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age. If the terrestrial elevation of the land shall continue as for the last 1,500 years, the barrier across the outlet of lake Erie must rise so high as to turn the drainage of the lakes into the Mississippi, by way of Chicago; and it is computed that the end of the Niagara river and falls, under such conditions, will be about 5,000 years hence.

All these estimates are based upon the rate of recession of the falls and the amount of work done in each episode, as discovered in working out the history of the lakes. In 1842, Prof. James Hall made the first instrumental survey of the falls. The next was made in 1875 by the Coast Survey. In 1886, Prof. R. S. Woodward made the third; and in 1890 Mr. Aug. S. Kibbe made the last. From these four surveys, the mean rate of recession of the falls (that is, the mean elongation of the gorge) was found to be 4.17 feet a year. But the river in the region of the falls is now erossing a pre-Pleistoeene valley, where the hard surface rocks have been removed for 80 or 90 feet in depth beneath the rocky ridge crossing the course of the canyon a short distance below the present site of the falls. Thus the amount of work now being done by the river is much less than the average demand upon the stream during the greater part of the life of the river. Before 1875 all statements as to the age of the river were pure conjectures, but that of Lyell was nearly correct. The estimates made upon the retreat of the falls alone have proved to be not even so accurate, although the method was better as far as it went; but it stopped short of the history of the falls. Again, speculations as to the ancient Niagara flowing down by the Whirlpool-St. David's valley have been disproved by the rock which crosses that course hundreds of feet above the lake level; instead, the Niagara here touches a little buried tributary of an ancient stream to the west.

In conclusion, the Niagara falls serve as a chronometer of geological time, as they give some idea of the epoch of the lakes. If the lee age ended with the birth of Warren water, then we can roughly estimate it to date back some 50,000 or .60,000 years. At the birth of the Niagara river and falls, and long before, there was no ice barrier in the Niagara district. Lastly, if we regard the Iroquois water as at any thie obstructed by ice, such conditions have not existed since the