N.N.E.), and Comet (N.E.). His Red appears to be identical with the North of Rolley's plan, and his Master with the N.N.E. section of the Comet. He also mentioned the existence of several minor veins, as well as describing deposits of lead ore interbedded with country rocks between the Red and the Comet. A section of the Principal Lode (N.N.E.) by Abraham Rolf, dated 1850, but evidently including later development shows extensive sloping, but it is not clear whether this should be correlated with the North or Comet Lodes. Sections begun in the late 1870s are of the Middle (N.N.E.) Roderick's (N.), and certainly the same as the Old Vein of Rolley's plan), and Cowling's (N.) Lodes. Plans and sections made in 1931-32 mark the West (N.N.E.), Middle, South, Roderick's, and Cowling's Lodes. It seems fairly clear that

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all the N.N.E. lodes are part of one mineralised channel up to 180 feet wide, and 19th century reports refer to six parallel veins of ore in this zone.

Sections of Roderick's and Cowling's Lodes do not suggest any particular orientation of the ore bodies in these lodes, and show that while the former has been extensively sloped, the latter (on the west) has proved rather poor. On the main lodes, however, all sections indicate that the ore shoots follow a remarkably constant south-south-westerly dip of 15° to the horizontal, and extend over a height of 400 feet at right angles to this dip. The ore ground has a maximum dip length of about 2,500 feet, and apparently fails at a depth of about 200 feet vertically below the Deep Boat Level. The pronounced elongation is said to be due to a close association between the ore bodies and certain hard beds of rock, known as the 'lead mine grits', while there are reasons for suspecting that the dip termination may be due to faulting.

It is a reasonable assumption that Roderick's, or the Old Vein., which outcrops very near to the summit of Pen Cerrig-mwyn, was the first lode to be discovered, and development thereon to the north and in depth would have met with the main group, if adits and other trials had not already done so. The main N.N.E. lodes would then have been followed down dip, though not without interruptions when the ore appeared to be lost, reaching the 30 fm. below the Deep Boat on Pugh's branch before 1850. This suggests that production for fifty years before 1900 was obtained by extending the workings north-north-east at depths gained long before.

There is a tradition that the mine was worked in the reign of King Charles I, and this seems by no means unlikely when the vast amount of tunnelling shown on the plans of the late 1700s is considered. The Deep Boat Level was begun in 1785, the Upper Boat, which entailed a cross-cut 400 yards to the lodes, must have been driven many years before that, and the extensive series of shallower adits still earlier. Rolley's plan referred to the Old Vein as having been 'discovered by the Romans', and while it would be rash to accept this as literally true, it indicates a time before the memory of the grandfather of anyone then alive, or possibly 150 years prior to the date of the plan.

During the latter part of the 18th century the mine was worked by the landowner. Lord Cawdor, on his own account, John Rolley being the agent. It was then called Cerrigmwyn, and a water-colour of 1792 by John 'Warwick' Smith, now in the National Library of Wales, depicts dressing-floors and a water-wheel at the mouth of the Upper Boat Level. Accounts from 1775 to 1797 have been preserved, and show that in that period 29,807 tons of galena were sold, at a profit of £86,707. The most productive years were 1778-79, more than 4,500 tons being raised in the two years. Costs for the same period were £125,946. Rolley received £100 per annum, and 400 people were employed.

The enormous wealth realised in the late 1770s came from the junction of the North and Comet lodes which formed a body 6 feet wide of solid galena, with another 12 feet of rich ore ground alongside. This great shoot of ore does not seem to have persisted below the Upper Boat Level.

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Rolley died in 1805, and was succeeded in the management by Joel Williams, a Cornishman. He had to grapple with the problem of what course, if any, the rich ore took towards the south-south-west, and a plan of 1808 in the Cawdor papers, presumably his work, shows the anxiety with which he considered the problem, and also indicates that, although the Deep Boat Level reached the older part of the mine in 1798, no worthwhile mineral had then been found at the lower horizon. Williams did not succeed in finding anything to compare with the Comet-North junction, but his development yielded fair results as production seems to have been maintained at 300 to 500 tons of galena a year, although in 1814, when 93 men and 20 women were employed, it was intended to reduce the labour force.

Apparently Williams was dismissed in about 1823, and shortly afterwards the then Lord Cawdor, probably finding that the mine had become a drain on his pocket rather than the splendid provider of wealth it had been in former days, adopted the policy of leasing it to others. It was at one time in the possession of Williams and Pughe, who worked the Dyliffe mines in Montgomeryshire, for many years, but in 1836 Mess Williams of Scorrier House, near Redruth, obtained the lease, which they continued to hold until 1900. At this latter date it was calculated that there 23 miles of levels in the mine. This is a curious matter. Why should the Williamses, Cornwall's richest mining family, merchants, miners, smelters, and bankers, retain a moderate sized lead mine in South Wales for so long ?

Account books of ores carted, and the payments made to carters, a useful source of income to local farmers, show that 10,366 tons of galena left the mine from 1824 to 1844 inclusive.

The annual Mineral Statistics were first published for 1845, and give a production of 38,200 tons of galena between then and 1900, an average of a little over 50 tons per month.

Unfortunately few details of underground development in this long period are known, but I have seen the cost-sheets for January and February 1879. These show 44 tributers employed, of whom 34 were on the Middle Lode, almost all at or above the Upper Boat Level. 14 tutworkmen were extending the Deep Boat Level, and sinking Angred Shaft below the Upper Boat. This seems to suggest that, besides being the principal source of ore in the mine, the deposits in the Middle Lode had not long been discovered, and that it was intended to prove them at greater depth by sinking the old Angred Shaft. The engine there was presumably erected not long after 1879.

Although Messrs. Williams were no doubt satisfied that the possibilities of the mine had been exhausted, others held more optimistic views, and in 1914 Joseph Argall, who had been the manager in the 1890s, took up the lease, transferring his interest in the following year to Nantymwyn Mine Ltd. This company continued independent operations for a decade, employing as many as 33 men. They principally sought lead ore, but sometimes activity was restricted to raising 'sandstone'.

In 1925 the Sulphide Corporation, then one of the world's foremost lead-zinc companies, with a large mine at Broken Hill, Australia, and other interests, but since absorbed by Rio

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Tinto Zinc, took an interest in the property, as they liked the idea of obtaining indigenous supplies of zinc for their smelter at Seaton Carew. The argument went that large bodies of galena were usually accompanied by equally important deposits of sphalerite, and the latter had never been recovered at Nantymwyn, although it was reported to be common there, and could be readily found on the waste heaps. Samples of blende proved to be of high quality, the mine could be cheaply worked, and the flotation process, by then brought to a high degree of efficiency, offered better recovery of galena and blende than the old gravity methods. Exploration began in 1927, and clearing the Maescarhyg and Upper Boat Levels gave encouraging results. A power plant and a flotation mill capable of treating 125 tons a day were erected, and the New Shaft (about 150 yards north by east of Angred Shaft) sunk vertically from surface to the Deep Boat Level. After some delays the mill went into production in June 1930, and ran for four months, during which period 6,615 tons were crushed for the recovery of 165 tons of lead and 539 tons of zinc concentrates. Milling costs, recovery, and concentrate grade all proved higher than anticipated, but unfortunately the operation had been planned when lead and zinc were both about £35 per ton, and the great depression of 1931 -32 had not been foreseen. In addition further development proved to be disappointing, and the clearing of the Deep Boat Level, completed in 1931 and expected to reveal a good blende deposit, found practically nothing.

The company did not resume milling after 1930, for although ore reserves of 209,000 tons of ore were eventually proved, overall grade was too low to permit profitable operations in the then foreseeable future, and in 1932 they abandoned the property. Operations had been concentrated about the junctions of Roderick's and Cowling's Lodes with the Middle Lode, and did not penetrate below the Deep Boat Level. The mill was situated on the hillside below the New Shaft, the site being still marked by concrete ore bins and foundations. Up to 80 men were employed.

I was told many years ago, by a geologist who had visited the mine when the Sulphide Corporation were working there, that the main lodes were cut off going south-south-west by a large fault, to the south of which they had not been found. He also told me that this fault had a downthrow north, and that therefore, if the lodes and the grits existed south of it, they would be nearer surface than the bottom of the old workings, 30 fms. below the Deep Boat Level. This is an intriguing thought !

G.W.Hall, September 2011.