

TRIP C. AROUND CAYUGA LAKE

SATURDAY, 9 MAY, 8:30 A.M. - 5:30 P.M.

This trip is in two sections: Section 1 in a clockwise direction, Section 2 counterclockwise. Both sections will meet at Stop 5 for lunch. Note that Section 2 will make the stops in reverse order, i.e., the first stop will be Stop 7.

RoutesSection 1.

Leave McGraw Hall, crossing downtown Ithaca to Rte. 96. North towards Trumansburg (views of Cayuga Lake trough to right. Note southerly dip of rocks on east shore of lake; prominent datum plane is the Tully limestone), to entrance to

Taughannock State Park. East along upper Taughannock Creek; exposures of middle part of Ithaca formation; under railroad to

Stop 1. Main Falls Lookout. Exposure of Genesee, Sherburne, and Ithaca formations in gorge walls. Continue down hill to Rte. 89, south across Taughannock Creek and present delta, with view on right of lower falls over Tully limestone. Turn around and north on Rte. 89, with views of Cayuga Lake on right, 9 miles to

Stop 2. Hubbard Quarry. Contact of Genesee and Sherburne formations, Middle-Upper Devonian boundary. Fossils. Septarian concretions. Continue north of Rte. 89 to Town Line Road. West to junction with Rte. 96. West on Rte. 96 to Ovid, north on 96 to junction with Rte. 414 at Romulus Center. North on Rte. 414 to Fayette. In Fayette, west on Poorman Road 0.25 mile to

Stop 3. Fayette Town Quarry. Upper Skaneateles (Levanna) shale in lower part of quarry; lower part of Centerfield member in upper part. Fossils from both members; septarian concretions. Back to Fayette and north on Rte. 414 to Yellow Tavern Road (Country Rd. 121), thence east to quarry.

Stop 4. Old Wolf Quarry (Warren Bros. Road Co.). Upper Onondaga limestone (Seneca member). Tioga metabentonite. Continue east on Yellow Tavern Road to Seybolt Road; north to first road east to Canoga and Rte. 89. North on Rte. 89 to

Stop 5. Cayuga Lake State Park. LUNCH (1 hour). Continue north on Rte. 89 to junction with Rtes. 5 and 20. East across Montezuma Swamp and Seneca River (State Barge Canal and Cayuga outlet) to junction with Rte. 90. South on Rte. 90 through Cayuga to junction with Rte. 326. East then north to

Stop 6. Yawger's Woods. Walk west from road 0.5 mile to woods, through woods to outcrop of Manlius (Olney) limestone and Criskany sandstone.

Fossils from Oriskany (sledgehammers useful!). Return via Rte. 326 to Rte. 90, then south through Union Springs, Levanna, and Aurora to King Ferry and junction with Rte. 34B. South on Rte. 34B to road 0.7 mile west of South Lansing leading down to Portland Point. 0.5 mile to quarry entrance.

Stop 7. Portland Point Quarry. Upper Moscow (Windom) shale, Tully limestone, lower Genesee shale. Fossils. Alnoite dike. Low-angle thrust. Back to Rte. 34B; east to South Lansing, south on Rte. 34 to Ithaca (Cornell Campus).

Section 2.

Leave McGraw Hall, north on Rte. 34 to South Lansing. West on Rte. 34B 0.7 mile to road leading down to Portland Point. 0.5 mile to quarry entrance.

Stop 7. Portland Point Quarry. Upper Moscow (Windom) shale, Tully limestone, lower Genesee shale. Fossils. Alnoite dike. Low-angle thrust. Back to Rte. 34B, north to junction with Rte. 90 at King Ferry. West then north on Rte. 90 via Aurora, Levanna, and Union Springs to junction with Rte. 326. East then north to

Stop 6. Yawger's Woods. Walk west from road 0.5 mile to woods, through woods to outcrop of Manlius (Olney) limestone and Oriskany sandstone. Fossils from Oriskany (sledgehammers useful!). Return via Rte. 326 to Rte. 90. North on Rte. 90 via Cayuga to junction with Rtes. 5 and 20. West across Montezuma Swamp and Seneca River (State Barge Canal and Cayuga outlet) to junction with Rte. 89. South on Rte. 89 to

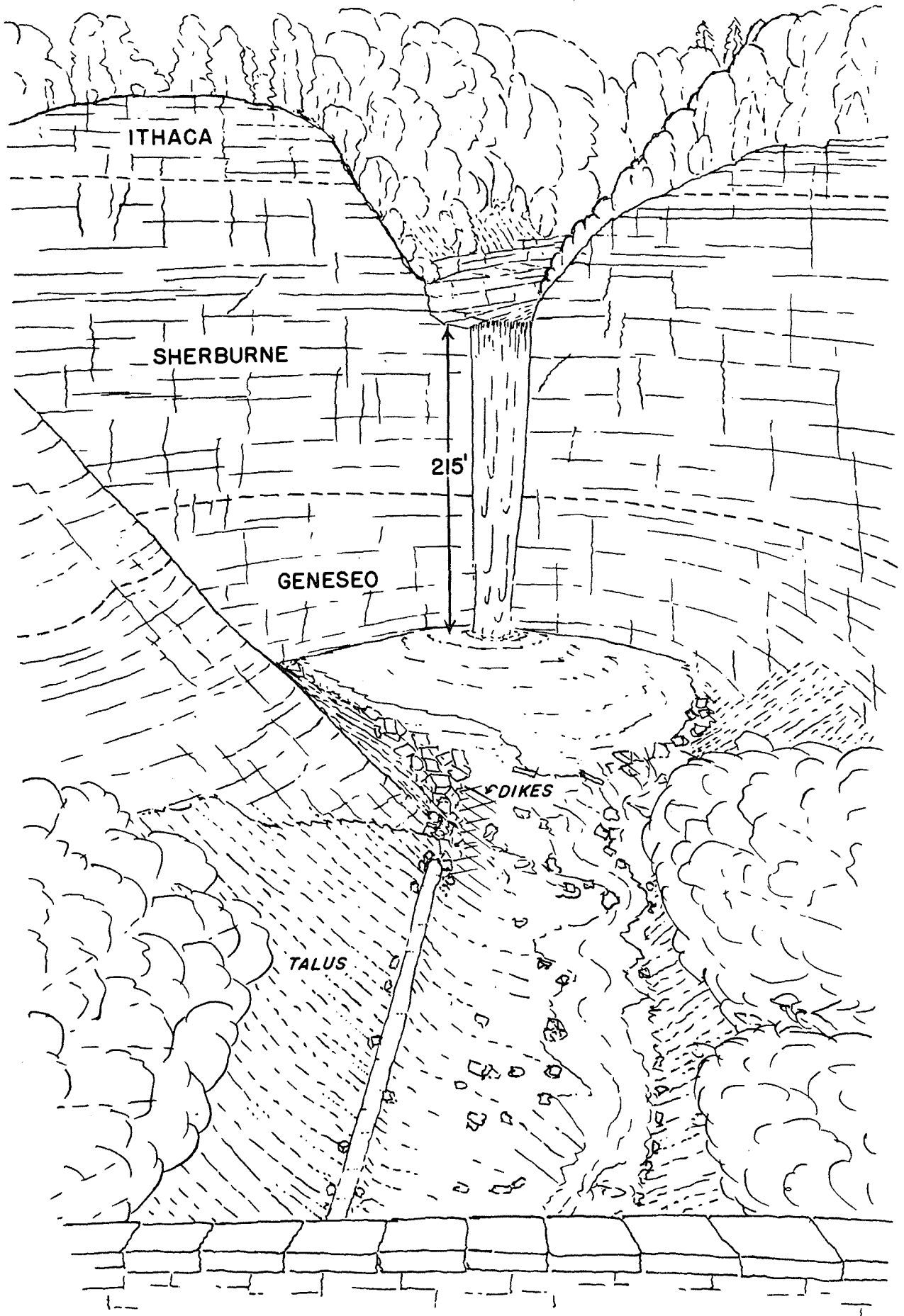
Stop 5. Cayuga Lake State Park. LUNCH (1 hour). Continue south on Rte. 89 to Canoga. West to Seybolt Road. South then west on Yellow Tavern Road to quarry,

Stop 4. Old Wolf Quarry (Warren Bros. Road Co.). Upper Onondaga limestone (Seneca member). Tioga metabentonite. Continue west on Yellow Tavern Road (County Rd. 121) to junction with Rte. 414. South on Rte. 414 to Fayette. West on Poorman Road 0.25 mile to

Stop 3. Fayette Town Quarry. Upper Skaneateles (Levanna) shale in lower part of quarry; lower part of Centerfield member in upper part. Fossils from both members; septarian concretions. Back to Fayette. South on Rte. 414 to junction with Rte. 96 at Romulus Center. South on Rte. 96 to Ovid, then east to Town Line Road, and continuing east 2 miles to Rte. 89. South on Rte. 89 to Lively Run and

Stop 2. Hubbard Quarry. Contact of Genesee and Sherburne formations, Middle-Upper Devonian boundary. Fossils. Septarian concretions. Continue south on Rte. 89 to Taughannock State Park, crossing bridge over Taughannock Creek (view to right of lower falls over resistant Tully limestone), turning around in parking space and back across creek and up road north side of gorge leading west to

Stop 1. Main Falls Lookout. Exposure of Genesee, Sherburne, and Ithaca formations in gorge walls. Continue up hill, under railroad bridge and west along Taughannock Creek (exposures of middle Ithaca formation) to junction with Rte. 96. South on Rte. 96 toward Ithaca. Views of Cayuga Lake to left. Note southerly dip of rocks exposed along east shore of lake; prominent datum plane is the Tully limestone. West across Ithaca and up hill to Cornell Campus.



TAUGHANNOCK FALLS

DESCRIPTION OF STOPS, TRIP C

Stop 1. Taughannock Falls, Taughannock State Park, 2.5 miles southeast of Trumansburg, Tompkins County.

(See sketch on opposite page.)

The main falls is at the head of a deep post-glacial gorge one mile long, with walls from 200 to nearly 400 feet high. The falls is determined partly by the superior resistance of the Sherburne-Ithaca sandstones and shales with respect to the weaker underlying Genesee black shale, and partly by the jointing. The upper 90 feet of the Genesee is exposed in the gorge walls from the level of the plunge pool to a point, marked by change in lithology and color, about halfway up the falls. The full thickness of the Sherburne (about 150 feet) is exposed above the Genesee, and about 50 feet of the overlying Ithaca caps the top of the wall on either side of the falls. The contact of the Sherburne and Ithaca is marked by the Warrenella laevis zone rather than any significant lithologic change.

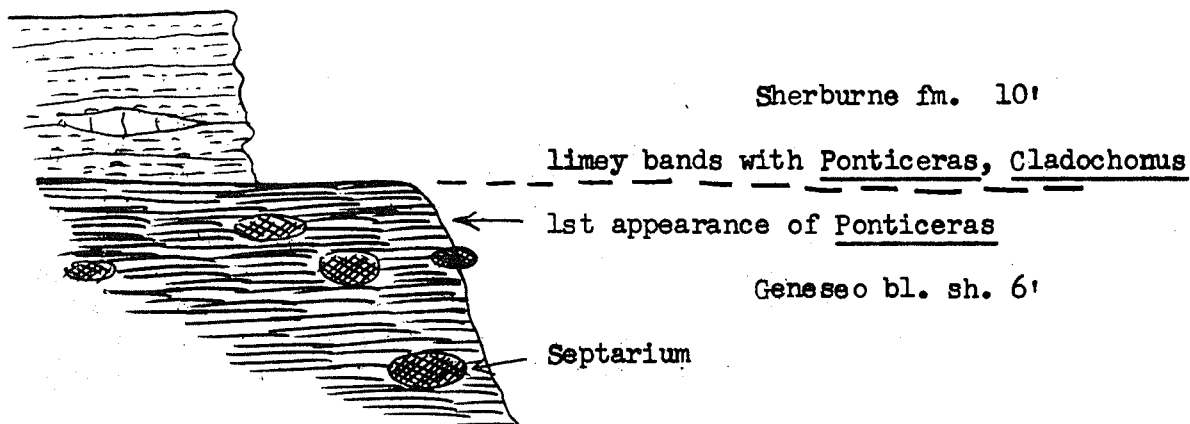
To the left of the base of the falls are several very thin (0.2 to 1 inch) altered alnoite dikes in the N-S joint planes.

At the mouth of the gorge on the lake is the lower falls, 15 feet high, over the resistant Tully limestone (15 feet thick) between the weak basal Genesee above and the weak shales of the upper Moscow formation below.

Stop 2. Hubbard Quarry, on Rte. 89 at Lively Run, 1.5 miles northeast of Interlaken, Seneca County.

This is one of the few places in this region where the contact of the Genesee black shale and the Sherburne formation--and the boundary between the Middle and Late Devonian--can be studied at close range.

Section in the Hubbard Quarry:



In the upper few feet of the Genesee, typical fossils of the black shale phase occur:

Barroisella spatulata
Orbiculoidea lodensis
Schizobolus truncatus
Leiorhynchus quadricostatus

Pterochaenia fragilis
Ponticeras perlatum
Tornoceras peracutum
 Fish and plant fragments

P. perlatum and T. peracutum are especially important, for they first appear at this horizon and extend upward through the Sherburne into the lower part of the Ithaca formation. Ponticeras is characteristic of the lower part of the Manticoceras Zone which marks the base of the Upper Devonian throughout the world.

The septarian concretions in the upper Genesee are almost wholly unfossiliferous but do contain an interesting variety of minerals; barite, calcite, ankerite, quartz, marcasite, sphalerite, and galena, in order of decreasing abundance. They have not been studied since Martens' brief note in 1925.

In the lower Sherburne the following fossils occur:

Cladochonus sp.
Leiorhynchus quadricostatus
Loxonema noe
Palaeotrochus praecursor

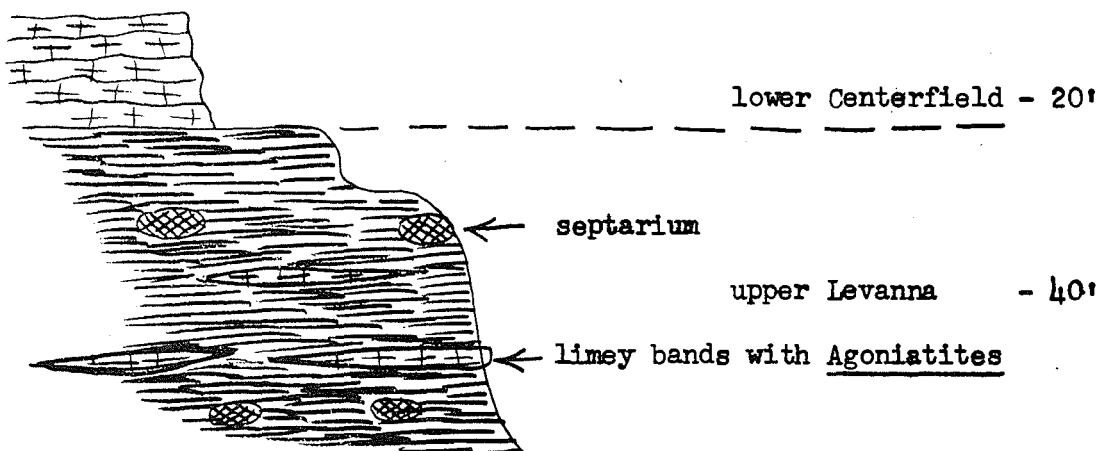
Panenka sp.
breviconic nautiloids
Ponticeras perlatum

This fauna of mixed benthonic and pelagic types is similar to the "Naples fauna" of the West River shales farther to the west. The basal zone, exposed in the quarry, has been correlated with the Gemundewa limestone to the west but is probably older, and the lower part of the Sherburne is equivalent to the upper part of the Genesee to the west.

Stop 3. Fayette Town Quarry, 0.25 mile west of Fayette, Seneca County.

This quarry, operated by the town for road material, exposes the upper part of the Levanna member of the Skaneateles formation and the lower 20 feet of the overlying Centerfield member. It is a good collecting site for the dark shale Leiorhynchus fauna of the Levanna and the more normal bottom Tropidoleptus fauna of the Centerfield.

Section in Fayette Town Quarry:



The Levanna is a dark, almost black shale with a typical dark shale fauna of mostly pelagic forms:

Leiorhynchus multicostus
Ambocoelia umbonata
Strophalosia truncata
Chonetes scitula
Orbiculoidea media
Nuculites
Styliolina fissurella
Tornoceras uniangulare
Lyrloceras

Palaeoneilo
Buchiola halli
Panenka
Pterochaenia fragilis
Bucanopsis leda
Euryzone rugulata
Gelsonoceroides
Michelinoceras
Spyroceras

Terrestrial plants from the lands to the east drifted into this area and their carbonized remains are not uncommon; Drepanophycus (lycopsid), Hostimella, Loganiella (psilopsids), and macerated pieces of the seed-fern Eospermatopteris. Fish remains, especially fragments of the armor plate of Dinichthys halmodeus, have been found.

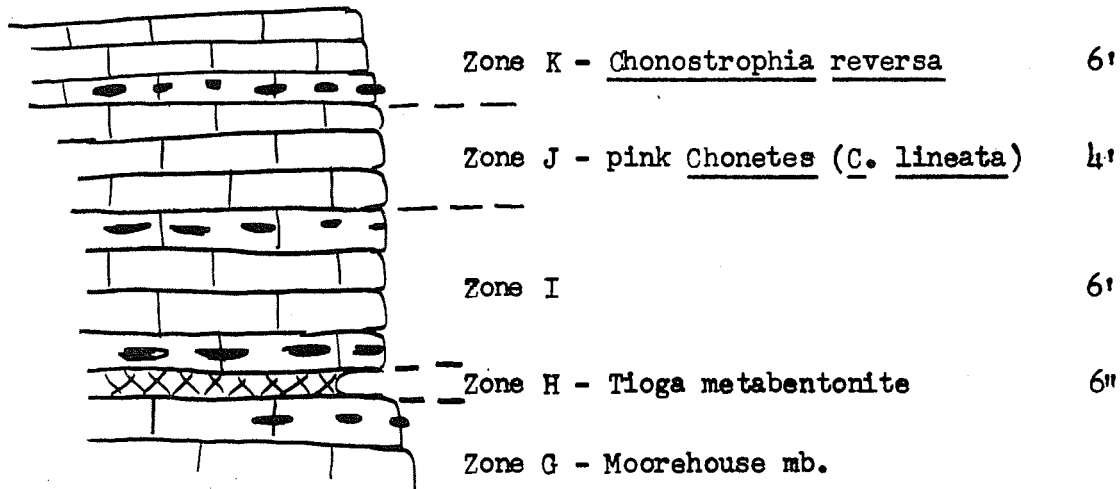
In the lighter-colored, slightly calcareous, worm-riddled bands near the top of the Levanna, a more normal benthonic fauna occurs with Phacops rana, Mucrospirifer, Brachyspirifer, Chonetes coronata. Large specimens of Agoniatites vanuxemi have recently been found in these layers.

The lighter-colored, slightly calcareous, drab-weathering Centerfield in the upper part of the quarry represents the lower part of the member, and is here rich in pelecypods such as Aviculopecten princeps, Actinopteria decussata, Modiomorpha mytiloides, and Leiopteria; and well-preserved brachiopods: Meristella barrisi, Tropidoleptus carinatus, Spinocyrtia granulosa, Fimbrispirifer venustus, and Brachyspirifer audaculus.

Stop 4. Old Wolf Quarry, 1.75 miles west of Canoga, Seneca County.

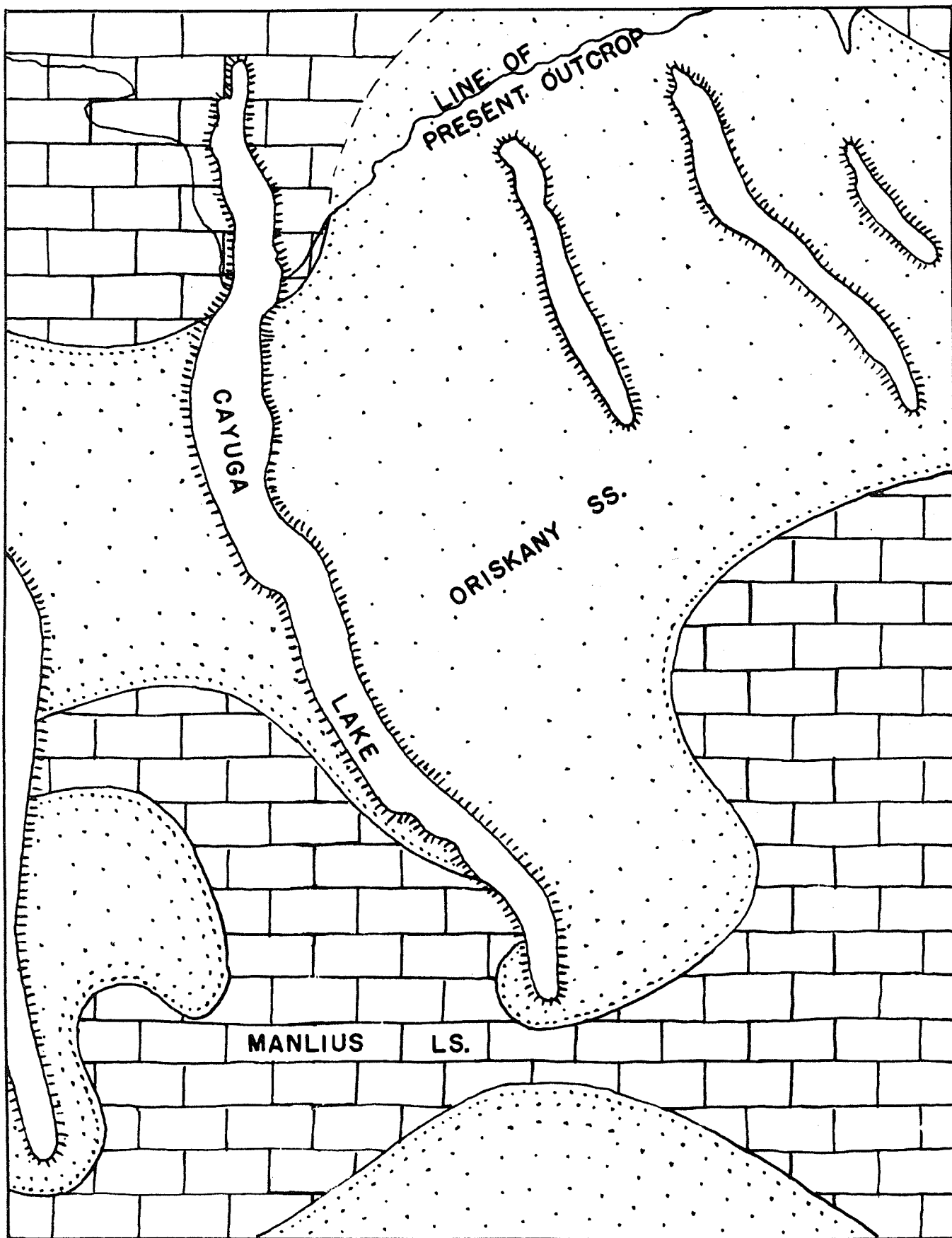
At this locality most of the upper member of the Onondaga, the Seneca, is exposed. The quarry has been worked off and on for at least a century, and recently has been re-opened by Warren Bros. Road Co. to provide crushed stone for bituminous paving.

Section in the Wolf Quarry:



The Tioga metabentonite, a pale greenish-gray clayey ash layer widespread in New York and Pennsylvania, lies about a foot below the floor of the quarry, about 14 feet below the top of the Onondaga formation. Eastward from here it is found progressively nearer the top. At Cherry Valley it is 6 feet below the top, and still farther east both it and the overlying Seneca member must pass laterally into the overlying Marcellus, indicating the time-transgressing nature of the Onondaga limestone--older to the east, younger to the west.

Stop 5. Cayuga Lake State Park. Lunch (1 hour).

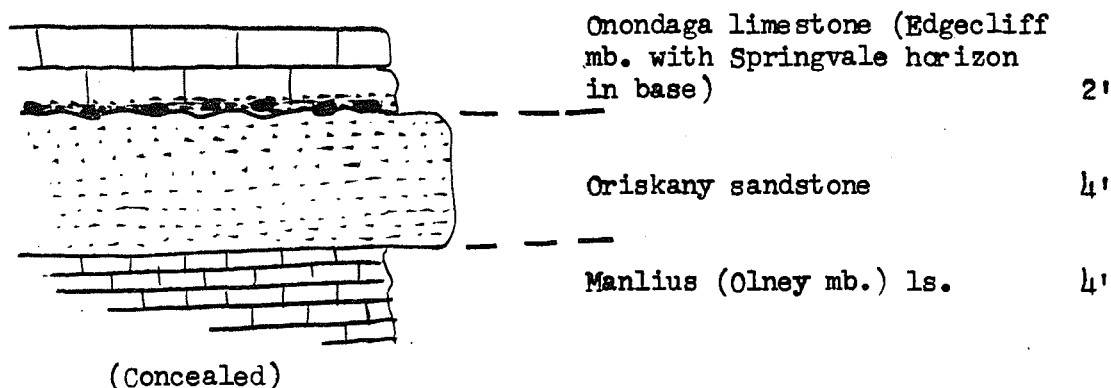


PRE-ONONDAGA PALEOGEOLOGY, CAYUGA LAKE BASIN

Stop 6. Yawgers Woods, 2 miles northeast of Union Springs, Cayuga County

Here the resistant Oriskany sandstone, a single bed 4 feet thick, outcrops in the woods a half mile west of the road, where it forms a low escarpment facing west. A few feet of Manlius (Olney mb.) limestone can be seen below it and one or two feet of the basal Onondaga (Springvale and Edgecliff mbs.) limestone rest on top.

Section at Yawgers Woods:



(In a creek less than 1000 yards to the south the Oriskany is absent and the Onondaga lies directly and disconformably on the Manlius. The Oriskany is absent from the opposite side of the lake westward to Buffalo. The sandy Springvale horizon in the base of the Onondaga has often been mistaken for the Oriskany in the areas where the latter actually is lacking. For the distribution of the Oriskany in the Cayuga Lake Region see the map on the opposite page.)

This is one of the oldest-known and most famous of American Devonian fossil localities. It was visited as early as 1810 by De Witt Clinton, later governor of the state:

"The higher stratum is composed of limestone /Onondaga/, and the next adjoining one of sandstone /Oriskany/ embedded with marine substances. There is but one stratum of sandstone, of the thickness of two or three feet, and below and beneath as well as above it there is limestone /Lower ls. = Manlius/. The sandstone contains several marine shells, which appear to be strange, and I should therefore pronounce them marine. There are littoral ones also, such as scallops /probably Costispirifer arenosus/ and in one instance a periwinkle /Platyceras?/ was found and sent to Peale's Museum in Philadelphia. One strange substance is larger than a scallop, and one is like a horse shoe in miniature /Hipparionyx proximus/.... This collection of sandstone demonstrates the existence of the ocean here."

A few years later (1815), Clinton remarked of these fossils: "These petrifications are worthy of a more minute examination. I have no doubt but that a very interesting set of shells might be made from this immense stratum of sandstone."

In 1819 David Thomas of Aurora noted that the fossils in the sandstone were mostly in the bottom of the bed, due to the "shells sinking more speedily than the sand" in the Flood, i.e., diatactic settling of the sedimentologists!

Benjamin Silliman sent some fossils from Yawgers Woods to Alexandre Brongniart in Paris in 1820. Brongniart was unable to name them; "... the sandstones of Cayuga, containing terebratulids which I shall perhaps be able, at some future time, to give you the exact name." By 1829, however, Brongniart was able to correlate, more or less correctly, "le grès blanc de Cayuga" with sandstones of Devonian age in Europe, but it was many years before Conrad, Hall, and Vanuxem figured and described the fossils of the Oriskany.

Fossils are scarce in the Manlius at this locality. The fauna is small, consisting of benthonic forms indicative of hypersaline conditions;

Howellella vanuxemi

Schuchertella interstriata

Brachyprion varistriata

Tentaculites

Leperditia alta

The fauna of the Oriskany is characterized especially by large brachiopods in enormous numbers, with occasional pelecypods and gastropods but few other forms;

Costispirifer arenosus

Rensselaeria ovoides

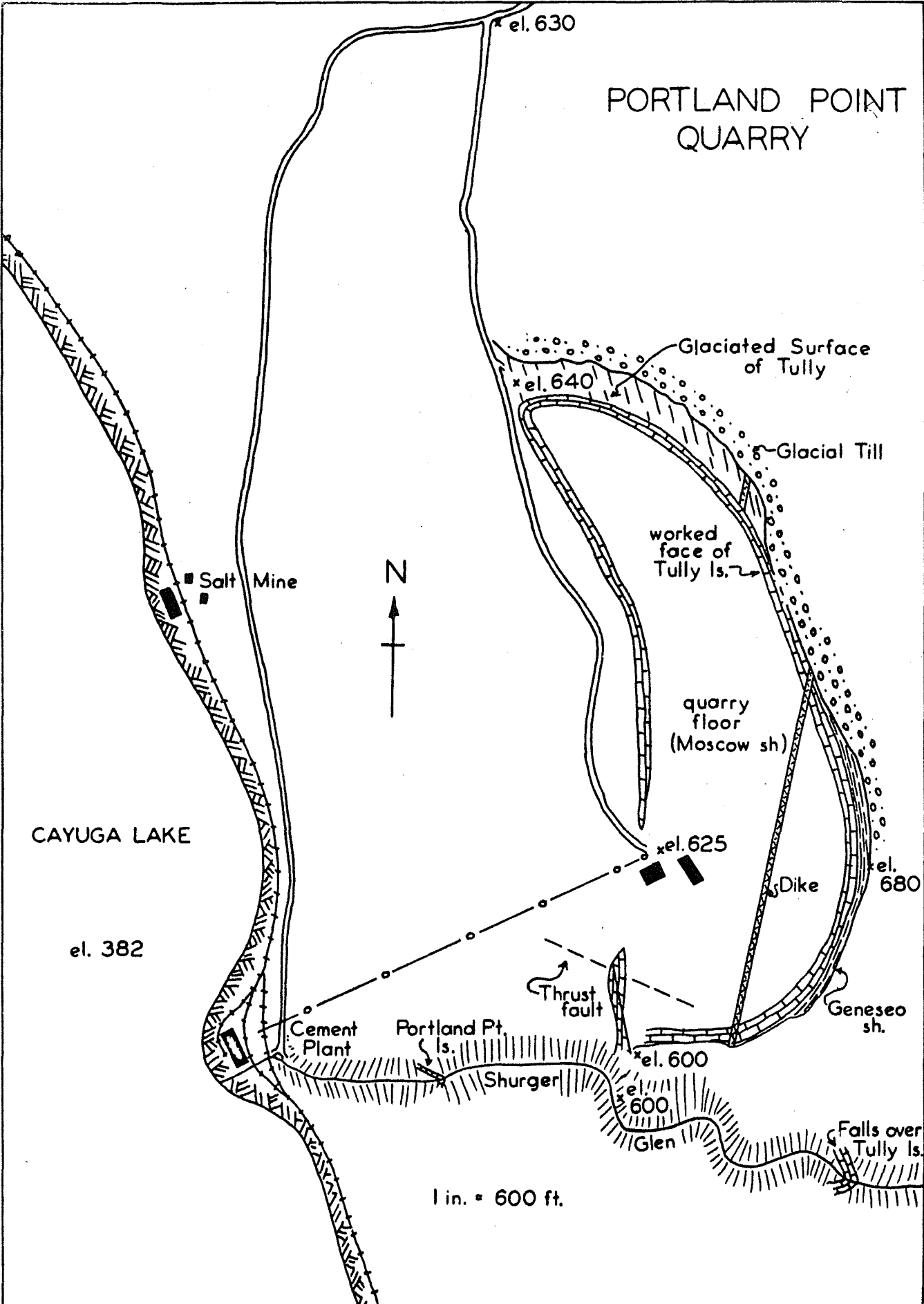
Acrospirifer purchisoni

Hipparionyx proximus

Costellirostra peculiaris

Only the lowest one or two feet of the Onondaga limestone cap the Oriskany at Yawgers Woods, representing the basal Springvale sand horizon (Zone A of Oliver, 1954), and the lowest beds of the Edgecliff member (Zone C of Oliver). Collecting is poor, but some loose blocks of the Springvale in the field at the east edge of the woods contain corals and the black, phosphatic sandy nodules characteristic of the Springvale. Purple fluorite is sometimes found in intradissepimental cavities in the corals. The Springvale represents weathered Oriskany reworked by the westwardly-transgressing Onondaga sea.

PORTLAND POINT QUARRY

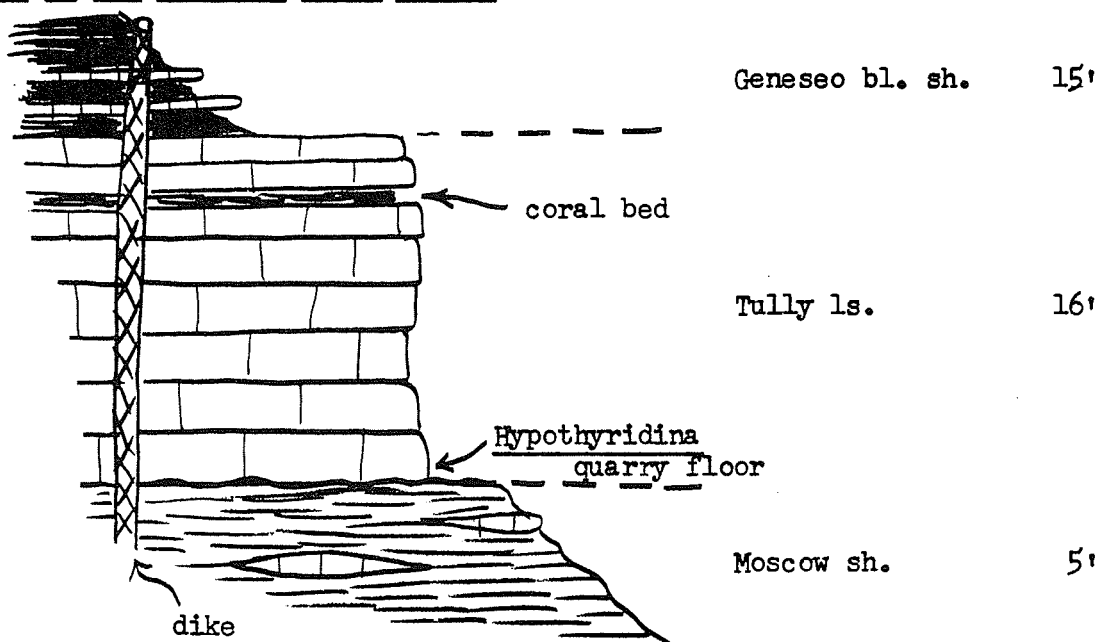


Stop 7. Portland Point Quarry, 1 mile southwest of South Lansing,
Tompkins County.

This quarry, from which the Tully limestone was formerly taken for cement manufacture, and now worked for riprap and road stone, is one of the most fossiliferous localities in the Cayuga Lake Basin. Over 100 species of corals, bryozoa, crinoids, brachiopods, pelecypods, gastropods, cephalopods, and trilobites, have been collected from the top few feet of the Moscow shale exposed in the floor of the quarry.

The quarry is situated on the crest of a low anticlinal axis. At the south end is a low-angle thrust fault overthrust to the northwest. On the east side of the quarry is a serpentinized alnoite dike about a foot thick following one of the N-S joints. Glacial striae are exposed on the surface of the Tully limestone at the north end.

Section in the Portland Point Quarry:



The black, bituminous Geneseo shale is sparsely fossiliferous, but contains a mixture of pelagic marine fossils (Orbiculoidea, Styliolina fissurella, linguloids, Paracardium, Leiopteria, Tornoceras uniangulare), freshwater fish (Dinichthys, crossopterygian scales), and land plants (Aneurophyton).

The Tully limestone is fossiliferous, but fossils are hard to extract. The guide fossil Hypothyridina venustula is found in clusters in the lower part of the basal bed. The thin dark shaly bed, packed with corals, in the upper part of the Tully, is a widespread datum plane from Skaneateles Lake across the Cayuga Lake Basin nearly to the western limits of the Tully east of Canandaigua Lake. The corals of this zone-- Heliophyllum, Heterophrentis, Siphonophrentis, Cystiphyllodes, Favosites, and Alveolites, are not found in the Tully outside of this bed, and represent a recurrence of Hamilton forms.

The upper 5 feet or so of the Moscow formation (Windom member) exposed in the quarry floor, is very fossiliferous. The fauna is the typical normal shale Tropidoleptus fauna. Especially abundant or characteristic are:

Corals:

Amplexiphyllum hamiltoniae
Bethanyphyllum robustum
Cystiphyllodes americanum
Eridophyllum archiaci
Favosites hamiltoniae
 " turbirata
 " arbuscula

Heliophyllum halli
Heterophrentis spp.
Stereolasma recta
Stewartophyllum intermittens
Trachypora vermiculosa
 (= T. romingeri, T. limbata)

Bryozoa:

Fenestrellina spp.
Fistulipora fruticosa
 " furcata
Ptilopora striata

Polypora multiplex
Sulcoretopora incisurata
Taeniopora exigua

Brachiopods:

Athyris spiriferoides
Atrypa "reticularis"
Brachyspirifer audaculus
Camarotoechia sappho
Chonetes coronatus
Cryptonella planirostra
Cyrtina hamiltonensis
Douvillina inaequistriata
Elytha fimbriata

Megastrophia concava
Macrospirifer mucronatus
Pholidostrophia naerea
Protoleptostrophia perplana
Rhipidomella vanuxemi
Spinocyrtia granulosa
 " marcyi
Stropheodonta demissa
Tropidoleptus carinatus

Gastropods:

Naticonema lineata

Platyceras erectum

Pelecypods:

Actinopteria boydii
 " decussata^o
Aviculopecten princeps
Cypricardella bellistriata
Grammysia arcuata
Leiopteria greeni

Lyriopecten interradiata
Modiomorpha mytiloides
Goniophora hamiltoniae
Palaeoneilo muta
Plethomytilus oviforme

Cephalopods:

Michelinoceras sp.
Nephriticerina juvenis

Spyroceras sp.

Trilobites:

Dechenella rowi
Dipleura dekayi

Greenops boothi
Phacops rana

