

METER RATES FOR WATER WORKS

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Meter rates for water works by Allen Hazen

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ALLEN HAZEN

METER RATES FOR WATER WORKS

PLEASE RETURN TO
DEPT. of APPLIED MECHANICS.

METER RATES

FOR

WATER WORKS

BY

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England Water Works Association; American Public
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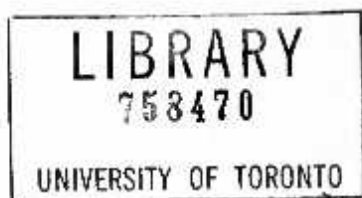
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ALLEN HAZEN



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PREFACE

THIS book deals with the problem of distributing the burden of supporting a water-works system among those who use the water, in a just and equitable manner. It also deals with the technic of handling the statistics that must be used, of making the required computations and of estimating the revenue that will be produced by a given set of rates.

The preparation of this material for publication was the direct outgrowth of service by the author as Chairman of the Committee on Meter Rates of the New England Water Works Association. In that capacity he found that the members of his Committee were very capable water works men, representing, by their business connections, both public ownership and private ownership. One was connected with a public rate fixing body, and two were in practice having to do with the rate problem from various aspects.

The first work of the Committee was to find the views of its own members, and without attempting to formulate any principles as to the amount of rates, to get an agreement as to the form of rates that would best distribute the burden upon all takers with a minimum of injustice. After the Committee had decided upon such a form of rate, it was presented to the membership of the Association for general discussion. The Committee then had to defend its proposals and in some cases to modify them, until finally a form of rate was reached which was adopted by the Association.

Since that time the author and his partners in professional work have had to do with establishing water rates in a number of water-works systems.

The need of standardizing methods of handling statistics and of making calculations being great, a number of methods have been devised and used in these cases. Those that have

been found most certain in application and useful in results are shown in these chapters.

In the development of the subject, the various reports of the Committee of the New England Water Works Association on Meter Rates, which were drawn by the author as Chairman of the Committee, are taken as a starting point. Additional explanatory and statistical matter is added, many kindred subjects are investigated and practical methods of application that have been tested by experience are added.

Diagrams are used to show the meter rates now in force in many American cities. These are drawn to permit ready comparison. Free use has been made of the Committee's reports and data and also of the writings of others, especially of those who were and are personal friends of the author, and who are also solid, substantial water works men who have contributed to the development of the meter business, and who have helped to establish the principles of fair rates.

If some of these quotations are old, it does not follow that the business is not developing. It rather indicates that some of the underlying principles do not change and that they were recognized by practical water works men long ago.

NEW YORK CITY,
September 14, 1917.

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METER RATES FOR WATER WORKS

CHAPTER I

REASONS FOR METERS

The one efficient, economical and practical method for lessening the waste of water in New York begins with a water meter on every service pipe.—John R. Freeman; Report on New York's Water Supply, 1900, p. 71.

There are two reasons for the use of water meters. The first is that selling water by measurement is the only logical and fair way of conducting the business. It is the only way that does not result in gross inequalities and discriminations against some of the takers, and in favor of others. The second reason is that metering water is the only practical method yet found for restricting excessive waste.

The first reason is the one that in the long run is controlling. It is unanswerable. In itself it is a sufficient reason for the adoption of the meter system.

As a practical matter under the conditions of the water works business as they have developed in the United States in the last thirty years, the need of stopping waste has been more important and has more often led to the installation of meters.

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 time goes 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, and a better method is adopted.

The problem is a very old one. Frontinus, Water Commissioner of Rome, under the Emperors Nerva and Trajan, A.D. 97-100, wrote an account of the water works of Rome, which has been made available to American readers.

Frontinus found that each taker of water in Rome was supplied through a little instrument which served the purpose of a water meter. In the years that preceded his administration abuses had grown up; the sizes of some of the orifices in the meters had been increased; taps had been made for new takers and old taps had been surreptitiously kept in service by the water men or inspectors after the right to their use had terminated. Frontinus took up the matter of correcting these abuses, and he states: *

Whatever had been unlawfully drawn by the water men, or had been wasted as the result of official negligence, has been recovered; this is practically equivalent to the finding of new sources of supply. And in fact the supply was almost doubled.

The experience of Rome, so concisely stated by her Water Commissioner, has been repeated over and over in American cities in the last decades.

* Translation by Clemens Herschel; "The Water Supply of Rome." Dana Estes & Company, Boston, 1899, p. 61.