LEAD AND ZINC ORES IN BUCKS COUNTY, PENNSYLVANIA

By

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Location.

Lead and zinc ore are not being mined in Pennsylvania at present, although they have been produced successfully in several places in the past. There are reasons for believing that some of the deposits have not been exhausted, and now, when three recently organized companies are seeking capital to re-open some of the old mines, seems an opportune occasion to assemble the available information regarding these deposits.

In Bucks County, lead and zinc minerals have been found in the Triassic shales over a considerable area west and northwest of Doylestown, which is 25 miles north of Philadelphia. Considerable mining has been done in the vicinity of New Galena on the North Branch of Nesnhaminy Creek, three miles northwest of Doylestown.

History.

It has not been possible to secure a satisfactory history of the New Galena mine as there is much disagreement in statements. The following account, based on newspaper articles, a report by John Armstrong who styles himself a "practical metallic miner," and recollections of present residents of the region, is offered with some misgivings although in the main it is probably correct. Some of the information emanated from persons who were interested in having favorable reports of the mine circulated and these circumstances may have colored their statements, making them unduly optimistic.
The story is told that when Washington's army was stationed at Valley Forge some lead for bullets was obtained from these deposits but the writer has failed to find any verification of this report and is not inclined to accept it.

It is said that prior to 1856, residents of the region in digging wells occasionally found pieces of a hard, black material which was supposed to be coal but would not burn. A piece washed from the embankment of a mill race in 1856 was tested and found to be galena. The following year two Doylestown men dug out about thirty pounds of the ore but did no further prospecting. In 1860 two men in digging post holes encountered a large block of lead ore which excited their curiosity because of its weight and the sparkling appearance of a freshly broken surface. They are said to have crudely smelted it in a neighboring blacksmith shop and obtained lead. The story caused some excitement in the neighborhood and shortly after a Mr. Dickinson from Philadelphia visited the locality and secured an option on the Wetherill property where the ore had been discovered. Failing to find ore in paying quantities he surrendered the property.

On April 1, 1861, Jacob and George Neimeyer bought the property for $21,000 and began an active search for ore. They found several veins but unfortunately encountered so much water that they could not continue to work the mine profitably. They engaged John Annear to make a report on the property and to assist them in finding a buyer. The following statements are abstracted from this report.

"The mining operations consist principally of a large "Gauphin" or longitudinal opening on the course of one of the veins, extending from the cross road 256 feet northeast, and varying in depth from twenty to fourty-four feet from the surface. The south-western breast and along the bottom from that point, to within a few feet of the engine shaft, the Lode averages about two feet in width, rich in Lead, with some Sulphuret of Zinc, and rich specimens of red and black Ore of Copper, which, if wrought on regular mining principles, would yield a handsome profit.

"In the Engine Shaft, which is being sunk some twenty feet, east of the Lode; to intersect it lower down, there is a branch of very rich Galena, four inches wide, evidently a "Dropper," and will doubtless enrich the Lode at the point of intersection. In the immediate vicinity of this shaft, the Lode is disordered by a "Slide," which passes through it at this place. About fifty-three feet north west of the shaft, the Lode has been followed down to the depth of fourty-four feet, (the water being kept out by a three inch branch pump.) The length of this working is about seventy feet on the course of the Lode, and the bottom of which is under the "Slide." This part of the Mine presents the richest course of ore yet discovered on the property. For about thirty-five feet in length, the Lode is three feet wide, very rich in hard, compact Galena, with every appearance of lengthening in going down. At this point a crosscut is commenced to intersect the "Dickeson Vein," which appears to run parallel at a distance of about thirty-five feet, which is reported to be eighteen inches wide, of good Galena, at the bottom of the shaft, sunk by Professor M. W. Dickeson, to the depth of thirty-eight feet from the surface, near the cross road.
"The Lode on which the present proprietors, Messrs. J. and G. Neimeyer are working, runs nearly north-east by south-west, and has been opened at places almost the entire length of their property. At the distance of 455 feet southwest of the main working, a trial shaft has been sunk on the Lode, where it is two feet wide, of rich ore. This shaft is being cleaned out for further operations.

"The Lode where opened has regularly defined "walls," and underlies east about two feet in the fathom, when "Sangue" appears. It is composed chiefly of Quartz, Calcareous Spar, with Conglomerate, containing Shales, etc. The surrounding strata are composed of various colored slates and shales, interlaced with strings of Quartz, most of which contain more or less of Galena, showing it to be a highly metaliferous channel of ground. The strata at the west, or "Foot Wall" of the Lode, does not differ much in character from that at a distance from it; but on the east or "Hanging Wall" it is of a much softer and kindlier nature, being of a light buff color, resembling the white killas of Cornwall, and easily wrought with pick and gad, being wide enough for "Reseuing" the Lode; materially diminishing the expense of mining. The three other Lodes, as far as I could judge, seemed to exhibit the same characteristics, and will no doubt prove good courses of ore when explored.

"Messrs. J. & G. Neimeyer have already shipped to market and sold one hundred and six tons of ore, yielding seventy-five per cent. of Lead, and eleven ounces of Silver, to the ton. They have now at the surface in various stages of preparation for the furnace, as near as can be estimated, eighty tons of similar quality, and are daily adding to that amount."

Knowing nothing of the trustworthiness and professional ability of Mr. Annear one cannot determine whether the favorable report was based on facts or was prepared for the purpose of effecting a sale. It evidently accomplished the latter purpose as the property seems to have been sold by the Neimeyers to a New York company for $75,000. This company apparently did little work other than to sell considerable stock, said to have amounted to $105,000.

General statements to the effect that the mine was operated after this, especially in 1888 and 1891, are vague and reports are conflicting. In 1894 a man named Cowan started work at the mine but evidently accomplished little. In 1904 some prospecting was started on a near-by farm. In fact a great deal of prospecting has been done throughout the region and although galena and sphalerite have been found the results have not been encouraging except in the one locality along the North Branch of Neshaminy Creek.

In 1921 the Guerden Glen Lead Mining Company acquired the property but, up to March 1923, has done no regular mining, only surface development, working over the old dumps. The company proposes to unwater the mine and determine how much if any ore remains in the underground workings. Considerable unproductive expense must be incurred for reopening the mine before any ore can be raised.
Occurrence and Character of the Ore.

The country rock of the region consists of dark colored Triassic shales that have been intruded by igneous dikes or sills of diabase, commonly called "trap rock." A sill is exposed in the vicinity of the mine and from specimens on the old dumps, as well as from hearsay information, the underground workings cut through some diabase. One statement is to the effect that the ore lies under a sheet of the igneous rock.

The ore seems to be confined to shattered zones that probably have a rather definite trend, according to all descriptions available. Within the zone of fractured rock the ore occurs as small veins filling former open fissures, as the cementing material in brecciated shale, and as disseminations and probable displacements of the shale. The galena and sphalerite are associated with much quartz, and numerous small cavities are lined with crusts of fine quartz crystals. The rock containing the ore minerals is either black or gray shale. The gray material closely resembles limestone in general appearance and seems to have been mistaken for limestone.

Some unusually fine specimens of galena and sphalerite ore have come from the New Galena mines. According to report a block of ore weighing 1,000 pounds was once found.

The following minerals have been reported from the mines: quartz, dolomite, ankerite, calcite, galena, sphalerite, pyrite, chalcopyrite, and bornite. Galena has yielded 10 to 15 ounces of silver and 10 cents in gold per ton.

Conclusion.

So scanty is the available information regarding the operations, the thickness, number, and extent of the lodes, the character of the ore in the lodes and their richness, and many statements have been so conflicting and highly incredible that one is forced to be careful in either praising or condemning the property. Handling the water with improved pumps would not be as serious a matter as it was sixty years ago, and if there is the showing of ore underground that has been claimed it may be possible to operate a mine successfully. The writer would be inclined to encourage the judicious expenditure of a moderate sum of money under expert supervision to determine the real character of the ore bodies, but such expenditure should be regarded as a hazardous venture.

Bibliography.


Daily Democrat, Doylestown, Pa.; June 6 and July 5, 1921. Doylestown Daily Intelligencer, June 6, 1921.