out the area is that the earlier three formations are very intimately invaded by granitic material. Pegmatitic material in part probably accompanying the Byram invasion and in part as late as post Hardyston, has also injected earlier formations.

On the map (Plate 1) formation contacts are represented by solid lines rather than dots or dashes. These solid lines do not, however, indicate a clean-cut, readily recognized and accurately determined contact plane. They indicate that in so far as the author of the map was able to judge, the materials on either side of a zone having the approximate location of the line on the map were of two types. Commonly, a decision had to be reached on the difference between the invading Byram gneiss and one or the other of the older formations containing abundant introduced Byram material.

The fairly consistent northeast-southwest strike of the formations has resulted in a similar alignment of the remnants of the injected materials.

Within the larger areas shown as either Pochuck gneiss or Byram granitic gneiss, one may expect to find small injections or inclusions of the other material, but within any area indicated as one or the other of these formations, the expectation is for a preponderance of that material.

Franklin Formation

_Distribution._—This formation occurs along the Delaware River in Chestnut Hill at the eastern end of the pre-Cambrian belt and extends southwestward across Bushkill Creek toward the western end of Chestnut Hill. A smaller area is found near the western edge of the county along the west bank of Monocacy Creek where it cuts the western end of Pine Top.

_Lithologic characteristics._—The more extensive member of the formation is a coarse-grained graphite-bearing limestone. Where unaltered by igneous intrusions it is a dense, white crystalline carbonate rock with scattered flakes of graphite and fewer grains of magnetite and silicate minerals appearing locally. In the Chestnut Hill area, this formation has been invaded by pegmatitic material, the emanations from which have altered the limestone to a serpentine mass. The intimate invasion of the limestone by silica solutions has resulted in numerous new silicate minerals. These are listed under the chapter dealing with the minerals of the county.

The graphitic quartz schist associated with the Franklin limestone in other areas in the pre-Cambrian belt is not present in Chestnut Hill but is fairly abundant in the fields just west of the Franklin limestone area along Monocacy Creek. Here it is composed chiefly of