

and produced the excavation. The depth of Lake Ontario is 738 feet, 492 of which are below tide level; and hence the minimum elevation that would give the same slope to the water as now was 738 feet. As shown on the map on page 201, this *Ontario River* (or the line of greatest depth) was near the south shore; and the depression had a high declivity on that side which was very steep for the first 500 feet. Similar conclusions may be drawn from all the Great Lakes; for they are generally believed to have been excavated by running waters during the Glacial period. The map on the page referred to has marked upon it the outlines of the drainage areas of the several lakes, the deep-water line, and the position of the point of maximum depth; and Schermerhorn remarks that the deep-water line of each is near the center of the area of drainage. The Lake Superior basin descends 407 feet below sea level; the Michigan, 289 feet; the Huron, 121 feet. For fluvial excavation, the elevation must have been not only that which would raise the basins above sea level, but to a height above the surrounding land that would enable even the bottom waters to flow out of the drainage basins; and to pass, not the existing drainage barriers, but the barriers of the Glacial period, when the land in the vicinity was far above its present level.

A change of level is also proved by the reversed flow of some streams. Carll and others have shown that the Pennsylvania rivers, the Alleghany and Beaver, then flowed northward into Lake Erie, proving that the land dipped toward the Erie basin. In the Beaver River channel in western Pennsylvania, now a tributary of the Ohio, the filling of drift, according to Foshay and Hice (1890), is only 60 feet deep at its mouth; but 20 miles above, it is 200 feet, according thus with the view that its drainage, as shown by Carll for the Alleghany, had been reversed. The Tionesta and Conewango basins, according to Carll, participated in reversed Erie-ward pitch. Facts on this subject of reversed drainage are presented by Chamberlin in a paper of 1894, along with illustrating maps. Moreover, Gilbert pointed out in 1871, that the Maumee River, now emptying into the west end of Lake Erie, then flowed *westward*, and joined the Wabash, and thus made the lake a tributary to the Ohio. He found the evidence both in westward glacial scratches and moraines, and in lake terraces. It is possible that a Huron River made another Ohio tributary.

Again, Lake Winnipeg, as pointed out by G. K. Warren (*Rep. U. S. Engineer Dept.*, 1867, 1874, and *Am. Jour. Sc.*, xvi., 417, 1878), which now discharges into Hudson Bay by the short Nelson River, formerly discharged into the Mississippi, and, with the Saskatchewan River, was its northern head waters. At the present time, the level of the lake is about 260 feet; too low for a southward flow. The divide is in Minnesota between Big Stone Lake, the head waters of Minnesota River, and Lake Traverse, the head waters of Red River of the North, a Winnipeg tributary. These two little lakes are but a few miles apart and differ but eight feet in level. The valley of Red River and that of the Minnesota were found by Warren to be continuous, and to be a great valley across the divides, 125 to 150 feet deep, and