

south branch of Smoke's creek a mile below Windom, and a 2 foot band of calcareous shale in the cliff at Bay View.

Outside of this quadrangle the Skaneateles shale is exposed in the bed of Mud creek below Wheeler in Ontario county; in Great gully, 3 miles south of Union Springs, Cayuga county, and in the Bear mountain ravine near Tully valley in Onondaga county.

Fossils are rare except in the lower calcareous shale. The following is a list of fossils reported as obtained from these shales by A. W. Grabau:

Phacops rana (<i>Green</i>)	Chonetes mucronatus <i>Hall</i>
yphaeus boothi (<i>Green</i>)	C. setigerus <i>Hall</i>
Primitiopsis punctilifera (<i>Hall</i>)	C. scitulus <i>Hall</i>
Orthoceras <i>sp.</i>	C. lepidus <i>Hall</i>
Tentaculites gracilistriatus <i>Hall</i>	Productella spinulicosta <i>Hall</i>
Styliolina fissurella (<i>Hall</i>)	Strophalosia truncata <i>Hall</i>
Euomphalus (Phanerotinus) laxus <i>Hall</i>	Spirifer mucronatus (<i>Conrad</i>)
Bellerophon leda <i>Hall</i>	Ambocoelia umbonata (<i>Conrad</i>)
Pterochaenia fragilis (<i>Hall</i>)	Liorhynchus limitare (<i>Vanuxem</i>)
Nuculites triqueter <i>Conrad</i>	Tropidoleptus carinatus (<i>Conrad</i>)
Orthotheses arctostriatus <i>Hall</i>	Crinoid stems

Ludlowville shale

This formation embraces that part of the rock section extending from the base of a 6 inch layer of soft limestone capping the Skaneateles shale and containing *Strophalosia truncata* abundantly, to the Tichenor limestone. The term applied to this member of the series is one of the earliest in the New York nomenclature and the occasion of its revival is explained in Museum bulletin 63, p. 17-20, 1904.

The shale is mostly fine, soft and evenly bedded, light to dark bluish gray in color and but slightly calcareous. In the lower part there are several thin layers of limestone and calcareous concretions are common. Next above the *Strophalosia* bed above mentioned, a stratum of concretionary limestone contains *Nautilus magister*; another, 10 feet higher and 3 feet thick, contains many trilobites; and a thinner one, 8 feet below the top of the formation, contains *Athyris spiriferoides* in large numbers.

The calcareous layers at some outcrops consist merely of rows of broad flat concretions and their number and relative positions vary greatly in different exposures; one or another may disappear entirely and a new one come in at a higher or lower horizon.

This formation is 60 feet thick in the southwestern corner of this region and increases toward the east at an average rate of about 1 foot a mile to Ontario county, where it is 125 feet thick. Farther