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SETTLINGSTONES – THE WORLD'S LAST WITHERITE MINE

F. Brook

On Friday, March 28th 1969, Settlingstone's Mine, Northumberland, which was the only remaining source of commercially mined witherite in the world, worked its last shift. The closing of this mine marks the end of an era for the metalliferous mines of Tyndale and in particular for the Haydon Field.

This field, which lies on the North bank of the Tyne between Haydon Bridge and Hexham, has two groups of veins of some importance and these are separated from the rest of the main Northern Orefield of Alston Moor and Allendale by some seven: miles of country which are devoid of any mineral deposits.

The larger group of veins extends North East from Morrale at the confluence of the Allen and South Tyne and includes the Langley Barony, the Settlingstones and the Stonecroft-Greyside veins. The smaller group lies on the East bank of the North Tyne near its meeting with the South Tyne, the Fallowfield vein being the only one of any significance.

Though small in area the Haydon Field mines produced some 143,990 tons of lead concentrates from 1666 to 1938 but was much more important in being, one of the world's main sources of witherite, of which just over half a million tons were produced.

Witherite is a natural carbonate of barium which, though widely distributed throughout the world, was found in commercially exploitable quantities only in the Northern parts of England, and the richest concentration was found in the Haydon Field. The first mine to concentrate on witherite production was Fallowfield where, from the l840s until 1913, Messrs Cooper and Walton were responsible for producing some 98,986 tons. Prompted no doubt by the success which this company enjoyed the owners of Settlingstones Mines Ltd began, in 1873, to concentrate on the production of witherite instead of on lead, which had been mined at Settlingstones since 1670.

The Settlingstones vein, which runs roughly North East and South West, is situated just South of the Ronan Wall. It is intersected by North and South faults and for some 4,500 ft. South West of the Staingate (the old Roman Road which ran South of the wall) the vein carried witherite in place of galena and barytes. The vein in this part of the mine is almost Vertical and varies from four to about [22] eleven feet in width, passing through the Whin Sill which is prominent on the surface in this area as a series of bold North facing basaltic crags. Although at Settlingstones witherite only occurred in parts of the vein with Whin Sill walls it was not true of other mines. Its distribution was fairly widespread at Fallowfield among strata of shales, sandstones and mountain limestone whilst at Morrison Pit, Annfield plain, County Durham it occurred in a fault fissure in coal seams.

In the summer of 1965 the writer made several visits to Settlingstones Mine and the following account of witherite mining is based on his observations and on details given by Andrew Carstairs, the mine manager.

The mineral was extracted in the same way as was lead, by stoping, save that the entire vein was removed and not just the strings of ore. Because of this it was essential to pack .the empty vein with fill. brought either from other workings or from the surface. Depending upon the nature of the parent rock one or two methods was used, these being shrinkage stoping or cut and fill. The former was used where the vein walls were very hard since it allowed the entire stope to be cleared before being filled in. The latter method was used where the walls were soft and a run-in would occur unless the empty vein were packed as the mineral was removed. Since the walls of the vein at Settlingstones were very hard, occurring in the Whin Sill, the former method was used.

The miners began a stope by bringing down ore from the roof. To clear a large space. The ore from this first cut was removed, since cut ore always occupied a greater volume than when in situ in the vein. Some five feet above the floor of the stope stemples were placed across the vein and planked over to form a floor from which the miners could work. At regular intervals wooden hoppers were made down which the ore could be tipped and stored as it was extracted from the vein. As the stope was worked upwards the surplus ore was dropped down the hoppers and drawn off from 'mills' at their bases, whilst the bulk of the ore was left in the vein to form a floor for working upwards. The stope was thus left full of loose ore to form an underground store from which it could be drawn off via the 'mills' whenever required, thus assuring a constant supply for the crushing plant on the surface. When the stope was finally emptied of its stored ore it was filled from above with rubble so as to prevent a run-in of the walls. The extracted ore was taken to the foot of Fredrick Shaft, the min winding shaft, in tubs pulled by ponies along the levels. When the writer visited the mine the managers were experimenting with a battery locomotive which was being adopted to suit the narrow levels.

On reaching the surface the mineral was taken in cable drawn wagons [23] along a mineral railway to the dressing plant which was situated at the old focus of the mines at Ellen Shaft, some half mile to the North East of Fredrick Shaft. Here the Witherite was crushed, washed and jigged to produce a saleable product in the form of small pieces of roughly three-eighths of an inch in diameter. The machinery used in the plant was nearly a hundred years old and was made by Davisions ironworks at Hexham. The plant handled a week by average of two hundred and twenty tons of crude mineral which was generally sold to customers who did their own collection in bulk. As a raw material witherite belonged to that group of metals which was used in small quantities in a variety of activities. Thus it was used in the making of paints, dyes, inks, detergents, military explosives, fireworks, ceramics, bricks, soap, beet sugar and optical glass.

In 1965 the mine employed some seventy, men, most of whom came from Haydon Bridge, though some lived in a terrace of cottages at the mine. These cottages belonged

to the Duke of Northumberland, who with the Commissioners of the Greenwich Hospital held the mineral royalties, and they have recently been purchased by Hexham Rural District Council. Since 1965 the output of the mine came from old pillars of ore and although searches were made to find new veins,. none were successful.

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