Paleontologic characteristics.—No fossils in the Tuscarora have been found in Lehigh County. At the Delaware Water Gap several species of eurypterids were found years ago. Also near Little Gap, Northampton County, a fucoid or worm trail, Arthrophycus harlani, has been found. The coarse character of most of the strata would seem to account for the absence of fossil remains. If fossils other than Arthrophycus ever are found the chances are that they will be in the thin shale laminae that are interbedded with the sandstones and conglomerates.

Thickness.—Only the lower part of the formation is present within Lehigh County and it is scarcely possible to determine what part of the 457 feet of the entire thickness is present. Perhaps the maximum thickness in the county is no more than 150 feet.

Name and correlation.—The formation is named for Tuscarora Mountain which forms the boundary of Juniata and Perry Counties, Pennsylvania. These strata were termed the Oneida and Medina by the geologists of the Second Geological Survey of Pennsylvania. In recent years these rocks have been correlated with the Shawangunk of New York State and that name has been used. The formation continues into Northampton County and was mapped as Shawangunk in the Northampton County volume (Miller et al. 1939).

C. K. and F. M. Swartz (1931) traced these beds across Pennsylvania and have correlated all of the beds exposed in Lehigh County with the Tuscarora of central Pennsylvania.

Willard and Cleaves (1939) have suggested, on the basis of a difference in the lithologic characteristics, that the basal 2.5 (3 or 4) feet of the Swartz section quoted above represents the Bald Eagle conglomerate and should not be included in the Tuscarora. The writer recognizes differences, but is not inclined to regard them as of stratigraphic importance. It is common to find basal conglomerates much more dirty or impure than the inter and overlying beds, due to the mingling of sediments derived from the underlying beds. This is well shown in the basal conglomerates of the Hardyston formation. The darker color can be explained in this way. Further, the limonite stains, conspicuous in the basal portion, and the feebly cemented pebbles can be well explained by the free circulation of oxidizing ground water at the unconformable contact.

Stratigraphic relations.—There has been general agreement that the Tuscarora, or the Shawangunk farther east, rests unconformably upon the Martinsburg shales. At Lehigh Gap this unconformity can be seen in a cut along the Lehigh & New England Railroad where the Martinsburg shales dipping to the northwest are truncated by the basal beds of the Tuscarora inclined in the same direction but with about thirteen degrees less dip. The basal conglomerate here is iron-stained and disintegrated. Nowhere else has this contact been observed by the writer.

It is of interest to note that J. P. Lesley argued strongly against the existence of an unconformity (nonconformity) between these two formations.