

is provided, 24-inch vitrified pipe being used, which extends to the Rideau River, at the bank of which it is continued by a 24-inch steel pipe which extends into the river for a distance of 120 feet and discharges through an outlet 12 feet below the surface of the water. The construction of the tanks was completed about the first of December.

## DEPRECIATION IN WATER-WORKS ACCOUNTS WITH REFERENCE TO UNIFORM REPORTS.\*

Harvey S. Chase.

Some twenty years ago, the writer was superintendent of a water-works in one of the smaller cities of New England, and subsequently became treasurer, and was also manager of the gas plant in the same municipality. During his administration the water-works were rebuilt, new pumps were installed, a water tower erected, a filter introduced, and the mains extended in many streets. At the same time a complete reorganization of the gas plant went on, with new works and holders. The process was changed from coal gas to water gas, and the mains throughout the town were repaired and relaid. This was the first practical experience with questions of depreciation on a considerable scale with which the writer had to do, for, as may be surmised, no allowances for depreciation had ever been made in the accounts of the water-works or of the gas-works prior to that time. All these renewals and reconstructions required the investment of new capital for the time being, although this was ultimately made up out of earnings in subsequent years.

From that time questions relating to depreciation in public service corporations and in municipal industries have played a prominent part in the writer's experience, as he has been engaged as an expert witness in a number of important suits relating to water-works, gas plants, and electric light works in which the determination of fair rates for depreciation was fundamental. In each case, in fact, the result of the suit depended almost wholly upon a correct setting forth of these matters. The Holyoke Water Power case was one of these suits. Boston Consolidated Gas Company, Haverhill Gas Light Company, Norwich Gas and Electric Company were others.

Having been called upon in a professional capacity to reorganize the accounts of various municipalities during the past ten years, the accounting of public water-works and electric light works has been drawn forcibly to the writer's attention. Moreover, a chairman of a committee of the American Association of Public Accountants which has reported upon questions pertaining to uniform accounts in public service corporations and in municipal industries, the necessity for correct accounting of depreciation has been further impressed upon him. The reports of this committee may be found, by those interested, in the Proceedings of the American Association of Accountants for past years.

In connection with the Bureau of the Census, special attention has been given by the writer to water-works accounts, while in 1907 a report was submitted by him to the New England Telephone and Telegraph Company which pertained especially to depreciation and kindred questions in the telephone field. These matters have been mentioned here in order to show how wide a field, in the experiences of public accountants as well as of water-works, gas, and electric engineers, is covered by matters related to depreciation.

\*Read at meeting of New England Water-works Association.

Albert H. Wehr, at the annual convention of the American Water-works Association last June, presented an admirable paper relating to uniformity in the accounts and reports of water-works, in which he refers to the recent work of the United States Census Bureau and to the conclusions of Dr. Powers of the census in the bureau's bulletin, "Statistics of Cities," published early in 1909.

It may be advisable for me to summarize the statements of Mr. Wehr and Dr. Powers before proceeding to my own conclusions concerning the subject of this paper.

Mr. Wehr's considerations in favor of a uniform classification of accounts are as follows:

"The evolving of any uniform classification of accounts for water supply or any other form of public service enterprise must be based on certain considerations of purely practical utility, of which the five following are the most important, viz.:

"1. To afford managers such detailed information relative to the operation of their properties as to enable the making of careful analyses of income and expense, both separately and as compared with previous similar periods.

"2. To afford accurate comparability of the operating results of such enterprises with those of any other similar enterprise.

"3. To so divide and subdivide the expenses as to easily enable the ascertainment of the separate and distinct elements of cost which make up the total cost of service.

"4. To so devise the scope of the classification as to place the enterprise, whether privately or municipally owned and operated, on a basis which will disclose all income earned by the enterprise, whether actually received or not, and show the actual expense of operation or cost of service, whether actually paid or not.

"5. To so devise the classification as to divide the various branches or departments of such classification into certain fixed and clearly defined centers of division, from which all subdivisions radiate. . . ."

In this connection, Mr. Wehr has devised a scheme of enumeration for the classified accounts which is simple, effective, and cleverly arranged. Mr. Wehr's paper sets forth definitions of the classifications, following in the main the terms accepted by the Census Bureau, and gives a complete scheme of the classified accounts under these heads:

1. Income Accounts.
2. Expense Accounts.
3. Allocation and Profit and Loss Accounts
4. Outlay, or Property Accounts.
5. Asset Accounts.
6. Liability Accounts.
7. Proprietary Interests, or Proprietorship.

In this classification depreciation appears under various headings, the first of which is 214, "Expenses for General Depreciation," with subdivisions as follows:

2140. Undistributed Expenses for General Depreciation.
  2141. Depreciation of Administrative Property.
  2142. Depreciation of Accounting and Commercial Property.
  2143. Depreciation of General Operating Property.
- Also under the heading 224, "Expenses for Water Service Depreciation," appear the following subdivisions:
2240. Undistributed Expenses for Water Service Depreciation.

2241. Depreciation on Sources of Supply Property.
2242. Depreciation on Intakes and Aqueducts.
2243. Depreciation on Purification System.
2244. Depreciation on Pumping Station.