

and Esopus is everywhere marked by low, swampy ground and by the existence of stream beds."¹

Esopus

The Esopus is a dark gray silicious shale. It has an approximate maximum thickness of 550 feet. The very strong cleavage which has been induced in it has given rise to very thin, platelike pieces. The entire Esopus is a continuous succession of hogbacks, giving an appearance very similar to a series of step faults. Yet this appearance may be due merely to differential weathering on account of the greater development of certain cleavages over others. This latter theory is partially borne out by the fact that the valleys between the hogbacks run parallel to the strike of the beds.

No fossils were found in the Esopus though prolonged search was made for them. Irregular pyrite nodules are very abundant in all parts of the Esopus and Lower Onondaga. For 50 or more feet up into the Onondaga, probably a fourth of the many fossils found are pyritized. This suggests that perhaps each of the Esopus nodules also represents what is left of one or more fossils after the wonderful cleavage to which it has been subjected.

The Schoharie grit is here included in the Esopus on account of the absence of fossils and the lithic similarity of the two formations.

Onondaga

The transition from the Esopus to the Onondaga is very gradual. The lowest, much cleaved beds are arenaceous shales and except for the fossils would be placed in the Esopus. The beds become more calcareous till 30 feet above the base, a typical calcareous shale is developed. Here the fossils are quite numerous though few in species. The most abundant species are *Coelospira acutiplicata* and *C. grabau*. The strata continue principally as calcareous shales for over a hundred feet but with the occurrence of thin bands of limestone more and more frequently toward the top. For the next 40 or 50 feet the limestone and calcareous shale beds are about equal in number and thickness. Here

¹Grabau, A. W. Stratigraphy of Becraft Mountain, Columbia County, N. Y. N. Y. State Paleontol. An. Rep't. 1902. p. 1069.