

IMPROVED MANAGEMENT OF WATERWORKS.*

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THE object of this paper is to advocate the employment, on an annual basis, of consulting experts in connection with the operation of small waterworks installations for the purpose of improving the service, the equipment, and the economy of operation. This is by no means a new practice, but it is exceedingly rare, whereas it should be virtually universal.

The means by which the expert's services may be rendered are by occasional visits, say, monthly or quarterly, by the training of the men locally employed, by the periodic examination of records and accounts maintained in accordance with instructions furnished by the expert and finally, by reports with recommendations, submitted at regular intervals. Not more than a few days per month would be occupied by the work involved, and the service may be rendered at what, comparatively speaking, is a nominal fee. For supervising waterworks in a small community \$600 should yield a fair compensation. Perhaps a more satisfactory method would be to base the fee upon the gross receipts, making it a suitable percentage thereof.

Need for Expert Supervision.—It is hardly necessary to point out that there is a real need for improved management of waterworks, for the reason that most engineers who have had anything at all to do with waterworks are aware of the very general slipshod methods employed. During the past eight years the writer has had occasion to visit or receive reports upon about two hundred small waterworks in the States of Ohio, Illinois and Kentucky, and not an instance is recalled of a small waterworks installation (that is to say, for a town having a population of about 25,000 or less), where thoroughly effective methods of management were being employed. This does not infer that all these waterworks installations were not giving good service. As a matter of fact, some were giving good service, but generally at unnecessarily large expense, and without adequate records and accounts to show where economies might be instituted. The great majority, however, were giving very inferior service, and showed every outward evidence of carelessness and neglect in management.

Possible Objections to Expert Supervision.—The method of improving the management herein discussed is not advocated for the purpose of increasing the business of consulting engineers, but because it seems the only practicable method whereby the desired results can at present be accomplished. In large waterworks, of course, it is perfectly feasible to engage the entire time of an expert and designate him as general manager. In small waterworks, however, it is not possible to afford the continuous services of an expert. The men ordinarily employed, while they may be intelligent and conscientious, have not had the opportunities of securing the necessary training and experience to render most effective service. But such men, backed by an expert, are as a rule capable of securing highly efficient results. More generally it is found that the waterworks has become a political football and is relegated to the mercies of very incompetent men. In such cases the consulting expert has a very difficult problem, but by tact and by appealing to the more enlightened sentiment of the community he may accomplish a great deal, and because

of the very fact that things are in a run-down condition the results of his efforts will be all the more striking.

There may exist the feeling among some, that the supervision of waterworks should be entrusted to local engineers in general civil engineering practice. This would, as a matter of fact, be an injustice to such engineers for the reason that their numerous other duties and employments rarely permit them to acquire the necessary expertness in the restricted field of waterworks. It would appear, therefore, that no conflict of interest exists between the consulting expert and the local engineer. On the contrary, the local engineer should be the first to recognize the necessity of the services of an expert in waterworks operation.

Some persons lean to the belief that supervision over public waterworks should be maintained by some central State authority, and such supervision is certainly desirable, in so far as the sanitary quality of water supplies is concerned. But to enter into the economic phases of waterworks operation to the extent of giving the close supervision herein contemplated, would be altogether impracticable. It would involve the maintenance of an expensive and cumbersome bureau engaged in performing functions which are primarily of local concern, and, moreover, the mere fact that the services of such a bureau would be foisted on the local community would cause the local authorities to be generally antagonistic toward the bureau's requirements. It is not practicable for any central body to go further in this matter than to do just enough to demonstrate the value of expert services in waterworks operation and leave the rest to municipal and private enterprise.

Results Obtainable through Expert Supervision.—Specifically, the results obtainable through expert supervision of a waterworks are:—

1. Better service.
2. Reduction of cost of operation, which, of course, means increased earnings.
3. Anticipation of future requirements.
4. Improved design.
5. A professional and personal advantage to consulting engineers.

Better service means furnishing, throughout the community, an ample quantity of pure and clear water for domestic and industrial purposes, and providing a liberal safeguard against disastrous fires.

Decreased cost of operation means a supervision of all the details of operation in such manner that effective service will be rendered at minimum expense.

Anticipation of future requirements means that all necessary increases in the supply and equipment will be foreseen, so that they may be provided before the community is reminded of its needs by destructive fires, inadequate equipment, or disastrous epidemics due to the pollution of the water.

Improved design will result from a better knowledge of operating conditions than is ordinarily obtainable under present practice by those entrusted with the preparation of plans and specifications. The structural features can generally be readily taken care of, but a common fault is a failure to provide for contingencies encountered in operation. Under the present regime the consulting engineer's connection ceases at about the time that operation begins, and if he has any curiosity to learn if his designs are working out successfully he must satisfy his curiosity at his own expense.

A personal advantage accrues to the consulting engineer from supervision over the operation by giving him continuous and regular employment, thus enabling

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