Saucon Valley attributed the failure of their water supply to this pumping, and law-suits against the company were threatened. Some iron mines in the vicinity ceased operations because of increased water when pumping stopped at the zinc mines. For a time the city of Philadelphia is reported to have considered a plan to run a pipe line from the mines to Philadelphia for an additional source of water supply.

At one time the water of Saucon Creek, at a point about 1 1/4 miles southwest of the mine, entirely disappeared through an easy passageway into the mine. By means of refuse thrown into the creek bed the opening was sealed. When the large engine was stopped in 1876 the creek below the mine shrank to a small part of its former volume, and it regained its normal size only after the mine had filled with water. In 1868 the pumping cost was said to be $6 per ton of ore, and in 1876, when the Ueberroth mine was closed, the pumping cost was said to be $4 per ton of ore, the greatest item in the entire mining costs. The high cost was due to the fact that only one shift was worked and altogether the daily output was only 55 to 60 tons of ore. For the same cost of pumping a much greater output could have been made.

On account of the different treatment required for the oxidized ores (calamine and smithsonite) and the sulphide ores (sphalerite associated with pyrite), and the difficulty of separating them if they should become mixed, the mining of the different kinds of ore was carried on separately so far as possible. In some places sulphide ore was left in the mines, even though it could have been easily removed. An additional reason for not removing all the sulphide ore was the fact that this ore had to be roasted to remove a large part of the sulphur before it was sent to the furnaces, and the companies were in danger of being enjoined by the courts if the sulphur fumes at Friedensville or South Bethlehem should become obnoxious. It is possible that if the mines are reopened the sulphur gases may be economically utilized in the manufacture of sulphuric acid. The greatest drawback to the profitable production of sulphuric acid will undoubtedly be the large amount of limestone necessarily mined with the ore. The sulphide ore from the Correll mine was made into sulphuric acid at Bergen Point, N. J. For a time the project was profitable, but the increasing amount of limestone in the ore finally caused the company to abandon the attempt to utilize the sulphur.

Milling

Both the oxidized and the sulphide ores as they came from the mine were mixed with impurities and had to be concentrated before delivery to the furnaces. The impurities with calamine and smithsonite were mainly clay and small pieces of limestone, and a few fragments of pyrite and sphalerite, whereas in the sphalerite ore the chief gangue material was limestone. For these reasons the two kinds of ore required different treatment.

As the oxidized ores were brought from the mine, the larger masses were broken by sledges and the richer fragments that happened to be fairly free from impurities were picked out by hand and sent directly to the spelter works. The small fragments mixed with clay were