

GUIDE TO THE
THIRTY-NINTH ANNUAL FIELD CONFERENCE
OF THE
SECTION OF GEOLOGY
OF THE
OHIO ACADEMY OF SCIENCE
April 25, 1964

UPPER PALEOZOIC STRATIGRAPHY
of
LAKE AND GEauga COUNTIES, OHIO

CHAIRMAN OF THE SECTION

Glenn W. Frank
Kent State University

CONFERENCE GUIDES

Charles S. Bacon
Henry F. Donner
John F. Hall
Western Reserve Univ.

Assembly - 8:00 a.m. in parking lot south of Millis Science Center,
Western Reserve University.

Drivers - Please mark your cars with the yellow streamers provided.
When driving along the field trip route, stay in line and
be careful; some of the roads we will travel have heavy
traffic.

* * * * *

Road Log

The attached strip maps replace the customary written road logs. They
show the route followed, mileages, and elevations at critical points as
well as points of geologic interest.

STOP 1 Short stop - Euclid Bluestone member of the Bedford Formation.
This unit was once extensively quarried here for flagstone. It
is a bluish-gray, fine-grained sandstone. Thickness in the
abandoned quarry was 26 feet.

The Chagrin-Cleveland contact is well exposed 0.1 mile north
on the east side of the creek. Here there is a thin pyrite
layer above which is a zone with abundant conodonts.

The Cleveland-Bedford contact higher on the hillside is ill
defined.

STOP 1 (a) A short view stop--along Euclid Creek--showing Chagrin Shale,
overlain by Cleveland Shale, with thin capping of glacial
drift. Height of exposure is 170 feet. Several thin siderite
layers occur in the Chagrin. A sponge horizon is at creek
level.

STOP 2 Stebbins Gulch. This gulch is a part of the Holden Arboretum
and, as such, is a wild life preserve. The management has a
very strict rule that the cliffs must not be defaced. Geologic
picks may only be used on loose pieces and in inconspicuous
places.

For geologic section see attached sheets at end of guide.

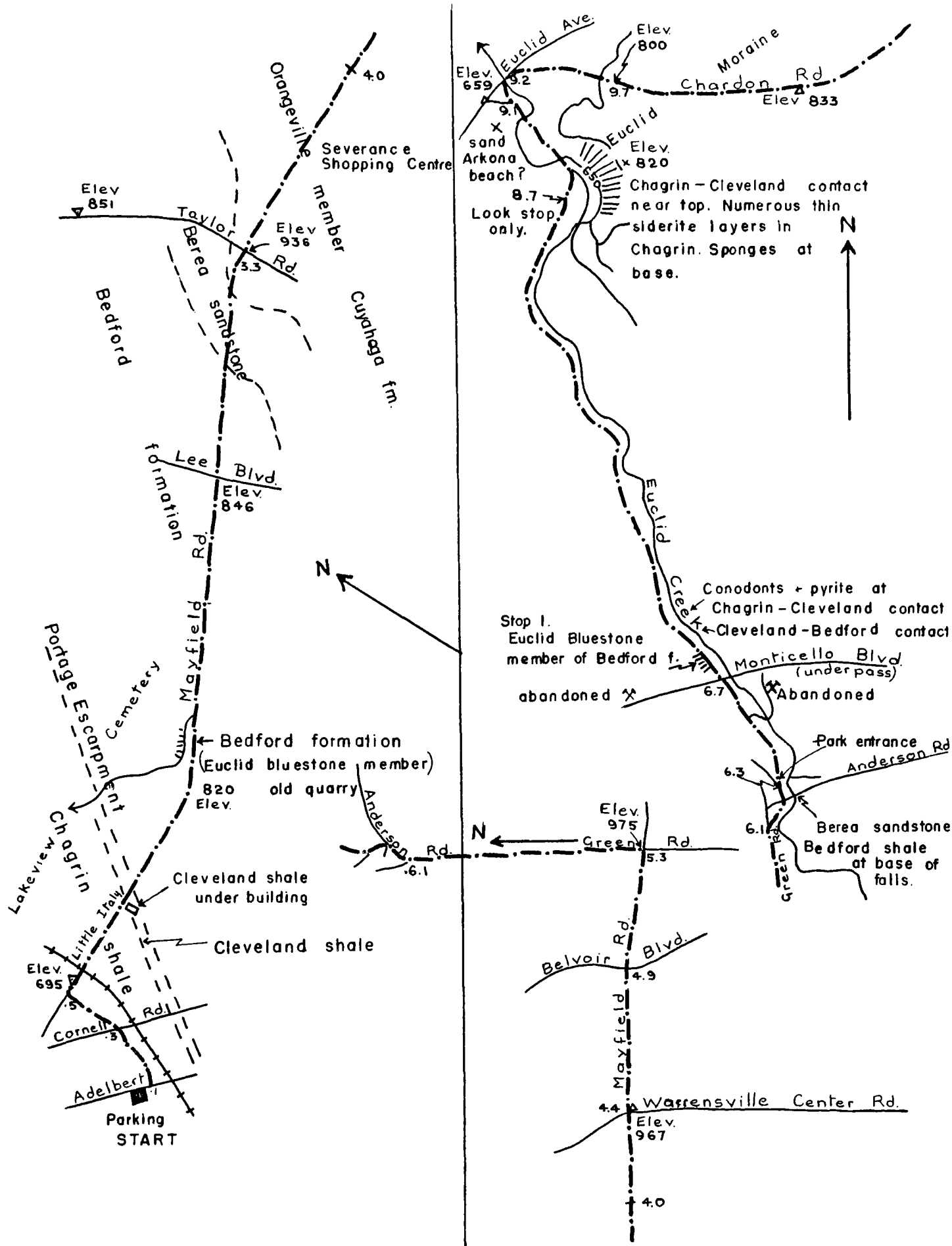
Parking will be in field at east side of building shown on
strip map. From here we will follow a trail westward to a point
about 875 feet elevation along Stebbins Gulch at a Chagrin shale
outcrop at bottom of section. Then we will proceed upstream in
the valley bottom past the falls and cascades to the sharp bend
at elevation approximately 1065. This is the Berea-Orangeville
contact and the last stop in this gulch. From here we climb out
of the gulch and return to the cars.

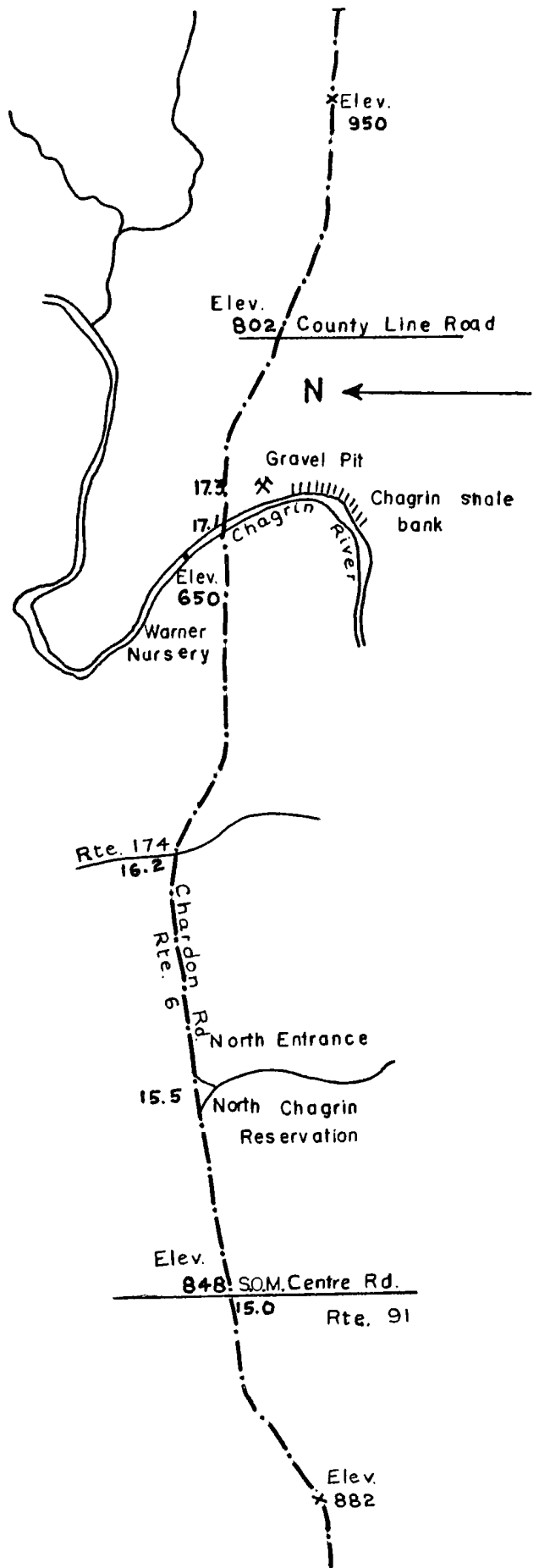
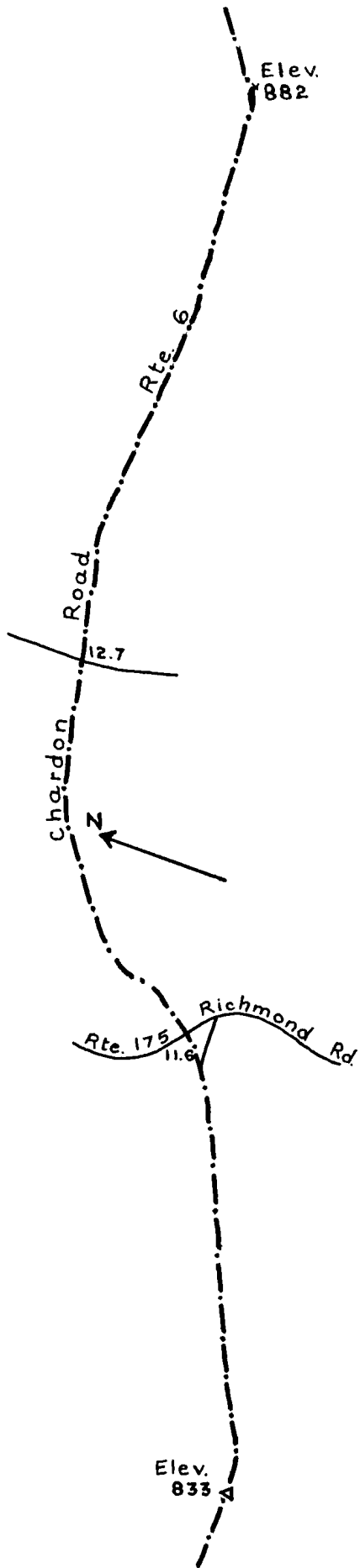
Follow the strip map arrows west on Mitchell Mill Road, turning left on Sperry Road to the Holden Arboretum picnic area for lunch.

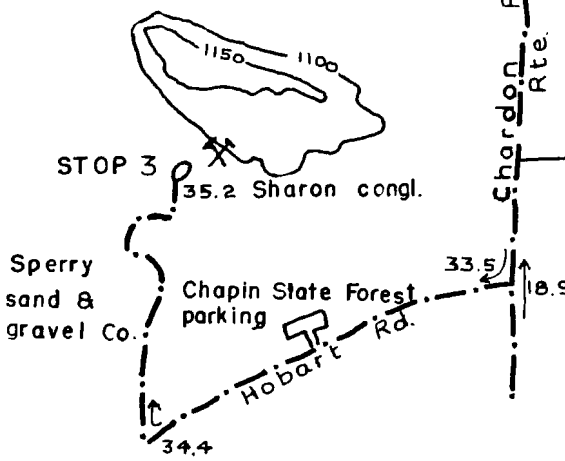
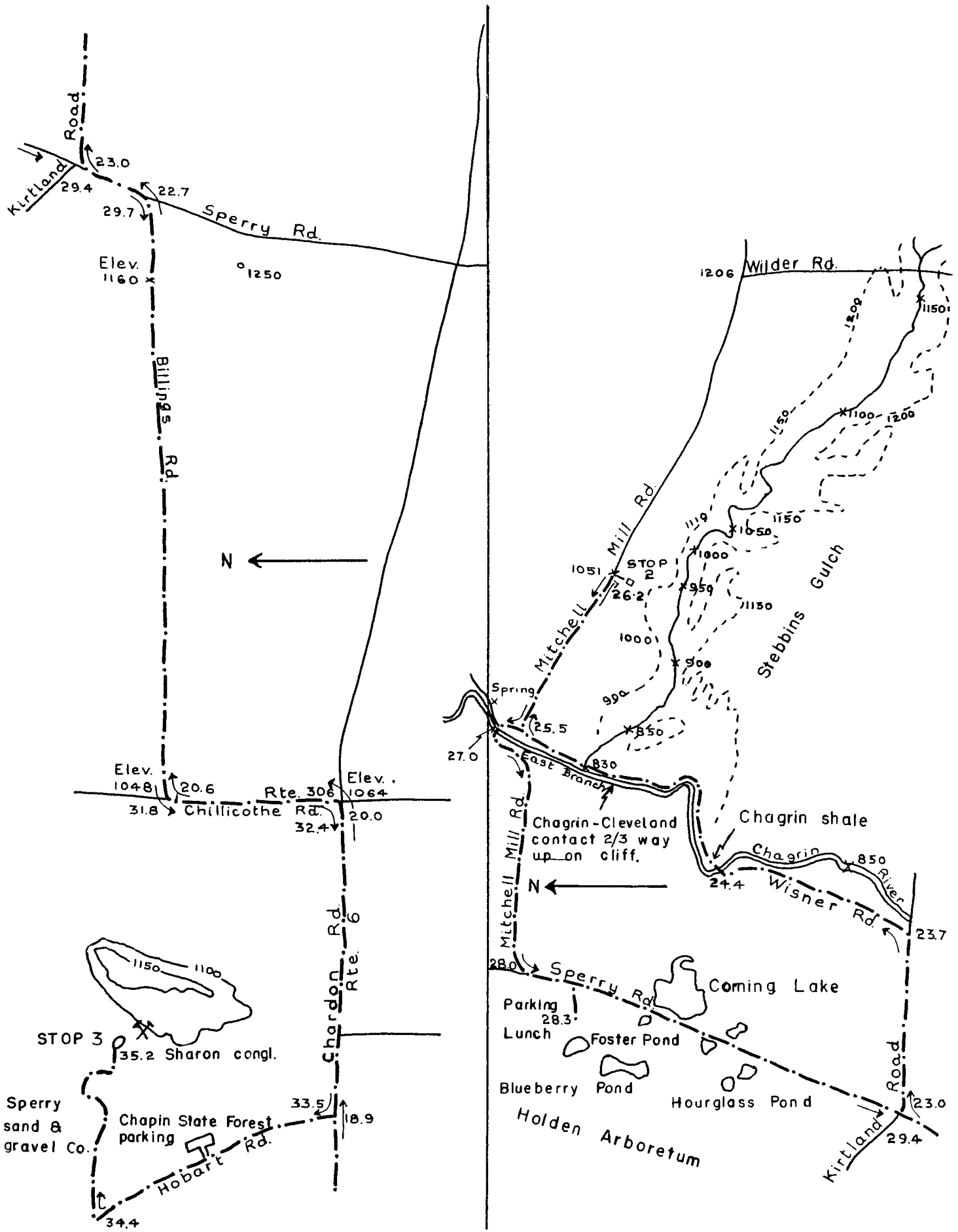
After lunch we take Sperry Road southward and return to the route along which we came out, driving westward to Hobart where we then turn north to the Sperry Sand and Gravel Company quarry.

STOP 3

Sharon conglomerate. This is the top formation in the area. It caps the highest hill. At nearby Little Mountains the Sharon is more than 50 feet thick. It is a coarse conglomerate characterized by abundant white quartz pebbles. Its unconformable base was estimated by Prosser to be 180 feet above the Berea in the Stebbins Gulch area. This is the last stop.







Section at Stebbins Gulch, Chardon Twp., Geauga Co., Ohio
(Modified after Prosser, 1913.)

- | | <u>Thickness</u> |
|---|------------------|
| 1. Covered interval, alluvial deposits mixed with some glacial debris. A few outcrops of Chagrin Shale appear here and there. | 60 ft. plus |
| 2. <u>Chagrin Shale</u> - Soft, blue-gray shales with occasional thin, shaly layers of sandstone which form low falls. Lots of fucoids on the sandstone layers. The Chagrin is often very fossiliferous in certain zones. However, here in Stebbins Gulch few fossils have been noted in the formation. Concretions are abundant 20-30 feet below the upper contact. Contact with overlying Cleveland Shale is sharp and distinct. | 30 ft. |
| 3. <u>Cleveland Shale</u> - Dark, black shale, thin-bedded. On weathered surfaces it is fissile and brittle. Conodonts may be found in the lower inch or two. Marcasite present along some bedding planes. Forms steep cliffs. Contact with Bedford Formation not sharp and distinct. | 26 ft. |
| 4. <u>Bedford Formation</u> - Blue-gray, soft shale with layers of blue-gray sandstone. A fossiliferous bed two inches thick is near the base. The sandstones are more numerous in the lower part of the formation. The sandstones show furoid markings and ripple marks. The better fossil zones occur in the lower inter-bedded shales. A disconformity between the Berea sandstone and Bedford Formations is evident in places where the overlying Berea cuts down into the sandstone layers of the Bedford. | 52 ft. (approx.) |
| 5. <u>Berea Sandstone</u> - A buff colored, medium to coarse-grained sandstone usually poorly cemented. Cross-bedding is very pronounced in places, especially in the middle third of the section. Ripple-marks and mud-cracks are found in the well-bedded portions. Much of it is a massive, soft sandstone. | |

A four and one half foot layer of massive sandstone at the top is pitted and rough due, possibly, to disintegration of pyrite. This zone is not friable like the main mass and is composed of coarse white quartz grains. It is separated from the main mass by an eight foot zone of bluish-gray argillaceous and arenaceous shales alternating with bluish, fine-grained, compact sandstones an inch or less in thickness. Arenaceous shale predominates. Most of the shale is very gritty and not at all like the Sunbury. 69 ft. plus

Thickness

6. Sunbury Shale - (Orangeville formation) A bluish-black, argillaceous shale. The basal part is black, bituminous, and very tough. Within one or two inches of the Berea, it contains specimens of Lingula melie (Hall) in considerable abundance and also of Orbiculoidea herzeri (Hall & Clarke). 29 ft.
7. Chardon Sandstone - (Orangeville Formation) A thin-bedded and shaly sandstone with some layers eight to ten inches thick. Compact, fine-grained, bluish color, weathering to a buff color. In the Cleveland area a similar sandstone in approximately this same stratigraphic position is called the Aurora sandstone. 8 ft.
8. Brecksville Shale - (Orangeville Formation) Composed of bluish argillaceous and arenaceous shales and some thin bluish sandstones. These form the highest outcrops in the stream.