ern slate belt have an average elevation close to 500 feet, while much of the area of the sandy Martinsburg rises to from 700 to 800 feet to the west near the Berks County line and some 400 to 700 feet on the east toward the Lehigh River.

Thus, topographically, the sandy Martinsburg presents a more rugged, hillier appearance, even to the development of fairly well-defined valleys and ridges, while the shaly (slaty) Martinsburg is expressed in a confusion of small hills and crooked valleys. In fact, so distinct is the topography of the two types of Martinsburg that it is nearly always an excellent check on mapping the contacts of the shale or slate with the sandstone.

The Martinsburg contact with the underlying limestone to the south is likewise sharply defined topographically. It amounts in some instances to a small scarp. There is an abrupt drop from the hilly Martinsburg terrane with maximum elevations of 600 to 700 feet to the flatter limestone valley at 400 to 500 feet above sea level. Likewise, the northern boundary of the region underlain by the Martinsburg is quite sharply defined. The soft beds of the northern slate belt pass under the massive sandstones, quartzites, and conglomerates of Kittatinny Mountain (called Blue, North or First Mountain in older reports). This mountain rises abruptly to elevations of 1,500 and 1,600 feet. Its fairly even crest forms a natural northern boundary to the county.

LITHOLOGY

Since nothing need be added to the already adequate and complete description of the slate beds in the Martinsburg as prepared and published by Dr. Behre, reference to them is best made by quoting from his 1933 report. It must be recalled that Behre strongly advocated the three-fold interpretation of the Martinsburg. His descriptions of what he called the lower and upper members are quoted rather fully. To begin with, he made the following general statement (p. 136):

For practical purposes, the formation is best subdivided on a lithologic basis into a lower, a middle, and an upper part. The lower part is characteristically a banded clay slate, though there are also thin sandstone beds. The middle member contains sandy beds as its most typical facies, though some truly slaty beds are also found in it. The uppermost member is banded like the lower, but there is less sand and the individual beds are much thicker. The differences between these subdivisions are relative and in areal mapping the line between them is drawn with difficulty.

Following this general statement Behre amplified his findings and described minutely the lithology of the members of the Martinsburg "in the Lehigh-Northampton district" (pp. 137-146):

Lower Martinsburg member. The lower member is generally a thin-beded clay slate (shale?) or slate. Its prevailing colors are blue-gray or dark silvery gray near the "neutral gray k" of Ridgway's color chart, weathering to light yellowish-brown or buff. It contains layers that are alternately siliceous, sericitic or carbonaceous; the resulting banded character is the distinguishing feature of this part of the formation. This banding is shown on the fresh cleavage surface by streaks that are more silvery where siliceous, and grade more toward a black where carbonaceous. Individual beds are generally two or three inches or less in thickness, and never exceed a foot. Workable slate beds are not found throughout the lower Martinsburg, but occur only at certain horizons. Some good banded slate has been quarried... but it is not extensively worked...