

generally considered to be attended with the production of a nuisance, as might be supposed. In fact, the removal of the sludge from a septic tank which has been in service for a considerable period may readily be handled at any plant without particular discomfort on the part of the workmen or of the people in the immediate neighborhood. The absence of odor in well-matured septic sludge is such as to cause considerable comment when for the first time an opportunity is afforded to witness the cleaning of a septic tank.

LEAKS IN WATER MAINS

Leaks in water mains are in many cases a prolific source of water waste. In some instances the entire system of mains has been so carelessly laid that to take them up and relay them, would solve problems of defi-

Leaks of any magnitude will show themselves at the surface in the shape of moisture in all forms of soils except those which are very porous. It is claimed that this method will reveal exceedingly small leaks (a one-half gallon leak per minute having been detected from a pipe of sixteen inches diameter, and in ground where the surface remained quite dry.)

THE RAKE IN ROADMAKING

The value of the common rake as an implement of roadmaking is not yet fully appreciated. It is many times exceedingly useful in construction, and is everywhere of value in the maintenance of gravel and broken stone roads.

In building gravel roads, the rake should be used to spread the gravel over the road-bed. If there are stones



BRIDGE ACROSS MUSKOKA RIVER, THOMAS STREET, BRACEBRIDGE

cient water supply. A new method of locating leaks, applicable more especially in frosty weather, is reported from Geneva, Switzerland.

It was found that snow or frost over a trench thaws in the morning sun more rapidly immediately over the leaks than at other positions. This method is evidently applicable only during certain seasons, when the ground has a light covering of snow or frost, and its temperature is raised from well below to slightly above freezing. In three days at Geneva thirty-eight leaks were discovered from which a total of 136 gallons a minute, or about 200,000 gallons a day had been leaking, the pipes being from about 24 inches to about 2½ inches in diameter. Snow has been found to be a more sensitive indicator than frost, and the observations are best made when the frost or snow begins to thaw.

of large size, these should be drawn forward and left on the earth sub-grade, to be covered by each succeeding load of gravel as it is dropped on the road. If there is an excessive amount of large material, the rake should be used in the pit to remove as many large stones as possible before hauling to the road.

Where a road is not consolidated by a heavy roller, deep wheel tracks, and a centre horse track are quickly made in loose gravel and broken stone. The rake is an excellent tool with which to go over these roads, raking the wheel and horse tracks full, until they are well consolidated by traffic. The common method has been to neglect these roads and permit the tracks to remain in the loose gravel or stone. These hold and absorb water the first season, and the destruction of the road commences rapidly.