water in the canal, also losses in other ways in its course to the city. Looking at this proposal carefully and disinterestedly, I feel certain that engineers, with all the facts before them, would not advise a company to go on with the work as a paying speculation.

In fact there is very little difference in this respect between the Lake Erie scheme for Hamilton and the Lake Simcoe one for Toronto. A great deal more might be published showing the impracticability of both schemes, but the facts connected with them are so apparent to those conversant with the subject, that an extended report does not seem necessary.

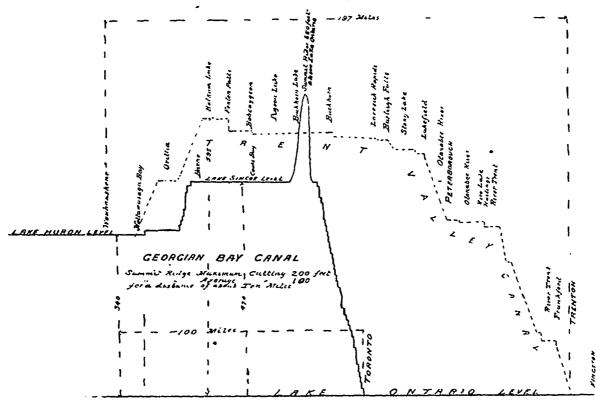
For THE CANADIAN ENGINEER

GEORGIAN BAY CANAL AND LAKE SITICOE WATER POWER.

NOTES BY THOS. C. KEEFER, C.E., OTTAWA.

- 1. If a ship canal has traffic enough to warrant its construction, Lake Simcoe would be an insufficient feeder in low water seasons and low water years, unless its level could be permanently raised by damming the outlet and storing the flood waters for this purpose.
- 2. Lake Simcoe has a very limited water shed, in proportion to its size, and has no large streams as feeders. Except on the south-east the surrounding land falls toward Lakes Huron and Ontario, the fall beginning within a few miles of the shores of Lake Simcoe. Balsam Like, which discharges into the Bay of Quinte, is within less than 20 miles of Lake Simcoe. The Simcoe lake surface must be deducted from its drainage area on water shed—because evaporation from that surface will equal the rainfall upon it.

- 5. If a larger canal than the Welland is needed it can be constructed much more quickly and cheaply by the Welland route than by any other, and when done would, for the reasons above given, be worth far more to the trade of the country.
- 6. For a ship cana! and 20 feet water an open cutting about 200 feet in depth at the summit, with an average of about 100 feet in depth for about 10 miles. would be required. There is nothing like this in canal history, except the celebrated cut on the Panama Canal -that grave of French millions-which was abandoned years ago. Before we can know what this cut will cost a series of shafts (some of them 200 feet deep) must be sunk to a level twenty feet below that of Lake S m oe. The tens of millions of cubic yards of excavation in such a cutting would cover mi'es of territory, land or water, in embankments from each end. Highways must be bridged or abolished, all bridges requiring attendance night and day. Farm crossings would be "nowhere." If the canal is to do any through business electric lights would be required throughout its whole length.
- 7. If hydraulic power is combined with navigation, the dimensions of the prism of the canal should be the largest the water supply would warrant. If the locks were much used the water power at the locks would be precarious at such times, because navigation must have the preference: and it would only be in winter that there would be a conflict.
- 8. If only a water power canal is wanted from Lake Simcoe, a tunnel at least ten miles long would be substituted for the open cutting. Such a tunnel like the cutting would beat the world's record for length. There



- 3. If the canal were in operation, a steamer of the Welland type could leave Toronto and he in Lake Superior, via the Welland route, before one could reach Lake Huron via Lake Simcoe
- 4. The length of the Simcoe route is about one hundred miles, that of the Welland canal twenty-seven. The lockage via Lake Simcoe is 600 feet, via Welland 326. It would, on account of excess in length of canal and in lockage, take three or four times as long to traverse the Simcoe canal route, as the Welland. Time being the measure of cost, nothing which could pass the Welland would take any other route.

"would be millions" in either. The probability is that the tunnel alone would cost more than all the water it could get would be worth after it is delivered as water power in Toronto.

From the tunnel to the city the water level would be kept somewhere near the natural surface by the dams instead of locks, as for the navigable canal. Open channels would be the cheapest conduits, but subject to diminution of delivery by ice in winter. The water power would be distributed over the route within twenty miles of Toronto, building up towns at every dam. Perhaps half of the power could be brought to the suburbs of