

the cliffs bounding the ravine, so that they prove the former extension of an elevated shallow valley, four miles below the Falls, a distinct prolongation of that now occupied by the Niagara, in the elevated region intervening between Lake Erie and the falls. Whatever theory be framed for the hollowing out of the ravine farther down, or for the three miles which intervene between the whirlpool and Queenstown, it will always be necessary to suppose the former existence of a barrier of *rock*, not of loose and destructible materials, such as those composing the drift in this district, somewhere immediately below the whirlpool. By that barrier the waters were held back for ages, when the fluviatile deposit, 40 feet in thickness, and 250 feet above the present channel of the river, originated. If we are led by this evidence to admit that the cataract has cut back its way for four miles, we can have little hesitation in referring the excavation of the remaining three miles below to a like agency, the shape of the chasm being precisely similar.

There have been many speculations respecting the future recession of the Falls, and the deluge that might be occasioned by the sudden escape of the waters of Lake Erie, if the ravine should ever be prolonged 16 miles backwards. But a more accurate knowledge of the geological succession of the rocks, brought to light by the State Survey, has satisfied every geologist that the Falls would diminish gradually in height before they travelled back two miles, and in consequence of a gentle dip of the strata to the south, the massive limestone now at the top would then be at their base, and would retard, and perhaps put an effectual stop, to the excavating process.

CHAPTER XV.

ACTION OF RUNNING WATER—*continued.*

Course of the Po—Desertion of its old channel—Artificial embankments of the Po, Adige, and other Italian rivers—Basin of the Mississippi—Its meanders—Islands—Shifting of its course—Raft of the Atchafalaya—Drift-wood—New-formed lakes in Louisiana—Earthquakes in valley of Mississippi.

Course of the Po. — THE Po affords an instructive example of the manner in which a great river bears down to the sea the matter poured into it by a multitude of tributaries descending from lofty chains of mountains. The changes gradually effected in the great plain of Northern Italy, since the time of the Roman republic, are considerable. Extensive lakes and marshes have been gradually