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SAND FILTRATION OF PUBLIC WATER SUPPLIES.

By R. S. LEA, Assoc. M. Can. Soc. C. E.

(To be read Thursday, Jan. 19th, 1899.)

The present century, particularly the latter half of it, is especially noted for the wonderful progress which has been made in scientific knowledge. None of the results are of more practical importance than the developments which have taken place in the facilities for transportation, and for the transmission of power over long distances.

The direct outcome has been a continually growing tendency towards centralization in most industrial operations; which, in turn, has resulted in an increase in the number of people living in towns quite out of proportion to the total growth of the population. For instance, in the year 1790 there were but three towns in the United States with populations of 8,000 and over; and these comprised less than 4 per cent. of the whole number of inhabitants. In 1880 there were 286 such towns; ten years later the number had increased to 448, and these included about 30 per cent. of the total population. Again, in 1840, there were only three cities with populations as great as 100,000; in 1890 there were 30; while at the present time almost half the people in the country live in places with populations of at least 1,000.

These are figures which apply to the country at large. In certain districts, however, the percentages are much higher. For example in the State of New Jersey, 52 per cent. of the people live in places of 8,000 or over, in Connecticut 54 per cent., in New York 60 per cent., and in Massachusetts 70 per cent. The last State, with a total population of about 2½ millions, has 40 cities of 10,000 and over, and 20 of