

degree, it would rise within one mile 92 feet and within two or three miles would be higher than the tops of these hills. Currents ascending at this rate, or even two or three degrees or more, may very probably have existed in the lowest part of the ice sheet, on account of the acceleration of its upper currents, within distances from 20 to 50 miles or more back from its boundary. By these currents much drift eroded from the land surface would be gradually incorporated in the comparatively sluggish lower part of the ice, reaching altitudes 100 to 1,000 feet above the ground within a few miles from its sources.

It is also to be remarked that the rounded or at least subangular forms of the greater part of the pebbles and small rock fragments in the esker gravel do not necessarily imply wearing by the stream during a long transportation. Daubr e placed angular fragments of granite and quartz, ranging from the size of one's fist to that of a hazel nut, with water in slowly revolving cylinders and found that they became perfectly rounded when the revolutions amounted to 25 kilometers or about 15 miles. ⁽¹⁾ Within a third of this distance probably some of the fragments had been well rounded, and in a less distance nearly all would be worn to subangular forms.

Many features of the modified drift, comprising glacial flood plains, eskers and kames, show that the melting of the ice-sheet at the close of the Glacial period was mostly very rapid. In the vicinity of Rochester it was hastened by the laving action of the glacial lakes on its southern border. Lake Warren had formed a beach which extends to the south side of the east end of Lake Erie, where its altitude is 860 feet above the sea. ⁽²⁾ At the time of formation of the Pinnacle hills and Pittsford esker series, the ice-border in New York appears to have receded so far that the water of the upper Laurentian lakes was no longer held up to the level of Lake Warren, which had outflowed at Chicago, and avenues of drainage seem already to have been opened eastward along the ice-border past the northern ends of the Finger lakes to the Mohawk valley. Undoubtedly the deposition of these esker gravel and sand beds took place above the level of such fringing lakes, which from the Genesee and Irondequoit basins could have no place of outflow eastward lower than by the way of Victor and Mud creek. The divide at Victor is somewhat higher than the general surface on which these eskers lie; hence it seems probable that when the esker beds were laid down in their ice-walled channels a depth of some 100 feet, more or less, of ice still remained unmelted

(1.) *Etudes Synth tiques de G ologie Exp rimentale*, 1879, pp. 248-250.

(2.) *Bulletin, G. S. A.*, Vol. II, pp. 258-265; Vol. III, pp. 484-487.