

most interesting, as well as the most important; but I must be allowed to state, that what I am about to describe in the first place, is what existed four years ago; for since the late rise of the Lakes, a breach has been made in the bar to the eastward of the swamp, which has caused these currents to cease for the present, and has produced other currents, which will be described as we proceed.

When the wind blows strongly from the westward, the waves are driven into the mouth of the harbour with very considerable force, and act with much effect upon the north shore, (this effect has been increased since the Government wharf was built) the constant action of these waves rolling inward produces a very sensible current flowing to the eastward of the harbour, but after the gale has continued for a considerable period, the water at the head of the Lake becomes lower, and an under current to the westward flows out of the mouth of the harbour, in order to restore the equilibrium between the water of the Lake and the water of the harbour; this under current is drawn chiefly from the south side of the Lake, for this reason, that the inward waves produce a contrary current upon the north shore, and prevent the water from flowing back in that direction.— Thus a circular current is produced all around the edges of the basin, the water of the harbour is prevented from stagnating, and is periodicaly changed. The phenomena of a double current is also beautifully illustrated at the mouth of the harbour. When the wind blows strongly from the eastward, the reverse of all this takes place, for the water becomes raised at the head of the Lake, the surges are forced into the Humber Bay, and whilst the waves raised in the harbour are forced outward, a powerful current underneath is rushing inward, to raise the water in the harbour to the equilibrium of the waves on the shore outside. This process has been known to raise the water in the harbour as much as six or seven inches,— and it must have produced a powerful effect in cleansing the harbour in those times before the swamp became connected with it; since then its powers must have been comparatively weak.

We may as well remind you, that we have already shewn that the bank which divides the harbour from the swamp is of old formation, and that long after the bar had been formed upon the south side of the swamp, the harbour and

the swamp do not appear to have had any connection with each other. Indeed this is proved by the well-defined former outlet of the surplus water from the swamp, still visible, close by Scarborough heights. It would appear that in these early times, the swamp had received the waters of the Don, and other streams. These in the unconsolidated state of the soil, and probably by the bursting out of secondary Lakes, undoubtedly carried into it a much greater quantity of alluvia than they do at present;— water plants had taken root, and the processes of growth and decay had, as usual in such cases, converted it into a semi-fluid morass. In process of time the surges of the Lake had blocked up the outlet to the eastward, and caused the water of the swamp to rise much higher than the water in the harbour. These waters had then overflowed and burst through the barrier on the west which separated them from the harbour, and poured in a deluge of water and mud into it; the which mud remains in the harbour till now, and toward its eastern end covers the bottom to the thickness of 5 or 6 feet, and to an extent nearly equal to one third of its whole area; this was the greatest injury which the harbour of Toronto has ever sustained.

We have already remarked, that those currents above described have ceased to act during the last four years; this is owing to an extensive breach effected in the bar upon the east side of the swamp during the late rising of the Lake, which allows the water to flow freely through the harbour from east to west and from west to east. During the autumn of 1838, accident put me in possession of valuable information upon this subject. I was travelling one afternoon along the Lake shore road, the Lake was subsiding, and the water in those large ponds upon the north side of the road was several inches higher than the water of the Lake; just as I was passing, one of the ponds burst out, the water flowed off like a deluge and carried several large pieces of turfy swamp weeds out into the Lake, where they floated about. Next day I was down at the harbour, and found several of these pieces of turfy swamp, which I saw carried into the lake on the previous day, drifted ashore near the Commissariat wharf. The weather was perfectly calm, and they could only have been brought there by an ordinary current; it is therefore a fair inference,