

Water Waste.

The providing of a sufficient supply of water for the increasing demands of an increasing population is a problem that is attracting the attention of many of our larger municipalities, and is one that in many cases is becoming more difficult of solution each year, and the time is approaching when most rigid economy will have to be exercised in the use of water unless some unforeseen sources of supply may be developed.

To reach a fair appreciation of the subject of waste we will consider it in its bearings to the systems now in operation in various cities. To those taking their supplies from subterranean sources or from inland lakes and streams dependent from their flow upon the rainfall over comparatively limited areas, and hence must carefully guard such supplies from contamination by increasing populations and especially from destruction by the denuding of forest lands, the subject is of the higher importance than to the cities more fortunately situated on the great lakes of our large rivers where the worst to be anticipated is additional expenditure for pumping and the cost of increased capacity of intake, distribution and machinery, with at most a settling basin or filter plant added.

The causes of waste being known, the methods for reducing it are to be considered. There are two standpoints from which waste is to be treated. The one is the case where the supply is unlimited and the reason for restricting its consumption are purely financial ones. The other is where the supply is not unlimited and the demand is approaching the limit. In the first instance, if the consumer is willing to pay his share of the cost of pumping and of the interest on the plant, he should be allowed to use as much water as he desires, but in the latter case the supply must not be wasted and it is proper to prescribe its legitimate uses and the quantities to be allowed for each. The solution of the problem so far as the premises of the consumer are concerned demands only in the former case the application of the meter, but under the latter inspection and stringent regulations are required in addition.

The first point to be looked after in the prevention of waste is the distribution system itself. The sources of waste here are the joints of the pipe, the stuffing boxes of the gates and the hydrants. For the gates and hydrants the remedy lies in a frequent examination. The subject of tight joints is one of more importance, the securing of which requires great precautions. The system of laying pipe usually adopted by contractors, of caulking two or more pieces together on the bank and then lowering them into the ditch is one that can hardly be approved. Although it is theoretically possible to so suspend three pipes from two derricks as

to allow of no strain upon the joints, yet this condition is not necessarily fulfilled in the ditch when the pipe reaches its final position. Personally we believe in laying each pipe on a block just back of the bell and pouring the joint with the pipe in the position where it is expected to remain. This requires a little more care in back filling than where the block is not used, but at the same time it does away with the bell hole digger on small pipe. The amount of lead necessary in a joint is frequently over-estimated. There is rarely, if ever, any reason on water mains to use more than two inches of lead and the less yarn the better. The yarn being fibrous at first prevents the water from getting through the joint, but after it is saturated its efficiency is decreased. For this reason a heavily yarned joint will not show leakage on a first test but in a short time will be found leaking. In these days of electrolysis of water-pipes and the possibility of the joints especially being effected, the subject of another jointing material than lead is being considered. Portland cement is being used both on water and gas pipes made into a putty and rammed into the joints and is reported as giving good satisfaction; rubber has been successfully used under pressure and is reported as high as sixty pounds. To be assured of the tightness of the joints whatever the jointing material, the line must be tested in the open ditch to as high a pressure as it is likely to be called upon to withstand and this test should be continued twenty-four hours if possible, and the longer the better. We have known lines that were tight for the first six or eight hours to leak at the end of twenty-four. The line should be carefully inspected, particular attention being paid to the bottom of the joints while under pressure. A leak on the bottom is an evidence of bad caulking. The causer is the one man on the work that should not be hurried, but should be allowed to do a first-class job on every joint. In inspecting lines under pressure any evidence of water on the inside getting on the outside is an evidence of a leak. The contractor may call it "sweat," but he should be made to stop it for these "sweats" rarely improve with age.

The next source of waste to be looked after is the service connections. The so-called corporation valves should be of brass and screwed into the main. If service cocks with the stop and waste are used, care must be taken that they are set right end to so that the waste may not take place from the main when they are turned off. Spring faucets are a partial safeguard, but there is nothing like the meter for taking care of this part of the waste. It is even related that in some places the moral effect of the meter is such that merely the case with the working parts removed and an inspector to look at it occasionally will materially reduce consumption.

Roads.

Mr. Thomas Brooks in his address on the Statute Labor question before the South Brant Farmers' Institute last month said: "Will any of you who have lived here for the last thirty or forty years tell me how much better any of our roads are now than they were then, directly. We see on the roads of to-day the aggregate of all the labor and expenditure that has been put on them for the last half century, and have we good roads? Not at all. Nothing like what we should have for the expenditure of time, money and labor. In many places the old hill is about the same grade, the old bottom just as deep in mud and mire as it was thirty or forty years ago. I will give you figures that will show you that they ought to be a vast site better than they are. On every hand and on every side we see evidence of progress, thrift and comfort except on the roads. It is said that civilization and good roads go hand in hand, but I would be sorry to have the civilization and intelligence of our farmers judged by the condition of many of our roads."

When the country was new we can readily understand why the Statute Labor system was adopted. The undeveloped condition of the country compelled the people to subscribe to its use and to accept the humiliation and injustice which it necessarily imposed. The settlers were poor individually and collectively and we are forced to excuse them from attempting to construct and keep up the roads in that crude and unsystematic system. The pains and trials of the early settlers have passed. Roadmaking is not such a question of civilization to-day as it was among the early settlers, yet it is a question which is to be made one of the great issues of the future. The system as at present operated is a travesty and a failure, in no place has it proved satisfactory, yet it is in operation in every township in the Province. Not only is the labor wasted but in addition, according to government returns over half-a-million of dollars per annum. This by no means represents the full amount, as the money collected from those persons who agree to pay their assessment in money rather than by personal labor is in many cases diverted to such mysterious uses that only the municipal politicians have power to disclose, and are therefore not shown in the returns. The labor and money spent by the people of this province within the last half century would more than build and maintain half the road mileage in Ontario of the best class of roads and yet with the exception of the few leading roads built by county grants chartered companies or direct municipal tax our roads are a burlesque on the name.

We are far behind in this respect. When we compare our system of highways to those of the older European countries our patriotic fervor must diminish most discouragingly. We have rushed along the