

## MUNICIPAL DEPARTMENT

### WINNIPEG SOFTENING PLANT.

The city of Winnipeg has recently installed a water-softening plant, a description of which will be of interest to other municipalities.

The plant is located at the new waterworks at Logan avenue and McPhillips street, close to the engine house. It is a building of irregular shape, approximately 175 feet long by 70 feet wide. The water comes from an artesian well 17 feet in diameter and about 35 feet deep. The water is drawn from the well by a compound pumping engine, which pumps it to the softening plant. The softened water flows into a reservoir. In the process of softening water lime is the chief material used. The lime is shipped to Winnipeg in box cars. These cars are run in on a spur track, and unloaded into the most northern portion of the building into a room called the lime storage room, which is walled off and perfectly dry, so that in case of any leakage of water into the building no fire would result, the room being either stone or brick on all sides. The lime is first taken from this room and weighed out in batches of about four hundred pounds. It is then placed upon a slacking bed in the lime room, where it is flooded with hot water, causing the lime to slack quickly. After the lime has been thoroughly slacked and made into a thick mixture it is allowed to slowly enter the mixing well, where more water is added, and it is stirred continuously with a paddle driven by power, until the contents of the well is a uniform mixture. The power is obtained from a twelve horse power vertical engine, which runs the paddle and also a centrifugal pump which is connected with this cream of lime, mixing well, and pumps the cream of lime up into the bottom of either one of the lime water tanks located out in the main room of the building. This cream of lime has to be made and pumped up about every two hours.

#### THE PROCESS.

The water as stated above is pumped by the small engine from the well into the softening plant up to a weir-box, which is a rectangular wooden box some 14 feet long and 2 1-2 feet deep, located at the very tiptop of the building. The hard water on entering this box is automatically divided into two streams, one stream,

containing about 20 per cent. of the whole quantity, passes down an 8-inch pipe into the bottom of two lime tanks, and slowly rising up through the lime in the bottom of the tanks is converted into lime water, and passes out through an 8-foot pipe near the top of these lime tanks, and rejoins the 80 per cent. of original hard water. These two streams come together in the baffle channel, which is located a little to the south and under the weir chamber. Here the lime water and the hard water are most thoroughly mixed and flow down through two pipes to the east and west reaction tanks. These pipes deliver the mixture of hard and lime water into the very bottom of the large tanks where a rotary motion mixes the now softening water with the heavy sludge in the bottom of these reaction tanks. The water slowly rises in these large tanks and on account of the heaviness of the precipitate the water slowly becomes clearer as it approaches the top. It is drawn off from the top of each of these reaction tanks by slotted pipes, supported by galvanized barrel floats, which causes the drawing off pipes to lower or rise as the

water fluctuates slightly in the reaction tanks.

The lime tanks are 14 feet in diameter and 18 feet deep. The reaction tanks are 30 feet 6 inches in diameter and 20 feet in depth. The water on being drawn off from the top of the 30 feet or softening tanks passes to the filters and through these to a masonry reservoir.

#### THE FILTERS.

The filters are seven in number and consist of a certain cast iron and steel frame which hold eighty-one wooden rings or plates, which are made of seasoned maple. These filter plates have a certain grille work. Between each of the eighty-one plates are placed two cloths, which are held together with a cloth collar. After the

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Correspondence invited. . . . .

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