

fectly vertical. The submerged portions of such islands must, according to the weight of ice relatively to sea-water, be from six to eight times more considerable than the part which is visible, so that the mechanical power they may have exerted when fairly set in motion must be prodigious.*

To return to the succession of geological changes which immediately preceded the present period in the Niagara district:—Thirdly, after the surface of the rocks had been smoothed and grated upon by the passage of innumerable icebergs, the clay, gravel, and sand of the drift were deposited, and occasionally fragments of rock, both large and small, which has been frozen into glaciers, or taken up by coast ice, were dropped here and there at random over the bottom of the ocean, wherever they happened to be detached from the melting ice. During this period of submergence, the valleys in the ancient rocks were filled up with drift, with which the whole surface of the country was over-spread. Finally; the period of re-elevation arrived, or of that intermittent upward movement, when the ridges to be described in the next chapter were formed in succession, and, when valleys, like that of St. David's, which had been filled up, were partially re-excavated.

* J. L. Hayes, Boston Journ. Nat. Hist., 1844.