flow 3,500 cu. ft. per sec. While the proportion between flood water and low water at Shawinigan was 27 to 1, at La Loutre it was found to be 4.6 to 1.

Excavation revealed the existence of from 6 ft. to 8 ft. of sand on the west side of the site, quite suitable for concrete. Test pits 8 ft. square were dug at various points, revealing a mixture of sand and stones overlying rock within a depth of from 6 in. to 16 ft. of the surface. Several of the pits had to be abandoned owing to the excessive seepage.

vestigated with the result that "Stoney" sluices, or those of a similar type, were considered the most suitable. Five different dam sections, of dimensions larger than usual, were investigated in regard to their stability under extremely severe assumptions of forces acting on the dam, these sections being, plain gravity section with vertical, also sloping, upstream face, hollow dam with deck at an angle of 45°, the same type with upper part of deck at 30° and lower part at 60° to the horizontal, and rock-fill dam with concrete shell. About 700 ft. of the dam is to

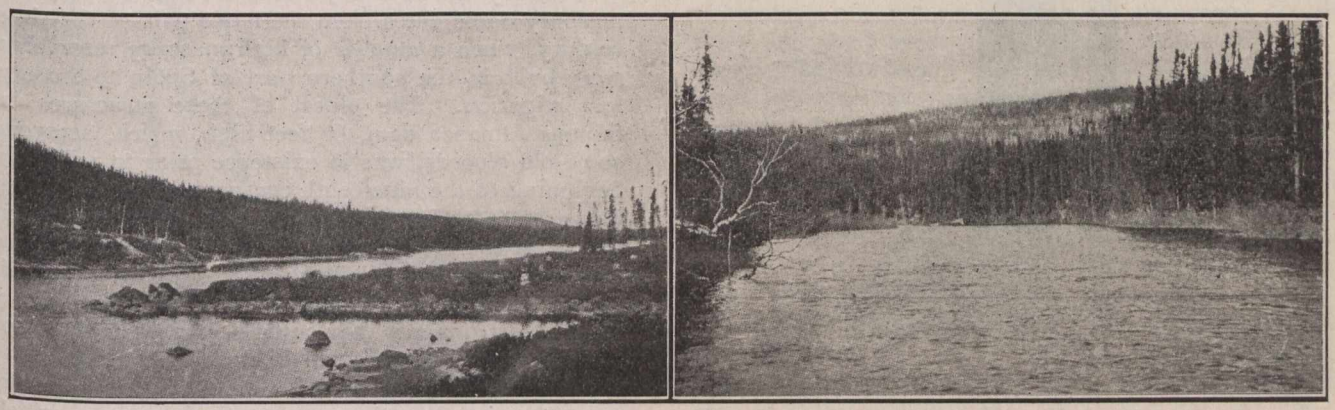

Fig. 2.—Western and Eastern Channels at the Site of the Dam.

The plans for the dam were prepared by Mr. J. W. Thurso, hydraulic engineer. Mr. Edw. Wegmann, of New York, was retained as consulting engineer. The dam, shown herewith in plan and elevation, will be about 1,720 ft. in length and will follow a broken line formed by four straight lines intersecting at obtuse angles. The crest of the dam will be at an elevation of 1,335 ft. above sea level, while that of the overflow weir will be 10 ft. lower. The plan comprises a sluiceway for logs and floating rubbish, 10 gates, each 7½ ft. by 12 ft., capable of discharging 18,000 cu. ft. of water per sec., a reinforced concrete measuring weir 375 ft. in length with abutments and wing walls. In addition, the development will include a power house, two gate houses, a gauge-house, a 12-ft. roadway and a telephone line from Manouan. These will be described in a later article.

form the overflow weir, its top being, as stated, 10 ft. below the crest of the remaining part of the dam. The maximum height will be 80 ft. above the foundation. The rock is Laurentian gneiss lying near the surface, rough from erosion, but entirely free from seams and fissures. It is an extremely hard stone, well adapted for the foundation and masonry of the dam.

It is proposed to unwater the river bed at the site of the proposed dam to permit of the necessary cleaning of the bed rock surface, the cutting of channels or checks for bending, etc. This will require the construction of

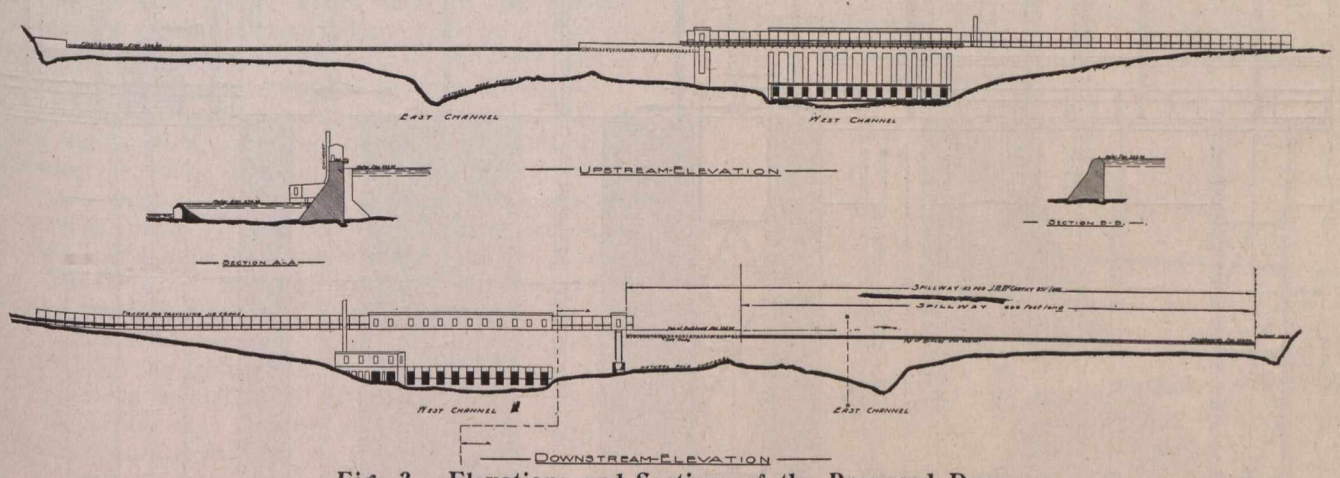

Fig. 3.—Elevations and Sections of the Proposed Dam.

Five different types of dams were investigated in regard to their adaptability for the proposed work, these types being plain gravity dam with buttresses acting as ice breakers, hollow ram with both reinforced and arched deck, retaining wall type with loaded upstream footing, and timber dam. Different types of gates were also investigated.

cofferdams and the installation of pumping appliances. The surfaces of the rock foundations are to be sufficiently roughened to bond well with the masonry and cut to rough benches or steps.

The concrete for the body of the dam will be of 1:2½:5 mix, Portland cement, natural sand and broken stone respectively. Stones, varying in size up to 4 cu. yds., will be embedded in the concrete after thorough cleaning, placed 6 to 8 inches apart to allow thorough concreting between them. Reinforcement used is to be of square twisted bars, of extra soft open-hearth steel.