as pos-

Council for both gly cantruction und the se is apsent.

r of the year of ditional will be king the itoba at

navigaonstruc-Winnia to the dam at

a would l largely of Win-

nd to be re rapid

g in the

caused urred at

nal level

as never

9

Owing to the continued cold weather up to the time the ice commenced to move, it was unusually thick and firm.

About 12 p.m. in the night of the 25th April a jam occurred at the north span of the Osborne street bridge, Winnipeg. The jam was caused by a field of ice $2\frac{1}{2}$ feet thick resting between the north pier and the turn-table fender. The flow of ice contir ued through the south span, with some interruptions, till 9 a. m. on the 26th, when the flow on that side was also stopped by a jam resting between the shore and the fender. The bridge has two (2) clear spans of 120 feet each. This jam kept back the whole of the ice in the river, which gradually melted away and disappeared. On the morning of the 29th the river was clear to within a mile and a half of the Osborne street bridge. During the day this ice gradually disappeared, and at 6 p.m. the last of it was within a few hundred feet of the bridge. At this time the jam at the bridge broke and, in a few minutes, the river was clear.

In dealing with the ice in connection with a dam across the river it may be

(a) held up by pile piers and booms above the dam, or

(b) it may be allowed to run over the submerged portion and between the piers of the dam.

The Dam.

The chief considerations involved in the construction of a dam across the Assiniboine River are:

(1) That the foundations should be sufficiently good to support the weight of the dam and prevent leakage under it;

(2) That the dam should be of the proper form and strength to hold the water on its upper side at an elevation of at least 90.00.

(3) That provision should be made for the passage of surplus water during floods without permitting the water immediately above the dam to rise above 90.00, or such other height as may hereafter be found advisable.

(4) That the movable portion of the dam should be as simple as possible so that, if necessary, it could be worked by unskilled labor.

(5) As at seasons of low water the whole volume of the river will be required, the movable part of the dam should be so constructed that it can be made water-tight.

(6) The dam should be so constructed that it cannot be damaged by running ice, and the moveable portion so arranged that it can be opened while the ice is running, if necessary.