

east it increases more rapidly and attains a thickness of 350 feet in the Tully valley in Onondaga county.

The extreme western exposure of the Ludlowville shale in New York is at the base of the south shore cliffs, which extend for  $1\frac{1}{2}$  miles southwest from the mouth of Eighteen Mile creek,  $5\frac{1}{2}$  miles beyond the south line of this quadrangle. The lower beds in the cliffs at Idlewild and nearly all of those exposed in Wanakah cliff belong to the Ludlowville shale.

On this quadrangle good exposures may be seen along Avery's creek where the limestones at the base of the formation produce a small cascade just above the lake shore highway bridge; along Rush creek, near Wosgwah station of the Hamburg Electric Railroad; along the south branch of Smoke's creek near Windom; along its east branch, 1 mile southwest from Reserve and along Cazenovia creek, 1 mile east from Reserve.

There are further large exposures of these beds at several localities east of this quadrangle, some of the best being in Ontario county on Shaffer's creek and in the lower part of the ravines on both sides of Canandaigua lake north of Menteth point; on the shore of Cayuga lake between Aurora and King's Ferry from 10 to 16 miles north of Ludlowville; and in Onondaga county, in the Bear mountain and Fellows falls ravines; in the Tully valley and at Pratt's falls in Pompey.

The Ludlowville shales abound in fossils most everywhere. Dr Grabau's list of those obtained from this horizon in the vicinity of Eighteen Mile creek names 120 species, embracing 6 crustaceans, 4 cephalopods, 4 pteropods, 29 lamellibranchs, 50 brachiopods, 1 crinoid, 8 bryozoans and 7 anthozoans.

Some of the more prominent or abundant forms are:

<i>Phacops rana</i> (Green)	<i>Orthotheses arctostriatus</i> Hall
<i>Crypheus boothi</i> Green	<i>Chonetes lepidus</i> Hall
<i>Nautilus magister</i> Hall	<i>Chonetes scitulus</i> Hall
<i>Orthoceras nuntium</i> Hall	<i>Spirifer mucronatus</i> (Conrad)
<i>Tentaculites gracilistriatus</i> Hall	<i>Sp. granulosis</i> (Conrad)
<i>Styliolina fissurella</i> (Hall)	<i>Sp. subumbonatus</i> Hall
<i>Platyceras attenuatum</i> Hall	<i>Sp. fimbriatus</i> (Conrad)
<i>Diaphorostoma lineatum</i> (Hall)	<i>Ambocoelia umbonata</i> (Conrad)
<i>Pterinea flabellum</i> (Conrad)	<i>Athyris spiriferoides</i> (Eaton)
<i>Actinopteria decussata</i> Hall	<i>Atrypa aspera</i> (Dalman)
<i>Modiomorpha subalata</i> (Conrad)	<i>Camarotoechia dotis</i> Hall
<i>Paleonilo tenuistriata</i> Hall	<i>Liorhynchus multicostum</i> Hall
<i>Cypricardina indenta</i> Conrad	<i>Tropidoleptus carinatus</i> (Conrad)
<i>Stropheodonta demissa</i> (Conrad)	<i>Stictopora incisurata</i> Hall
<i>Leptostrophia perplana</i> (Conrad)	<i>Pleurodictyum stylopora</i> (Eaton)
<i>Rhipidomella vanuxemi</i> Hc.	<i>Streptelasma rectum</i> Hall