connected to either of the two transmission lines. There are six 125-kilowatt transformers which lower the pressure from that at which it is received to 1,040 volts, for lighting purposes; also six 125-kilowatt transformers reducing the voltage to 350 volts, the secondaries of these being led to two three-phase, 300-kilowatt, 60-cycle, rotary converters, these supplying the direct current for the electric railways and for other purposes, there being about 100 motors of various sizes in use in the city.

In connection with its lighting system, the company has some 40,000 incandescent, 200 Nernst, and 50 commercial arc lamps. In Victoria, the company's patronage is chiefly for commercial and residential lighting, the corporation of Victoria having its own electric street lighting system. The local electric railway system comprises some fifteen miles of track, including the lines from the city to Esquimalt. The British Columbia Electric Company, Limited, is an English organization, with head office in London. Its operations cover electric railways and lighting in Vancouver, as well as Victoria, and railways in and to New Westminster and Vancouver. The Vancouver branch of the company's enterprise is by far the most important. The chief officers of the company, at Vancouver, are: J. Buntzen, general manager; R. H. Sperling, general supt.; W. F. Gitchell, comptroller; B. W. Slocum, chief engineer, and J. B. Rannie, superintendent of traffic, at Victoria; A. T. Goward, local manager; G. M. Tripp, superintendent.

ISOLATED SEWAGE DISPOSAL PLANT.*

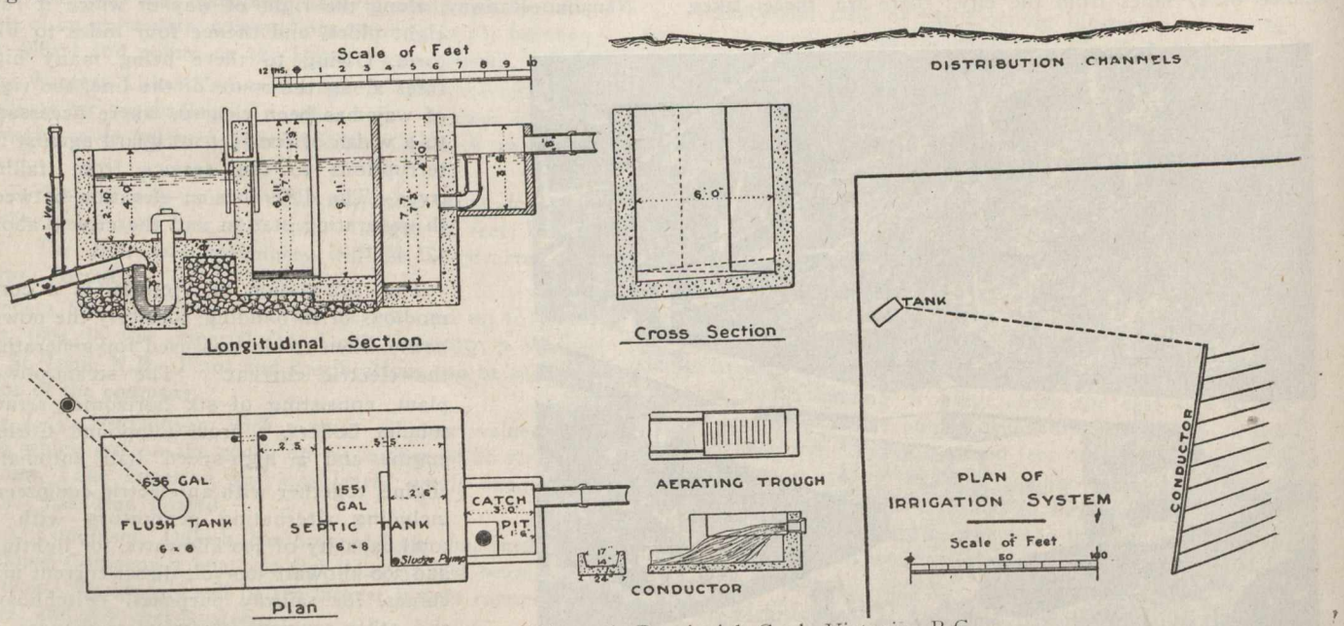
In October, 1901, the author received instructions to design and construct a sewage disposal system for the Provincial Gaol at Victoria. It was found that to connect with the city sewerage system would involve a large expenditure, and it was finally determined to dispose of the sewage on the gaol property of about twelve acres. An examination of the existing work showed it to be in a most offensive and dangerous condition. This discharge was into an untrapped brick cesspool, the overflow from which ran into a field. Near the cesspool the ground was excrement sodden; and the odor three or four hundred feet away was something phenomenal when wafted on a favoring breeze. The pipes, of six-inch diameter, from the gaol had been laid regardless of grade and direction, and a very considerable percentage of them were broken. Under the circumstances, the prevalence of disease was not surprising.

The daily flow of sewage varied from 1,200 to 1,800 gallons a day, which it was supposed to dispose of by surface irrigation. The soil was not an ideal one for such purpose, as it consisted of a stiff clay fit for brickmaking, with practically no loam on the surface, and it was with fear and trembling that surface irrigation was resorted to. Had that failed, double contact beds would have been the next method adopted. In the first place, the cesspool and old pipes were entirely abandoned. New eight-inch pipes, properly jointed, and laid true to grade and alignment, connected the buildings with a catch pit, about 250 feet distant. From the catch pit the sewage flowed into a septic tank of 1,550 gallons' capacity, the effluent from which passed into a 636 gallon flush tank, discharging about twice a day. The contents of the tank, after passing through an aerating trough, charged a concrete conductor, from which the distribution channels on the surface of the ground were fed.

The catch pit is of brick in cement, three feet square, and is fed by an 8-inch sewer from the gaol. Its effluent discharges into the septic tank, at 2 feet 3 inches below water level, through a six-inch trapped pipe set in concrete in one corner. The catch pit might perhaps have been dispensed with, but, bearing in mind the mischievous proclivities of prisoners, and the strong probability that all sorts of foreign substances would be wantonly thrown down the closets, it was considered advisable to construct one, and its adoption has been amply justified by results. The pit is cleaned out at short intervals, and its miscellaneous contents buried.

The septic tank is built of five parts of sea shingle and sand to one part of White's Portland cement. It is 6 ft. by 8 ft. inside, with nine-inch walls, and is smoothly cemented. The floor has a fall of 1 in 18 towards the inlet. There are two half brick baffle walls to prevent any direct current between the inlet and outlet, and also to increase the length of channel, and afford better opportunity for the deposition of the matters in suspension. This plan appears to the author to combine the advantages of the usual long narrow tank with economy. The outlet is of two-inch wrought iron pipe, H shaped, with an entering limb 2 feet 3 inches below the horizontal discharge, the end of which in the flush tank is tapped, and, as the ends are open, no syphonage can occur, and any obstruction is easily removed.

The flush tank is 6 feet square, and discharges when a depth of 2 feet 10 inches is attained. The syphon is a six-inch Miller, discharging through a six-inch sewer pipe into the aerating trough. In the drawing it is shown when about to discharge.



Plan of Sewage Disposal, Provincial Gaol, Victoria, B.C.

The trough is a box of No. 26 galvanized iron, provided with slits in the bottom and end, set 15 inches above the conductor, and fed by the 6-inch pipe before mentioned.

The conductor is a level concrete trough, of which a cross section is shown on the drawing, and has ample capacity for one discharge of the flush tank. It is provided with eleven tapering outlets, furnished with stops so as to divert

*From a paper by E. Mohun, C.E., read before the Can. Soc. of Civil Engineers.