the flow to such distribution channels as require irrigation. The tanks and catch pits are provided with plank covers.

Owing to some misapprehension, the channels were not placed, as shown in the drawing, but small gutters were cut below the general surface of the ground. It is, however, intended to carry out the original plan this year after the removal of the crops. Before the sewage was turned upon the land, about a quarter of an acre was thoroughly dug, and the sewage has generally been applied to this area, though occasionally diverted to an adjacent piece under cultivation.

The sewage was first turned into the tank on the 20th December, 1901. All the sewer gas has been completely cut off between the catch pit and the gaol, and there is a marked improvement in the sanitary condition of the building. The surface scum in the septic tank was of very slow growth; indeed, the tank was working fully six months before a complete coating was formed. During that period the effluent was very turbid and somewhat offensive. Since then there has been a marked improvement. Though not absolutely clear, it is inoffensive, except when confined for some hours in the conductor. The surface in the septic tank in May, 1903, was completely covered with a coating about two feet thick from which no offensive odors arise. On the 18th May, 1903, a sludge pump was placed in position in case there should prove to be a considerable amount of sludge deposited during the eighteen months' work of the tank. In that period from 650,000 to 800,000 gallons of sewage must have passed through the tank. The pump has a 2½-inch suction, reaching 8½-in. above the bottom of the tank. On starting it, no sludge deposit was found at that depth, the discharge being precisely similar to that of the catch pit. The pump was placed in position, so that, in the event of the tank area available for liquid sewage becoming restricted, it would always be possible to remove a few yards of sludge without disturbing the surface scum, and with the least possible trouble and annoyance.

The character of the soil, which, as before stated, was an unproductive clay, appears to be much improved. Sweet corn, peas, cabbages, beets, carrots and leeks have been raised of excellent quality, and it appears not improbable in the future that the value of the crop might equal the interest and sinking fund for the original outlay. The cost of the whole plant—common labor being furnished by the prisoners—has been as follows, and includes tearing up and replacing the old sewers and trenching, about 150 feet of which was in rock:

Lumber and haulage	$ 50 78
Cement (32 barrels at $3.50)	112 00
Haulage of cement, shingle and sand	52 55
Syphon and freight	37 50
Sewer pipes	138 80
Aerating trough	12 45
Labor and superintendence	164 75
Sludge pump	21 00
	$589 83

MONTREAL, THE GREAT ELECTRIC POWER CITY.

BY ALTON D. ADAMS, IN THE "ELECTRICAL WORLD AND ENGINEER."

Montreal consumes more electrically-transmitted water power than any other city in the world. This power is drawn from three generating stations located on the rivers St. Lawrence, Richelieu and St. Maurice, at distances that range up to eighty-five miles from the central sub-station in the city. With the vast drainage area of the Great Lakes, the Champlain Basin between the Green and Adirondack Mountains to gather water for the Richelieu, and a great stretch of northern Canada to supply the St. Maurice river, the reliability of electrical supply from water power is assured in Montreal. At Chambly power house, on the Richelieu river, seventeen miles by the transmission line from Montreal, the combined capacity of the main electric generators is 16,800-K.W. The Lachine power house, on the St. Lawrence, five miles from the city, contains main generators of 6,000-K.W. total capacity. Both of these power plants are devoted exclusively to the operation of the Montreal system. Neglecting the total equipment of the great power house at Shawinigan Falls, on the St. Maurice river, which is operating under a head of 145 feet, and in which three turbines, of 6,000-h.p. each. are installed, with generators of 3,750-K.W., the energy being transmitted 85 miles to a sub-station in the suburbs of Montreal, the transformer capacity of which is 5,000-K.W., requiring about 6,000-K.W. in generator capacity at the Shawinigan plant. The total rating of the present generators in water-power stations, supplying Montreal, is thus 28,800-K.W. This capacity will shortly be increased in two directions. A fifty-year contract requires the Shawinigan Company to deliver up to 20,000-h.p., and another water power is about to be developed at Soulanges, on the St. Lawrence, for the city system.

In anticipation of this increase of capacity, the sub-stations in Montreal have been equipped beyond immediate requirements. Besides that of the Shawinigan system, already mentioned, there are two sub-stations in Montreal devoted to general electrical supply. At one of these, known as the McCord Street sub-station, the total transformer capacity receiving the high-tension transmitted energy is 7,000-K.W. In the main or central sub-station, the total capacity of transformers connected to the transmission lines is now 27,500-K.W. with room for an increase. Including the 5,000-K.W. at the Shawinigan sub-station, 4,750-K.W. of which is entirely devoted to the Montreal system, the combined capacity of stepdown transformers is thus 39,500-K.W. or 52,000-h.p. It is safe to say that no other city in the world has an equal capacity of stepdown transformers delivering energy from water powers to an electrical supply system.

Besides these water power plants and sub-stations, the system includes steam power stations at five points, with a combined capacity of 5,700-K.W. These plants are in large part a legacy of former conditions, and are held as a reserve for the water power system. The largest of these steam-driven stations is on Queen street, has a capacity of 2,400-K.W., and has been remodelled during the past year.

Electric light and power supply is distributed by the Montreal system for a distance of about fourteen miles along the river front, and to an average width of between three and four miles from its bank. Included in the service area is a strip of territory about one mile wide and four miles long on the mainland opposite to the city. Within this area there are 11,152 customers using commercial arc and incandescent lamps, and 870 customers using motors, besides the cities and towns that are supplied with street lamps. The municipalities, whose streets are lighted, number fifteen, including Montreal, and all except two of these are on the island. The total connected load of street lamps numbers 1,717 arc, and 577 incandescent; 11,152 customers take current for 299,903 incandescent lamps, 1,514 arc lamps and 405 pieces of various apparatus, such as fans and heaters. 870 consumers use power for 1,109 electric motors with an aggregate capacity of 19,172-h.p. These figures show that the utilization of water powers has made the operation of motors an important part of the business of Montreal; 2,161 service transformers with an aggregate capacity of 13,249-K.W. are employed for the private lighting and part of the public incandescent street lamps. For the motor load 695 transformers with a total capacity of 6,980-K.W. are employed, but these do not operate all of the connected motors, many being of the direct-current type, and many of the alternating motors operating at the full voltage of distribution.

This system, which constitutes the only public supply of light and power in Montreal, has been welded together out of diverse elements. The Montreal Light, Heat and Power Company, the owner of the system, was incorporated in March, 1901, for the purpose of consolidating all the gas and electric companies doing business in the city. In conformity with this purpose, it is authorized by its charter to acquire plants for the supply of gas, electricity or other source of light, heat or power. The company may also lease and operate all or any part of the plants of any other company engaged in the supply of light, heat and power, and