

MUNICIPAL DEPARTMENT

THE FINANCIAL MANAGEMENT OF WATER WORKS.

The April Proceedings of the American Society of Civil Engineers contains a paper under the above title by Mr. Emil Kuichling, M. Am. Soc. C. E., which merits careful attention, particularly from those parties or communities who seem still to entertain the idea that a public water supply should in some way or other furnish free water to consumers. The paper in no sense is intended as an argument against that erroneous idea, for Mr. Kuichling assumes a rational, business view of the subject as a starting point for his observations, but what he has to say is directly pertinent to that phase of the matter as well as to others. It is simply our purpose, however, to direct attention in passing only to this feature of the paper and to discuss more generally a number of points made, and well made by Mr. Kuichling.

He first points out the actual expenditures incurred in the construction and operation of a system of public water works and the sources of revenue to be derived from the consumption, both public and private, of the water supplied. These are financial matters about which, in their general character, there can be no question. It then becomes necessary to determine in what manner these expenditures shall be met, which is also a matter of regular business procedure. Municipalities, like individuals, must borrow money in order to carry out large enterprises, and having made loans it becomes necessary to pay interest on them; at the same time it is necessary to provide for repairs, renewals, extensions and operation. These sources of outgo mean that funds to meet them must be raised either by revenue from the works or by taxation, or by those methods combined. Again, it is only common business prudence to provide for a sinking fund sufficient to meet the bonded indebtedness at its maturity. As a result of accrued experience to the present time, Mr. Kuichling appears to be of opinion that it is reasonable to make an annual contribution to the sinking fund on the basis of liquidating the debt at the end of 30 years, together with an annual payment into a "depreciation fund" sufficient at the end of possibly the same length of time to cover the renewal of the perishable portions of the plant. All of this is no more than reasonable. It lays no burdensome duty on the present, and it scarcely can be considered more than fair to the future.

The total annual expense would then be divided into three classes—viz., interest on bonded debt, annual payments into sinking and depreciation funds on, say, a 30 years' basis, and annual operating ex-

penses, including ordinary repairs and minor betterments. There are certain other possible classes of annual costs, but the three preceding, under Mr. Kuichling's views, cover all that seem to be advisable. We think, however, that there may be some doubt whether "all extensions and material improvements of the system should be regarded as new construction work to be paid for by general taxation." Such "extensions and material improvements" may be on a scale to make them productive of considerable revenue, and when that is the case there seems to be no good reason why they should not be brought under debt, sinking and depreciation fund provisions, although the wisdom of paying cash without mortgage obligation for all practicable betterments, and even construction, is to be commended.

The methods of raising these annual expenses form problems of no little complexity, although it is perfectly clear that general taxation must be applied for all these benefits which the public as a whole (both persons and property) enjoys. This principle is beyond doubt, but the limits of its application are not well defined. Mr. Kuichling is of opinion that fully one-third of the annual charge on the cost of construction is due to adequate provision for fire protection, and that about the same amount is chargeable to the provision for future growth. As the original enlargement of plant for the latter purpose will be just sufficient for the needs "twenty to forty years" later, the annual charge decreasing until it disappears at the end of that period with correspondingly increased revenue will be but about half that due to fire protection. The operating expenses are also manifestly greater in consequence of the increased capacity of the plant for fire protection and for future growth. Mr. Kuichling considers that one-fifth the total operating expenses may reasonably be taken, at least in some cases, for this portion. He also considers that one-third of the annual contribution to the sinking and deterioration or renewal fund should, for the same general reason, be charged to the public. All these items, together with the cost of water used for public purposes at the regular rates, should be raised by taxation, leaving the remainder of the annual charges to be borne by the individual consumers of the water. While these proportions may not be critically correct for all

cases, they are fairly representative quantities and illustrate well the considerations which lead to stable and reasonably low water rates. They are worthy of careful attention in cities and towns where confusion regarding water-works financing still reigns, and they are not few. We commend them for the guidance of such communities. Engineering Record.

THE RENFREW WATERWORKS.

Mr. Willis Chipman, the well-known waterworks engineer, of Toronto, says the *Montreal Gazette*, passed through the city yesterday from a visit to Three Rivers, where he had been inspecting the Iron Works Company, looking over minutely the various pipes, hydrants, valves, etc., which the company will furnish in connection with its contract with the town of Renfrew. In discussing the capacity of the works, Mr. Chipman expressed himself as more than surprised at what he had seen, adding that a better plant could not be found on the continent, and as for the mechanical arrangements they are most complete, and reflect the greatest credit upon Mr. Duncan, the superintendent. Mr. Chipman said in conclusion that he had no idea that so extensive a concern existed in this province, and after testing the pipe for the Renfrew works he believed they would give every satisfaction.

A GARBAGE DESTRUCTION SCHEME.—Assistant Health Commissioner Reilly, of Chicago, proposes the construction of a large steel box inside the chimney of each of the city's pumping and electric light stations, so that the garbage now taken to the offensive dumps may be therein dried by the waste heat, that is estimated to average 400° Fahr., and fitted for use as fuel under the boilers.

THE WORLD'S DRY DOCKS.—The length in feet of the principal dry docks of the world is given in the U. S. consular reports as follows: Belfast, 825; Birkenhead, No. 1, 750; No. 2, 930; Cardiff, 600; Liverpool, 768; London (Tilbury), 875; Newcastle (Wallsend), 520; Southampton, 750; Antwerp, 427; Cherbourg, 508; Havre, 535; Marseilles, 593; Genoa, 720; Baltimore (Simpson's), 504; Brooklyn, Erie No. 1, 620; Erie No. 2, 510; Newport News, at top, 609; at bottom, 560; Norfolk, Va., 500.

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