

quantity of snow should be attended with an effect of so much longer duration than the continuance of its supposed cause; in short, how the phenomenon should be observable both *before* and *after* it can be imagined to be the product of the *melting* snow. This cause is then inadequate, and if thrown out of the question, upon what hypothesis is the fact to be explained, if that before submitted be rejected?

Next to the formation of the Canadian Lakes, the overfalls of Canada are the most interesting phenomena connected with the process of elevation. The confluent waters of a higher falling into a lower tract of territory, must have the equableness or precipitancy of their course determined by the position and quality of the strata over which they pass. Were the strata invariably of loose and soluble material, we should of course have no overfalls; nor even in the event of their inclination preserving an exact correspondence with the plane of the elevated surface, whatever might be the nature of their material. Whenever one tract, however, is distinguished from a lower by a disruption of the compact strata, overfalls and rapids of greater or less elevation are a necessary effect of the different levels at the place of disruption, unless, as generally happens, this effect is prevented by preference of another law, which it may please nature to follow in the process of elevation. In the case of fissures running continuously at an angle from the line of disruption into the elevated tract, a plane bed is provided for the waters of rivers, provision made for the effectual draining of the land, and even the prevention of its being inundated by sudden and great torrents and this may be regarded as the design which nature has sketched out as the usual mode of conducting her operations in this department. Sometimes, however, the fissures are not continuous but truncate. The fissure, in this case, proceeding from its base formed by the line of the disrupted strata, terminates abruptly, as in the instances of the overfalls of Fenelon and Niagara. It is a surprising and very beautiful provision for the concentration of the waters at such parts as these, that while the fissures terminate abruptly, their termination is at a point in a hydrographical basin previously formed, as if the fissure, incomplete, had, notwithstanding, had its course marked out by a line permanently engraved by an instrument of the Mighty Architect. This circumstance has led many to suppose that the whole of the depressed portion forming the vallies of these rivers is the effect of the action of water, independently of the fissures which are formed by the subterranean forces in the process of elevation. There are few rivers in Canada, the formation of whose valleys can be understood in this manner, and many, where a reference to the cause alleged, is ob-

viously necessary. On the Grand River, in the township of Galt, we find the margin denoting the ancient edge and surface of the stream raised about 25 or 30 feet above its present surface. It must then have flowed over a compact stratum which, fissured in the process of elevation, now forms its present basin.

The researches of M. Bourguet among the Alps and Appenines, and the chain of the Jura, led him first to observe that valleys of the largest order present in their opposite sides a reciprocity of form, salient and re-entering angles being seen on either side alternately, and he entitles this observation a Key to the Theory of the Earth. The observation is a very important one, and receives ample illustration from the natural history of Canada; but this illustration furnishes no evidence for the principle that led to the wild hypothesis of Buffon and Humboldt, which geologists have in general abandoned as insufficient to explain the phenomena, and therefore untenable. It is a fact in nature, however, which seems perfectly explicable, if the valleys of rivers are understood as the common effect of subterranean force, exhibited in fissures coeval with the commencement, or occasioned in the course of the process of elevation. In those cases where no salient and re-entering angles are discovered alternating, as in the lakes of Canada, the Mediterranean, the Baltic, and the Red Sea, &c, the absence of those specific indications of fractured strata is in exact conformity with the hypothesis which assumes the maintenance of the original depression of that portion of the strata which underlies the beds of these waters.

There are facts that seem to justify the inference, that the lower levels comprehending a large extent of the existing land of Canada, have emerged from the waters at a comparatively recent period. The surface of Lake Ontario is only 234 feet above the tide water of the Atlantic; but even at a level of 100 feet lower than the present, what a vast extent of territory would, in that case, be under water? We find, in point of fact, immense fields of modern alluvium forming the soil of large tracts of country on both sides of the St. Lawrence—modern alluvium containing, of course, the relics of species that still form a part of the products of the streams and lakes. The shoals of the lakes and extended swamps which, in the course and on the flanks of the parent stream, characterise the valley, broad as it is between Québec and Kingston, partake precisely of the character of the alluvium, which in the old world, has cast into the lap of the reaper, the riches of harvest from immemorial time. We here behold the process. There the period of a like process must be referred to remoter ages. With respect to the St. Lawrence alone,