Limonite is the chief coloring matter of most of the rocks of the region. The iron was originally derived from pyrite, siderite and the various ferro-magnesian minerals of the crystalline rocks. Pseudomorphs of limonite after pyrite have been found at Chestnut Hill and elsewhere.

**PSILOMELANE** (MnO₃ + impurities)

Most of the limonite iron ores of the region contain some manganese and in a few places considerable percentages of it. The other in some localities has enough manganese to be called umber. The only place where umber has been mined in Northampton County is on the south side of Quaker Hill, a few miles north of Bethlehem. Although some of the manganese in the iron ores and umber may be in the form of pyrolusite it seems that more exists as psilomelane and of the variety known as wad.

Edgar T. Wherry⁶ gives an analysis, made by J. S. Long, of psilomelane associated with beraunite from an old limonite iron mine one mile southeast of Hellertown. It is as follows: Fe₂O₃ 4.5, Mn₂O₃ 50.5, P₂O₅ 8.2, H₂O 22.1, SiO₂ 12.0.

Alkalies and alkaline earths present but not determined.

Eyerman⁷ says that he has “observed some beautiful specimens of dendritic wad, coating the limonite, at the Ackerman mine, south from Glendon.”

**CARBONATES**

**CALCITE** (CaCO₃)

Calcite is an abundant mineral throughout the limestone areas of Northampton County. Good crystals are not common although small ones have been noted in many places in vugs and other cavities in the limestones and in the serpentine rocks of Chestnut Hill. Calcite veins are abundant in the cement limestones and other calcareous rocks and not uncommon in some places in the slates. Stalactites of calcite occur in the caves and smaller openings of the limestones.

Some limestone beds within the county are almost pure calcium carbonate, but nearly all contain much magnesium carbonate, silica, aluminum oxide, and iron oxides.

Calcite from Williams’ quarry containing strontium has been called strontianocalcite.

**ARAGONITE** (CaCO₃)

Beautiful acicular and tree-like crystals of aragonite have been observed in Lost Cave at Hellertown, in the cave at Redington and in open crevices in limestone quarries. Many of the cave stalactites are composed of aragonite. Eyerman, in his Mineralogy of Pennsylvania,

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⁷*Mineralogy of Pennsylvania, Part I*, 1890.