"At the head of these rapids is a flat section of the river, called the dead waters, which extends a distance of four miles as far as the highway bridge at Bishop's Crossing. Along this latter part the shores of the river are low and would not be suitable for any power development. At the foot of the rapids, there is another flat section called 'The Basin'—the water surface of which is the same as that in the pond above the dam of the Brompton Pulp & Paper Co., located near the mouth of the Eaton River (near East Angus), two miles below the rapids herein described.

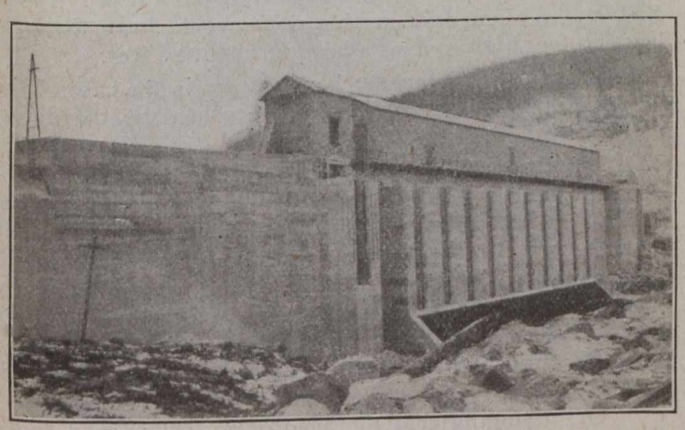
"We have made a survey of the St. Francis River between the Basin and the dead waters. Base lines were run on the two shores and connected by triangulations, checked and plotted by latitudes and departures. Special attention was paid to the location of the lands bordering the Quebec Central Railroad, and the lines dividing the lots bordering the river. Permanent stations were established at both ends of the survey and at all the triangulation points. The location of these stations have been referred to blazed trees, stumps or marked hubs.

Survey of St. Francis River

"A complete system of levels was run on these base lines, and the different elevations were referred to a benchmark located on a rock on the north shore, opposite the Westbury Rapid. The benchmark was assumed to be at elevation 100. Later on, Eloi Duval, C.E., making a precise levelling along this part of the river, called this point his benchmark No. 58, and found that our datum was 633.52 feet above mean sea level.

"Using our benchmark at elevation 100, it was found that on August 6th, 1917, the water surface at the Basin was 88.3, and the water surface at the dead waters above the bridge of the Maine Central Railroad was 115.6; the fall being, therefore, 27.3 feet in a distance of 22,500 feet or 4.25 miles.

"There is a possibility of using 25 feet of the fall between the head and the foot of the Westbury Rapids,



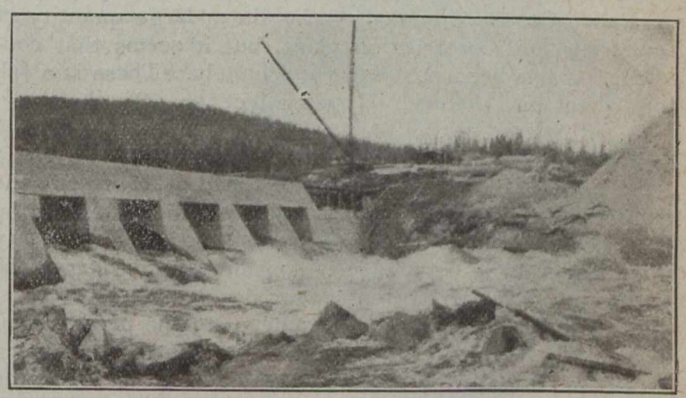
Upstream View of Sluice Gate Section, La Loutre Storage Dam

in building a dam that would back the water to the dead water part of the river. It is the most economical scheme possible. The idea of making three separate developments, namely, at Westbury, at the rapid Ledge and at rapid Tardif, is not practical. The heads would be low, and it is much better to construct the available fall in one single development.

"Records should be kept in the spring, so as to have more precise data regarding the water elevation of the Basin. It seems that the floor at the power-house should be built above elevation 95 and, in order to have the greatest possible head, use should be made of a penstock and draft-tube.

"The drainage area of the St. Francis River, above Westbury basin, has been measured on a map prepared by the Hydraulic Service of Quebec, to a scale of four miles to the inch. The area was found to be 1,240 square miles.

"But the dam which has been built by the Quebec Streams Commission at the outlet of Lake St. Francis, will store the run-off from a basin of 472 square miles, and



Temporary Sluices, La Loutre Storage Dam

will regulate this run-off to a minimum of 600 second-feet for every day of the year.

"The discharge at Westbury will thus be 600 second-feet, plus the run-off supplied by the drainage area between Westbury and the outlet of Lake St. Francis. That is, 1,240—472 = 768 square miles.

"From measurements made during the last four years, by the Commission, it was shown that the minimum run-off must be taken as being 0.25 second-foot per square mile, and the maximum run-off as being 20 second-feet per square mile. The minimum discharge at Westbury would thus be:—600 + 768 x 0.25 = 792 second-feet, say 800 second-feet.

"Over a head of 25 feet and assuming a wheel efficiency of 80% the minimum of water-power at Westbury will be 1,818 h.p. The maximum discharge will be the regulated flow let out plus the run-off supplied by 768 square miles multiplied by the run-off of 20 second-feet per square mile from the drainage area below the storage dam at Westbury. That is:—600 + 768 x 20 = 15,960 second feet, say 16,000 second-feet.

"Sufficient openings will have to be provided in the dam to make sure of the possible discharge at the rate of 16,000 second-feet during flood times, and to assure the regular sluicing of the logs.

Rapids Below East Angus

"From East Angus to Westbury Islands, the St. Francis River is not deep and contains a large percentage of boulders. At certain points, the bed of the river is made up entirely of boulders, which give the impression that the grade is high; but the profile shows a uniform grade, and none of these rapids can make the object of special study. From the Westbury Islands downstream, the river is flatter, the shores are nearer level and the valley is pretty large. From a water-power standpoint, the part of the river above the islands is the only one that can be used. A complete topographic survey was made from these islands as far as the dam of the Brompton Pulp & Paper Co. at East Angus.