

With modern processes and proper operation it is possible to reduce objectionable sights and odors to such a point that only a prejudiced visitor will be dissatisfied. A reasonable amount of money spent in laying out flower beds, shrubbery and trees, and in taking care of the grass walks will be more than returned in the added interest in the plant by its operators and by the citizens.

The committee calls the attention of designing engineers to the importance of including the sodding or seeding of slopes and planting of trees and shrubs in the contracts for the construction of sewage treatment works, for new works are too often left in a very unsightly condition with respect to landscape embellishments.

Municipalities frequently employ expert engineers to study local conditions and to design sewage treatment works, but when such works are put in service their operation is entrusted to an untrained employee, transferred from some other branch of the service, who is totally lacking in knowledge of the complex forces which must be controlled in order to produce the results which the designers intended, and for which the funds were invested.

This is poor business policy; a municipality or private owner would not attempt to operate a power plant or other installation involving complicated machinery without the services of trained engineers, because they know it would not be economical to do so.

Where sewage treatment works are of sufficient size to warrant it, laboratory control will allow improvements in methods of operation whereby failures may be averted, and the capacity of the plant maintained to an extent which will more than pay for the small expense involved.

In the case of a small works the expense of an individual laboratory will usually be prohibitive. However, if there are several such plants in the same neighborhood it may be possible to obtain the services of an expert operator, provided with a laboratory, to look after all of them, and the expense, divided among the several communities, would be very small. It is recommended that designing engineers call the attention of their clients to the necessity and economy of such operating control.

As the great majority of sewage treatment works in America are small and frequently widely separated, it is apparent that the needed expert supervision cannot be obtained locally, and that efficiency of operation can only be obtained through some central authority.

In several states the legislators have empowered the state boards of health with authority to control the pollution of watercourses, and their approval is required before sewerage works can be constructed.

The state board of health, in its uniform relation to all the municipalities of the state, and with similar boards in adjacent states, is in a position to perform such a service to better advantage than any other body now existent in the usual organization of the various state governments of the country. The problem is not for the national government, as the operation of sewage treatment works requires oversight by individuals familiar with local needs, characteristics and possibilities, and stationed within a few hours travel of the local works, in order to be of service in case of emergencies which require immediate attention or advice. On the other hand, except in scattered cases, the unit of the county appears to be too small.

In municipalities where sewage treatment is entrusted to competent expert employees, and where this work has the strong moral and financial support of the citizens, the

exercise of state authority and supervision is but little needed; but in such cases the co-operation of state and municipal officials is of mutual advantage.

For the state boards of health to act intelligently they should know the methods of operation and results accomplished in all the sewage treatment works in the state. They would then be able to act as clearing-houses, applying to one works the information obtained from several others operating under similar conditions. Such information must, of course, be applied to any particular works by one who is thoroughly conversant with local conditions and able to distinguish the peculiarities and differences involved. The operation of each works is a purely individual matter. Blindly copying, without due analysis of the local conditions, is generally fatal.

This would in no way encroach upon the province of the private or consulting engineer; on the contrary, it would be to his advantage.

The state is interested in seeing that the existing works accomplish the best results possible, and the separate communities are naturally anxious that the works shall meet the requirements at the minimum expense for operation, additions and renewals.

To obtain these data, information is required on the following:—

- (1) The purpose of the works—*i.e.*, are they primarily intended to protect sources of water supplies, or to prevent the creation of nuisance?
- (2) The construction of the works—*i.e.*, the details of each process which influence operating methods rather than the stability of the structure.
- (3) The quantity and character of the sewage to be treated.
- (4) The methods of operation and results accomplished.

The data concerning the construction of the works should be obtained either through plans submitted for approval supplemented by record plans after the works are constructed, or, in cases where the board is not yet clothed with such authority, by means of inspection and measurement. Any changes from the original contract drawings or alterations after the plant is in service should be especially noted, as these may be vital information in connection with operating policies.

It is presumed that in those states where the law does not require approval of sewerage works before construction, the number of plants is small, and hence there should be no difficulty in obtaining the needed data.

The records of operation and results accomplished should be furnished the state by the town or owner upon blank forms prepared by the town officials or the owner in conjunction with the state officials.

It is practically impossible to recommend a standard form of report blank to cover all the many types of apparatus used in sewage treatment. If, however, the report form for each works in a state is prepared to meet the local needs, it can still contain essential data so recorded that reports of operation of similar types of apparatus in different works will be in identical form for comparison.

In preparing such forms it should be borne in mind that the small works are generally operated by employees lacking a technical education, and therefore clearness and simplicity should be obtained by having as much as possible printed, leaving only figures to be filled in.

The reports should be printed on sheets either 8½ in. by 11 in., or of such size as to conveniently be folded to