with the dry-weather flow and storm flow respectively: The smaller set consists of 4 and 8 horse-power gas engines, driving centrifugal pumps, and designed to deal with the varying rate of flow, the larger engine and pump dealing with the day flow, and the smaller one with the night flow. These engines and pumps will be fixed in the small underground pumping station. The larger set consists of two 30 horse-power gas engines, driving centrifugal pumps, and designed to deal with the sewage flow during times of exceptional rains, under which conditions the sewage will probably exceed the dry-weather flow many times. (It should be noted that the system of sewers is on the "combined" system, that is to say, the sewage and storm-water discharge into the same system of pipes, although it is ultimately intended to exclude as much storm water as possible, where this is feasible).

Detritus Tanks.—The detritus tanks are of the deep Dortmund type, having conical bottoms. This is intentionally arranged so that the detritus can be discharged from the bottom of the tank by opening a valve without having to empty the tank, such as is necessary with the shallow type. The author considers the Dortmund type of detritus tank to be one of the most efficient at present known.

Hydrolytic Tanks.—The type of tank adopted is quite different from the ordinary hollow rectangular or septic tank. It will be built of ferro-concrete. It is a very great improvement on the septic tank, as it really separates the sludge from the liquid in a very much more efficient and satisfactory manner than has yet been obtained with any other kind of tank the author is aware of up to this date. The sewage passes through this tank, and in its passage it is freed of nearly all its solid matters and some portion of its colloids also. Valves are arranged in the bottom of the hydrolytic tank so that the sludge can be run off without emptying the tank, and this is a feature of the type. The tank is the subject of a patent.

Percolating Filter.—The sewage after leaving the hydrolytic tank will flow into a centre feed channel between two rectangular filters, over which it will be evenly distributed by means of rectangular distributors. These filters are provided with false floors so as to afford efficient aëration and drainage, and are filled with suitable media (preferably clinker) graded in size. The floors have a cross fall, and the effluent is collected in channels at the sides along which it runs to a sump at the lower end, where the humus passing out of the filters with the effluent will be caught.

Land.—The total area of the land purchased by the corporation consists of 19 acres. Of this the cottage, pumping station, cart road and other walks, tanks and filters occupy about 7 acres, leaving a net area for irrigation of about 12 acres. The ground has been divided into plots and levelled, the surface being formed into ridges and furrows. The land is, generally speaking, of a sandy loam, with little or no gravel, and clay was encountered in one or two places. Underdrains have been laid under the barrow paths and walks, into which the effluent will percolate, ultimately discharging into the river in a purified state through three outlets.

Sludge Disposal.—The arrangement for disposing of the detritus from the detritus tanks and the sludge from the hydrolytic tank is by burial in the land. Trenches will be cut about 1 ft. or 15 in. deep in the land, into which sludge will gravitate. It will then be immediately covered over, and thus aerial nuisance is reduced to a minimum. The matters raised by the rakes from the screen in the pump well will also be dealt with in a similar manner.

Storm-Water Filter.—The storm-water filter is constructed in a somewhat similar way to the percolating filters, except that it is only 3 ft. deep, and the media is of larger size. The storm-water will be roughly distributed over its surface by means of half-pipes or wooden troughs. This filter is also provided with floor tiles to afford the necessary aëration and drainage. **Cost.**—The estimated cost of the entire scheme, including land, disposal works, and intercepting sewers, is about \$215,000, and it is expected that the works will be carried out for a little less than this amount.

IMPROVEMENT NAVIGATION ASSOCIATION.

The Great Lakes and St. Lawrence.

The Great Lakes and St. Lawrence Improvement Navigation Association, organized at Toronto on September 9th. They decided to wait on the Dominion Government at an early date to urge the advisability of deepening the Welland Canal. In the meantime a circular setting forth the necessity of the improvement will be printed and circulated among the various municipalities. The following officers were elected: —

President, H. W. Richardson. Kingston; Vice-presidents, H. Champ, Hamilton, Thomas Conlin, Thorold, Thomas L. Church, Toronto, Thomas King, K.C., Kingston, A. E. Kemp, Toronto, Mayor J. S. Campbell, St. Catharines, Colonel Ponton, Belleville, A. A. McKay, Hamilton, J. B. Miller, Toronto, L. L. Henderson, Montreal, Mayor L. H. Daniels, Prescott.

NOVA SCOTIA SOCIETY OF ENCINEERS.*

The election of officers for 1909 resulted as follows:

President, S. Fenn; First Vice-President, J. A. Stairs; Second Vice-President, J. W. Mackenzie; Secretary, J. Lorne Allan; Council, Prof. R. R. Keeley, A. R. McClean, H. C. Burchell, D. McD. Campbell, J. G. McKenzie, A. G. Robb, G. M. Archibald and W. G. Yorston.

ORDERS OF THE RAILWAY COMMISSIONERS OF CANADA.

Copies of these orders may be secured from the Canadian Engineer for a small fee.

7881—August 27—Covering regulation adopted by the Board for the carriage of explosives by railways subject to its jurisdiction.

7882—August 24—Approving of change of location of the G. T. P. Railway from the East line of Section 1, Township 52, Range 24, West of 5th Meridian, District of North Alberta, Province of Alberta, mileage 43.56 to mileage 55.15.

7883—August 24—Approving location of G. T. P. branch line, Melville-Regina Branch, Section 31, Township 22, Range 6, to Section 13, Township 21, Range 12, West 2nd Meridian, mileage o to mileage 33, District of Assiniboia, Saskatchewan.

7884—August 24—Recommendation to the Governor in Council for approval of By-law of the Oshawa Railway Company in re-spitting and smoking on Railway premises.

7885—August 24—Recommendation to the Governor in Council for approval of By-law of the Thousand Islands Railway Company in re-spitting and smoking on railway premises. 7886—August 24—Authorizng the Alberta Government Telephones to erect wires across the tracks of the C.P.R. at

Sullivan Street, Camrose, Alberta. 7887—August 25—Authorizing the City of Hamilton to erect lay water pipe under tracks of G.T.R. at the intersection of Hillyar Street and the Northern and North Western Branch of the Railway.

7888—August 27—Authorizing the Canadian Northern Ontario Railway to construct joint section of C.P.R. and C.N.O.R., Parry Sound Spur, under the tracks of the C.P.R. at Parry Sound, Ontario.

7889—August 27—Approving By-law of the New Brunswick Southern Railway Company authorizing H. W. Newnham (Continued on Page 320).

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