

system being greatly improved by the late City Engineer, Colonel Tracy, M. Can. Soc. C. E., and the Water Works staff.

The first two mains were hauled across the Narrows by the Vancouver Waterworks Co., the rest of the mains being hauled by the Corporation of the City of Vancouver, which bought out the Vancouver Water Works Co. on 1st March, 1892.

The following mains were hauled across the Narrows:

*First Main, 1887.*—A 12" cast iron main, composed of pipes which proved to be too light, and which only lasted for 5 years. The main was condemned and taken up in 1892.

*Second Main, 1888.*—A 12" main, composed of rolled Calamine steel pipes, with cast iron spigots and sockets riveted to them. This main only lasted a short time, and was taken up in 1893.

*Third Main, 1892.*—A 12" cast iron main, hauled across for the city by contract with Captain Westcott. This main consisted of 105 lengths of 12" pipes, or a total length of 1260 feet. It was taken up in August, 1906. It had been expected that this main would last about twenty years, but, on being raised, it was found that about one-third of the pipes were nearly worn through by the continual wash of sand carried backwards and forwards over them by the ebb and flow of the tide. Most of the pipes thus rendered useless had been lying on the bed of the northern half of the Narrows, which consists of a bank of gravelly sand. The pipes which had been lying on the southern part of the bed, which consists of hard indurated sand almost like rock, were found to be still in a very good condition.

*Fourth Main, 1894.*—A 12" cast iron main, laid by the city by day work. It is in use at the present time.

*Fifth Main, 1895.*—A 12" cast iron main, hauled across for the city by contract with Messrs. Westcott & Campbell. This main consisted of 107 lengths of 12" pipes, or a total length of 1284 feet. It is in use at the present time.

*Sixth Main, 1899.*—A 12" cast iron main, hauled across for the city by contract with Mr. Harris, under the inspection of Colonel Tracey, then city engineer (who also supervised the laying of the 3rd, 4th, and 5th mains), assisted by Mr. S. Maddison, superintendent of the water works.

Much trouble was caused by the breaking of the cables, which had been strained when used on former occasions.

Hauling began on August 24th. A cable broke before the pipes started; this was repaired, and hauling was resumed on August 28th, and continued until September 22nd. In the later part of this time it was noticed that the pipes were coming along too easily and,