ted it for a depth of one hundred and fifty feet without change. The water which this bore yielded was salt and bitter, and a considerable quantity of carburetted hydrogen gas was evolved.

I may here remark in passing that in the spring of 1855 a great land-slide occurred on the slope of the mountain a little below Dundas Station, which displaced a portion of the track of the Great Western Railway, and was caused by the weight of the debris of the harder rocks above sliding along the face of the soft shales which, by exposure to the weather, resolve themselves into an unctuous sort of clay.

I may also notice that in filling up the old channel of the Desjardins canal, enormous quantities of material were thrown in and disappeared, producing no effect in forming a bank, but forcing up the soft material in the original bottom of the marsh to a considerable extent and height above the surface. This affords a good illustration on a small scale, of what the geologist often finds on a large scale, and may be puzzled to account for; I refer to the displacement of strata, formed in horizontal position and thrown up into a highly inclined or even vertical position.

Waterlime and Ochre.—Before noticing the superficial deposits of this region, I shall direct attention to the waterlime and ochre beds of Thorold, which are somewhat extensively worked for commercial purposes, and occur about three hundred feet above the level of the Lake, and close on the line of the Welland Canal at Thorold. The waterlime deposit consists of a series of thin layers (each layer not exceeding eight to ten inches thick) in all about three and a half to four feet thick, of very hard compact dark blue limestone, corresponding in position and probably identical with the Clinton group. These beds are in some places a perfect congeries of large bivalves, called *Pentamerus oblongus*, some of them measuring three and a half to four inches across, while the partings of the beds are beautifully marked with fucoids of various species. The limestone from this bed, when calcined and ground to powder, forms an hydraulic cement of the best quality; owing this peculiar property to the presence of a large proportion (over ten per cent.) of silica or silicates. Immediately underlying and overlying this bed, are in layers of a softer stone, which, when calcined and ground, forms an excellent drab coloured pigment; a rich brown paint, said to be fireproof, is also manufactured at Thorold, from material found in the same quarries.—Whether these peculiar products extend far to the east or west of the localities where they are at present quarried, I am unable to say; but at Chester there occurs an iron ore bed at the same place in the series, and Dr. Mack of St. Catherines has ascertained that the stone from the drab ochre bed contains forty per cent. of

Superficial Deposits.—I shall now, as briefly as the subject will admit, direct your attention to the superficial deposits of this region, and the proofs of glacial action which they afford. It is now pretty generally conceded, and in fact cannot on any reasonable ground be denied, that the thick deposit of clay, sand, gravel and boulders which covers the Western districts of Canada, (in many places upwards of one hundred feet beneath the general surface, and along the shores of Lake Erie and elsewhere forming hills one hundred and fifty feet above the general level,) is due to what is called by geologists the glacial period, and the phenomena referable to this epoch, are precisely similar on both sides of the Atlantic. From well known cosmical laws, icebergs and fields of floating ice are constantly, in seas north of the fortieth parallel of latitude, passing from the Polar regions in a direction from N.E. to S.W. and are conveyed for hundreds of miles from their original birth-places; and these are frequently found to be charged with vast quantities of mud, sand and boulders, the debris of the granitic rocks which mostly occupy these regions. These ice-islands become stranded in seas too shallow to float them, and as the ice is melted, deposit their insoluble contents at random over the bottom of such seas, and the deposits thus formed would be stratified or unstratified according as the water was in a quiescent state or disturbed by currents. The slow passage of these ponderous masses, armed with such refractory materials, over the rocks forming the bottom of the seas, would grind down their upper surfaces, removing great quantities of their constituent materials, and producing grooves, furrows and scratches in the normal direction of their course. We have, on a small scale, an example near our own doors of the effect of ice in removing masses of rock. I refer to the fact that the isolated rock called Gull Island, between Cobourg and Port Hope, two miles from the northern shore of the lake, and on which the lighthouse is built, formed at the time of the early settlement of the country, an island of over two acres in extent, but is now only a sunken reef, owing doubtless to its having been as it were decapitated by the ice forming over and adhering firmly to its upper beds, which would be borne away with the floating ice during storms. The same process is continually going on upon a larger scale in Lake Superior, and the observations of navigators in the Arctic regions supply, on a still more extensive scale, all the "modern instances" requisite for the corroboration of the theory.

Now it is an interesting and important fact that the constituent materials of the clay, sand and gravel which cover the greater part of Canada West, are derived from granitic and trappean rocks; that the boulders embedded in the clay and strewed over the surface are, for the most part, fragments of the same rocks; that