and are by no means exhausted. One of them was reopened and worked for a short time during the first World War.

Since there is so little information concerning the individual magnetite mines of the county and they are much alike, the general descriptions are mainly replaced by descriptions of the Vera Cruz locality.

**History.**—The following note from Mathews and Hungerford’s History of the Counties of Lehigh and Carbon published in 1884 furnishes a few facts of historical interest. “On the east (south) side of the same mountain (South Mountain) there was discovered, about the year 1848, several very rich magnetic iron-ore veins. Those on the premises of William Brunner, Henry Wickert, and others have been operated by David Lewis (the oldest ironmaster of Lehigh County), F. T. Jobst and George Neumoyer. The Hellertown Iron Co., Lewis, Pascoe and Webb, Schwarz, Dickenshied & Co. took in 1880 a lease on the premises of F. T. Jobst (formerly of William Brunner), and continued the operation of the mines. They discovered some rich veins of ore from two to twelve feet thick, and delivered an average of five thousand tons per year. Several other mines along the mountain, on the premises of Daniel Klein, Joshua Fry, and others, have been kept in operation.” (p. 346.)

**Occurrence.**—The ore of the Vera Cruz region occurs in tabular bodies, generally called veins, which have a maximum width of 15 feet and dip to the south or southeast at angles of 45° to 55° and strike approximately east. The veins do not maintain a uniform thickness in any of the mines, but narrow and widen along both the dip and the strike and in places pinch out altogether. In most places the veins are parallel to the bands in the inclosing gneiss, but in some places they do not maintain this attitude. Though most of the veins are in the lighter-colored gneisses, some are associated with the dark basic gneisses, and the same vein may pass from one kind of gneiss to the other without changing its character, as is well shown near Vera Cruz Station.

In most places the ore body is sharply delimited against the enclosing wall rock, but in some places the transition is so gradual that it becomes difficult to determine the limits of the vein. Veinlets of magnetite that form offshoots from the vein commonly penetrate some distance into the wall rock, which in most places carries some disseminated magnetite. In Jobst’s tunnel, northeast of Vera Cruz Station, the wall rock between two veins for a distance of over 250 feet contained from 15 to 25 percent iron.

In the Vera Cruz region, the only place where exact data have been procured, it was long known that three veins, roughly parallel in direction, extended for a considerable distance along the mountain. A magnetic survey of a portion of that region was made about 1899 by The New Jersey and Pennsylvania Concentrating Company that had obtained “options on hundreds of acres of iron ore lands on the Lehigh Mountains.” The work was done by Tobias Castelane under the direction of Thomas A. Edison, the president of the company. It was found that seven veins were present, four of which extend for distances of half a mile to 1 1/2 miles. On the magnetic survey map