

to take the overflow of Loon Lake. This pipe when laid as proposed can deliver, running full, some 2,600,000 gals. per diem, thus largely increasing the available water supply. The total cost of the connection is estimated at \$5000.

#### DAM AND GATE HOUSE.

The dam and gate house are situated at the foot of Lamont Lake. The original dam was built to supply water for a grist mill, but the mill had not been in use for some years when the town took the lake for its supply. The old dam, which was built roughly with stones, brush, and other rubbish, was raised 2 or 3 feet and the gate house built in the front part. When the lakes rose, the dam was found to be leaking considerably. The different leaks were repaired as they appeared, but finally a trench 2½ feet wide was cut along the whole length of the dam, down to a bed of clay some 2 feet under the original ground surface, and filled with well puddled clay. This seemed to stop the leaks effectually, and no trouble was experienced till February 7, 1893, when it was found to be leaking about the waste-weir, and an examination showed as follows: It will be seen by the sketch how the waste-weir is constructed. It is 12 feet wide and set into the dam some 2½ feet. 6 in. x 8 in. timbers bedded in the clay are put in running across the weir 4 feet apart. These are planked over with 3 in. plank, caulked and run with tar to keep the water from making its way through to the clay. Another layer of 3 in. plank is put on as a protection from the sun when no water is running over the weir. Stakes are driven down in front at the lake end of the weir, and 3 in. plank extending 4 feet out on each side of the weir spiked to them. 6 in. x 6 in. timber sides are then put in, with the timbers well fastened together with ragbolts. Then clay is well rammed down in front of the apron and around the sides. A dry wall is built at the back of the dam under the weir, and loose rock thrown in behind to break the force of the water falling over.

*Frost action.*—It is known that as frost works down through clay it expands the clay, which of course must rise, and anything in the clay must of necessity rise with it. Thus it will be seen that as the frost found its way down past the apron in front of the dam, each plank, as the frost reached it, rose and separated from the one below it. In our case there were spaces of from ½ to 1 inch between them, while the first short plank at the sides was separated from its neighbour fully 2 inches.

Then as frost goes down through clay there is always a space (usually half filled with ice needles) between the frozen ground on top and that unfrozen underneath. It will readily be seen that as soon as the frost had worked down below the water-level, the water would begin to find its way between the lifted planks in front, and along the seam made by the frost, and out into the stones behind the dam. It would not be long before the water would wear away a considerable quantity of the soft clay, and thus make a serious leak.

