

Glacial Geology of Strafford Quadrangle

Addition to Report of D. P. Stewart
1966, Paul Mac Clintock

Problem concerning the two tills of this area.

Copy for Doc

Within the quadrangle are found many exposures, roadsides as well as river-banks of reddish brown old-looking till. A typical exposure is seen at South Strafford along Route 132, 100 yards south of the town hall. Here a 20 ft. roadside exposure of dark brown sandy calcareous till is found to be leached to a depth of 9 ft. Both the leached part and the calcareous till below is studded with weathered and rotten, crumbly pieces of stone. It would appear that the ice charged with calcareous material must have picked up already - weathered stones and incorporated them to its fresh till. In a nearby gravel pit a count showed that of 71 pebbles 57% of them were weathered and 43% were fresh. At east end of the pit the gravel lies on brownish till with many rotten stones in it. This till has N.28°W. Vector Mean fabric. One mile east of South Strafford an 80 ft. high stream-cut bluff exposes blue-gray calcareous fresh till

containing many rotten gneisses and schists embedded in their^{is} unweathered till. Till fabric count in this fresh till shows the Vector Mean direction to be N.32°W. Lying on top of this till is a deposit of ^aablation till having N.31°E. Vector fabric Mean. The upper till here is non calcareous and the lower till is also leached to depth of 6 ft. The lower till, therefore, is Bennington till and the upper is Shelbourne.

A big roadside exposure^e 1/2 Mi. N.W. of West Norwich gives the section:-

Calcareous ^aablation till. 6-7 Ft. (N.27°E. Mean)

brown basal till leach 10 ft.

brown to gray basal till calcareous 9 ft. (N.50°W. Mean)

This exposure, then, demonstrates an episode of weathering and leaching to depth of 10 ft. before the calcareous Shelbourne drift was deposited on top. A roadside bank 20 ft. high is seen 1/2 mile to the north, down in bottom of the valley. This is likewise calcareous ^aablation till with a N.E. fabric (N.34°E. Vector Mean) showing it to be Shelbourne in age also. It is (in) a ^amoraine area that here occupies the bottom of the valley.

At Chelsea, in northwest corner of the quadrangle, two tills are also found. At the east edge of town, in the valley, is an 80 ft. bank of dense basal calcareous gray till with fabric Vector Mean of $N.17^{\circ}W.$ at the eastern end of the exposure it is found to be leached to a depth of 12 to 13 ft. A mile and a half east of Chelsea where the road rises to the upland is a 10 ft. roadside exposure of sandy ^aoblation till which has a fabric Vector Mean of $N.27^{\circ}E.$ We therefore see ^{Burlington} Bennington till down in the valley and Shelburne till on the upland.

In the northeast corner of the quadrangle and extending into the southeast corner of the East Barre Quadrangle, is a considerable patch of terminal Moraine composed of ^aoblation till. A big roadside exposure in the middle of this Moraine of sandy ^aoblation till has Vector Mean fabric of $N.47^{\circ}E.,$ showing it to be Shelburne drift. At the high bank on north side of the brook and road at Goose Green, dark gray calcareous basal till ($N.33^{\circ}W.$ fabric Mean) lies on 50 ft. of non calcareous lake sands.

Summary. The many exposures in the quadrangle combine to show that it was first overrun by the ^{Burlington} Bennington glacier which came from the northwest. This ice picked up weathered surface material of the Waits River bedrock and incorporated it into its own calcareous till material and thus producing the brownish color of "old-looking" till. Then this ice waned and there followed an episode of weathering and probably some fluvial erosion. This episode was brought to a close by the advance of the Shelburne ice from the northeast which overrode the whole quadrangle. This latter ice evidently waned by "stagnation zone retreat (Currier L. W. 1941) which meant that there was a peripheral zone some score of miles wide at the edge of the waning ice, in which the ice stagnated and melted by down wasting so that its load of debris was let down gently as a blanket a few feet thick on to the ground without disturbing the fabric overlotion of the stones, but the melt water from the melting ice did remove the fine fraction of the debris i.e., silt and clay, and wash^{ed} it into the ice marginal lakes of the time. This is how the mantle of ^a ablation till is believed to have been ^{formed} found.