

also in the northern side of the esker, consists almost wholly of fine gravel and sand, with stratification mostly inclined  $5^{\circ}$  to  $20^{\circ}$  southward. This section, 30 to 40 feet deep, and the surface of the esker immediately adjoining it, have only very rare boulders; but within a short distance the southern slope of the ridge, where it is cut for the road, has many boulders on the surface and in the upper 10 feet of the gravel and sand. The rather broadly rounded top of the esker is here about 80 feet above the general level on the north, east and south. In its central part, 25 feet below the top and some 20 rods from its northern base, a small space of this section, 10 feet long and 6 feet in height, shows three sharp faults, each having 2 to 3 feet of displacement, with overthrust from south to north. The beds overlying the faulted portion, which was near the bottom of the excavation, and the continuations of the faulted layers away from this place on each side, were undisturbed, dipping  $10^{\circ}$  to  $15^{\circ}$  S. or S. S. W. Fifteen to 40 feet east from these faults, slightly higher beds show eight repetitions, within a thickness of 8 feet, of layers of gray gravel, 3 to 12 inches thick, separated by layers of fine yellow sand 1 to 3 inches thick. These alternations probably represent the rapid and strong currents of a glacial river during the fast melting of the ice surface by day and the slow currents at night, when ablation was at its minimum or ceased.

Another large excavation 300 to 500 feet west of the last, likewise in the northern side of the esker, has a vertical face of 40 to 50 feet, consisting of interbedded gravel and sand in its upper half, while its lower half is mostly sand. The largest cobbles in the gravel are about one foot in diameter, and no boulders were observed. Mainly the dip is  $10^{\circ}$  to  $20^{\circ}$  southward, but at the east end of this section its upper 10 to 15 feet are much contorted, with a prevailing northerly dip of  $10^{\circ}$  to  $15^{\circ}$ .

In the southeastern side of the esker, opposite to Mrs. W. H. Cobb's house, an excavation about 25 rods long and 50 to 60 feet high consists in its upper part, to a depth of 6 to 20 feet from the surface along its whole extent, of sand and very coarse gravel enclosing exceedingly abundant boulders of all sizes up to 6 or 8 feet in diameter, far more plentiful than in the ordinary till of this region. Below this portion, the remainder of the section, extending downward 30 to 40 feet, is irregularly interstratified gravel and sand, with only infrequent boulders. The whole section shows stratification by currents of water, and according to my estimate nineteen twentieths of