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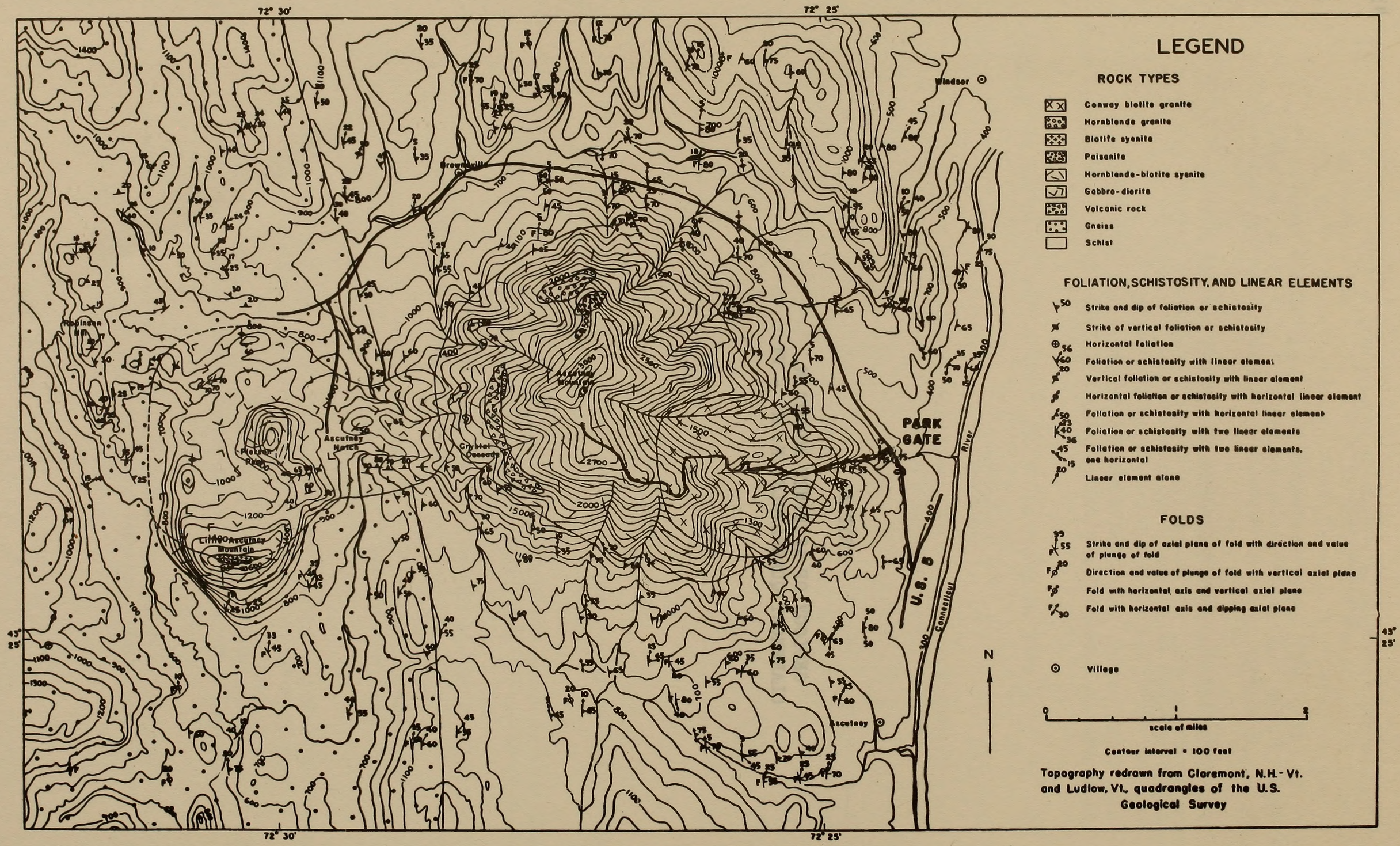
Geology of Ascutney Mountain

Stoiber, Richard E.

TRIP F

GEOLOGY OF ASCUTNEY MOUNTAIN, CLAREMONT QUADRANGLE, N. H. - VT.



GEOLOGIC MAP OF ASCUTNEY MOUNTAIN, VERMONT

TRIP F

GEOLOGY OF ASCUTNEY MOUNTAIN, CLAREMONT QUADRANGLE, N. H. - VT. - SUNDAY, OCTOBER 10, 1954 - 8:30 A.M.

Leader: Richard E. Stoiber

Assembly Point

Park gate, base of Mt. Ascutney auto road

To reach this point proceed from Hanover south to White River Junction and then on Route 5 south through Windsor, Vt. Turn abruptly right at a well-marked road on the right leading to Mt. Ascutney, approximately 3½ miles south of Windsor, Vt. The Park gate is on the left 1.3 miles from the turn off Route 5. (This is about a 45-minute drive from Hanover.)

The group of cars will proceed up the toll road to a parking area near the top of the mountain. Each driver will pay for his own car--50 cents per car with five or less passengers.

General

Mt. Ascutney is composed of an assemblage of igneous rocks that have intruded highly-folded schists and gneisses of Pre-Cambrian and lower Paleozoic age. The intrusions, members of the White Mountain magma series, have had no significant structural effects on the country rock. Radioactive age determinations on the structurally and mineralogically similar Conway granite has established its age as 230 m.y. (Mississippian). The major intrusives are syenite, biotite granite, and gabbro-diorite. The gabbro-diorite stock lies to the west, the syenite stock to the east, and a granitic stock, circular in map plan, lies within the syenite. Exposures of each of these will be examined. Mt. Ascutney is the topographic expression of the syenite and granite. Arcuate and isolated irregular patches of volcanic rocks are found in the syenite high on the mountain. Devitrified felsite dikes intrude the surrounding metamorphics.

STOP 1 Parking area, end of auto road near top of Mt. Ascutney.

Exposure

Syenite of main stock

Basic inclusions in syenite (best seen at Stop 4)

Aplitic syenite

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Questions:

1. Is the aplite of metasomatic origin. (?)

STOP 2 On the "Steep Trail" which leads from the parking area to the summit, several hundred yards below the summit.

Exposure

Volcanics

Syenite in contact with volcanics

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Questions:

1. Nature of the syenite-volcanic contact.
2. Nature of the volcanics.

STOP 3 Summit of Mt. Ascutney (3144 ft. elevation).

Exposure

Syenite

Igneous breccia

Volcanics exhibiting flow structure

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Questions:

1. Nature of the syenite adjacent to the volcanics.
2. Reason for the pockmarked weathered surface of some of the syenite.
3. Areal geology as seen from the summit.
4. Glacial grooving.

STOP 4 Return to cars and proceed down the mountain to a point 0.4 mile below summit parking area.

Exposure

Syenite with dark inclusions.

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Note: The dark inclusions have been called xenoliths of basic rock greatly reworked by the magma (Chapman and Chapman). Daly described them as basic segregations.

Questions:

1. Nature of the inclusions.
2. Have inclusions a preferred orientation. (?)

STOP 5 Parking area, 0.9 miles below summit parking area, reached by a road to the left. We will walk back to the main road.

Exposure

Granite

Syenite

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Questions:

1. Nature of the contact.

STOP 6 Proceed down the mountain, shifting to LOW GEAR 0.2 miles after leaving parking area, to a point 3.2 miles below summit parking area.

Exposure

Granite

Syenite

Miarolitic cavities

Basic inclusion (?)

Aplite

Aplite

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Questions:

1. Contact relationships.

2. Orientation of the miarolitic cavities.

Note: 0.1 miles down the road is syenite-schist contact (covered).

STOP 7 3.5 miles below summit parking area.

Exposure

Metamorphosed Gile Mountain formation (Ordovician?)

Quartzites and schists

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Note: From here to the Park gate exposures on the left hand side of the road show less and less effect of contact metamorphism as indicated by the increased prominence of the schistosity.

STOP 8 Turn left at Park gate and follow black top road around the north side of the mountain. Turn left 6.3 miles from the gate house (19.3 miles from summit parking area) and proceed 0.7 miles to:

Exposure

Gabbro-diorite

Granite dikes

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Selected Bibliography

Balk, R., and Kreiger, P., 1936, Devitrified felsite, dikes from Ascutney Mt., Vt.: Am. Mineralogist, v. 21, p. 516-522.

Chapman, R. W., and Chapman, C. A., 1940, Cauldron subsident at Ascutney Mountain, Vermont: Geol. Soc. America Bull., v. 51, p. 191-212.

Daly, R. A., 1903, Geology of Ascutney Mountain: U. S. Geol. Survey Bull. 209, p. 1-122.