residents with sufficient water for all purposes. In other sections there are no springs. In a few places difficulties have been experienced in securing well water and the necessary water is obtained from cisterns. In protracted droughts water is hauled in barrels from nearby creeks or wells.

**KITTATINNY (BLUE) MOUNTAIN**

Inasmuch as there are no residences on Kittatinny (Blue) Mountain there has been no necessity for investigating the underground water resources of that section. However, the time may come when homes may be established there. Beyond the limits of Lehigh County some houses have been built at and near the crest of this mountain.

The mountain is composed of the Shawangunk sandstones and conglomerates. Although these are generally well cemented by silica that fills most of the interstices, there are some fairly pervious beds, besides which the openings between the beds and also numerous joints afford easy circulation of water. Where the crest of the mountain is narrow the water level probably is very deep and only a small supply of water could be obtained except by drilling almost, if not quite, as low as the slate area at the base of the mountain. Where the mountain top is broad a small amount of water might be got by a comparatively shallow well, perhaps enough for household purposes.

Drilling in the Shawangunk is expensive as the rocks are extremely hard where they are not decomposed by weathering. A local well driller in an adjoining county failed to realize this condition to his sorrow when he took a contract to drill for water in this formation.

Springs occur along the foot of the mountain but they are generally concealed by thick talus deposits and their presence is determined by marshy conditions or by seepages when excavations are made in the talus.

Because of the relatively insoluble character of the Shawangunk rocks, any water obtained from them is low in mineral matter.

**MARTINSBURG SLATE REGION**

The slates of the northern part of the county permit the rain water to pass quickly through the surficial soil and weathered slate but very slowly through the compact, fresh, fine-grained rock beneath. Percolation through the slate itself does take place but most of the water that goes far below the surface moves through openings of joints and along loose bedding planes and possibly along cleavage planes. These openings are very narrow and are not widened by solution, as in the limestone region, because of the relative insolubility of the slate. The result is a very slow downward movement of the rain water and the almost complete absence of large underground streams. Where faults are present the water tends to follow them.

The water from the Martinsburg is almost everywhere of good quality if not contaminated by surface pollution. However, there are several places where both spring and well waters have enough sulphur to make the water undesirable or useless. The sulphur in the water is derived from pyrite, which in some places occurs in the slates in considerable abundance. In the slate quarries cubes of pyrite are frequently noted, especially in the more highly carbonaceous beds.