

half hour in the tank should be sufficient to give an effluent fairly free of suspended matter. The sludge and humus would be collected in the same digestion chamber and might be drawn off under hydraulic head in the manner usual with two-story tanks.

The principle of treatment of sewage in sedimentation tanks followed by percolating filters has been criticized on the ground that, during its passage through the sewers aerobic bacteria are developed in the sewage and the process which is started there is reversed in the sedimentation tanks where anaerobic bacteria are developed, to be reversed again in passing through the filters, which is a distinctly aerobic process. The part played by aerobic bacteria in the sewers is open to question, but there is no doubt that the treatment of sewage by filtration after it has passed through sedimentation tanks is a change over from the anaerobic to the aerobic process. A method which would eliminate the first sedimentation tank as here suggested would not be open to this objection, and the removal of what is apparently a check in the process might help towards the attainment of good results.

The brushwood filter described, which has been a decided success, is virtually the outcome of previous experiments with a lath filter originated by Lieut.-Col. G. G. Nasmith, C.M.G. The writer has been in charge of the construction and operation of the filter under Mr. W. R. Worthington, of the sewer section, Department of Works, Toronto, of which Mr. R. C. Harris is the commissioner.

ANNUAL CONFERENCE OF COUNTY ROAD SUPERINTENDENTS OF ONTARIO.

The programme for the next annual conference of county road superintendents of Ontario, the sessions of which will be held in the Parliament Buildings, Toronto, is as follows:—

Tuesday, March 27.—Morning Session: "Departmental Requirements Regarding Annual Returns," Mr. W. Huber, Assoc.Mem.Can.Soc.C.E. Records and annual statements of expenditures on highways towards which the provincial subsidy is paid are required to be shown in a manner specified by the department.

Afternoon Session: "The Transportation of Materials," Mr. Geo. Hogarth, O.L.S., Assoc.Mem.Can.Soc.C.E., Provincial Engineer of Highways. The greater portion of the cost of road-building materials is that paid for transportation. Economical haulage is of vital importance in the reduction of the cost of roads. "Maintaining Earth and Clay Roads," Mr. A. A. Smith. The keeping of unimproved portions of the county road systems in a passable condition is of as great importance as the maintenance of roads after construction.

Wednesday, March 28.—Morning Session: "Highway Bridges," Mr. Geo. Hogarth, O.L.S., Assoc.Mem.Can.Soc.C.E. The department has prepared standard plans and specifications for steel and concrete bridges, which are available for the use of county road superintendents and engineers. "Culverts," Mr. Arthur Sedgwick. There are a number of types of culverts, each being best adapted to certain conditions.

Afternoon Session: "Dust Preventatives and Bituminous Binders," Mr. G. C. Parker, B.A.Sc., Assoc.Mem.Can.Soc.C.E. Dust on a metalled road indicates wear, and its prevention by the use of bituminous materials, properly chosen, results in greater comfort to users of the highways as well as a reduction of main-

tenance costs. "Important Details in Oiling and Tarring," Mr. W. Huber, Assoc.Mem.Can.Soc.C.E. Expenditure for good materials is wasted if care is not exercised in the preparation of the road surface and the methods of application.

Thursday, March 29.—Morning Session: "The Highways Laws of Ontario," Mr. W. A. McLean, Member Can.Soc.C.E., Deputy Minister of Highways. County road superintendents should be well versed in the legislation under which they operate, in order that they may advise their municipal councils with respect to proper procedure.

Afternoon Session: "Increasing the Safety of Highways," Mr. W. H. Losee, B.Sc. Many accidents could be avoided by the elimination of level railroad crossings or, where that is impossible, the removal of obstacles obstructing the view of those using the roads. "Repairing Gravel and Stone Roads," Mr. R. M. Smith, B.Sc. A thorough system of caring for gravel and stone roads should be adopted immediately following their construction.

Friday, March 30.—Morning Session: "Reducing Construction Costs by Increased Efficiency," Mr. W. Huber, Assoc.Mem.Can.Soc.C.E. Approximately one-half of the cost of a highway is that of labor. The elimination of wasted time and energy is the first step towards lowering the cost of construction.

Afternoon Session: "Roads Foundations and Drains," Mr. R. C. Muir, A.M.Inst.C.E., Assoc.Mem.Can.Soc.C.E. The bearing power of a subgrade depends on the efficiency of the drainage system. The subjects of foundations and drainage are closely allied. "Concrete Roads," Mr. H. S. Van Scoyoc, chief engineer, Toronto-Hamilton Highway Commission. When used in a road surface, concrete is subjected to severe conditions. It is essential, therefore, that only the best materials be used and careful methods of construction be followed.

AMERICAN CONCRETE PIPE ASSOCIATION.

The annual convention of the American Concrete Pipe Association will be held in the Auditorium Hotel, Chicago, on February 12, 13 and 14, 1917.

Among the papers which will be read are the following: "Supporting Strength of Drain Tile in Ditches," by W. J. Schlick, drainage engineer, Iowa State College; "New Drain Tile Specifications of the American Society for Testing Materials," by George P. Diekmann, chief chemist, Northwestern States Portland Cement Co., Mason City, Iowa; "Concrete for Sanitary Sewers," by M. W. Loving, Universal Portland Cement Co.; "Aggregates for Sewer Pipe and Drain Tile," by Prof. Duff A. Abrams, Lewis Institute, Chicago, Ill.

ROLLING STOCK FOR FRENCH RAILWAYS.

According to a French contemporary, the Germans have carried away some 55,000 railway vehicles from France, and in order to make good the shortage orders for new stock have been placed in America and Spain by the Government. The first batch of 5,000 vehicles was ordered at the beginning of 1915, and 3,400 of these are already in service. About 7,000 are being erected in the railway companies' workshops and 200 by private firms, who received the parts and are making the bodywork. Orders have been placed with French firms when they were ready to accept them.