The crystals usually display simple forms, hexagonal prisms, terminated by the plus (+) and minus rhombohedrons (−), equally developed. The only distortions observed were those resulting from the intergrowths of crystals in clusters.

The color results from hydrous iron oxide, originally dissolved in the silica gel in a ferrous condition and later changed to the ferric state. It appears that the silica had been uniformly stained by the iron before crystallization of the former.

Some of the specimens show pure white crystalline calcite, associated with the quartz and iron oxide. No perfect crystals of this mineral were found but good rhombohedral faces and a distinct rhombohedral cleavage were observed. Since the calcite has not been colored by the iron it seems to be of a later crystallization than the quartz.

These quartz crystals were evidently formed following the solution of dolomite by ground water, and the precipitation of quartz in its place.

The silica which formed the crystals was leached from the siliceous portions of the Jonesboro formation, 600 feet of which is composed of a very siliceous dolomite, heavily laden with chert.

The abundance, perfect development, and uniformity in shape and size of the crystals points to a full, free space for crystallization indicating not so much replacement as the occupation of space already made.

The solutions from which the silica crystallized must have encountered divalent calcium in the dolomite which induced the coagulation and precipitation of the silica.

The color of the quartz crystals came from iron hydroxide, leached from adjoining rocks, which had stained the silica gel previous to its precipitation.

Lithologically it is generally possible to separate the Beekmantown from the Allentown and the Tomstown strata by the characteristics described. However, some of these features are not confined to the Beekmantown and again, no one of them may be exhibited in local restricted exposures; also the low-magnesian limestones of the upper Beekmantown may be confused with the basal limestones of the Jacksonburg. Therefore, there is room for difference of opinion in certain localities and it is to be expected that other maps will be prepared from time to time in which the stratigraphic lines will not agree exactly with those shown on the accompanying maps.

Chemical composition.—The strata of the Beekmantown formation show wide variation in chemical composition, particularly with reference to the MgCO₃ content. To the writer's knowledge, cement companies looking for accessible high-grade stone to “sweeten” the low-lime cement rock have discovered numerous outcropping beds of Beekmantown limestones containing from 90 to 95 percent CaCO₃ and only 1 to 3 percent MgCO₃. In several cases they have occurred considerable expense in drilling certain properties, only to find that this type of stone was interbedded with dolomitic limestones containing over 40 percent MgCO₃ and that it would not be possible to operate a quarry by steam-shovel for material usable in the manufacture of portland cement. It was feasible for cement companies to operate such quarries only during the days when hand-loading prevailed and the low-magnesian stone could be shipped to cement plants and the high-magnesia could be sold to iron furnaces for flux or used for ballast or concrete.

No locality in Lehigh County has been investigated where, under present economic conditions, a large amount of low-magnesian stone