WATER REQUIRED BY A STEAM RAILWAY SYSTEM.

In a report to the Illinois Water Supply Association, Mr. C. R. Knowles, general foreman of the Waterworks Department of the Illinois Central Railway, places emphasis upon the importance of an adequate supply of water of good quality for the maintenance of an economic and uninterrupted train service.

Not many years ago, the load of freight trains ranged from three hundred to five hundred tons, and an engine tender with a water storage capacity of twenty-five hundred gallons was considered ample; but to-day freight trains on important trunk lines of low gradients are loaded with two thousand to four thousand tons, and engines with tender storage capacity of nine thousand gallons are quite common. The consumption of water has, therefore, greatly increased and it has become necessary to raise the standard of water supply, both in quantity and in quality in order to meet the traffic conditions.

In former years it was the practice to erect a tank and establish a water station at any point where water of any kind was most convenient, with little regard for quality or future requirements. This has necessitated many changes to meet the changing conditions and added requirements, relocating the water stations with due regard to curvature, gradients and the many previously unknown expedients of operation.

To accomplish the desired result it is often necessary to pipe water from a considerable distance, or, if an ample supply is not otherwise available, to sink wells, or construct an impounding reservoir. If the available supply is not satisfactory in quality, it is often necessary to erect treating plants for converting it into a suitable water for locomotive purposes.

All these changing conditions and increased requirements have made it necessary to maintain a waterworks department organization, whose duties are similar to that of a city waterworks department. Constant vigilance on the part of this organization is necessary to maintain an uninterrupted supply of water at all times.

The amount of water required by a railroad 6,500 miles long, over the entire system, for all purposes, is approximately 16,500,000,000 gallons per annum.

Only part of the water consumed is metered, as a large part of it is furnished on a flat rate, or pumped by facilities, owned and operated by the railroad; consequently the figures given are estimated, the estimates being based on comparative figures at points where meters show the actual amount used.

The consideration of first importance in railway water supply, both in quantity and in quality, is water for locomotives. A water which would be ideal for this purpose would be one that would not scale, would not corrode, and which would not foam or prime. Unfortunately nature does not supply such a water; consequently, where these evils do not cause too much trouble they are tolerated and where they are excessive the water is treated. In the State of Illinois, on 2,000 miles of railroad, locomotives consume annually 4,236,838,000 gallons of water; 1,751,790,000 gallons of the above amount is purchased from municipal and privately owned waterworks plants, and 138,645,000 gallons is treated by purifying plants owned by the railroad company. It is necessary to maintain 123 water stations to distribute this water to locomotives at required points.

The washing and filling of locomotive boilers at terminals require a large amount of water in addition to the above, which amounts to approximately 950,000,000 gallons per annum. This is, of course, supplied through the same facilities supplying water for locomotives, with additional facilities for maintaining the desired pressure for washing and the necessary pipe lines for distribution of the water under pressure.

There is also the consumption of water by stationary power plants, including water used for condensing engines, which is approximately 300,000,000 gallons per annum, 125,000,000 gallons of this is city water. Water is also used for sanitary purposes at shops, roundhouses, offices and stations. This requires an additional estimated amount of 250,000,000 gallons, 200,000,000 gallons of which is city water. The grand total is 5,736,838,000 gallons used for all purposes in Illinois alone, 2,476,790,000 gallons of this is purchased from city plants.

It is interesting to note that forty-three per cent. of the water used in the State is purchased from municipal or private waterworks. It would seem that the railroads of the State form such a large portion of the various water companies' patronage that rates for water purchased from city plants could be made sufficiently attractive to secure even more of what would appear to be very desirable business. As a matter of fact the city rates in a great many instances are so high that the railroad companies wherever it is possible to do so have found it cheaper to install and operate their own stations.

The use of superheaters on locomotives, and modern washout plants, where the water is blown off from locomotives into the washout system and used again for washing and heating fresh water for refilling, have affected economies in the use of water, but the consumption of water has increased to such an extent on account of the larger business being handled that the result of these economies is not perceptible in the grand total of water consumed.

A great deal more might be said on this subject, but costs, merits of various sources of supply, methods of pumping, treatment and filtration have not been considered in detail, the object being to present the water supply of a railway system only in a general way.

ROYAL COMMISSION OF GEORGIAN BAY CANAL.

A Royal Commission will be appointed to investigate the commercial advantages of the Georgian Bay Canal project. Whether the Government will proceed with a twenty-two foot waterway from Montreal through to the head of the lakes via the Ottawa River and the Georgian Bay, or whether it will proceed to deepen the St. Lawrence Canal to a depth of twenty-two or possibly thirty-five feet will depend upon the report of the Commission.

One of the two or three interior terminal elevators to be erected by the federal government in the Canadian West is to be in Calgary. Placed as this city is at the natural gateway from the grain growing area of Alberta and Saskatchewan to the Pacific coast and the Panama Canal, no other decision seemed possible. The Grain Commissioners voiced their disapproval of the city's laissez-faire attitude in not presenting a more elaborate case when the question was under consideration, but to Calgarians, the situation is so apparent that the organizations most particularly interested may be excused for thinking that everyone else ought to see it as plainly as they.