

the surfaces of the harder rocks *in situ* in the peninsula, wherever exposed by the removal of the drift, are found to be smoothed, polished, furrowed and scratched in a direction from N.E. to S.W. Any one who has had occasion to visit Niagara Falls will see this phenomena strikingly developed along the top of the cliff on the American side, and at the excavation for the Hydraulic canal, about half a mile below the Fall. That this smoothing and scratching of the rocks could not be produced simply by the action of torrents of water carrying stones with it, may be satisfactorily proved by examining the rocks in the bed of the river, which, even where the current is most rapid, exhibit no analogous effect.

*General Inferences.*—In order to account for all the phenomena I have thus briefly sketched, we are irresistibly impelled to the conclusion that subsequently to this region having acquired its present geographical configuration, so far as relates to the outline of the older rocks, the land was submerged under the sea to a moderate depth, and that large ice-islands were driven by currents from the north, charged with mud, sand and boulders, which, as they grounded on the bottom, pushed along all loose materials of sand and pebbles, broke off all angular and projecting points of rock, and when fragments of hard stone were frozen into their lower surfaces, scooped out furrows and grooves in the subjacent rocks. When the icebergs melted, the soft and loose insoluble materials which they conveyed subsided into the bottom, filling up valleys in the ancient rocks, covering them under a mass of clay and sand where currents were powerful enough to reduce the deposits to a general level, and forming mounds and hillocks of the same, in places where such currents did not prevail. That this was actually the case is proved by independent evidence, namely, the occurrence of marine shells of recent species, in the drift formation at various heights above the level of the sea in the region drained by the St. Lawrence.

*Burlington Beach and Heights.*—Of this nature and origin I have no doubt are the remarkable formations of the Burlington Beach and Heights, which seem to have been expressly designed by Providence, the first as a natural rampart and breakwater to protect our magnificent harbour, and the latter as a bridge to facilitate our communications by land. The immense masses of clay and drift which conceal the older formations between Dundas and Copetown render it impossible to say with certainty whether the latter preserve the same precipitous