

its way back as long as the structure of the gorge continues as it is now—thick beds of limestone resting horizontally upon soft shales (Fig. 118). The softer strata at the base are undermined, and slice after slice is cut off from the cliff over which the cataract pours. The parallel walls of this great gorge owe their direction and mural character to parallel joints of the strata. The lesser or American fall (A in Fig. 119) enters by the side of the ravine and falls over its lateral wall. The larger or Canadian (Horseshoe) fall (C) occupies the head of the ravine, and owes its form to the intersection of two sets of joints. The structure of the gorge being the same at both falls, it seems reasonable to infer that as the American fall, which appears to be diminishing in volume, has cut back only somewhere about

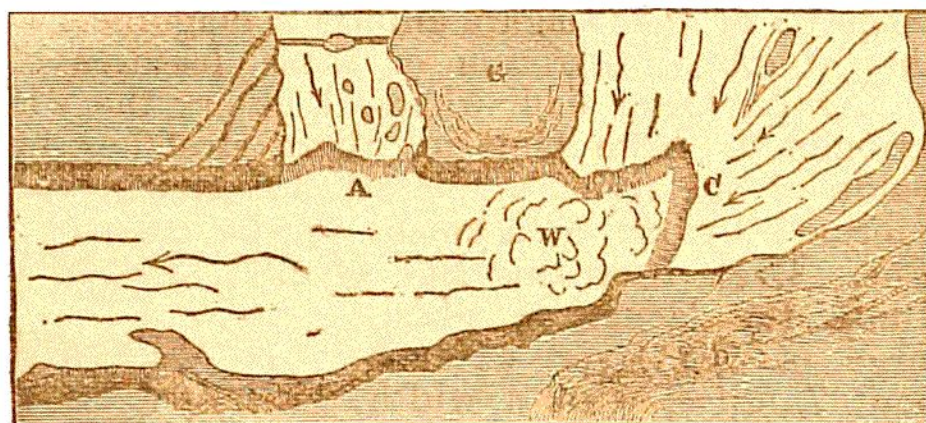


Fig. 119.—Plan of the Ravine of Niagara at the Falls.

A, American Fall; C, Canadian Fall; W, Whirlpool; G, Goat Island; D, Bank of Drift resting on ice-worn sheets of Limestone.

140 feet from the original face of the ravine, this branch of the river has, comparatively speaking, only recently begun to work. Goat Island, which now separates the two falls, is an outlier of drift resting on the limestone. It has been cut off from the rest of the ground on the right bank of the river by the branch which rejoins the main stream by the American fall. From the position of the glacial striæ it may be concluded that a great part, if not the whole of the ravine has been excavated since the Glacial Period. There are indications, indeed, of a pre-glacial valley by which the waters of Lake Erie joined those of Ontario, before the erosion of the present gorge. Bakewell, from historical notices and the testimony of old residents, inferred that the rate of recession of the falls is three feet in a year. Lyell, on no better kind of evidence, concluded that "the average of one foot a year would be a much more