pollution from various causes. Again, the growth of the city has been phenomenal. From a town of about 2,600 in 1901, it has grown into a city with a population approximating 67,000, practically doubling its number of citizens every four years. Indications point to continued development, wherein lies a weighty and perplexing problem for the engineer who sets about to design systems for the requirements of future years. The average life-time which considerable portions of such a system may attain is 30 or 40 years. It need hardly be wondered at, that there are radical differences, at times, in the opinions of highly competent engineers, in their endeavors to find the best solution to problems such as Edmonton's. One point is clear: an adequate and consistently pure supply of water in the service mains commands superiority over antagonistic factors of speedy installation, low first cost, low operating costs, etc. In the consideration of the reports now in its possession, the city of Edmonton should keep constantly in the foreground the desirability of establishing a system that will provide such a supply; that may be extended as the city grows without unnecessary scrapping of plant before its day of usefulness has expired; and that will not be lacking in efficiency throughout its life-time, as a result of curtailment of initial expenditure with an aim at economy. For it must be acknowledged that, owing to the indefiniteness of the city's needs twenty or even ten years hence, the most careful aim at true economy in the construction and operation of the system may fall very widely off the mark. It remains, therefore, to make now the safest selection of source; then choice of the best site, and economic factors may enter the problem. Indefiniteness of future requirements makes the latter subsidiary to the former.

A NEW TRAIN CONTROL.

Mr. F. W. Prentiss, of Toronto, recently conducted a very successful demonstration of the Prentiss system of automatic "wireless" train control, of which he is the inventor, at the Hampton Court Station of the London and South Western Railway (England). In this system the track is divided into a number of insulated sections, in each of which a low-voltage track circuit is arranged, with, in addition, a high-tension wave wire running between the rails. At the end of each section is a box containing the high-frequency plant for the supply of current at 20,000 volts to the wave wire. This plant is controlled by a relay in connection with the track circuit of the section ahead, with the result that if that track circuit be short circuited the controlling relay is de-energized, and the supply of high-tension current to the wave wire ceases. The locomotive is fitted underneath with an arrangement of wires equivalent to the antennæ of the ordinary wireless apparatus. These receive the energy transmitted from the wave wire, and by means of a system of coherers and relays in the cab a green "line-clear" signal is provided for the driver if the section ahead is unoccupied. If, however, the section ahead be short circuited the wave discharge ceases, and a red light is shown and a buzzer simultaneously sounded, while the brake is at the same time applied, these operations being effected by power obtained from a battery in the cab. Provision is made to enable the driver to release his brake, but the red light and the buzzer continue until the section ahead is cleared, when the high frequency supply is re-established and normal working is resumed. The system, therefore, provides for a continuous danger signal on the locomotive so long as the line is not clear, the automatic application of the brake and a prompt intimation of the restoration of line clear conditions. In the event of failure of the high-tension, or the track circuit danger indications would be given. The operation of the cab apparatus naturally depends on uninterrupted battery supply. The demonstration was quite successful, the train being brought up on every trial by the automatically applied brake, although the regulator was untouched. The system requires electrical supply to all the section-boxes, and transformer plant in each section-box, in addition to the boxed-in high-tension wire between the rails and the apparatus on the engine. The expense question is therefore one which will have to be seriously considered before the system is likely to be largely adopted. In addition to initial cost the working cost must also be taken into account, the power taken by a half-mile section being about 1 horse-power.

COST OF WOOD BLOCK PAVEMENT.

In an article on street and pavement construction, which was published in our issue of September 4th, 1913, the following paragraph appeared on page 410:—

"In Hamilton this pavement (creosoted wood block) has become so popular that some residential streets have petitioned for it on account of its quietness; although it is a costly pavement, running from $2.25 to $2.65 per square yard, according to the kind of block, whether plain or grooved for heavy grades. All of these pavements have assumed a concrete base 6 in. thick at least on business streets, with a mixture not less than 1:3:6, which will cost from 50 cents to 60 cents per square yard."

Some readers are evidently under the impression that the city engineer of Hamilton, who was the author of the above article, meant that the cost of the foundation was included in the "$2.25 to $2.65." This is not the intended meaning. The cost of the foundation is extra, and the wood block is estimated by Mr. Macallum to cost from $2.25 to $2.65 per square yard, assuming that it is to be laid on a good concrete foundation.

In this article also the second paragraph of the second column of page 409 refers to "a temperature not less than 28%," where "28° F." was intended.

For the equipment of the two new battleships now being built at the Government dockyards of Lorient a crane of the Goliath type has been put in service, able to deal with a load of 150 tons, divided between two parallel travelling crabs of 75 tons, which can work separately or simultaneously. The crane consists of an inner framework or tower, surmounted by a platform which supports a cast-steel roller path, and of an outer slewing framework carried on the supporting tower. The lower part of the outer framework is fitted with rollers running on the roller path, which is of 14m. outside diameter. The jib has a total length of 70m., and is composed of lattice girders spaced 6.40m. from centre to centre. The crane has a maximum radius of 23m. with 150 tons and 39m. with 75 tons; a lifting speed of 1.50m. a minute with 150 tons, or unloaded of 4m. a minute; and a speed of horizontal motion of 8m. a minute with 150 tons. The upper part of the jib is fitted with a runway on which travels an auxiliary crane of 20 tons, designed with a lifting height of 60m. and a lifting speed of 10m. per minute (loaded). The crane has been successfully tested with a load of 180 tons at 23m. radius and with 90 tons at 39m. radius.