

accurately worked out, and regularly entered upon the books of all such corporations. This being the case in private works, it is also necessary that municipally managed public services should have similar accounts. The reason in both cases is the same, viz., in order that fair rates may be established, that is, rates which will be just to the consumers and also fair to the plant. Such rates cannot be just unless full allowances shall have been made for deterioration of the plant, or, in other words, for the capital losses which arise from depreciation. Such losses must be provided from income, or otherwise they will require new capital. Therefore, they should be handled in the accounts as regular charges against income. This is most forcibly true in all plants which have to do with electricity, for in such plants depreciation during past years has been rapid, and changes in the art have frequently demanded that machinery should be scrapped even though the machines themselves might be in excellent physical condition. Electric street railway companies, electric lighting companies, and telephone companies are fast coming to see the necessity for proper and complete provisions for depreciation. Gas companies are next in importance in this particular, while water-works may be considered last. It must be noted that it is frequently the fact that "appreciation" in the general value of any water-works, due to increase of population in its territory, may offset in great part, and sometimes may even exceed, the losses by depreciation which occur during a given period. Therefore, while the emphasis which is here laid on depreciation accounting is accepted in full by electrical concerns to-day, and accepted in part by gas companies, it is nevertheless true that water-works have not as a rule acknowledged the necessity for such accounting, or, at least, have not adopted such accounts in their bookkeeping systems. The same arguments which have compelled the use of depreciation accounts in electrical concerns will, in my opinion, compel their use ultimately in water-works. This will come about mainly through the instrumentality of state supervising boards, which will require uniform reports from all municipalities and from their departments, in which a water department is frequently included.

Just as the gas commissioners of Massachusetts have required definite allowances for depreciation in the accounting of municipally operated plants, so, in due time, similar requirements will be promulgated for municipal water-works.

If the writer has stated the facts correctly, and if his deductions in regard to the future are true, it is evident that proper accounting for depreciation should be undertaken promptly in all such plants. The best way to handle these matters, in the writer's opinion, is by a series of depreciation reserve accounts, that is, by reserve accounts which correspond to the different classes of assets, and which appear in the balance sheets as liabilities (credit balances). Every monthly closing should provide for items to be charged to expense and at the same time credited to these various reserve accounts. Each of these charges should be based upon a carefully calculated percentage which will vary according to the estimated life of the particular class of a set. Wherever depreciation is made good by actual expenditure for renewals or reconstruction, such amounts should be charged against the corresponding depreciation reserves and thereby the balances remaining in these reserve accounts will show whether or not sufficient monthly allowances are being made year by year to provide for depreciation losses, shown by the actual expenditure for renewals and reconstructions. The necessity for depreciation reserve accounts being evident, the writer urges that particular attention be given to

them in all public service accounting, and trusts that, in future editions of the census classifications, statements of liability accounts will be included in which will be set forth in detail a depreciation reserve for each of the various classes of deteriorating assets.

If what he says here will, in some measure, bring the importance of such reserves forcibly to the attention of practical book-keepers and managers of public services, the writer will have accomplished all that was intended by the preparation of this paper.

REPORT ON THE DUST PROBLEM.

(Continued from page 100.)

chemical when exposed will absorb a definite quantity of water, varying with the humidity of the atmosphere.

Pasadena, California, has used asphaltic oil for laying the dust to a great extent in the past few years. The best results were obtained by using as heavy an oil as would be used by heating the oil with live steam. This oil contained about 80 per cent. asphaltum. The method now used in Pasadena in the construction of macadam roadways is to incorporate the oil into the crushed rock which forms the surface, and which automobile traffic will not ravel, and which has the appearance of a sheet asphalt street. Spraying with oil has also been used as a dust preventive. Oil costs at Pasadena and Los Angeles about \$1.10 per barrel of 42 gallons. At Los Angeles it was found necessary to add a layer of fine rock or screenings mixed with oil to the old macadam surface. The old macadam was swept clean and made as open as possible before oiling.

San Francisco in Golden Gate Park has satisfactorily solved the dust nuisance by the use of oil on macadam roadways. The city, during the coming year, proposes sprinkling most of the macadam roadways with a solution of calcium chloride. Last summer they used calcium chloride on the paved streets with considerable success.

Toronto uses a petroleum residue, a portion of which comes from Pennsylvania and the balance from Canada. This oil is of a paraffin base, and is not so suitable as the Californian oil, which has an asphalt base. The cost of the latter precludes its use in Toronto. The ordinary street sprinklers are used with the exception that the bore of the sprinkler proper is decreased and made uniform throughout. Toronto has had its macadam roadways well surfaced and crowned with oil five times a year.

Tacoma, Wash., has had very little experience with this question, but purposes trying oil on the macadam roadways.

Portland uses oil on its macadam roadways, applied with a sprinkler. One hundred and twenty-five barrels is made to cover one mile of roadway 20 feet wide. The oil costs \$1.05 per barrel. This city does not oil the full width of the streets, but where a street is 30 feet wide only oils 20 feet in the centre. The oil is used cold, but better results are obtained on a warm day.

NEW INCORPORATIONS.

Ottawa, Ont.—Jaques Transportation Co., \$250,000. C. A. Jaques, R. Bickerdike, A. M. Jaques, Montreal.

Toronto.—Hare Engineering Co., \$400,000. J. O. Sharp, T. B. Williams, S. L. Gibson. Little Turtle River Improvement Co., \$20,000. R. B. Henderson, A. H. Royce, A. M. Boyd. Ontario May-Oatway Fire Alarms, \$100,000. W. Gilchrist, A. W. Garden, T. Moss. Canadian H. K. Porter Co., \$50,000. H. K. Porter, W. E. Lincoln, W. E. Martin, Pittsburgh, Pa.