

Nickel and the Nickel Mines.

Under the above head we find in a late number of the *Columbia Spy* a communication giving an account of a visit to the nickel mines near the Gap, in this county, from which we make the following extracts:—Nickel is a white metal requiring a high temperature of fusion; it is magnetic and has a specific gravity of 8.5. It is not an abundant metal, there being but three or four localities of it in the United States, and the only locality where it is profitably worked is in Lancaster county, Pennsylvania, about four miles southwest of the Gap Station, on the Pennsylvania Railroad. A remarkable fact in regard to this metal is that it forms an important ingredient in most aerolites and in masses of native iron found in various parts of the world, and which are supposed to have had an aerial origin.

The furnace for reducing the nickel ore is about one-half mile north of the mines. The ore is brought here, and roasted in large ovens to expel the sulphur with which it is charged. It is then smelted in a small furnace, somewhat similar to an iron furnace, with a flux of limestone and quartz, the fuel being coke. It is run into "pigs," which are generally porous and friable, and contain a number of impurities, iron, copper, cobalt, etc. The "pigs" are afterwards broken and crushed, and the metal in this state is shipped to Camden, N. J., to be refined. There are two shafts; the principal or older shaft is one hundred and seventy-five feet in depth, and passes through a heavy deposit of the ore. In order to free the mine from water, a Cornish engine of great power is used, which of itself is an object sufficiently curious to merit a visit.

The ore is found imbedded in a hornblende rock of peculiar structure, and is associated with other metals and minerals, some of much interest. We found specimens of carbonate of iron in various forms, sulphate of iron coating the stones all around us, sulphate of copper in places; sulphuret of copper is found in considerable quantities along with the nickel; sulphuret of iron also shows in some spots. One of the most interesting minerals is the sulphuret of nickel, or Millerite, which is found here and at but two or three other localities in the world.

There is a second shaft about two hundred yards from the first, which is about one hundred feet deep, and has been opened but a short time. It intercepts a very fine bed of ore, and is paying very handsomely.

In regard to the yield of ore, we could not make very accurate estimates. We were told that the furnace yields about four thousand pounds of metal each twenty-four hours. The mines were discovered many years ago, and about the time of the Revolutionary war were worked for copper, but were soon abandoned, the crude machinery of that period being ill adapted to working them profitably.

Two generations had passed away, and the circumstance had been forgotten, when about fifteen years ago the mines were reopened by a company of capitalists from Philadelphia, since which they have been steadily worked. They were reopened with the view of obtaining copper, but the ore was soon discovered to be richer in nickel, a more valuable mineral; and since then they have been worked for that metal exclusively. The introduction of nickel cents by the Government, and the war, which rendered small change so scarce, gave great impetus to these works.

Stories of Pennsylvania

A nickel deposit at Gap, in Lancaster county, discovered a couple of years after Shippensburg's early residents began to build a town on what was then the western frontier, for a time in the latter years of the last century was the world's chief supply of the shiny metal which recently has been largely displaced for decorative uses by chromium and its stainless steel offspring.

The Gap nickel deposit was discovered in 1732, although some reports indicate knowledge of a valuable ore in the vicinity in 1718. For 80 or 90 years the Gap mines were worked, first for copper alone and then for both nickel and copper. The mines then were idle for about 30 years, until 1849, when those with a lust for gold and adventure were rushing westward in response to reports of rich finds in California, while more sober stay-at-homes were beginning to think about nickel ore again. By 1853 the Gap mines had become the chief source of the world's supply of nickel, and held that preeminence until 1890.

In 1877 the average annual production of the Gap mines was estimated at 7,200 short tons of ore, carrying one to three per cent of nickel. In that very year, however, 8,000 tons of ore were exported from newly opened veins at New Caledonia, carrying 8 to 10 per cent of nickel. This was a severe blow to the industry at Gap. The development of the Sudbury nickel ores in 1887 was the final setback for the Gap mines, which were closed in 1893. Today the ore from Sudbury, Ontario, supplies most of the world's nickel.

The Gap mines were underground. There were six vertical shafts penetrating from 44 to 235 feet, with a few others 60 to 80 feet deep. Tunnels extending as much as 2,000 feet were driven from the shafts. The industry's payroll at its height included 100 men in the mines, 50 at the smelting works and 100 at the refinery. Some 30 horses and mules were used for hauling.

Pure nickel at that time was worth \$2 to \$3 a pound. The Gap ore was a good sulphide ore, but was not rich enough to compete with Sudbury ore. The income from the ore must have been large, nevertheless, because the Gap establishment was the finest in the world while it flourished. It brought thousands of dollars to Lancaster county each month. Nickel was used then largely as it is today, for electroplating, as a constituent of various alloys including nickel steel, for influencing the elasticity, toughness and oxidation of metals, and for coinage.