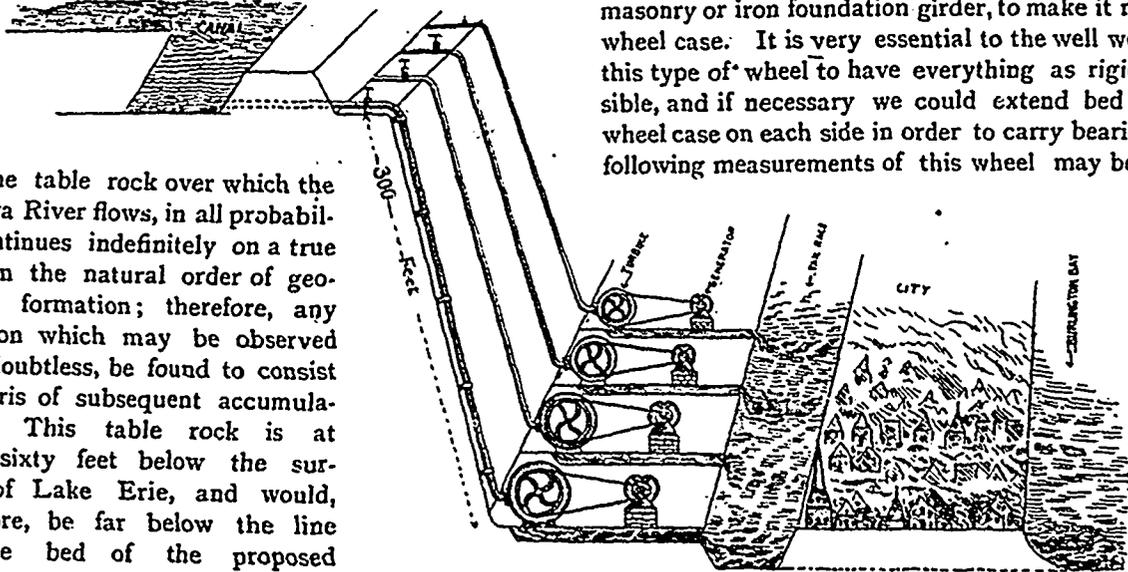


mile as far as Caledonia, thence with same inclination direct to top of mountain at Hamilton, the cross section to be nowhere less than 1,500 square feet. At the top of the mountain the canal will turn to the right or to the left, as desired, retaining same cross section and depth for a distance of 2,000 feet. At the base of the mountain there will be a canal of same dimensions running parallel thereto for same distance, the bed of which will be at least ten feet below the surface of Lake Ontario; from the end of this canal, at right angle thereto, the tail-race of same dimension will continue to the bay or to the lake, as may be found best.

I do not propose to locate manufactories or work of any kind at the power station, but to distribute the power to manufactories and other works where at present located. All of the cutting under the base of the mountain will be of the least expensive character, and I am of the opinion that the high lands on the top of the mountain, lying between Lakes Erie and Ontario, will be found to be of broken material and not solid stone.



The table rock over which the Niagara River flows, in all probability, continues indefinitely on a true level in the natural order of geological formation; therefore, any elevation which may be observed will, doubtless, be found to consist of debris of subsequent accumulation. This table rock is at least sixty feet below the surface of Lake Erie, and would, therefore, be far below the line of the bed of the proposed canal.

Considering all the facts, I am of the opinion that the cost of the proposed work is quite within the limits of results favorable to investment and that the subject should engage the attention of those likely to be benefited. One hundred thousand horse power means the work accomplished by 3,600 tons of coal per day. It means the supply of all the mechanical power required within a radius of fifty miles from the power station. It means the lessening of the cost of manufacturing, thus increasing the demand for the manufactured articles. It means the employment of all the present unemployed. Investment respects neither sentiment nor patriotism, yet in the beautiful city of Hamilton, so favored by nature in location, climate and surroundings, there should be found many good citizens who could repeat with pride, "This is my own, my native land."

Regarding the use of water wheels under such a great head of water, Mr. Golding encloses the following letter from the firm of J. C. Wilson & Co., manufacturers of turbines, Glenora, Ontario:

"Your favor of 26th ultimo received re horizontal turbines for Hamilton, Ont., to develop 1000 h.p. under 300 feet head.

"By this mail we send you under separate cover a photograph of a twenty-one inch diameter shallow bucket "Little Giant" (No. 620), which will develop

1000 h.p. under the head mentioned, making 800 revolutions per minute. This wheel is a special pattern of extra strength throughout, and one we will guarantee to withstand the pressure due to a head of 300 feet. The photograph was taken from a lot of eight wheels we made last year for the Montmorency Electric Power Company of Quebec City, to operate under a head of 185 feet for generating power for transmission to Quebec from Montmorency Falls. This company have over a dozen of our wheels in operation, some of which have been in use for eight or ten years.

"In the event of furnishing wheels for your head, we would make a few minor alterations, such as mounting the gate on friction rollers, which would reduce the friction from sliding to rolling, and make gate operate more easily. Cut No. 620 represents wheel without bearings; these are intended to be placed just outside of stuffing boxes at each side of wheel case. And if you drive from both sides of wheel we would suggest having two sets of bearings on each side of wheel case and the driving pulley between bearings. If this plan is adopted it will be necessary to have these pedestal bearings set on masonry or iron foundation girder, to make it rigid with wheel case. It is very essential to the well working of this type of wheel to have everything as rigid as possible, and if necessary we could extend bed plate of wheel case on each side in order to carry bearings. The following measurements of this wheel may be useful:

Diam. of wheel, 21 inches; depth of bucket opening, $5\frac{1}{2}$ inches; size of wheel shaft (steel), 5 inches; length of shaft, 10 feet; this could be lengthened or shortened as desired; distance from bed plate to centre of wheel shaft, 24 inches; width of case, 48 inches; length of case, 61 inches; height of case from bed plate to top of case, 40 inches.

"We make a specialty of horizontal wheels, especially for high heads, and can get you up any type of case you may require. The case we now make is so constructed that the whole wheel can be laid bare by simply removing the bolts at division in case, which does not disturb wheel, bearings or stuffing boxes. This is one very important feature in this particular style of case. Hand holes are provided in case it is necessary to remove any obstruction that might get in wheel."

OWING TO the steady increase of the advertising patronage of THE CANADIAN ENGINEER, we are enabled to enlarge the paper now for the third time, four pages being added to the present issue. In wishing our patrons and readers a prosperous new year, we take this opportunity of expressing our gratitude for the generous way in which the paper has been supported, and to the loyalty of our friends we attribute the advancement of the journal.