

be shown to have been the drift filling the old valleys and the warping of the earth's crust. But the basins are river-like and broad submerged valleys. Lake Ontario is 247 feet above the sea, but its greatest depth is 738 feet; and throughout a considerable portion of it, the southern side is bounded by high vertical but submerged walls, which for long ages formed bluffs along the ancient river.* Besides the longitudinal trough, another deep channel crosses the basin east of Toronto. Lake Erie is 573 feet above tide, but it is generally less than 100 feet deep, except over a small area where it is 210 feet; but beneath the waters of the shallow basin there are many buried channels, the deepest of which, at Cleveland, is 228 feet (Newberry). Lakes Michigan and Huron and Georgian bay, are at one altitude, 582 feet above the sea. Georgian bay is generally less than 200 feet deep, but at its southwestern side a channel reaches to a depth of 510 feet, in front of the foot of a very high escarpment, part of which is submerged. Another submerged escarpment crosses lake Huron. This has a descent of more than 400 feet. The deepest sounding is 750 feet. The two basins of lake Michigan (respectively 864 and 576 feet deep) have vertical submerged escarpments adjacent to them. Also there are some deep channels and fjords, one of which is 612 feet deep. Lake Superior has been studied less. More or less drift is known to occur between the lake basins, like that filling the submerged channels under lake Erie. The buried valleys will explain the connection between the lakes.

4. *Glaciation of the Region.* The striæ are nowhere parallel to the direction of the escarpments, whether these be submerged or above the level of the lakes, where they form bold topographic features. Nor are the vertical walls of the limestone escarpments polished by lateral glaciation. In short, the striæ are at considerable angles, even at right angles, to the rocky escarpments. Thus it appears that the valleys were not shaped by glacial action.

*"Notes on the Origin and History of the Great Lakes," by the writer, Proc. Am. Assoc. Adv. Sci., vol. xxxvii, 1888, p. 197; "Origin of the Basins of the Great Lakes of America," by the writer, Quart. Jour. Geol. Soc., London, vol. xlvi, p. 523 (also in AMERICAN GEOLOGIST, vol. vii, pp. 86-97, with map of the ancient Laurentian river system, Feb., 1891); and earlier papers.