

extended for some distance southward on the line of the river, is a matter of doubt. (3) Part of the time the volume of the river was so much less that the rate of recession was more like that of the American Fall than that of the Horseshoe. Some suggestions as to the comparative extent of slow work and fast work are to be obtained from the profile of the bottom of the gorge. While the volume of the river was large, we may suppose that it dug deeply, just as it now digs under the Horseshoe Fall (see p. 216); while the volume was small, we may suppose that a deep pool



FIG. 21.—Longitudinal Section of the Niagara Gorge, with Diagram of the Western Wall.

The base line is at sea level. It is divided into miles. Water, black; drift, dotted; Niagara limestone in block pattern; shales, broken lines; F, falls; R, railway bridges; W, whirlpool; Foster, Foster Flats; E, escarpment.

was not made. Fig. 21 exhibits the approximate depth of the water channel through the length of the gorge; and by examining it the reader will see that the depth is great near the mouth of the gorge, again from the head of Foster Flats to the Whirlpool, and then from the bridges to the Horseshoe Fall. It is small, indicating slow recession, in the neighborhood of Foster Flats, and also between the Whirlpool and the railroad bridges. The problem is complicated by other factors, but they are probably less important than those stated.

Before the modern rate of recession had been determined, there were many estimates of the age of the river; but their basis of fact was so slender that they were hardly more than guesses. The first estimate with a better foundation was made by Dr. Julius Pohlman, who took account of the measured rate of recession and the influence of the old channel at the Whirlpool; he thought the river not older than 3,500 years. Dr. J. W. Spencer, adding to these factors the variations in the river's volume, computes the river's age as 32,000 years. Mr. Warren Upham, having the same facts before him, thinks 7,000 years a more reasonable estimate. And Mr. F. B. Taylor, while regarding the data as altogether insufficient for the solution of the problem, is of opinion that Mr. Upham's estimate should be multiplied by a number consisting of tens rather than units. Thus estimates founded on substantially the same facts range