

comparatively short transmission distance of numerous cities and towns, which would, no doubt, flourish if the canal were built and consequently, greatly increase the demand for power.

Passing up the river twenty miles further, the Chenaux rapids are reached. The available power at present is practically negligible owing to the fall being very small, but the canal will concentrate here a head of 35 feet and of 63,300 horse-power capacity. Besides the Chenaux lift being a power directly created by the canal the other sites on this reach of the river will be greatly increased in value. From the Chats to Pembroke there are long stretches of shallow rapids, &c., where frazil and anchor ice troubles would abound but which will be eliminated by the raised canal levels.

At mileage '183' the Ottawa river is divided into two channels by Calumet island. The south channel consists of a series of pitches and rapids, twelve miles in length. By the canal, these rapids will be concentrated into two lifts three miles apart, and of 35 feet each, called the Rocher Fendu No. 1 and the Rocher Fendu No. 2 with a total of 78,000 electrical horse-power available.

The Grand Calumet falls are situated on the north channel caused by Calumet island. In a distance of a mile there is a drop of 56 feet made up of a number of cascades of great turbulence. Taking the present extreme low water flow of 4,635 cubic feet per second, there could be developed here, 20,100 horse-power. As the proposed canal route will most likely be through the Rocher Fendu channel, it will be necessary to put a dam in the Calumet channel for the proper maintenance of the canal levels. Properly placed, this dam, together with the other canal works could be utilized to develop a most valuable power site, with the following governing conditions: a maximum effective head of 69.5 feet and a regulated low water discharge of 9,700 cubic feet per second, making an available capacity of 56,000 electrical horse-power. The Grand Calumet is an excellent site for a pulp and paper industry, as a large timber country is available through tributary streams situated short distances further up the river.

The next fall will be at Paquette, 209 miles from Montreal. At present there is a maximum available head of 16 feet, capable of developing 8,700 horse-power. Extensive works are necessary to obtain this power which presents a great contrast with the power which can be obtained after canalization. By the latter, there will be concentrated here a head of 20 feet, making available 24,900 electrical horse-power.

Culbute chute is a small power situated on the north channel caused by Allumette island.

Fifty-six miles from the Paquette lift are the Des Joachims falls, 266 miles from Montreal. With a head of 35 feet, the present low water capacity is 22,740 electrical horse-power. The available head after the canal is constructed will be 40 feet, developing 60,400 horse-power.

Eighteen miles further, or 284 miles from Montreal, are the Rocher Capitaine falls. This is another of the large powers of the Ottawa river. The present physical conditions are favourable to development. The river swings around a neck of land across

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which a canal head-race one and one-half miles in length could be constructed—thus, to utilize an effective head of 59 feet, and develop 38,400 electrical horse-power. The same scheme of development could be adopted after the canal is built. The available head would also be 59 feet but with the increased regulated low water flow of 16,200 cubic feet per second, a capacity of 82,000 horse-power could be obtained.

The next fall at Deux Rivières has a present maximum head of 15 feet, with a capacity of only 9,360 horse-power. This could only be developed at a large capital cost. The canal will concentrate here a fall of 30 feet, making 38,400 horse-power available.

The last three water-powers, viz.: Des Joachims, Rocher Capitaine and Deux Rivières, are situated within a stretch of 31 miles and would aggregate a total of 180,800 electrical horse-power after the canal is constructed, as against 70,500 horse-power if developed fully for present low water. It is not probable that any improvement of these sites would be attempted under present conditions, as the country in the vicinity is sparsely settled and the land is very rough.

From Mattawa to Lake Nipissing, the various lifts which will be created by the canal will not be available for power purposes as the water supply of the Summit will be practically required for lockages and storage.

The water-powers of the French river are, at present, many in number but of small capacity. The Big Chaudière, Five-Mile rapids and the Dalles are the largest and most suitable for power purposes, especially so as the canal lifts on the French river will be concentrated at these three places.

However, with regard to this section of the route there is not sufficient data upon which to found any accurate statement regarding the power to be developed there.

Five-Mile rapids are situated forty-five miles from North Bay; the total low water flow is 5,000 cubic feet per second. A total effective head of 24 feet and 10,000 electrical horse-power is available. The capacity of this power being the same before and after the canal is constructed, the cost of development with the canal built is decreased only by the cost of the dam, which would be borne by canalization.

The Dalles falls are situated about a mile from Georgian bay. In order to obtain a head of 21 feet and utilize a low water discharge of 4,000 cubic feet per second, it is necessary to dam the four channels. Only 6,700 horse-power could be developed at Dalles falls.

There are many other features which are taken into account in the study and valuation of the water-powers, such as run-off flow at all stages, &c., but these are given elsewhere and it is deemed unnecessary to repeat the same here.

The report goes on to say:

Upwards of 1,000,000 horse-power can be developed along the Ottawa and French rivers by the improved regulated conditions proposed for canal purposes. It is doubtful if more than 150,000 horse-power at minimum conditions could be developed at present. Under present conditions the powers will not be developed for more than 150,000 horse-power, and the capital cost per electrical