The first was passed in 1849 during a cholera epidemic, but this applied to times of epidemic only. The first permanent act was passed in 1886. Probably the first order ever issued in Quebec in the interests of public health was in 1667, when it was decreed that privy pits be established and refuse taken care of without public nuisance. In 1706, inspection of bread and meat was started. Several years later the chief of police of the province visited Montreal and determined the slopes of the streets in the more thickly settled part, ordered the construction of sewers and declared it a misdemeanor to throw rubbish into the streets.

Sanitary Engineering in Quebec

In 1745 the first census was taken but after that health matters showed no progress or change until 1795 when the colony was threatened by a typhus epidemic in Ireland, and quarantine measures were adopted in regard to ships until the captains had given full information and guarantees. From 1815-21 there was a smallpox epidemic that was fought with vaccination. In 1832, during a cholera epidemic, the provincial government appointed a health commission of 16 members, and in 1849, during another cholera epidemic, they passed a health act giving certain powers to this central board and permitting them to exercise these powers during any epidemic. This act was invoked during the epidemics of 1854, 1866 and 1885, and again in 1919 during the influenza epidemic.

In 1870 a municipal code was passed giving each municipality power over buildings, water works, sewers and infections diseases. From 1870-85 this act was but little used, but in 1885 there was a smallpox epidemic and the following year a permanent board of health, consisting of 6 members, with power to control conditions anywhere in the province, was appointed and began active work. Amendments to the act, passed in 1890 and 1893, made it a really useful act. In 1893 a statistician, and in 1894 a chemist and bacteriologist were appointed, and in 1909 a sanitary engineer. In 1911 the province was divided into districts with officials in charge of each district. The board consists of 8 doctors, 1 dentist and 1 engineer, but the engineer's commission has just expired.

The board has the power to enforce municipalities to obey its mandates, and it can also issue orders to individuals or companies. Plans for water works or sewerage extensions must be submitted to the board by a graduate engineer. He must submit general and detailed plans, accompanied by a report when necessary. If a water supply is derived from a surface source, the plans must provide for purification; if from an underground source, a map showing all buildings, etc., within 1,000 ft. of the source, must be filed with the board.

440 Water Works Systems in Quebec

Raw-water by-passes for fire protection must be sealed by a representative of the board and opened only when necessary, but this subject is being discussed now by the board and it is entirely probable that dual connections will be entirely forbidden.

Sewage treatment is ordered wherever the pollution is unduly great. The Public Utilities Commission appoints an abritration board to determine the division of costs when municipalities are ordered to build joint sewerage systems, use common water works intakes, etc., in the interest of health.

Any municipality that has been ordered by the board to construct works does not have to submit a money by-law to its ratepayers. The only orders issued to municipalities to date have been to direct one to change its water supply source, one to build a reservoir, two to build sewers, and four to merge their interests in a common sewerage scheme. Most of the board's power over municipalities was granted only in 1916, however, and the war was then a factor in the situation, but now the board intends to force an improvement in certain sanitary conditions.

In the province of Quebec there are now 860,000 people supplied with filtered water and 170,000 with chlorinated water. The latter figure does not take into account filtered water that is also chlorinated. There are 440 water works systems. Half of these are very small, but 192 serve over 500 people. Of the 1,300,000 people served by these 192 plants, 86% drink river water, 4% drink lake water and 10% get spring or well water. It is the intention of the board to order filtration or chlorination plants for all river supplies. Some of the lake and spring or well supplies are of very good quality.

Alex. Fraser, assistant chief egnnieer, Department of Roads, Quebec province, read a paper on "The Evolution of the Public Roads Problem in Quebec Province."

Until 1841 the roads of the province were under the Grand Voyer, said Mr. Fraser. In 1796 a bill was passed appropriating a small sum for the construction and repair of roads. In 1827 a special committee investigated conditions pertaining to trunk roads. But up to 1907 the roads of the province were generally in bad shape under the statute labor and individual portion systems. The Good Roads Act which was passed in 1907, and its amendments of 1908, 1909 and 1911, changed the situation. The province has spent nearly $25,000,000 in encouraging highway construction since 1911. Last year there were built 341 miles of gravel road, 93 miles of Macadam, 7 miles of penetration Macadam, 3 miles of bituminous concrete and 6¾ miles of cement-concrete. There are 1,700 miles in the province's present program of construction, some with federal aid and some to be built without federal aid.

Road Problems in Quebec

Mr. Fraser stated that it is estimated that 80% of the traffic of the province uses only 20% of its 40,000 miles of roads, and that 40% of the traffic goes over the roads that have already been improved. The trunk highways built since 1911 include the King Edward Highway, the Montreal-Quebec Road (the Gouin Highway), the Levis-Jackman Road, the Sherbrooke-Darby Line, the Montreal-Chambly Highway and the road from Riviere-du-Loup, to Edmunston N.B.

In 1919 the province authorized 336 municipalities to do maintenance work on improved local roads, and 204 did such work on a total of 535 miles of Macadam or gravel roads. Hundreds of tests on stone, gravel and other materials were made last year in the department's own laboratory.

In discussing Mr. Fraser's paper, W. A. McLean, deputy minister of highways for Ontario, stated that of the 55,000 miles of roads in that province, 42,000 are graded and in use and half of them are superior to earth roads. Ontario expects to spend fully $12,000,000 annually for the next five years on road construction, said Mr. McLean, and after that probably more each year. His program is to get the traffic over cheap surfaces on good foundations, he said, and then improve the surfaces. In Ontario the department has scheduled 10,000 miles which it hopes to get into excellent condition as quickly as possible. Of this, the counties will take care of 8,200 or 8,400 miles, and the province directly through the department will construct 1,600 or 1,800 miles. There will be cement-concrete, asphaltic-concrete, bituminous penetration and to a considerable extent gravel or Macadam pavements (preferably oiled with asphalt or tar, said Mr. McLean).

French System of Roads for Ontario

By the end of the current year, said Mr. McLean, he hoped to have a highway from Quebec boundary to Windsor that will be reasonably passable and considerably superior to an earth road, and over which anyone will be able to travel in any weather as fast as their car can carry them. And in passing over this main route, said Mr. McLean, it will be noticed that past substantial expenditures have provided branch roads extending into all parts of the province. While there is a good system of market roads at present, a through artery has hitherto met with opposition due to the scattered population along the route.

French should be the official language of road building, said Mr. McLean, because the French have a finer system of primary construction than any other nation. In planning Ontario's roads he is endeavoring to follow the French system.