

the Mount Hope Cemetery and the Genesee river and farther to the west, the material of the ridge is largely till, which shows that low portion to be a marginal or interlobate moraine; but the high range of the Pinnacle hills from Brighton to the Mt. Hope Cemetery is clearly an esker,  $3\frac{1}{2}$  miles long, consisting of interbedded gravel and sand, here and there enclosing boulders, sometimes in surprising abundance, but containing no till in the extensive sections nor on its surface.

The width of this hill range is mostly about a sixth of a mile, but varies from a tenth to a half of a mile. Along its whole extent it is a single range, nowhere presenting a combination of parallel series of hills; but, in some parts, especially in the Highland Park and near the reservoir, it is incised on each side by ravines between spurs and outlying hillocks of the main belt, and its top is occasionally very uneven in contour, with infrequent bowl-shaped hollows 10 to 50 feet below the surrounding surface. The profile of its crest line undulates in an irregular way, generally varying 50 to 100 feet in height upon each mile or half mile; and it nowhere maintains a level course for any considerable distance. In the vicinity of the Pinnacle and in many other places, the slopes on each side are very steep, ranging to a maximum of about 30 degrees; and the crest line has occasional slopes of half this steepness. More commonly, however, the slopes vary from 6 to 15 degrees, having from 10 to 25 feet of ascent in a distance of 100 feet.

When my first contribution to geology was published, sixteen years ago, "On the origin of Kames or Eskers in New Hampshire," <sup>(1)</sup> these classes of the modified drift, produced jointly by the ice-sheet and the water of its melting, had not been discriminated from each other. Every knoll, hillock or hill, short or long ridge, or series or network of ridges composed of irregularly and often anticlinally bedded gravel and sand, retaining nearly the original form in which it was accumulated, was then called interchangeably a *kame*, *esker*, or *as*, or a series of *kames*, *eskers*, or *asars*. The first of these terms is of Scottish, the second of Irish, and the third of Scandinavian origin, the last being Anglicized to *osar*, with *osars* as its plural form. It is found very desirable, however, to subdivide these gravel and sand accumulations into two classes, as proposed by McGee <sup>(2)</sup> and Chamberlin, <sup>(3)</sup> giving to the hillocks and short ridges the name

(1.) Proc. A. A. A. S., Vol. XXV, for 1876, pp. 216-225.

(2.) Report of the International Geological Congress, second session, Boulogne, 1881, p. 621.

(3.) U. S. Geological Survey, Third Annual Report for 1881-82, p. 299; Am. Jour. Sci., III, Vol. XXVII, 1884, p. 389.