passed through log washers or cone washers. From the washers the ore was discharged on grizzlies or revolving screens and then thrown on picking tables where boys removed pieces of limestone, pyrite, and sphalerite. Most of the concentrate obtained from the washers went to the oxide furnaces.

The water from the washers, which carried the clay and small bits of ore and rock, was drained into settling ponds. Later much of the coarser materials that had been deposited near the inlet of these pits was dug and worked in buddles or tossing tubs and considerable fine calamine and smithsonite were thus recovered. A four-compartment Hartz jig with an eccentric stroke was tried on these sands but was not successful. Sometimes the tailings were found to contain more zinc than the heads. The failure was due to many thin flat pieces of calamine that had a tendency to go with the tailings. The concentrate recovered from the sands was sent to oxide works. The dried oxidized concentrate as sent to the furnace contained about 20 percent zinc.

The intimate mixture of the sphalerite ore and the limestone rendered concentration difficult. In blocks of ore that showed complete gradation from pure sphalerite into pure limestone a clean product could be obtained only after extremely fine grinding. The result was that during the period of most active operations the richer ore was picked by hand and sent to the roasting furnaces or roasting heaps and the remainder thrown aside.

After 1876 sizing and jigging of the sulphide ores was tried. Hand jigs were first used and, later, Hartz jigs having several compartments. They were not entirely satisfactory as the tailings were always high in zinc.

The best of the sulphide ore was roasted in reverberatory furnaces for spelter. Often the lower grade ore was heap-roasted and sent to the oxide furnaces or re-roasted in the reverberatory furnaces and sent to the spelter works.

The best of the hand-picked sphalerite ore contained from 42 to 44 percent zinc; the remainder contained from 15 to 25 percent zinc.

**Future**

Extensive prospect drilling done by the New Jersey Zinc Co. has doubtless yielded information sufficient to warrant a decision on future plans. The data and conclusions are confidential.

A common belief that the Friedensville mines were closed on account of the exhaustion of the ore is incorrect, because the ore bodies were as large in the lowest workings as near the surface. The veins gave no evidence of dying out as the depth increased and the sulphide ores showed little change in tenor.

Another reason frequently heard for closing the mines was the threatened litigation by the farmers whose wells were drained by the pumping that was required to keep the mines free of water. This explanation is likewise without foundation, as the courts have repeatedly upheld the principle that no mining company is liable for damages incurred by the withdrawal of water from previous users so long as this is necessary in order to remove the ore and the water.