

TRIP E: STRATIGRAPHY OF THE HAMILTON GROUP IN THE SYRACUSE AREA

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<u>Total miles</u>	<u>Miles</u>	<u>Route description</u>
0.0	0.0	Leave Syracuse University's Field House at the Colvin Street exit. Turn left (E) on Colvin Street.
0.9	0.9	Turn right (S) on Nottingham Road.
1.6	0.7	Distant view of hills in the Marcellus and Skaneateles formations ahead.
2.2	0.6	Junction of Peck Hill Road with Nottingham Road. Drumlin on the left and a scarp in the Manlius and Rondout formations on the right.
2.6	0.4	Entering Rock Cut Channel. This large cross channel was cut during the recession of the glacial ice by the drainage from a glacial lake in Onondaga Valley to the west.
2.9	0.3	Junction of Nottingham Rd. with Jamesville Toll Rd. Turn left (E) on Jamesville Toll Road.
3.1	0.2	Road cut on right in the Cobleskill and Rondout dolomite formations. The Cobleskill is thicker bedded and is composed of purer dolomite than the Rondout.
3.6	0.5	Bridge over the D. L. & W. Rwy.
3.7	0.1	Junction of Jamesville Toll Road and Jamesville Road. The stone crusher building of the Solvay Process Division of the Allied Chemical Corporation can be seen on the hillside to the left. Continue south on Jamesville Road into Jamesville.
4.6	0.9	Junction of Jamesville Road and Seneca Turnpike (Route 173) in Jamesville. Turn left (E) on route 173.
4.9	0.3	Exposure of the Edgecliff member of the Onondaga limestone on the left near top of grade.
6.0	1.1	Junction of Gates Road with Route 173.
6.4	0.4	Small exposure of the Cherry Valley limestone member of the Marcellus formation in road cut on left near top of rise.
6.6	0.2	View of the Solvay Process Division Quarry on left.
7.4	0.8	Intersection with Sweet Road. A monocline on a thrust fault in the Onondaga limestone is exposed on the south side of Route 173 in the bed of a small stream a short distance west of this intersection.

TRIP E (Continued)

<u>Total miles</u>	<u>Miles</u>	<u>Route description</u>
7.7	0.3	<u>STOP 1. Monocline in the Onondaga limestone and exposures of the Union Springs shale, Cherry Valley limestone, and Chittenango shale members of the Marcellus formation.</u>

Walk south up the stream for about 500 feet to where the top beds of the Onondaga limestone exposed in the stream bed dip northward due to the presence of a monocline that strikes about N 70 W. This monocline probably grades into a thrust fault in the Solvay Process Division's quarry. Solution-widened tension joints are well-developed in the limestone on the monocline.

Continue up the stream to where it forks. About 15 feet of Union Springs shale and about 3 feet of Cherry Valley limestone are exposed at a small waterfall on the left branch not far from the fork. The Union Springs consists of black shale with numerous thin beds of black limestone. Styliolina fissurella, a small mollusc shaped like a pencil point, is common in the shale of the upper part of the member. The Cherry Valley limestone forms the lip of the falls. This member is noted for cephalopods and one or more may be seen in the stream bed at the top of the falls. The basal few feet of Chittenango shale, exposed in the stream bank above the falls, contains one or more thin beds of black limestone. Numerous styliolina fissurella can be seen on the bedding surfaces of some of the shale.

Return to Route 173 and go back west to Gates Road.

9.2	1.5	View of the Solvay Process Division's quarry ahead on right.
9.4	0.2	Turn left (S) on Gates Road.
9.7	0.3	Turn left into shale pit.

STOP 2. Chittenango and Cardiff shales.

This shale is quarried by the Alpha Portland Cement Company for use in cement manufacture at its Jamesville plant. The upper bench is in the upper 40 to 50 feet of the Chittenango shale member of the Marcellus formation.

Although these shales are similar in appearance, they can be distinguished easily by their streaks. The Chittenango shale, because of its relatively high content of carbonaceous matter, streaks brown when scraped by a hard object such as a geologic hammer, whereas the Cardiff streaks light gray. Examination of drill core from several test holes has shown that the change in color of the streak takes place within a vertical interval of 3 feet. The contact is placed where, in going downward, the streak becomes distinctly brown. Located this way, the contact is near the top of the lower face, 5 to 6 feet above the upper layer of large septarian concretions.

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Many of the septarian concretions in the upper part of the Chittenango are several feet across. The Cardiff shale on the other hand has only a few concretions and these are seldom more than 6 inches in diameter. The cracks within the septarian concretions commonly contain calcite, ferroan dolomite, and white, platy barite. Small crystals of barite with some pyrite also coat joint surfaces in the shale in places.

Fossils are sparse or lacking in most of the Chittenango and Cardiff shales, but one or more zones near the top of the Chittenango contain numerous carbonized plant remains and a few fish scales, fish body plates, pyritized straight cephalopods, and small brachiopods. Because the shale tends to break down into small pieces after exposure for a few months, the success of fossil collecting depends on the recency of quarrying in the fossil zones.

- 9.8 0.1 Return to Gates Road and turn uphill (S).
- 12.1 2.3 Turn right on Sweet Road and continue south.
- 12.4 0.3 STOP 3. Road cuts and small quarry in the upper part of the Butternut member of the Skaneateles formation.

About 40 feet of the upper Butternut is exposed in the small quarry and road cuts nearby. Most of the exposure consists of shale with thin siltstone layers and silty shale that increase upward. The top $5\frac{1}{2}$ feet in the quarry is siltstone. This siltstone and the silty shale below contain some brachiopods particularly Leiorhynchus sp. The lowest beds exposed in the road cut are poorly fossiliferous shale that splits into thin flat pieces "paper shale", a characteristic of the shale of the middle and lower parts of this member.

Continue south on Sweet Road.

- 14.3 1.9 Turn left (E) on Pratts Falls Road.
- 14.8 0.5 Exposures of the Centerfield member of the Skaneateles formation in banks of gully beside road on left.
- 15.0 0.2 Turn left (S) on Hennaberry Road.
- 15.15 0.15 Small exposures of the Centerfield member in road cuts.
- 15.25 0.1 STOP 4. Siltstone platform of the Staghorn Point coral biostrome.

Stop opposite the yellow brick house. Walk about 100 feet up the hillside on the west side of the road to exposures of siltstone strata that form a bench on the hillside. This is the siltstone platform on which the Staghorn Point coral biostrome was formed. It is about 50 feet above the base of the Otisco member of the Ludlowville formation and is an important horizon marker in the Syracuse area. The exposed section here is as follows:

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<u>Total miles</u>	<u>Miles</u>	<u>Route description</u>
		Ludlowville formation Otisco member
		8" siltstone bed with numerous molds of corals in bottom 2 inches
		3'0" covered
		4'0" siltstone platform with several thin discontinuous fossil-rich layers. Base not exposed but total thickness of siltstone probably about 6 feet.
		Turn around and return to Pratts Falls Road.
15.5	0.25	Pratts Falls Road on right, continue on Hennaberry Road.
15.6	0.1	Turn left (E) on Pratts Falls Road and proceed to Pratts Falls Park.
16.1	0.5	Turn left into Pratts Falls Park.
		<u>STOP 5. Delphi Station and Pompey members of the Skaneateles formation.</u>
		Observe the upper beds of the Pompey member exposed near the top of the falls. Walk right on path along the edge of the gorge to where the falls can be observed.
		The top 60 feet of the falls is Cooper's (1930, <u>Am. J. Sci.</u> v. 19) type section of the Pompey member. The resistant siltstone beds that form the lip of the falls are his <u>Eunella-Nyassa</u> zone that marks the top of the Pompey, distinguished by the presence of <u>Eunella lincklaeni</u> , <u>Athyris cora</u> , and <u>Nyassa arguta</u> . The lower part of the falls exposes the upper part of the Delphi Station member. The Mottville limestone member which underlies the Delphi Station member is exposed a moderate distance downstream from the falls.
		Return to Pratts Falls Road.
16.9	0.8	Turn left (E) on Pratts Falls Road.
17.1	0.2	Small shale quarry in the Butternut member of the Skaneateles formation on the right side of the road.
17.8	0.7	Turn right (S) on Watervale Road and continue south to Route 20.
18.3	0.5	Turn left (E) on Route 20 and go through the village of Pompey Center.

TRIP E (Continued)

<u>Total Miles</u>	<u>Miles</u>	<u>Route description</u>
20.8	2.5	<p><u>STOP 6.</u> Road cut in the Pompey and Delphi Station members of the Skaneateles formation.</p> <p>This cut exposes about 115 feet of the Pompey and Delphi Station members. The 8 feet of siltstone at the top of the cut is Cooper's Eunella-Nyassa zone that marks the top of the Pompey, the same unit that forms the lip of Pratts Falls. This siltstone grades downward into gray shale.</p> <p>The contact between the Delphi Station and the Pompey members is not easily located and is one of the problems to be considered at this stop.</p> <p>Return to Pompey Center on Route 20 and continue west.</p>
25.9	5.1	Intersection of Route 91 with Route 20 at Pompey.
31.9	6.0	Intersection of Route 11 with Route 20 in the village of LaFayette.
32.3	0.4	Road cut on the left in the Butternut member of the Skaneateles formation on road connecting Routes 81 and 20.
38.2	5.9	Intersection of Route 80 and Route 20.
38.6	0.4	<p><u>STOP 7.</u> <u>Lower part of the Centerfield calcareous siltstone member of the Skaneateles formation.</u></p> <p>Walk a short distance north from Route 20 to the waterfalls on the lower part of the Centerfield. The deep ravine below the falls is in the Butternut shale member of the Skaneateles formation.</p> <p>Continue northwest on Route 20 to Hogsback Road.</p>
39.5	0.9	Turn right (N) on Hogsback Road about 300 feet and park.
		<p><u>STOP 8.</u> <u>Centerfield member.</u></p> <p>Walk southeast about 200 feet to the stream where the Centerfield member forms a waterfall. Most of the Centerfield is exposed here, and the upper part with calcareous concretions is accessible for close observation. The gradational nature of the bottom contact of the Centerfield with the Butternut member can be seen on the side of the falls. The total thickness of the Centerfield is not closely determined in this area, but may be about 30 feet.</p> <p>One of the noteworthy features here is the joint controlled cleft at the top of the falls through which the stream flows.</p>
39.6	0.1	Return to Route 20 and turn back left (E).

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<u>Total miles</u>	<u>Miles</u>	<u>Route description</u>
40.9	1.3	Turn right (S) onto Route 80 and proceed about 0.2 mile uphill.
41.1	0.2	<u>STOP 9. Joshua Coral Reef in the Otisco shale member of the Ludlowville formation.</u> This is the famous Lords Hill locality described by W. A. Oliver, (1951, Amer. Jour. Sci., p. 705-728). The coral bed is estimated to be as much as 50 feet thick in this area and to be about 90 feet above the bottom of the Otisco Member. The exposure was much better before the road ditches were coated with blacktop, but some of the corals can still be seen and collected. According to Oliver, the most common genera of rugose corals here, in order of abundance, are: <u>Cystiphyllodes</u> , <u>Siphonophrentis</u> , <u>Bethanyphyllum</u> , <u>Heliophyllum</u> , and <u>Heterophrentis</u> . In addition the colonial rugose form <u>Eridophyllum</u> and several species of Favosites are present. Continue uphill.
41.3	0.2	Small exposures of the Ivy Point siltstone member of the Ludlowville formation on both sides of the road. The Ivy Point forms benches in this area.
41.7	0.4	<u>STOP 10. Road cut in the Owasco member of the Ludlowville formation, and the Portland Point and Windom members of the Moscow formation.</u>

The section is as follows:

Moscow formation

1'6"?? Windom shale member (to top of exposure)
 9'1" Portland Point member
 7'6" shale and thin interbedded fossil-rich limestone layers
 1'7" impure limestone, fossiliferous

Ludlowville formation

2'3" Owasco siltstone member
 2'0" Spafford shale member (to base of exposure)

The Portland Point member, according to Cooper (1930), consists of 1 foot of crinoidal limestone overlain by 8½ feet of calcareous shale with interbedded thin layers of limestone. At this locality the basal limestone is a little thicker, and thin beds of fossiliferous limestone are present in the overlying shale for about 7½ feet above the limestone. Because of the indefiniteness of the position of the upper contact, the amount of Windom present in this exposure, if any, is uncertain.

Continue south (uphill) on Route 80 to Kingsley Road.

TRIP E (Continued)

<u>Total</u> <u>miles</u>	<u>Miles</u>	<u>Route description</u>
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42.7	1.0	Turn left (E) on Kingsley Road.
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43.8	1.15	<u>STOP 11. Tully limestone.</u>
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Small exposure of the upper part of the Tully limestone on the south side of the road opposite a red barn. Walk down the hill to the east a short distance and turn into the old quarry in the Tully limestone on the north side of the road. The top 5 feet of the quarry is the West Brook member below which is 10 feet of the Apulia member. The contact between them is placed at the bottom of the nodular limestone of the West Brook. The Tinkers Falls member is not exposed. Fielding (1956, MS thesis, Syracuse Univ.) estimates the total thickness of the Apulia member to be 18 feet and the West Brook member to be 9 feet in the South Onondaga quadrangle.

The Apulia member contains crinoid fragments, ostracods, and brachiopods particularly Hypothyridina venestula. The coral Lopholasma is characteristic of the West Brook member. In addition, Fielding (1956) reported finding Metriophyllum tullium, Elytha fimbriata, Phacops rana, Tornoceras uniangulare and crinoid fragments.

Continue east on Kingsley Road.

44.00	0.15	<u>STOP 12. Road cut in the upper part of the Windom member of the Moscow formation.</u>
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About 20 feet of the top part of the Windom shale member is exposed in the road cut on Kingsley Road. The shale becomes silty near the top of the exposure and is sufficiently resistant to have formed a bench about 500 feet wide. A few small calcareous concretions can be seen in this exposure and enough pyrite is present to cause considerable limonite staining. Brachiopods, pelecypods, and trilobites are present, but are not abundant.

End of trip.