Horse-Power of the Assiniboine River.

For the purpose of estimating the horse-power which the Assiniboine River will afford in the City of Winnipeg the site for the dam is assumed to be at cross-section 22 and the average level of the tail race, the elevation of the river at cross-section 17. The elevation of the water in the upper reach is assumed to be 90 00.

The volume of the river is calculated from observations at cross-section 22, except in the case of extreme low water, when the formation of the river bed at cross-section 5 was found to be more suitable.

In calculating the theoretical horse-power the formula used was:

$$P = .001892\ Qh$$

when P = Horse-power.
Q = Quantity of water in cubic ft. per M.
h = Head of water from tail race in feet.

Taking the discharge for February and March as before stated, at 82,980 cubic feet per minute, and the water level at cross-section 17 at that time at 64.8, the upper level being 90.00, the horse-power was:

$$P = .001892 \times 82980 \times 25.2$$
$$= 3956 \text{ horse-power.}$$

On the 18th May, 1888, the discharge was 298,809 cubic feet per minute. The elevation of the water at cross-section 17 was 68.5. Elevation of the upper level, 90.00.

The horse-power was:

$$P = .001892 \times 298{,}809 \times 21.5$$
$$= 12156.$$

The horse-power given above is the theoretical constant horse-power. In case the power was in use for 14 hours per day only, the accumulation of the water during the remaining 10 hours would be made use of, so that at the lowest winter level the power for 14 hours per day would be: discharge per minute, 82,980 cubic feet; discharge per 10 hours, 49,788,000 cubic feet.

The area of the reservoir above the dam at an elevation of 90.00 is approximately 26,000,000 sq. ft.

The flow in 10 hours would therefore fill up about 2 feet in depth of the reservoir; and each day of 14 hours, the supply being run down 2 feet, the increased quantity of water per minute from that source would be 59,271 cubic feet, which, added to the ordinary discharge, would give a total of 142,251 cubic feet per minute.