

FIELD TRIP NO. 3A — Hamilton Stratigraphy and Fossil Collecting

Exposures of the Ludlowville formation will be visited in an area south of Batavia. The Centerfield member here is prolifically fossiliferous and the relationships of the other Ludlowville members (except the Deep Run) are clearly shown across the Clarendon-Linden monocline.

Miles

- 0.0 Zero mileage, River Blvd. entrance to main quadrangle of U of R, River Campus, as for previous trips.
- 0.25 Elmwood Ave. (N.Y. 47). Turn right over Genesee River bridge.
- 0.5 N.Y. 383 (Plymouth Ave.) joins from right. Cross railroad tracks.
- 0.7 Follow N.Y. 383 to left onto Scottsville Rd.
- 1.1 Erie Canal
- 1.8 Rochester-Monroe County Airport to right.
- 3.0 N.Y. 252 joins from right. Bear left.
- 3.1 Pass over railroad.
- 3.8 New York Central Railroad branch line crossing and bridge.
- 4.2 N.Y. 252 leaves to left over steel truss bridge.
- 6.3 Road swings away from Genesee River. Ascends Dumpling Hill, a drumlin whose northeast end is truncated by the Genesee.
- 8.8 Pass under New York State Thruway.
- 9.2 Pass over railroad.
- 10.1 Turn right (W) on North Rd. at beginning of settlement (Scottsville). Now over Upper Silurian; no exposures.
- 10.7 Railroad crossing.
- 11.4 Scottsville-Chili Rd. Keep straight. Several gravel pits in glacial material to left after crossing.
- 14.0 Wheatland Center Rd. Turn left (S).
- 14.5 Stop sign. N.Y. 383. Turn right (W). Wooded drumlin at left after making turn. Behind (S of) drumlin is shallow gypsum mine in Upper Silurian. Plant visible at 15.3 miles.
- 16.9 Turn left (S) at triangular junction. N.Y. 36 joins from right.
- 17.1 Oatka Creek bridge. Creek here runs west-to-east along south edge of out-crop belt of soft Upper Silurian shales. Rise of ground just south of creek in Onondaga escarpment, here supported by waterlimes above Salina shales and by lower part of Onondaga limestone.

Miles

- 17.4 Caution blinker at crossing in village of Mumford.
- 17.7 Pass over railroad. County line. Enter village of Caledonia.
- 18.5 Pass under Lehigh Valley Railroad.
- 18.8 Stop sign. Main St. (N.Y. 5). Turn right (W).
- 19.3 N.Y. 36 leaves to left. Keep straight on N.Y. 5.
- 21.0 Railroad crossing.
- 24.4 Quarry and crushing plant of General Crushed Stone Company to right. Operating in Onondaga limestone.
- 25.2 Enter Village of LeRoy, birthplace of Jell-O!
- 26.0 Bridge over Oatka Creek. Low dam retains pond to left. To right, just north of bridge, is low falls over Stafford limestone member of Marcellus formation, Hamilton group. Banks below buildings on east (right) side of creek below falls used to expose type section, Oatka Creek black shale member of Marcellus (typical Leiorhynchus facies: paper-like black shales with Leiorhynchus and Orbiculoidea). Bank is now parked and exposures are poor.
- 26.5 Turn obliquely left (SW) on Gilbert St. (first street to left over brow of hill), marked with sign to Lapp Insulator Company plant.
- 27.3 Lapp Insulator Company plant.
- 27.5 Pass over Pennsylvania Railroad branch line. Dangerous bridge.
- 28.4 Cross Cole Road.
- 28.7 Road fork. Bear left.
- 29.7 Outcrops in stream bank to left (SE), adjacent to small bridge on side road, are Levanna shale member of Skaneateles formation.
- 30.3 Cross Roanoke Rd.
- 31.6 Cross Transit Rd. Keep on pavement.
- 32.4 Crossroad. Keep straight.
- 33.1 Stop sign. N.Y. 63. Turn right (NW). This is village of East Bethany.
- 33.3 Turn obliquely left (W) on dirt road at edge of settled area.
- 34.9 Cross Center Rd. (paved). Keep straight.
- 36.4 Road end. Turn left on Francis Rd.
- 37.0 Overpass over Delaware, Lackawanna and Western Railroad. Park before reaching overpass.

STOP 1 --- Exposures of Hamilton strata along Delaware, Lackawanna and Western Railroad and vicinity, 3 miles west of East Bethany.

This locality is world famous as a collecting ground for Middle Devonian fossils of the typical Hamilton assemblage (see pp. 37-38). The locality is also interesting for structural features, unusual in western New York, which have led to the exposure of over 100 feet of strata in a relatively short, nearly horizontal exposure. The section to be visited extends along railroad cut and hillside exposures for about half a mile east of the bridge carrying Francis Road over the railroad tracks. In this distance the section spans, nearly completely, the Clarendon-Linden monocline, a westward-sloping flexure which displaces the exposed strata about 100 feet. Observable dips at the surface reach a maximum of about 5 degrees. Water and gas well records suggest a greater displacement at depth, and it may be that the monocline evidenced at the surface is but a subdued expression of a major fault at depth.

The stratigraphic section here is as follows (see pp. 30-34):

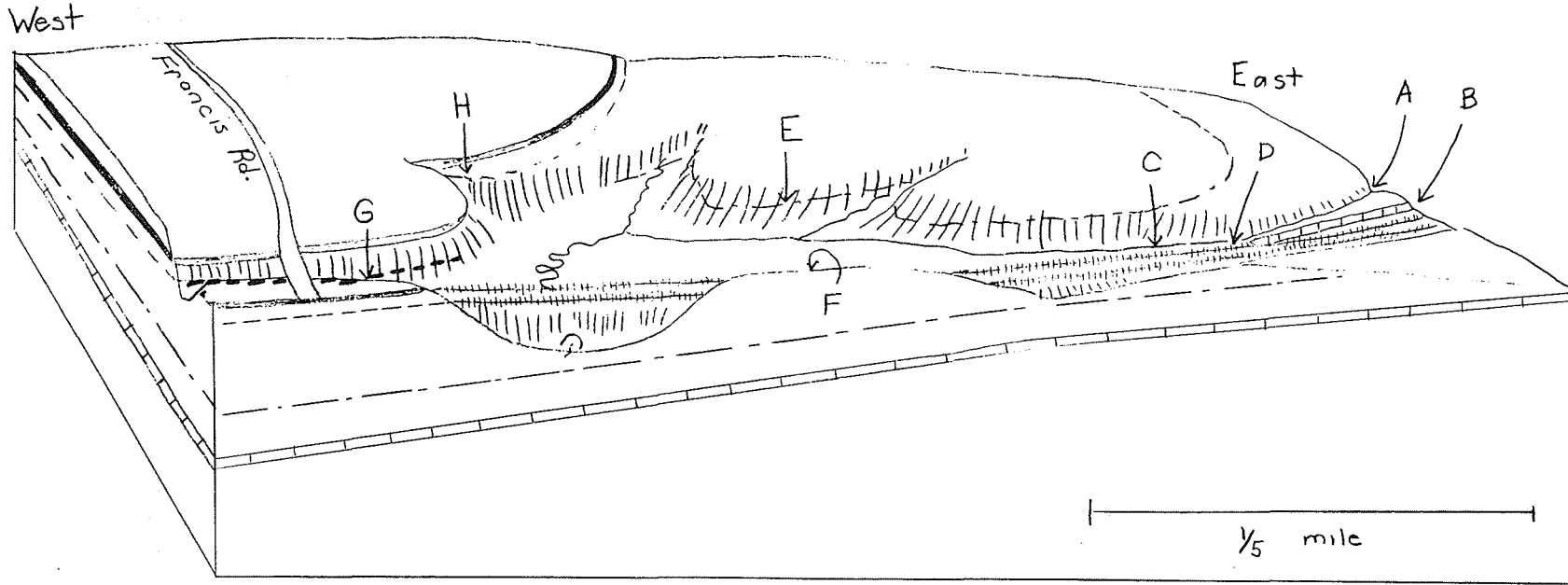
	<u>Thickness</u>
Ludlowville formation	
Tichenor limestone	about 1 foot
Wanakah shale	15 feet
Ledyard shale	88 feet
Centerfield shale	2 feet (+?)
Skaneateles formation	
Levanna shale	portion near top




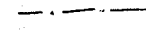
The accompanying map and perspective sketch indicate the field relations. The letters in the following discussion refer to these illustrations.

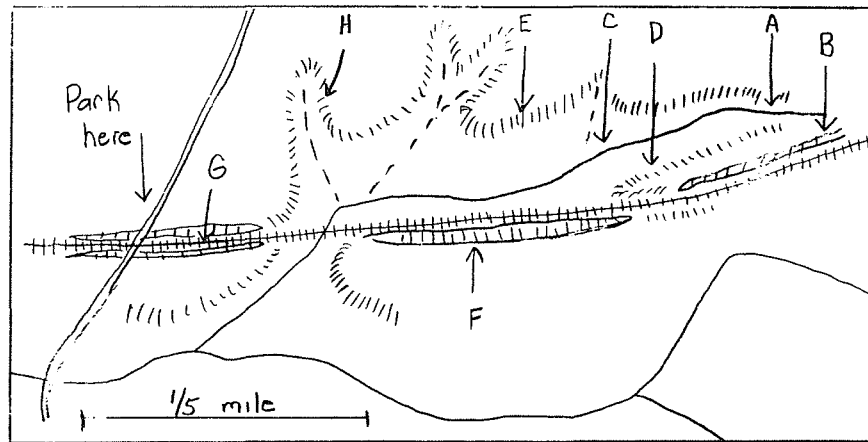
The Levanna shale (A) is in typical black shale, Leiorhynchus facies, exposed in the stream bank. The Levanna-Centerfield contact is covered and the actual thickness of the Centerfield cannot be determined. Unweathered blocks occur in place, with horizontal bedding at B, and from here eastward for more than a mile. Most of the material in this cut is weathered Centerfield residuum rich in fossils. At C fresh Centerfield strata occur in the stream bed about 30 feet lower than at B, and in between the two (D) the ground surface is composed almost exclusively of fossils weathered from the Centerfield and washed clean of matrix. Samples of the finer fraction of material here are rich in microfossils: ostracods, sponge spicules, Foraminifera, Bryozoa, crinoid and echinoid plates and spines, immature specimens of larger forms (and oddly shaped cinders!). The larger specimens are mostly corals, brachiopods, gastropods, and crinoids in great variety, and the trilobite Phacops rana.

Severe weathering of a portion of the Ledyard bearing fossils formerly replaced with marcasite has yielded an interesting assemblage of limonitized specimens at E. Most common are small gastropods and nautiloids, the goniatite Tornoceras, and nuculoid pelecypods.

Section along D.L. + W. RR 3 miles west of East Bethany



-  Tichenor
-  "Strophalosia" bed
-  Marcasite bed
-  Centerfield



Middle layers of the Ledyard, exposed in the railroad cut F, are poorly fossiliferous. Leiorhynchus and Chonetes occur in some of the laminated black shales in this cut. A rather high angle reverse fault (displacement a few feet, dip east) is visible here.

The upper portion of the Ledyard, and the Wanakah, in cuts on both sides of the railroad at G, typify the calcareous shale facies of the Hamilton. Occurring here are Rhipidomella, Athyris, Atrypa, Mucrospirifer, Ambocoelia, Stereolasma, Pleurodictyum, Styliolina. Microfossils are abundant, also, in washed residues of thoroughly weathered material, but variety is less than in samples from the Centerfield. Some of the more coherent layers contain orthoconic nautiloids, gastropods and pelecypods, along with the trilobites Greenops and Phacops.

The resistant lime-rich layer which descends to track level just west of the bridge abutment is the "Strophalosia" bed, replete with the productid brachiopod Productella truncata (formerly Strophalosia). This has been used as the marker horizon separating the Ledyard below from the Wanakah above. This practice is of questionable validity (although followed here for convenience), for the bed does not occur in a consistent position with respect to the top and bottom of the Ledyard-Wanakah shale interval in different exposed sections (see p. 34). At this locality it is unusually high, thus making the thickness of the Wanakah unusually small and that of the Ledyard correspondingly great. It is probably better to consider the Ledyard-Wanakah a single unit with several contrasting facies between the Centerfield and Tichenor limestones.

An exposure near the top of the Wanakah, at H, is rich in Chonetes, Mucrospirifer and Pleurodictyum. A little higher on the slope in the same area, tetracorals probably weathered from the Tichenor can be found.