

of the charcoal iron trade. These, however, do not constitute the plan to harness the waters of the Ottawa River. It was a visit to Manchester, N.H., and Lowell, Mass., that created the idea. When the little "Merrimac" does such wonders, what would our old Ottawa do under similar circumstances, was the question?

The proposed canal would be almost straight, about five miles long, and lie close beside the Canadian Pacific Railway throughout its whole length.

Following the water from the starting point A, the first obstruction is met when the lake narrows into the river again, forming the Deschenes Rapids, with a fall of about fifteen or twenty feet. From here for about three miles the flow is quiet, with a regular fall to where the Remoux, a turbulent rapid, extending a distance of half a mile, with fine descent, breaks the monotony. Another short, quiet flow, and the first ripple of the Little Chaudiere is met, followed by a swift rapid to the main fall, making in all a descent of fifty or sixty feet. It will be observed that the river sweeps to the north, and consequently furnishes the easiest possible means of conveying the water back to the river, or again into the canal at a lower level. The land is comparatively level and is mostly limestone rock, so there are neither engineering difficulties to overcome, nor dams and embankments likely to give way. The enclosed area is unoccupied except as water front or piling ground, except one small hill covered with buildings averaging (in value) \$200 a-piece. To get to the lowest level, it would be necessary to cross the waterworks system, which is a serious difficulty, but one the city would likely help in obviating for such an object, as it would be immensely the gainer by the work.

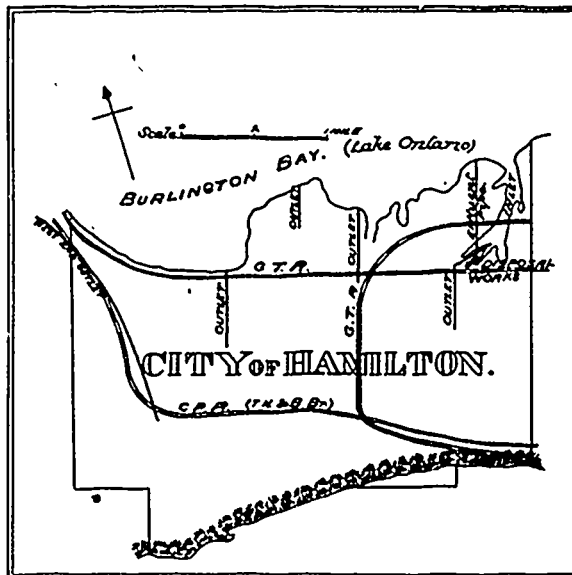
NOTE BY THE EDITOR.—The lowest level of the proposed canal, viz., that passing round the Chaudiere Falls, could not be constructed without the consent of the present owners of the power at that point, which could hardly be obtained except at an enormous expense. The proposed work would probably be confined to the line A to B', as indicated by dotted lines.

#### HAMILTON SEWAGE DISPOSAL WORKS.

The city of Hamilton, a prosperous manufacturing centre of about 50,000 population, is situated on the shore of Burlington Bay, a triangular sheet of water, each side of which is about five miles, and connected with Lake Ontario by the Burlington Canal.

The city, owing to a gentle, uniform slope towards the bay, is well adapted for the simple and efficient sewerage system designed and carried out by the late city engineer, William Haskins, M. Inst. C.E. By this system the city was divided into five independent districts, each district collecting its sewage and storm water into one main outlet, and discharging it into Burlington Bay. For a number of years the bay was fully capable of disposing of the sewage thus discharged, till recently, owing to the increase in the size of the city, the waters were gradually getting polluted, especially along the shore line. In the year 1895 matters were brought to a climax by an order from the High Court restraining the city from discharging crude sewage at the East end outlet, on the ground of its being a nuisance; the sewer in this district emptying into an inlet from the bay, and not into the bay directly. While the best means for carrying out this order were under consideration, the question of the disposal of the entire city sewage naturally suggested itself, and E. Kuichling, C.E., the sewerage expert of Rochester, N.Y., was engaged by

the council to report on this subject. After getting the necessary data, he presented a very full report, the purport of which was the recommendation to collect the dry weather flow of all the city sewage to one station, and then pump it a mile or more out into the deepest part of the bay, considering that the bay was amply capable of receiving the sewage from the present population without rendering the waters offensive.



This solution of the sewage question did not meet with the approval of the city council, the citizens or the city engineer, there being a repugnance to this mere emptying the sewage into the bay without any treatment at all. The expense of collecting the sewage at one station was also against such a scheme, the estimated cost being nearly \$200,000.

The late city engineer recommended the purification of the sewage by chemical precipitation, and advised the construction of such works at the outlets of two of the trunk sewers at Ferguson avenue and the East end. A by-law being submitted to the ratepayers, was carried for the construction of this work, the amount voted being \$50,000 for Ferguson avenue outlet, and \$35,000 for the East end outlet. It will thus be seen that the character and location of the works are both in accordance with the recommendation of the late city engineer.

The question of applying the sewage to land was gone into, but no site of a suitable nature or at a reasonable cost could be obtained. There was a determined opposition made to the establishment of sewage farms by the surrounding townships.

After careful measurements, the daily dry weather flow of sewage at the East end outlet, where the works are being established, was found to be 500,000 gallons per 24 hours. The sewage is comparatively free from obnoxious components, being largely collected from the rural parts of the city.

The works at present nearing completion are situated at the east end and consist of a pump house, press house and precipitation tanks. The sewage, before entering the receiving well, is carried across a sand pit, where heavy particles are deposited, and a screen retains large floating matters. When the pit requires cleaning, two throttle valves are shut, and the third (see Fig.) is opened when the sewage passes directly into the receiving well. At the point just below where the main sewer is tapped a weir is built across the sewer, so that in times of heavy storms the water will rise in the receiving well till it reaches the top of the weir,