SEVENTEENTH ANNUAL FIELD MEET

NEW YORK STATE GEOLOGICAL ASSOCIATION

Rochester, New York May 9 and 10, 1941

PRELIMINARY NOTICE

DATES: Friday and Saturday, May 9 and 10. The best dates available in the schedule of the University of Rochester and likely good weather for field trips.

FRIDAY, MAY 9. Assemble during morning, Dewey Building, River Campus. Special displays and the Museum. Lunch in the Museum. In the afternoon, the Genesee Gorge, Irondequoit Bay, et cetera. Dinner in evening in Todd Union. Only one speaker. Dancing.

SATURDAY, MAY 10. To the south - Mendon Ponds (kames, eskers, kettles), Jaycox (Hamilton fossils), High Banks (Genesee Group), Letchworth Park (Gardeau beds). Box lunches. Party disbands in afternoon.

Field Trip Leaders. All advanced students at Rochester are being trained to be Field Leaders. Each delegation will be provided with a Rochester Leader. When that group is ready they can move on to the next stop. No waiting for others, no traffic jams. Time spent at each stop will depend, within limits, upon wishes of members of the delegation.

Hotels. List of hotels, rates, et cetera, will be sent later.

Mimeographed Field Guides will be mailed early in April, giving details and references providing information which each institution can amplify for use of its own students.

J. Edward Hoffmeister, Secretary

FRIDAY, MAY 9, 1941

TIME	MILEAGE	
1:30	0.0	Start from Dewey Building, River Campus
		Left on River Boulevard
		Right across river on Elmwood Avenue bridge
	0.4	Right on Plymouth Avenue
	2.3	Right on Glasgow Street on entering Plymouth Park
	2.4	Left on Exchange Street
	3.2	Straight through Four Corners on to State Street
	4.0	Continue on Lake Avenue
	5.3	Right on Driving Park Avenue
	5.3+	Left into Maplewood Park
1:45	5.4	STOP 1. Maplewood Park. Park cars in parking area.
2:15		Leave Stop 1. Return to Driving Park Avenue
		Left across Driving Park Avenue bridge
	5.8	Left (north) on St. Paul St.
	6.2	Left (west) on Norton Street curving at once into Seneca Park Road.
		Right (north) to top of Brewers Dock Trail
2:20	6.4	STOP 2. Brewers Dock. Park on Seneca Park road. Walk down hill to river bank.
2:50		Leave Stop 2. Retrace to Norton Street.
		Cross St. Paul Street. Continue east on Norton Street.
3:00	10.1	STOP 3. Donsmore Crook.
		Leave Stop 3. Retrace route on Norton Street to Culver Road.
	10.5	Right (north) on Culver Road to Sea Breeze.
		Right through Sea Breeze to outlet.
3:40	14.5	STOP 4. Irondequoit Bay Outlet.
3:45		Leave Stop 4. Continue east on Sea Breeze-Nine Mile Point Road.
	15.6	Right (south) on Bay Road.
	16.1	Right on Dewitt Road
4:00	18.2	STOP 5. Inspiration Point.
4:20		Leave Inspiration Point.
	19.0	Right on Vogt Road
	19.3	Right (south) on Bay Road
4:25	20.3	STOP 6. Glen Edith. Park beside main road
		Walk down to rock outcrop
4:40		Leave Stop 6. Continue south on Bay Road to Empire Boulevard (Webster Road, Route U.S. 104)
		Right on Empire Boulevard through Float Bridge Dugway
	24.9	Left (south) at top of hill on Winton Road North
	26.3	Cross East Avenue and continue on Winton Road South
	26.5	Pass by Winton Road sand pits on right
	26.9	Right (west) on Highland Avenue
	27.6	Right up Cobbs Hill.
5:00	28.2	STOP 8. Cobbs Hill.
		Leave Stop 8. Retrace to Highland Avenue
		Right (west) on Highland Avenue
	28.7	Left (south) on Monroe Avenue
	29.5	Right on Winton Road for one short block
		Right (west) on Elmwood Avenue
	33.0	Right (north) on River Boulevard to
5:30	33.3	Dewey Building

NOTE: Those who care to visit Ward's Natural Science Establishment (STOP 7) should omit Cobbs Hill (Stop 8).

Leave Winton Road North at Main Street
Right (west) on Main Street.
Cross bridge over Railroad and at once turn
Left on Circle Street
Right (south) on Goodman Street to
Ward's Natural Science Establishment (between Birch Crescent and College Avenue)

To return to Dewey Building, River Campus
Continue south on Goodman Street
Right (west) on Elmwood Avenue
Right (north) on River Boulevard to Dewey Building

NEW YORK STATE GEOLOGICAL ASSOCIATION

FIELD TRIP

University of Rochester

Rochester, New York

* * * *

FIRST DAY

FRIDAY AFTERNOON, MAY 9, 1941

FRIDAY, MAY 9

STOP 1. - MAPLEWOOD PARK

This represents the post-glacial gorge of the Genesee River.

STRATIGRAPHIC SECTION OF THE GENESEE GORGE AT ROCHESTER

Beginning with the oldest, each formation exposed in the gorge will be briefly described.

QUEENSTON SHALE. Red shale with layers of massive sandstone. Total thickness about 1000 feet. The only known trace of past life is represented by peculiar markings known as Paleophycus tortuosum, which has been considered a worm burrow. This and the overlying formation show numerous green splotches, the origin of which is not known. The Queenston shale has been considered by some a delta deposit. Sil.or

GRIMSBY SANDSTONE. Also commonly referred to as the Medina sandstone. A hard, red, massive formation formerly much used for building stone. The only fossils in the formation in the vicinity of Rochester are the worm burrows, Arthrophycus alleghaniensis and Daedalus archimedes. These burrows, the presence of numerous well preserved ripple marks, and the cross bedded conditions of the formation point to deposition under beach conditions.

THOROLD SANDSTONE. Light gray, shaly, slightly friable sandstone. It is considered the basal formation of the Clinton Group and to have been formed by a reworking of the upper part of the Grimsby by an advancing sea. The only fossil found in the Rochester region is Arthrophycus alleghaniensis.

MAPLEWOOD SHALE. This is a platy green, sparingly fossiliferous formation which thins to the east and west of the city.

BREWER DOCK LIMESTONE AND SHALE. The characteristic fossil is a minute gastropod of the genus Clyclora. The brachiopod Hyattidinia congesta is also found in the formation.

FURNACEVILLE IRON ORE. This is one of the many lens-like, hematite-rich layers which characterize the Clinton Group. This bed thins to the east and is absent at Irondequoit Bay. The Furnaceville is calcareous and composed largely of fossil fragments coated with hematite. Bryozoans and crinoid sedments are the commonest forms.

REYNALES LIMESTONE. Gray, crystalline limestone The upper layers are made up almost entirely of the large brachiopod, Pentamerus oblongus.

LOWER SODUS SHALE. A purplish and green shale with thin layers of pearly limestone composed almost entirely of shells of Coelospira hemispherica. This bed represents the basal part only of the Sodus shale at its type locality. Gillette has separated it from the Upper Sodus by means of Ostracods.

WILLIAMSON SHALE. This is a black, platy shale characterized chiefly by the graptolite, Monograptus clintonensis. Another graptolite, Retiolites venosus is also occasionally found. The Williamson, like the Sodus, thickens to the east. Between these two formations exists an hiatus which is represented to the east by the Upper Sodus shale and the Wolcott limestor

IRONDEQUOIT LIMESTONE. This is a massive limest of interbedded layers of shale. It is very

fossiliferous, the fauna consisting chiefly of brachiopods and bryozoans. In places it is characterized by reef structure.

ROCHESTER SHALE. This is a gray, calcareous shale. It is by far the most fossiliferous formation in the section. Its fauna is somewhat related to that of the underlying Irondequoit. Some of the common brachiopods are Dalmanella elegantula, Plectambonites transversalis, Spirifer niagariensis, and Spirifer radiatus. The commonest trilobite is Dalmanites limulurus. The formation is considered to be the highest member of the Clinton Group.

LOCKPORT DOLOMITE. (Not seen at Maplewood Park. Gray, massive, sandy dolomite which commonly contains small cavities lined with dolomite and other crystals. For the main part the formation is unfossiliferous but in places numerous poorly preserved corals, a few brach pods, and stromataporoids are found.

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STOP 2. - BREWER'S DOCK. Collect from all formatic from Queenston shale to Reynales limestone. (Avoid poison ivy.)

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STOP 3. - DENSMORE CREEK. Collect from the Rochest shale.

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STOP 4. - OUTLET, IRONDEQUOIT BAY. This bay is th site of the pre-glacial channel of the Genes River. Here can be seen the spits which divide the bay from Lake Ontario.

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STOP 5. - INSPIRATION POINT. An excellent view may be had here of Irondequoit Bay. The pre-glacial channel of the Genesee was from 1 to 2 miles wide and over 400 feet deep. During the advance of the ice sheet the bottom of the channel was filled with glacial till. The remainder of the channel was later filled with glacial lake sands. Similar filling of the pre-glacial channel about 12 miles south of Rochester diverted the course of the river into its present gorge (see STOPS 1 and 2.)

The small Irondequoit Creek and its tributaries have succeeded in excavating a good deal of the valley filling, thus developing Irondequoit Bay. The rock walls of the pre-glacial valley are still covered by the glacial debris except where locally exposed as at Densmore Creek and Glen Edith (see STOPS 3 and 6.)

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STOP 6. - GLEN EDITH. Shows ~~west~~ east bank of pre-glacial Genesee River.

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STOP 7. - WARD'S NATURAL SCIENCE ESTABLISHMENT. If time permits.

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STOP 8. - COBBS HILL. This stop is on the Pinnacle kame-moraine. To the south is the outwash plain, covered by clays and sands deposited in glacial Lake Dana, which extended from the ice front at this point to the Bristol Hills. The Bristol Hills are visible on the skyline to the south.

The Pinnacle Range is a series of connected kames deposited by streams of melt-water issuing from the ice front. The ice

at this time stood directly to the north. In some parts of the range, till covers the stratified kame material. This represents a local and temporary southward readvance of the ice overriding the previously laid kames. Additional evidence of this readvance is crumpling and tilting of the upper beds of the kames on the north side of the range.

Irregularities in the summit level of the range are due to deposition by individual streams. Kettle holes are found along the range east of this point. They are the result of deposition of debris around and over detached blocks of ice.

Two theories are offered for the origin of the range. According to one theory, this kame-moraine was formed by a single ice lobe making a crescent-shaped range of hills. The eastern portion has been destroyed by subsequent glacial lakes and present drainage. According to the other theory, the kames were deposited between two lobes of ice, one to the south and one to the north, connected at the eastern end. A long, low ridge to the south, and the tendency of the range to show a double summit, are supporting evidences for the latter theory.

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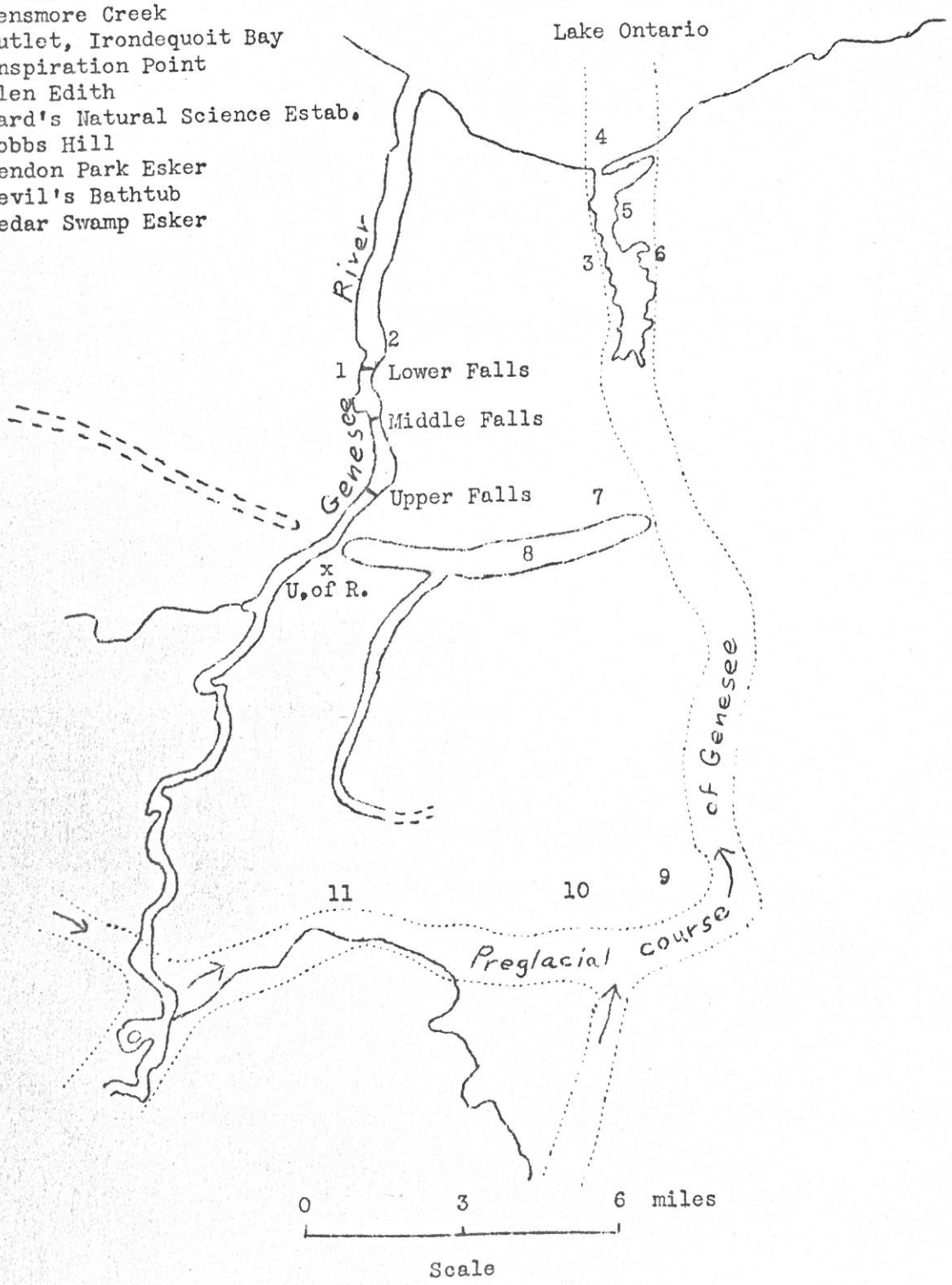
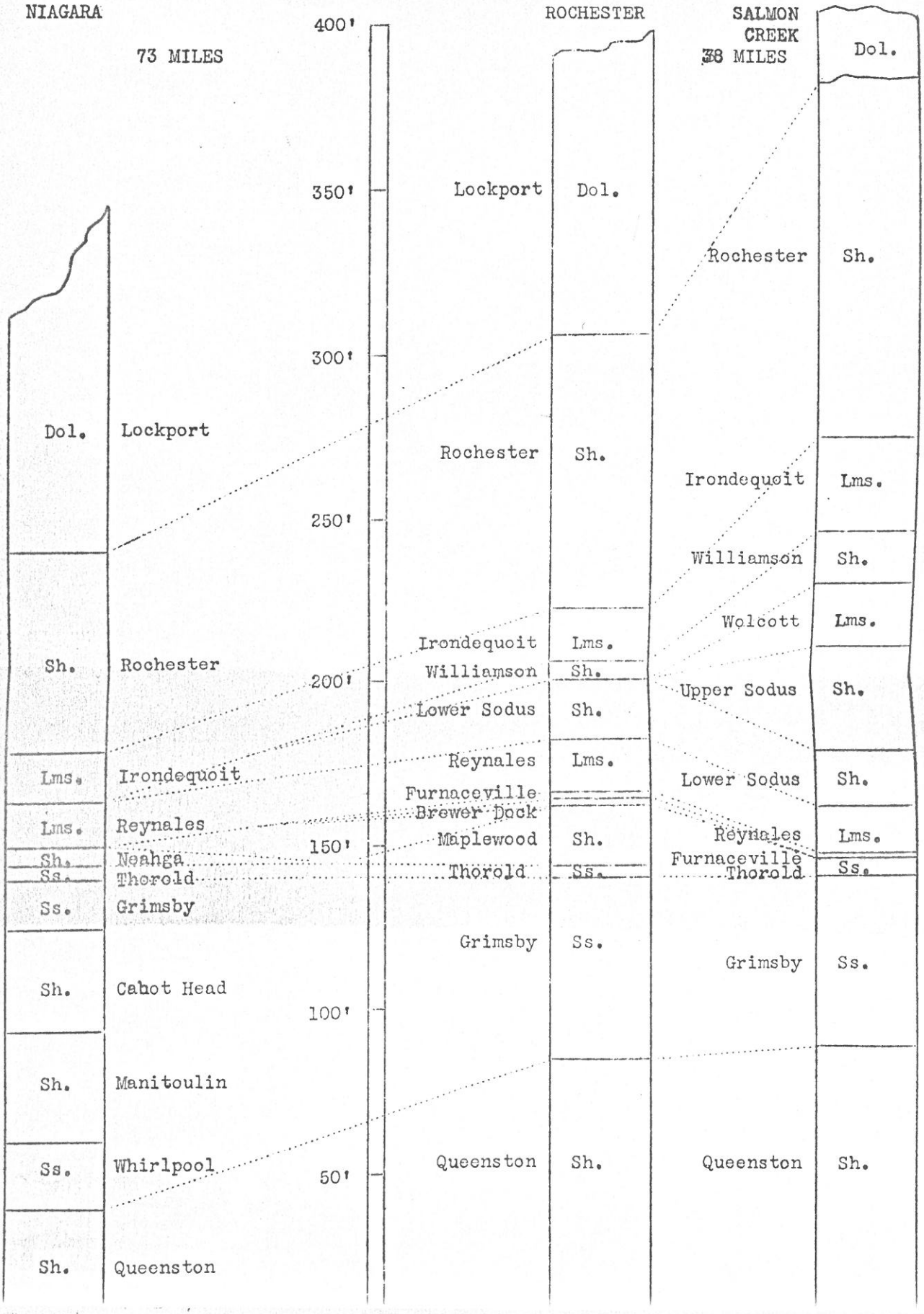
STOPS

1 - Maplewood Park
2 - Brewer's Dock
3 - Densmore Creek
4 - Outlet, Irondequoit Bay
5 - Inspiration Point
6 - Glen Edith
7 - Ward's Natural Science Estab.
8 - Cobbs Hill
9 - Mendon Park Esker
10 - Devil's Bathtub
11 - Cedar Swamp Esker




NIAGARA
73 MILES
ROCHESTER
SALMON CREEK
38 MILES
400'
350'
300'
250'
200'
150'
100'
50'
Dol.
Lockport
Sh.
Rochester
Lms.
Irondequoit
Lms.
Reynales
Sh.
Neahga
Ss.
Thorold
Ss.
Grimsby
Sh.
Cabot Head
Sh.
Manitoulin
Ss.
Whirlpool
Sh.
Queenston
Dol.
Lockport
Rochester
Sh.
Irondequoit
Lms.
Williamson
Sh.
Lower Sodus
Sh.
Reynales
Lms.
Furnaceville
Brewer Dock
Maplewood
Sh.
Thorold
Ss.
Grimsby
Ss.
Queenston
Sh.
Dol.
Rochester
Sh.
Irondequoit
Lms.
Williamson
Sh.
Wolcott
Lms.
Upper Sodus
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Furnaceville
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Grimsby
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Queenston
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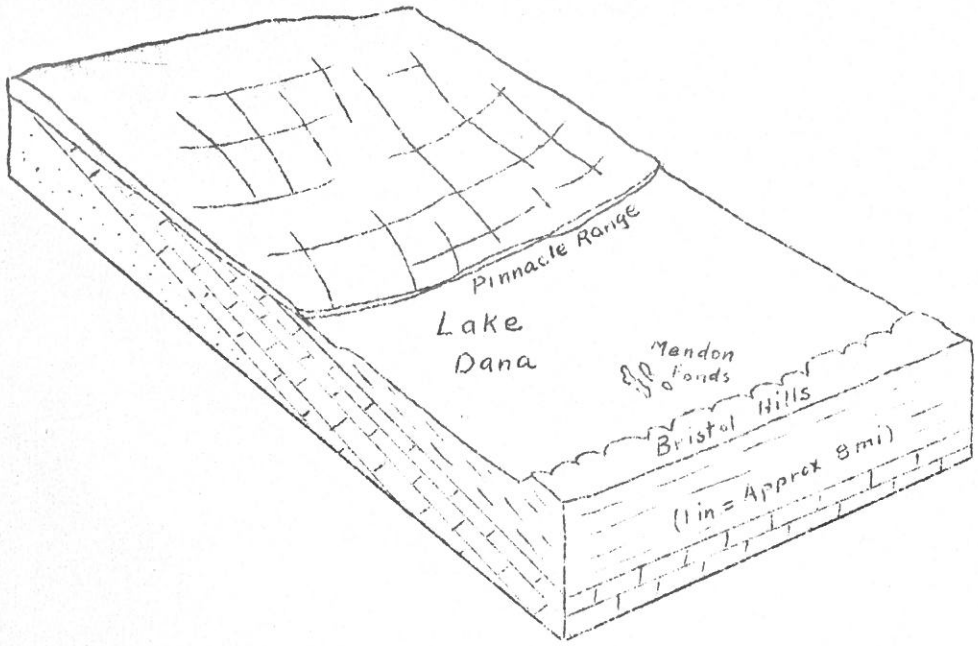
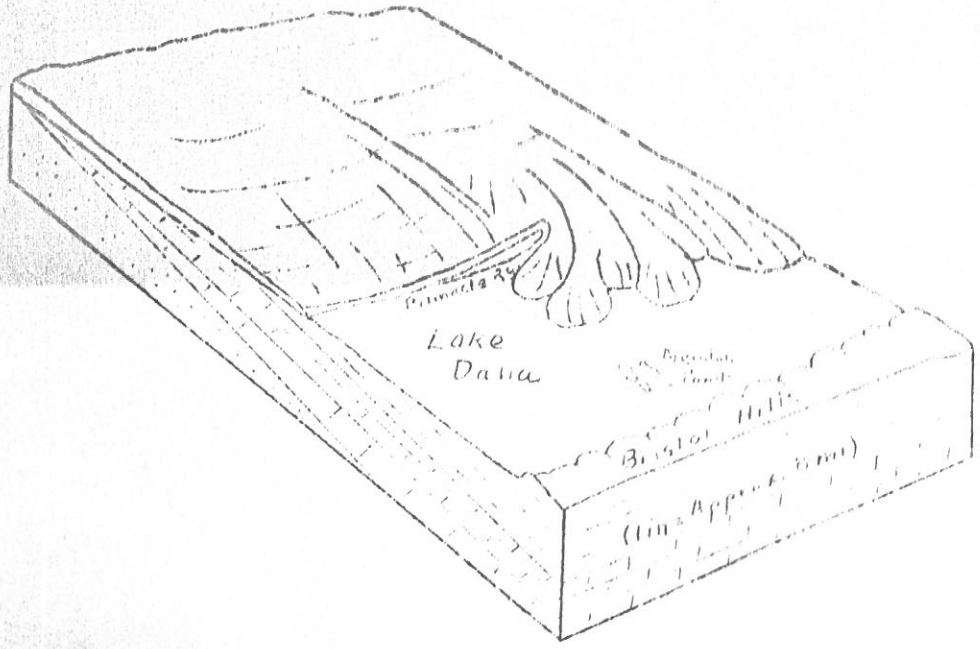


FORMATION OF PINNACLE RANGE

SINGLE LOBE THEORY



FORMATION OF PINNACLE RANGE

INTERLOBATE THEORY

ROUTE GUIDE

SATURDAY, MAY 10, 1941

TIME	MILEAGE	
8:30	0.0	Start from Dewey Building, River Campus Left on River Boulevard
	0.3	Left on Elmwood Avenue (Route 47)
	1.0	Right on Mt. Hope Avenue (Route 15)
	1.3	Bear left on East Henrietta Road (Route 15A)
	5.8	Left at Henrietta on Lehigh Station Road (Route 253)
	8.6	Right on Route 65
	10.2	Left on Canfield Road in Mendon Ponds Park
	11.4	Right on Douglas Road in Mendon Ponds Park
8:55	11.9	STOP 9. Climb esker to left of road Leave Stop 9. Continue on Douglas Road. Right up gravel road.
9:15	13.8	STOP 10. Devil's Bathtub Leave Stop 10. Retrace to Douglas Road Continue on Douglas Road
	14.5	Cross Clover Street. Continue west on Williams Road. At end of road turn
	16.0	Left (south) on Pinnacle Road
9:27	17.5	STOP 11. Cedar Swamp esker. Stop cars just across railroad crossing
9:32		Leave Stop 11. Continue south on Pinnacle Road
	18.0	In village of Rush turn right (west) on Rush-Mendon Road (Route 251)
	19.0	Left (south) on 15A at Rush
	19.3	Right (west) in village of Rush on West Rush Road
	20.7	Right, continue on West Rush Road
	21.2	Left (south) on West Henrietta Road (Route 15) Look for two notched drumlins, one to right, one to left of road
	22.7	Outcrop of Onondaga limestone to left
	23.5	" " " " in abandoned quarries
	26.5	Right (west) at East Avon on Routes 5 and 20
	28.5	Right around circle in Avon South on Genesee Street (Route 39) in Avon
	29.0	Right on Spring Street (Route 39)
	29.4	Left on Wadsworth Avenue (Route 39)
10:04	35.3	STOP 12. Jaycox Run. BE SURE TO CLOSE GATE
10:54		Leave Jaycox Run. Continue on Route 39
	38.2	Right in Geneseo (Route 39)
	38.3	Left in Geneseo (Route 39)
	39.2	Left on Route 63
11:01	39.8	STOP 13. Fall Brook.
11:11		Leave Fall Brook. Continue south on Route 63 to Mt. Morris.
	44.5	Right in Mt. Morris at stoplight on Route 36.
11:22	45.5	Cross Genesee River. Stop beyond railroad tracks at STOP 14.
11:27	45.6	Leave Stop 14.
	45.6	Left up hill on gravel road. Use great caution.
11:32	47.2	Stop 15. High Banks. Loop in road.
11:45		Leave High Banks. Retrace route on gravel road back to Route 36. Right on Route 36 to Mt. Morris
	50.0	Right in Mt. Morris on Route 63
11:54	54.0	STOP 15-1/2 at side of road before reaching church, to see divide between east and west branches of Pre-glacial Genesee River
12:00		Leave Stop 15-1/2. Continue on to Letchworth Park (about 14 mi.), by way of Nunda, Oakland, and Portage. Stop at Main Picnic Grounds
12:30	68.0	at foot of hill for lunch

17th meeting

NYSGA
Field Trip

Rochester

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SATURDAY, MAY 10.

MENDON PARK (STOPS 9 and 10). This is a kame area, marking a temporary halt in the retreat of the ice sheet. The kames were deposited by debris-laden streams issuing at the edge of the ice into glacial Lake Warren. The deposits are roughly conical in shape and consist of stratified material.

STOP 9. - MENDON PARK ESKER. The elongated, winding ridge which runs through the center of the area is an esker. It is composed of roughly stratified material and is thought to have been deposited in the course of a sub-glacial stream. The irregular crestline may be the result of unevenness in the sub-glacial channel or slumping after ice retreat. In some places the crest of the esker has been planed off by wave erosion in a later glacial lake which stood at a lower level. Bordering the esker are numerous kames and kettle holes. To the south can be seen the Bristol Hills, which marked the southern shore of Lake Warren.

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STOP 10. - DEVIL'S BATHTUB. This is a deep kettle hole. To the east may be seen another esker.

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STOP 11. - CEDAR SWAMP ESKER. Gravel pits here reveal the internal structure of the esker.

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STOP 12. - JAYCOX RUN.

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STOP 13. - FALL BROOK. (If time permite).

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STRATIGRAPHIC SEQUENCE AT JAYCOX RUN NEAR GENESEO

The formations exposed here belong to the Hamilton Group and are probably the most fossiliferous beds of western New York.

MENTETH LIMESTONE. This is the highest formation exposed in the creek and is considered the lowest member of the Moscow division of the Hamilton. This formation makes a small falls in the creek.

DEEP RUN SHALES. 9 feet in thickness at this locality, but thickens to the east. It is very fossiliferous and is characterized by a pelecypod fauna.

TICHENOR LIMESTONE. This formation makes another small falls in the ravine. The large number of fossil crinoid stems and other crinoid fragments which it possesses earned for this bed the name of the Encrinal Limestone.

WANAKAH SHALES. Gray in color, the shales carry abundant brachiopods, trilobites, and corals.

LEDYARD SHALE. The formation is similar in appearance to the other shales in the group but is characterized by a Leiorhynchus brachiopod fauna.

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STOP 14. - NORTH OF MT. MORRIS. Here a section of post-glacial gorge rejoins the pre-glacial Genesee valley. Formerly the Genesee flowed northeast from Portageville through Nunda by way of the Keshequa Creek valley to join the larger Dansville branch (Canaseraga Creek)

of the pre-glacial Genesee about four miles south of Mt. Morris. Glacial drift blocked the pre-glacial river east of Portageville, and diverted the river to its present course through Letchworth Park.

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STOP 15. - HIGH BANKS. This point overlooks another section of the Genesee River channel cut since the retreat of the ice.

FORMATIONS AT HIGH BANKS OF THE GENESEE RIVER NEAR MT. MORRIS

MIDDLESEX SHALE. This is the lowest formation exposed in the river gorge near Mt. Morris. It is a black, highly bituminous shale lacking in animal remains but contains many fossilized plants.

CASHAQUA SHALE. This overlies the dark colored Middlesex shale. It consists of gray and greenish shales with numerous thin layers of fine grained sandstone. The outstanding fossils of the Cashaqua are ammonites, belonging to the Goniatite division.

RHINESTREET SHALE. This purplish-black shale can be easily distinguished from the underlying gray Cashaqua, and contains some fossil plants and fish remains.

HATCH SHALE. Highest formation at this point.

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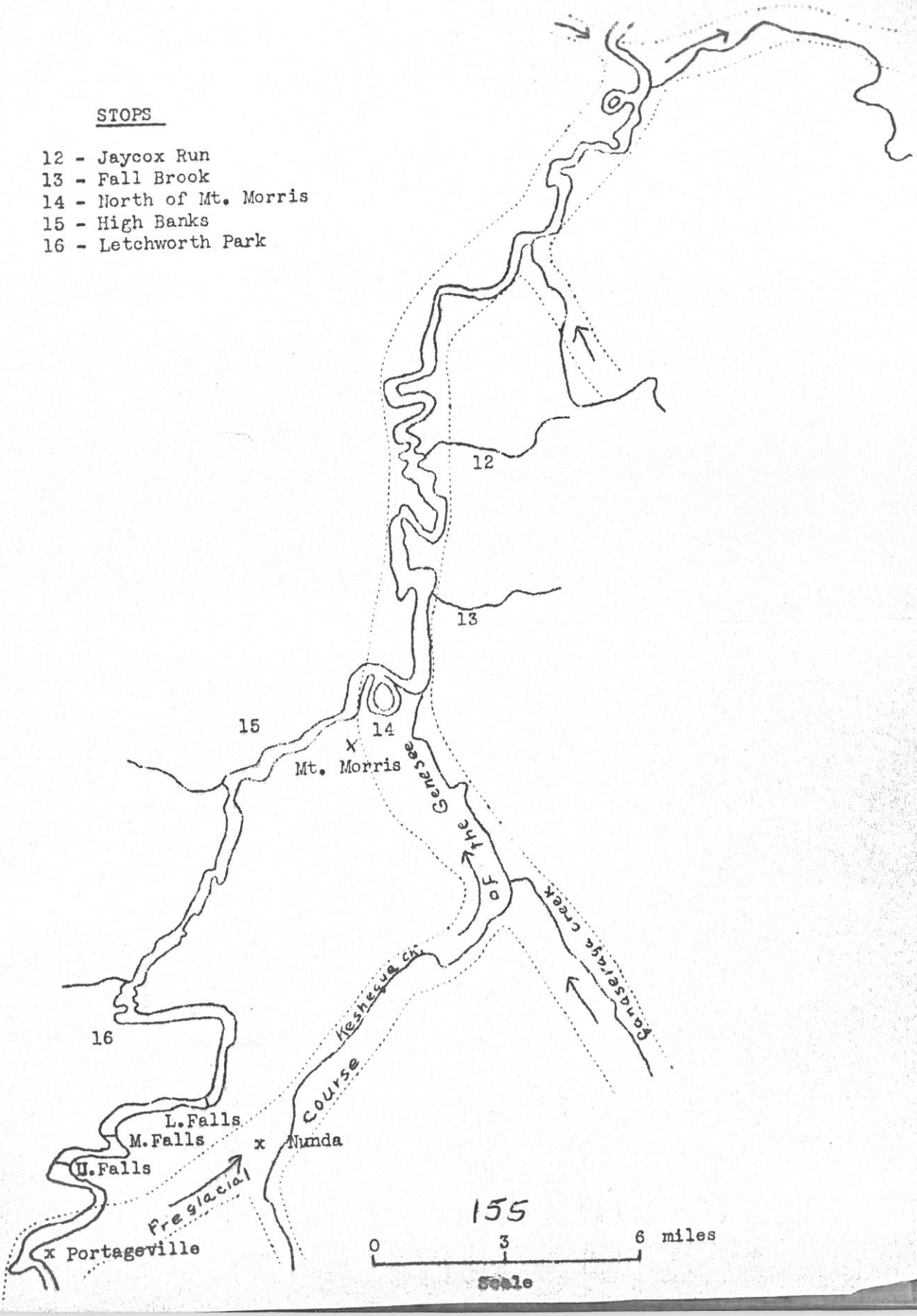
STOP 16. - LETCHWORTH PARK. This is another section of the post-glacial gorge seen at the last stop. There is not enough difference in rock hardness to account for the three separate cataracts here. It is believed that each falls is related to erosion as controlled by three

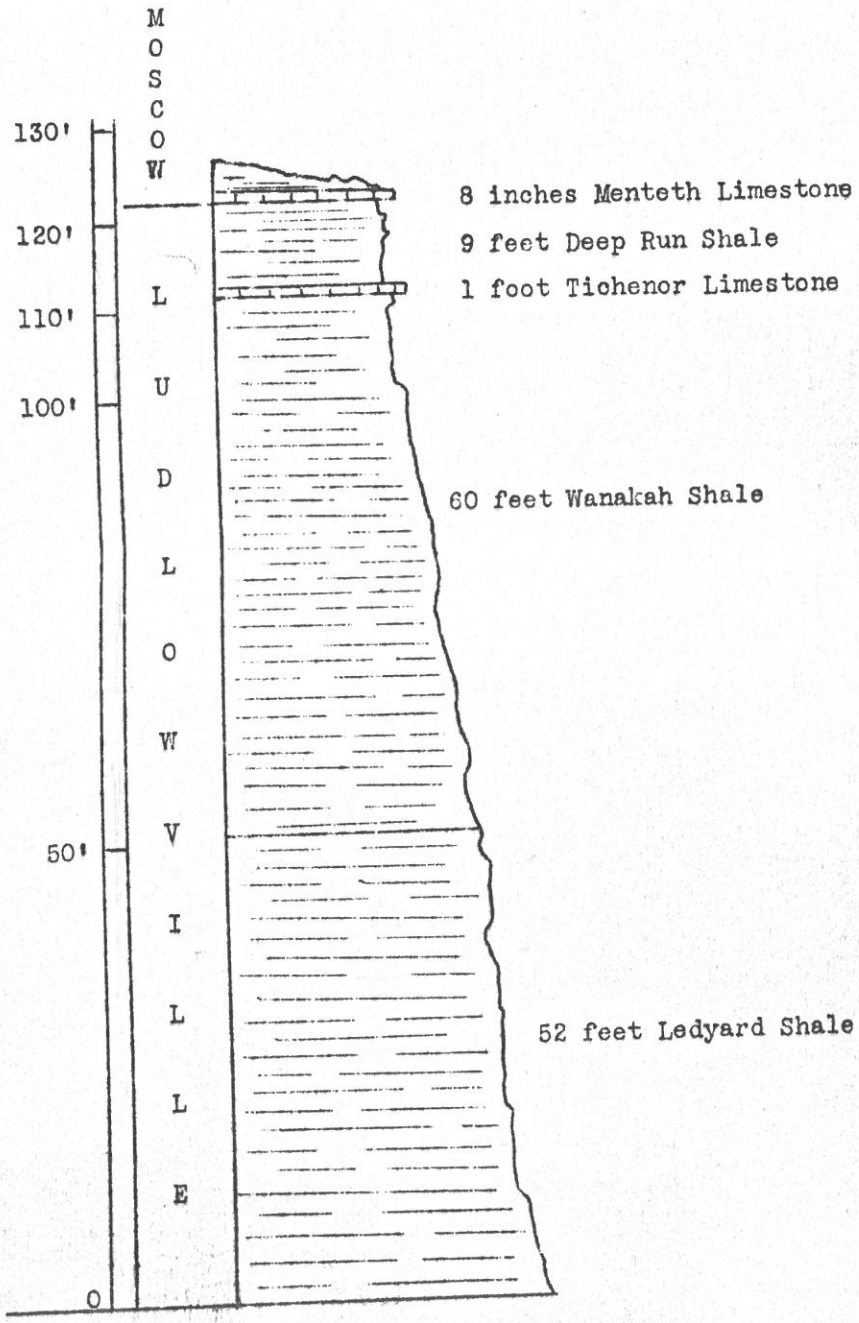
STOPS

12 - Jaycox Run
13 - Fall Brook
14 - North of Mt. Morris
15 - High Banks
16 - Letchworth Park

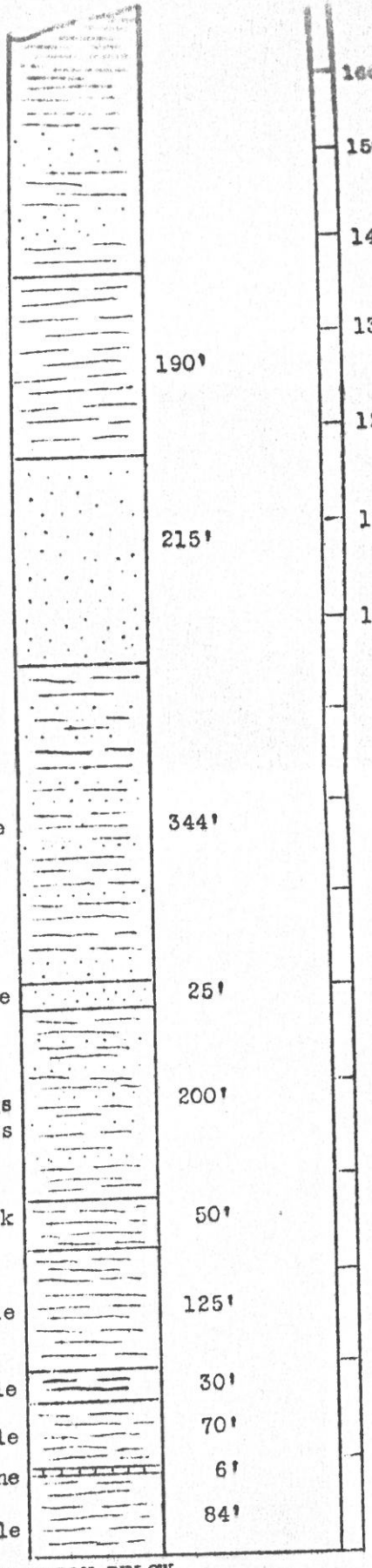


JAYCOX RUN SECTION

(After Cooper)



After Luther and Payne



Chemung Sandstone and shale

Wiscoy Shale 190'

Nunda Sandstone 215'

Gardeau Sandstone flags, shales 344'

Grimes Sandstone 25'

Hatch flags and shales 200'

Rhinestreet Black shale 50'

Cashaqua Shale 125'

Middlesex Black Shale 30'

West River Black Shale 70'

Genundewa Limestone 6'

Geneseo Black Shale 84'

HAMILTON BELOW

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