The site, though well adapted for a strong, water-tight masonry dam, has the disadvantages of severity of

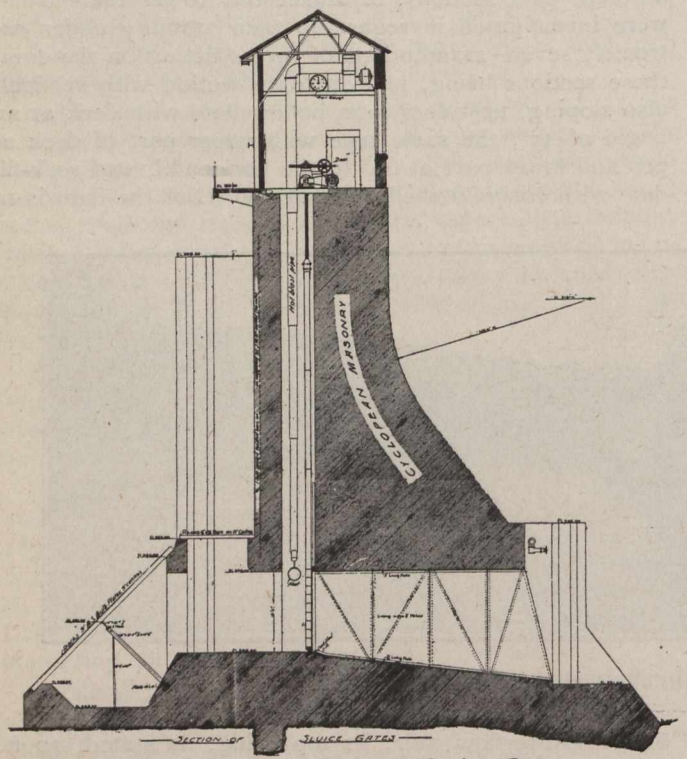

Fig. 4.—Section Through Sluice Gates.

winter weather, requiring extra strength to resist ice pressure, and inaccessibility, which will add materially to the cost of construction.

The plans have been prepared, and the work will be executed under the direction of the Quebec Streams Commission, of which Olivier Lefebvre, C.E., is chief engineer, and Ernest Bélanger, C.E., and Wm. I. Bishop, C.E., are commissioners. John W. Thurso is designing engineer of the dam, and Edward Wegmann and J. M. McCarthy consulting engineers.

In his report, Mr. Wegmann commented as follows on the design of masonry dams in general, and upon the application to the St. Maurice storage project:

Theory of Masonry Dams.—The construction of masonry dams dates from the latter part of the sixteenth century, when a number of high masonry reservoir walls were built in the southern part of Spain to store water for irrigation. The oldest of these structures is the famous Almanza dam, 68 feet high, which, according to some old records, was in existence prior to 1586. In the beginning of the nineteenth century a number of masonry dams, 30 to 75 feet high, were built in France in connection with the construction of canals. None of the early masonry dams were built according to correct principles. It has been shown that some of these reservoir walls would be stronger if they could be turned around, so that their upstream faces would be downstream.

The French engineer, M. de Sazilly, was the first to point out, in 1853, the correct principles upon which the design of the profile of a dam should be based. He was followed in the study of this subject by Delocre, Bouvier, Pelletreau, Lévy, etc., in France, and by Prof. Rankine, in England. According to these engineers there are three ways in which a masonry dam can fail; viz., by overturning; by sliding or shearing apart, or by the masonry or the foundation being crushed by the pressure it has to sustain. To insure safety, an ample factor of safety must

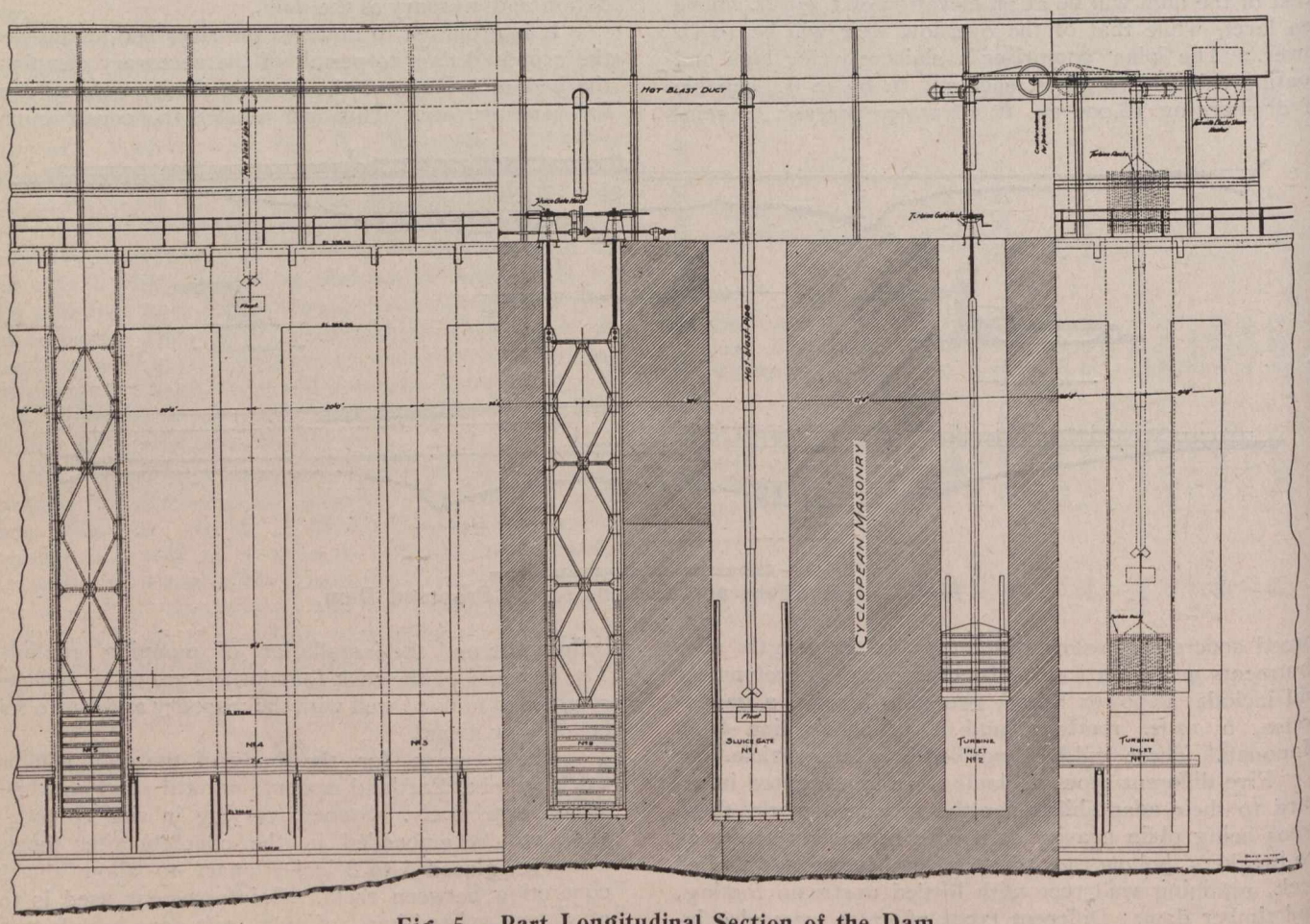

Fig. 5.—Part Longitudinal Section of the Dam.