

## CURTAILING WASTE IN WATER SUPPLY BY METER.

Much evidence is manifest throughout Canada of the necessity of immediate action to curtail waste in water supply systems. In some cases the consumption is almost double the amount of water actually required. The effect of the waste is realized by the officers in charge when the limit for which the system was designed has been reached. Costly extensions are then necessitated to supply the wasted water and the rates for water must be readjusted upward. These high rates must be applied indiscriminately both to the careful and the careless user.

One of the larger cities in British Columbia recently narrowly averted a water famine caused by excessive waste during a dry period and steps have now to be taken to provide an additional supply at considerable expense. In another city, in Alberta, the cost of carrying each flat-rate consumer has been noted to increase by \$1.20 during the past year. The City Commissioner, urging the installation of service meters to remedy conditions, officially reports that "there are many hundreds of houses where water is being supplied at flat rates which are less than cost, and, on the other hand, there are many flat-rate payers paying considerably more than the cost of the water which they are using."

Mr. G. A. Johnson, Consulting Engineer, New York City, asserts that, as an integral part of the programme of conservation, water waste prevention is of cardinal importance. The saving that can be effected by intelligent and persistent effort in this direction is not sufficiently appreciated.

Hazen, in his book "Meter Rates for Water Works," says in part: "When a water-works system is first installed all the plumbing fixtures in houses are new and they are in general reasonably tight; people will ordinarily draw only the amounts of water that they need, and waste is comparatively small in amount. As time goes on, rust, corrosion, the hardening of rubber valves, and other changes result in leakage from plumbing fixtures. Small leaks running constantly make little impression on people who do not realize their significance. Yet a leaky water closet may waste without attracting attention as much water as would supply twenty families.

"As times go on people become accustomed to the waste of water in their houses and indifferent to it; and it is the experience of American cities where the meter system has not been used that the consumption always increases more rapidly than the population. It may be a long time before the output becomes double the legitimate use; but after that point is reached, the rate goes on with greater acceleration until three-quarters of all the water that is furnished is wasted.

"The only limit to the increase is that a time comes when the new works required to supply the ever-increasing waste become so large and cost so much to build, that the burden cannot be further borne."

It does not require 100 gallons of water daily to cleanse the person and surroundings of the average citizen, carry away his sewage, cook his food and provide him with drink, or to furnish his share toward the water needs of the industries in his community. The New York water authorities seem to think that 80 gallons per capita is enough water for all the domestic, municipal and industrial needs of that city. There seems to be no good reason why one city should have an actual water consumption record of 70 or 80 gallons per capita daily, and another of approximately the same size and industrial activity show a water consumption of three times that amount. And yet such occurrences are not uncommon.—L. G. Dennis.

The high cost of living is increased by forest fires. Every citizen should help to keep down fires.

## THE LARGEST ELECTRIC LIGHT AND POWER PLANT IN THE WORLD PUBLICLY OWNED.

With the acquisition of the \$32,724,000 properties and entire electrical interests of Sir William MacKenzie in the Toronto and Niagara district the Hydro-Electric Power Commission of Ontario becomes the largest generating and distributing concern in the world, according to the Electrical World.

The total capacity of the plants owned, acquired and under construction will be more than 1,000,000 horse-power. The total investment by the end of 1922 will be between \$160,000,000 and \$170,000,000 by the province of Ontario and the municipalities.

The Hydro-Electric Power System owned and operated by the Province of Ontario has been in operation now for ten years. It has been a story of stirring achievement and success mounting steadily from the first. By the last of 1920 it was serving 235 cities and intervening territory. It had reduced the price of electricity from 9 cents to 3 cents a kilowatt and was the most successful enterprise of its kind on the continent.

Now, with the purchase of these additional properties the province assumes an almost complete monopoly there being only one privately owned concern remaining in the province. It also, incidentally, becomes the greatest electric light and power plant in the world.

## CONCRETE ROADS.

Concrete roads are rigid. They distribute the pressure of heavy vehicle loads to a large area of the underlying soil. When the soil lacks reliable bearing power as in the case of spongy clays or soft loams, concrete roads may be reinforced with steel rods or heavy steel wire mesh the bending stresses caused by the shock of traffic. This reinforcement affords an additional factor of safety at locations where, for any reason, unstable soil conditions exist or may develop. Concrete is the only paving material in which steel reinforcing can thus be used to give the increased strength required. Because they are rigid and can be built strong enough for any traffic, concrete roads are more widely used than any other type of highway surface. The people have learned to depend upon concrete roads. That's why concrete roads are being built and used everywhere. It's not the result of a sudden impulse. It's the result of public confidence — justified by long experience.

### What About Cracks in Concrete Roads?

Concrete expands and contracts slightly with changes in temperature. Sometimes, in contracting, cracks appear in the surface. Those unfamiliar with concrete pavements sometimes are alarmed by such cracks, and fear serious consequences. Such cracks, when they do appear, in no way affect the smooth riding qualities, nor do they tend to shorten the useful life of the pavement. Road building engineers of wide experience in all sections of the country give little or no serious thought to the cracks that may develop in a well built concrete road. At Bellefontaine, Ohio, there are concrete pavements on the principal business streets, which were laid in 1893. To-day, after 28 years, those pavements are giving perfect service. A few cracks are in evidence but they have not shortened the life, nor affected the service giving quality of the pavement in any way.

More than 200,000,000 square yards of concrete pavements in the United States and Canada are serving the demands of modern traffic.