

Trip G
SURFICIAL GEOLOGY AND GEOMORPHOLOGY
OF WHITEFACE MOUNTAIN AND KEENE VALLEY

by

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The Pleistocene history of the Adirondack Mountains has largely been interpreted from geomorphic evidence. Kemp, (1905), Alling (1911, 16, 19, 21), Ogilvie (1902), Fairchild (1913, 19, 32) and others wrote of cirques, tarns, aretes, horns and lateral moraines as evidence of local glaciation. However, they pictured this local glaciation development as a minor phase of the rapid deglaciation of the mountainous region, leaving an ice free island surrounded by the continental ice mass. This author believes that the local glaciers were very active during the time of continental deglaciation with valley glaciers extending as much as 10 miles down valley from their cirques.

A new theoretical model is proposed to explain this climatic situation of deglaciation in the St. Lawrence Lowland to the north and active glaciation in the Highlands to the south.

The model is based on the relationship of large pro-glacial lakes formed at the margin of the continental glacier and the effects of local storms developing over the lakes and moving eastward into the Adirondack Mountains of New York. Glacial conditions were maintained locally by the high snow fall from these "lake effect storms". Ablation of the local snow would be retarded by low temperatures related to the cooling at higher elevations, effect of the continental glacier at the northern edge of the Adirondacks and the cloud cover that would develop over the High Peaks area due to orographic uplift of the eastward-moving moist air.

These local climatic conditions would cease to exist when the continental glacier retreated sufficiently to open the St. Lawrence Valley, lowering the pro-glacial lakes and decreasing their size considerably. Therefore, the existence of mountain glacial conditions was dependent on the existence of pro-glacial lakes and the time of mountain glaciation is directly related to the history of those lakes. Local accumulation of snow started after the development of the first large pro-glacial lake west of the Adirondack Mountains and ended when the lake system drained below its present level.

All the evidence for local glaciation can not be seen on this trip. Some of the key exposures are 5 to 10 miles in from the roads and can be reached only by foot.

The trip is set up to show the best examples of the geomorphic and stratigraphic evidence that can be reached from buses and within the time limit allowed.

Topographic maps useful on this trip:

Lake Placid	Paradox Lake
Mount Marcy	Schroon Lake
Elizabethtown	Santanoni
Ausable	Newcomb

Stop 1 - Whiteface Mountain Ski Centre, Wilmington, N.Y.
Lake Placid Quadrangle

Proceed from the bus to the chair lift and ride to the end of first lift.

"Coon Pit" stop. After getting off the chair lift walk up stream to the waterfall. There is a deep glacial groove enlarging a joint. Which direction was the ice flowing to cut this groove?

Walk over to the second chair lift and proceed to the top of the mountain.

Stop 2 - Top of Whiteface Mountain

After leaving the chair lift walk to the top of the mountain. Gather at the elevation marker.

From this point you can observe the only indication I have observed of continental glaciation over riding the mountain tops in the high peaks region. This is the "roches moutonnees" form of the crest on the south side of the peak.

Observe the "horn" configuration of the peak area. The "cirque form" of the valleys leading away from the peak and the very narrow "arete" ridge to the west of the peak. Could these features develop from Continental Glaciation?

Walk down the north trail (not the tourist trail) to Wilmington Turn House and have lunch.

Stop 3 - Atmospheric Sciences Research Centre, Whiteface Mountain
Field Station, Wilmington, N.Y.

Leave the bus and walk up the jeep road to the Whitebrook valley trail (unmarked). We will be going about $\frac{1}{2}$ mile up the valley. Anyone that wishes to, may stay at the centre and look around the lodge.

Whitebrook Valley Moraine. This ridge was described by Alling (1919) as a lateral moraine of a local glacier occupying this "cirque". Notice the high percentage of Potsdam sandstone pebbles lying on the surface.

Proceed back to the bus.

Stop 4 - County Gravel Pit on 9 N, 1 mile south of Keene, N.Y.
Mount Marcy Quadrangle

10' till, grey oxidize moderately stoney, very sandy at base, large folds of underlying sand, silt and clay carried upward into till.

50 to 100' fine sand, silt and clay upper 5' strongly contorted by load folding.

Return to Plattsburgh.

