

I have said the Niagara River commenced its present gorge during the Champlain Epoch. In reality there was no Niagara River when this work commenced. Lake Erie stretched down the valley of the existing river, and the overflow of its basin wore the notch in the rocky rim which was the beginning of the Niagara River.

Lake Erie stands at present three hundred and thirty-four feet above Lake Ontario. At the time of which I am speaking it stood three hundred and seventy-two feet above Lake Ontario, and filled the valley of Niagara River as far as the heights above Lewiston (Fig. 84).<sup>\*</sup> Indeed, there are clear evidences, in the form of beaches containing fresh-water shells, that the level of the river was once forty feet above the present summit of the falls. No barrier has ever existed to dam the water to this height except the escarpment at Lewiston. This is one hundred and five feet above the summit of the falls, and thirty-eight feet above Lake Erie. The indications seem to be conclusive that the waters of Lake Erie stood thirty-eight feet higher than at present, and poured over the bluff at Lewiston, in a series of cascades, three hundred and seventy-two feet, to the sea, which at this time filled the basin of Lake Ontario. During the subsequent ages, the mighty stream has dug a gorge in the solid rock, which is seven miles long, two hundred and fifty feet deep, and, on an average, about one thousand feet wide. The material transported from this gorge into Lake Ontario is over three hundred and forty millions

<sup>\*</sup> *Explanation of Fig. 84.*—The diagram on the following page is intended to illustrate the geological position of Niagara River and Falls, and the ancient lake levels from Lake Ontario to Chicago. The vertical scale is 560 feet to the inch; the horizontal scale is irregular. The diagram is merely a series of sections around the lakes, placed end to end. The dips of the strata are much exaggerated. The two portions of the diagram join each other along the line *a, b, c, d*, etc. The figures against the vertical dotted lines show the heights in feet above the sea of the points to which the lines extend.