## Researches relating to the Great Lakes.—Spencer. 119

ing of the land. Prior to the existence of these separate bodies of water, higher shore-lines were formed, and the great gulf or lake bounded by them was called the Warren water which name the writer has defined as applicable to the great open water of the region, until after the formation of the Forest beach—its most perfect episode—after which it was dismembered into the Algonquin and Lundy waters.\*

During the changing stages of Warren water, its configuration was somewhat varied but not sufficiently to call the water by a multiplicity of names, according to the changing levels. The old shore lines form prominent features, requiring nomenclature for the most important. And additional naming only adds confusion. Some of the beaches have been renamed by Mr. Leverett, † contrary to the usage of naturalists.

With the continued elevation of the land, the Algonquin water sunk to the level of the Nipissing beach (of Taylor) and the Lundy became dismembered, and formed an insignificant lake Erie.\* In the Ontario basin, the water sunk to the Iroquois beach and lower levels, and Niagara falls had their birth, after the river had first been a strait. Remnants of beaches of that time were long ago observed, not only in the vicinity of Niagara, but also at the head of the lake. With the temporary pauses recorded, the waters of the upper level were speedily lowered to that of the Iroquois beach, and then the Niagara river descended only 200 feet, in place of 326 feet, as at present. The effect of this diminished descent upon the excavating power of the falls was first pointed out by the writer in 1888§ and published in 1889. With the continued lowering of the waters in Ontario basin, the descent of the Niagara increased to 80 feet more than at present, as first shown by Prof. Gilbert; but later, by the tilting of the earth's crust north of the Adirondack mountains, the outlet of the Ontario basin was raised, causing the backing of the waters, so as to reduce the descent of Niagara river to its present amount.

\*High-level shores in the region of the Great Lakes, etc., cited betore.

<sup>‡</sup>Proc. A. A. A. S., 1888, p. 199.

SThe Iroquois Beach, etc. Trans. Roy. Soc. Can., 1889, p. 132.

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<sup>&</sup>lt;sup>†</sup>On the correlation of the New York moraines with the raised beaches of lake Eric, by Frank Leverett. Am. Jour. Sci., vol. L, 1895. pp. 1-20.