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Contents of this issue on page 3

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STORAGE ON THE UPPER ST. MAURICE RIVER

PROPOSED MASONRY DAM AND STORAGE WORKS NEAR LA LOUTRE FALLS FOR THE REGULATION OF RIVER FLOW—TO BE ERECTED UNDER EXTREME CONDITIONS OF TRANSPORTATION AND CLIMATE.

A DIFFICULT storage undertaking, but one that will have an important bearing upon power development and the lumbering industry in northern Quebec, is under construction. The consideration of flow regulation of this river was adopted by the Provincial Legislature in 1912, and an act was passed granting additional powers to the Quebec Streams Commission for the execution of the works provided for. Since that time, the engineers of the commission have gathered all available data concerning precipitation, run-off and evaporation on the watershed, as well as the stream flow of the river and its tributaries. This information was, generally speaking, too meagre to be of much value, necessitating the establishment of gauging stations all along the river, as well as other careful data compilation.

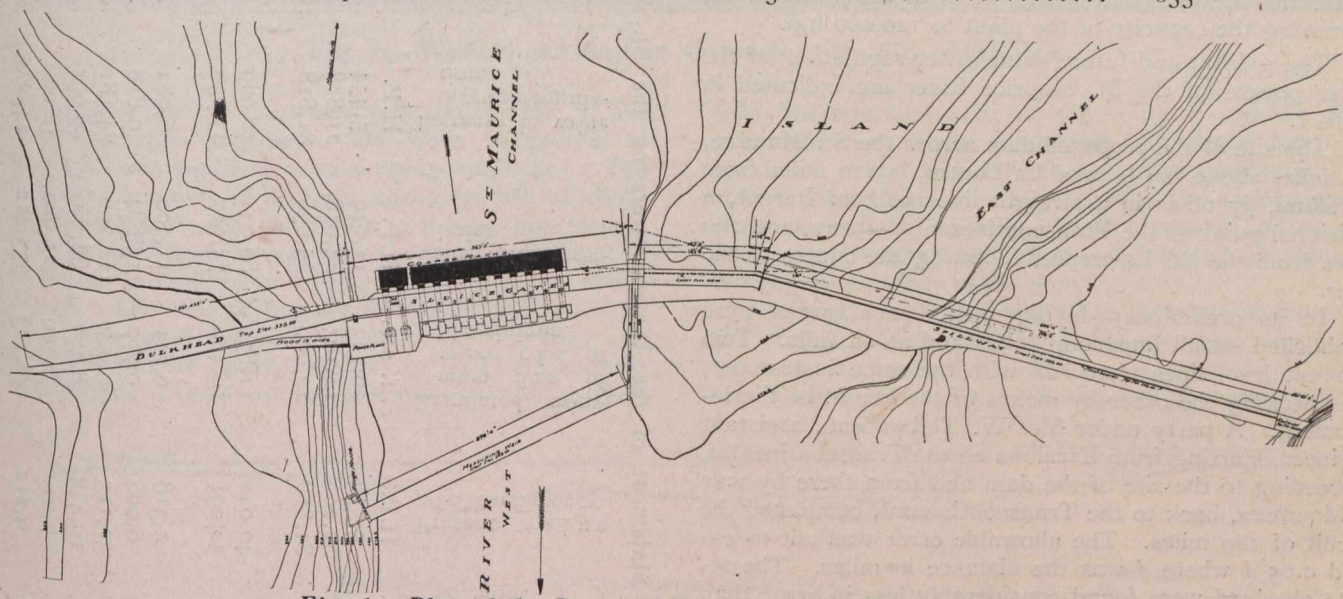

Fig. 1.—Plan of the Proposed Dam on the St. Maurice River.

Records of daily observation at Shawinigan from 1900 to 1912 had shown that the minimum flow of the river was 6,000 cu. ft. per sec., representing 0.37 cu. ft. per sec. for every square mile of drainage basin. The proportion of the flood to the minimum flow on the St. Maurice is, generally speaking, 30 to 1. The commission, after careful study, ascertained that, by a storage dam above the La Loutre rapids a volume of water estimated at 160 billion cu. ft. could be stored. The flow thereof could be made as follows:

For 150 days	.....	12,345	cu. ft. per sec.
" 200 "	.....	9,317	" "
" 250 "	.....	7,407	" "
300 "	.....	6,172	" "

The present storage reservoirs on the Manouan River, a tributary of the St. Maurice, give a total storage of 590 square-mile-feet, or 16,448,256,000 cubic feet, equal to a flow of:

For 150 days	.....	1,269	cu. ft. per sec.
" 200 "	.....	952	" "
" 250 "	.....	761	" "
" 300 "	.....	635	" "

But a close analysis of the records giving the flow at Shawinigan shows that, for the year 1906, the lowest year for the period from 1900 to 1912, it was as follows:

Under	12,000 c. f. s.	—230 days—	Average	8,000 c. f. s.
"	15,000 c. f. s.	255 "	"	8,558 c. f. s.
"	18,000 c. f. s.	270 "	"	9,030 c. f. s

The records for 1911 show practically the same conditions. To regulate the flow to 12,000 cubic feet per second would have required an average of 4,000 cubic feet per second for 230 days. The storage of the two reservoirs will give, for the same period, 8,051 and 828 cubic feet per second respectively, leaving in the reservoirs 4,879 cubic feet per second, or 55% of the water stored.

The regulating of the flow to 15,000 cubic feet per second would, in the same year, have required an average of 6,442 cubic feet per second during 255 days. The two storage reservoirs could give for that length of time 7,262 and 746 cubic feet per second respectively, leaving 1,566 cubic feet per second, or 19½% stored water not needed.