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THE WHERRY MINE, PENZANCE, ITS HISTORY AND MINERAL PRODUCTION.

By R. Shambrook.

If the visitor standing at Wherry Town on the south western end of Penzance esplanade, looks seaward, he will observe at low tide and 240 yards from the shore, a low, seaweed clothed rocky shoal, always surrounded by water. This rocky shoal, was the site of the Wherry Mine, a mine unique in the boldness of its conception and remarkable in the extreme in its situation and execution.

The area now covered by Penzance esplanade and its suburb Wherry Town, is composed of metamorphosed slaty rock (killas) alternating with greenstone, these also outcrop at Lariggan Rocks a little to the west of Wherry Town, where they contain such axinite in strings and lenticles. The foreshore has a sloping shingle beach through which rock projects at and below low water mark. At a distance of about 240 yards from the coast and nearly parallel with it, the slate is traversed by an 'elvan' or quartz-felspar-porphry dike, which has a south west strike and dips north west at an angle of 60 – 700 , and it was upon a stanniferous portion of this dike, that the Wherry mine was sunk. This elvan is traceable at low water from Battery Wharf to Wherry Rocks – some 830 yards, but dips westwards beneath the sea towards Newlyn. Reports of the mine state that in addition to the stanniferous elvan dike, a definite cassiterite lode intersecting the dike was encountered in the workings. Two mining prospectuses of 1834 and 1836 also mention a lode containing copper and the cobalt arsenide (erythrite) the latter having a north to south strike. William Jory Henwood writing of the mine in 1843 stated that "the masses and veins of cassiterite which are irregularly distributed throughout the elvan, appear to follow the intersection of the elvan by the 'Black Lode'. Nowhere in all the mine's reports is the nature of the 'black lode' mentioned, and one is forced to conclude that Henwood obtained this information from other sources, or he was alluding to the copper/cobalt lode. Reports by Phillip Rashleigh and Sir Humphrey Davy both mention erythrite and pitchblende being found on the dumps, together with ilmenite – oxide of titanium and iron.

Our knowledge of this is scanty, but it was known in the early 1700s, that the particular section of the elvan dike exposed at very low tide was traversed by veinlets of very rich tin ore, the adjacent rock also being thickly charged with spots of the same mineral, consequently, miners were tempted when conditions of tide and weather permitted, to remove the more accessible ore, until the excavation so made became untenable and was abandoned to the sea. Ore Books of the old Angarrack Smelting Company contain entries of tin ore bought from 'Penzance Work' and 'Wheal Kathen' in 1713/4, either of which could allude to Wherry Mine.

The First Working.

About the year 1778, Thomas Curtis a miner of humble circumstances from Breage, then aged 57, became interested in the spot and decided to sink a small shaft on the shoal. In winter months work was impossible, and even in summer was practicable only between tides – part of this limited time being required to constantly bale out

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the workings. Some of the problems faced by Curtis can be gauged from the fact that the shoal is covered by the sea 10 months out of twelve, and at high tide the shaft collar was covered by 18 – 19 feet of water, and owing to the rapidly shelving beach even at low tide, the rock on which the shaft was sunk was surrounded by a considerable depth, the spot moreover being subject to the breaking of much surf. One can also appreciate Curtis's difficulty with blasting in so wet a situation, with only black powder, and reeds or quills charged with powder instead of fuse. To work the mine Curtis constructed a flat hewn surface round the collar of his shaft, upon which he erected a turret of stout boards to a height of 20 feet above the rock, and 2 feet 1 inch square (inside measurement) so the shaft was very small. The rock removed in preparing the foundation for this erection [91] was dressed to shape, and built around the outside of the turret to form a collar, the whole being caulked with oakum and rendered with fat cement. The wood turret and lagging of the shaft were also caulked and sprayed with pitch. The turret was held in position by eight stout iron stays, four inclined from the four sides at the top to their anchorage formed by holes drilled in the rock, and four inclined from lower down and anchored in a similar manner. A platform of boards was then constructed round the mouth of the turret and this was lashed to the four stout poles, which were held in position by being clamped to the turret stays. The platform itself supported a windlass worked by four men.

The execution of the work was beset by many problems and setbacks, but after three summers was successfully completed. Curtis had apparently hoped to work continuously throughout the winter, but in this he was disappointed, for swell and the surf found their way into the shaft, and when the workings were extended along the strike, water leaked through joints in the elvan. Rough seas also prevented one being transported to the shore.

The whole winter was one of inaction, and not until April could work be resumed; but once restarted however, the mine proved extremely rich, and though worked in a very small way, became a most profitable venture.

About 12 years after its commencement, the mine was examined in the autumn of 1790 by John Hawkins who gives the following particulars:—

“A short level from the shaft, which was then 26 feet deep, connected with a large irregular chamber, where the ground had been stoped away from both above and below – in places to within 3 feet of the sea level, many timbers being needed to secure the workings. The greatest depth of the stope was 6 fathoms, and maximum width 18' and minimum 3', while owing to the dip of the elvan (60–70°) the miners were actually able to walk up the footwall. At the commencement of each shift between tides, four men were employed for two hours at the windlass raising the water – 4 gallons per minute, while towards the end of the time, 6 men were bailing the water from the bottom of the stope to the level, from where it ran to the sump. For the remaining 6 hours, the men mined the ore, between each tide they mined about 30 sacks of ore, of this 15/16 was so rich as to produce 1/6 of a hundredweight of tin. In the summer months of 1790, tin of the value of £1,600 was raised by the ten men employed”. (At this time, the mine possessed no dressing appliances, the tin-bearing

elvan being merely burnt in an ordinary limekiln to render it more friable before being sent to the stamps).

In the winter of 1791, Thomas Curtis died aged 70, but he had seen his mine increasing in prosperity. After Curtis's death, the mine was carried on by local adventurers. Davies Gilbert in writing to John Hawkins in September 1792 said "The course of tin elvan near Penzance (The Wherry) promises to make a very great mine the tin being continued to a great extent in both directions. A house near The Green, built with fragments of this stone collected from the shore, is to be pulled down, and rebuilt with other stone for the sake of its tin." (In the summer of 1792, £3,000 of tin was raised from the mine). At this period, the mine was worked by a rotary engine which stood on the shore, and by means of flat rods carried along a wooden trestle bridge, worked a Cornish pump in the shaft. A headgear was also erected over the shaft on the seaward side, worked by a horse walking to and fro along the bridge. It was also intended to sink a shaft on the mainland and drive a level out to the elvan dike, but this was never done, presumably through lack of capital, and the usual failing of Cost Book concerns – to extract the maximum amount of ore with the minimum of expenditure of time and on deadwork. In 1794 Charles Hachett F.R.S. in his tour of Cornwall inspected the mine, which he went down and says it was 17 fathoms deep, that the sea continually drained into the workings, and that the roar of the breakers could be heard distinctly overhead. Hachett reported that descent was by a rope tied around the waist, and that "you are let down like a bucket into a well, for the water is more than knee deep in places".

"The upper part of the shaft resembles an immense iron chimney elevated about 12 feet above sea level. A narrow platform leads to it from the beach; close to [92] this is the engine shaft, through which water is brought up from below." In 1798 the mine was brought to an untimely end, when an American vessel broke its moorings in Newlyn Harbour, and striking against the turret, demolished the whole mine. The staunch belief of Thomas Curtis, though he did not live to see it at its zenith, was amply borne out in the next 20 years, when ore to the value of £70,000 was raised.

Second Working.

In the year 1834, a prospectus headed 'Capital Speculation, Wherry Mine, Penzance' was printed by E. Heard of Truro. This alluded to the former riches of the mine, which had then been abandoned 36 years, and referred to reports of Sir Humphrey Davy and John Hawkins, and also stated that a rich copper lode was present and could be worked with profit. The prospectus also stated the mine was 150' deep when destroyed in 1798, and mentioned that Curtis stated there was a good course of tin going west, but only the rich branches were followed down. This company does not seem to have materialised until two years later when both the "West Briton" and "Royal Cornwall Gazette" in their issue dated 29th April 1836 contain a further prospectus and notice of a meeting of the Wherry Mining Company held at the Union Hotel, Penzance on 25th April 1836 with Mr. Richard Pearce in the chair, supported by Samuel Higgs, and Richard Millett. The capital was 800 shares of £5 each. This prospectus also mentioned a cobalt lode "running north and south". Success alluded the company however, and the mine was abandoned in 1840 after heavy losses.

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Whether on reopening the mine was found to be poor, or whether water and other problems precluded deeper and more extensive mining, or the small capital was insufficient is not known. It seems odd that no attempt was made to sink a shaft on shore and drive a level out to the elvan; the jointed nature of the slaty rock probably obviated this.

The Elvan Dike and Minerals contained therein.

Although stanniferous elvans have been worked at a number of mines in Cornwall, none is more interesting or remarkable than the Wherry Mine, both for the variety of minerals occurring in the elvan itself, and for the very exposed situation of the workings. The rock forming that portion of the elvan dike on which the mine was worked and which forms the outer portion of the shoal visible at low water, consists of a ground mass of pinkish, fine-grained orthoclase with sparsely distributed phenocrysts of quartz and innumerable small cavities plugged with scaly crystals of secondary chlorite and occasional small minute prisms, and radial aggregates of dark brown to black tourmaline. Stanniferous phenocrysts and strings of translucent reddish-brown resinous cassiterite are alternately sparsely and thickly distributed.

In other varieties of the elvan, the pinkish bluff groundmass of orthoclase contains innumerable small cavities, many of which are rudely square in outline, lined with pink andularia-habit crystals of orthoclase upon which are rosettes of dark green scaly six sided crystals of chlorite, accompanied by slender black prisms of tourmaline.

Cassiterite.

Cassiterite from Wherry Mine is both massive and crystalline, the greatest characteristic, seems to be pink elvan, with very little quartz, through which is disseminated reddish-brown to black cassiterite both massive and in strings. A specimen in the possession of the writer, shows black cassiterite veins up to 2½ cm in thickness, composed of large intergrown pyramidal crystals, the walls consisting of white orthoclase heavily invested with disseminated cassiterite and chlorite.¹

Conclusion.

An analysis of the writer's specimen carried out by the Institute of Geological Sciences, more than confirms earlier reports, and the elvan is certainly very rich in cassiterite. But whether the various statutory bodies – The National Trust, C.P.R.E., The Duchy of Cornwall and the fishing interests would permit a mine in Mounts Bay, is another matter.

[93]

(1) The writer wishes to express his appreciation to the Institute of Geological Sciences, for identification of these and other specimens.

(2) The Wherry Mine, Penzance, its History & Mineral production. Sir Arthur Russell Bart. Mineralogical Magazine June 1949 Vol. XXVIII

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