

estimated that the capacity of the despatcher is increased from 25 to 50 per cent. It is also only reasonable to conclude that on account of the contact between despatcher, operator and trainmen being of a more personal character results in a closer co-operation and a more efficient service.

Now, with regard to the most important point of all, the question of safety, the telephone again has the advantage. In the first place, the despatcher in sending an order by telegraph does so without a written copy for reference, and has no record until the first operator repeats it. With the telephone he copies the order at the same time he is sending it to the different offices, so that the repetition can be checked directly against his own copy and an error on the part of the operator immediately detected. Numbers of trains and engines names of stations and other essential words in order are spelled out by letter as well as pronounced, so that a mistake is almost impossible.

In conclusion, I venture to say that, while great advancement has been made in the selective and telephone apparatus and installations in the short space of five years, still further improvement is in store, and the time is not far distant when the telephone will have almost entirely supplanted the telegraph for the despatching of trains. It is also coming into use quite extensively for the transmission of local messages and in this respect also will run the telegraph a hard race.

In speaking thus, I am not oblivious of the telegraph's wonderful achievements in the past, nor blind to its future possibilities, but I am convinced that for the purposes I have described the telephone has triumphed over it.

VANCOUVER'S PROPOSED HARBOR COMMISSION

As noted previously in *The Canadian Engineer*, at the next session of the federal parliament a bill is to be introduced by Mr. H. H. Stevens, M.P., to provide for placing the port of Vancouver under a commission of three, two members to be appointed by the government for terms of five years, and the other by the city council, for a term of three years. The commission, if the bill passes, will be empowered to improve, operate, maintain and govern Vancouver harbor.

The proposed port limits will include Burrard Inlet with the North Arm and Port Moody, False Creek and English Bay; in fact, all tidal waters to a line drawn from Port Atkinson to Point Grey. The commission is to be the pilotage authority.

The commission may acquire, expropriate, lease and dispose of lands deemed necessary for development, improvement, maintenance and protection of the harbor; may acquire movable property, plant, vessels, machinery, etc. It can acquire property for wet or dry docks, warehouses, elevators and railways in connection with the harbor, and all tidal lands within the harbor limits shall be under its jurisdiction. Further, the commission may construct and operate tracks and harbor lines and may make agreements with railroads, affording all companies whose lines reach the harbor equal facilities for traffic. Laws governing the harbor not contrary to laws existing or the jurisdiction of the corporation may be enacted, fairways, special anchorages, etc., regulated, and the navigation of the harbor will be generally managed by the commission. The harbor master will be appointed by the commission.

Rates will be levied at discretion upon all goods landed or shipped in the harbor, moved by rail on the harbor tracks, excepting military supplies. Powers will be given the commission to borrow such moneys as are necessary to carry on

its work, and debentures may be issued to cover such loans. The governor-in-council may advance funds necessary to complete the harbor works. Salvage disputes will be heard by the commission and all wreckage or flotsam dealt with.

Upon certain conditions the commission may seize vessels or goods, the detention being effected upon order of any judge or magistrate having power of two justices of the peace. Judicial powers will be given the commissioners to cover infringements of the Canada Shipping Act within the harbor limits. The government may waive duties on all merchandise required for the port commission work.

HARBOR IMPROVEMENTS AT NEW WESTMINSTER

New Westminster is seemingly entering the most active building period of its career. A statement which is creating great interest in New Westminster, Port Mann and every part of the Fraser River is that Messrs. Mackenzie and Mann have rejected the agreement between Vancouver and the Canadian Northern Railway.

It is stated that the clauses which Messrs. Mackenzie will not accept are those binding them to make Vancouver their home port, to enter the city by a tunnel and to purchase additional property in the city for their hotel site. If this report ultimately proves to be correct, it will only be in accordance with the steady conviction of a great many that the Canadian Northern Railway would never go to a vast expenditure to make Burrard Inlet their shipping point when they already owned a port capable of magnificent development at Port Mann.

New Westminster's harbor developments may also have had some influence on the Canadian Northern Railway's decision. These are taking concrete shape, and the expenditure of the \$500,000 worth of bonds that have been sold for this work will begin very shortly. Mr. Powell, the engineer in charge is calling for tenders for 3,000 linear feet of cedar pile quay wall and 1,000,000 yards of back filling with rock rivetted slope. This is for the widening of Front Street to 192 feet, and the construction of a straight municipal quay of over a mile in length.

COSTS ON THE PANAMA CANAL.

The annual report of Col. Gorthals, chief engineer of the Panama Canal, gives some interesting unit costs on the work during the past year.

Excavation in the prism by steam shovels was cheapest in the Central division, averaging \$0.5101; in the Atlantic division a lower cost is shown than during the previous year—\$0.5952 against \$0.6010—while in the Pacific division it is higher—\$0.7527 against \$0.6960. There was a total of 1,443,570 cu. yd. of masonry laid in the locks and spillway during the year. The unit costs for the masonry were: Gatun Locks, \$7.7552; Gatun spillway, \$7.0988; Pedro Miguel Locks, \$6.4640; Miraflores Locks, \$4.7675. The labor costs for the year per cubic yard of plain concrete at the various locks and spillways show lowest at Miraflores, \$0.8394; next, Gatun Locks, \$1.3840; Pedro Miguel Locks, \$1.4733; and Gatun spillway, \$1.5425.

The cost of concrete piling at Gatun was \$0.0679 less during the year than in 1911, while the cost in place was \$0.7088 less. The total amount driven was 83,670 lin. ft., at a cost of \$1.5719 per lin. ft.; in addition, 51,450 lin. ft. of wooden piles were driven, at a cost of \$0.6516 per lin. ft. On this basis had wooden piling only been used for the south approach pier a saving of \$77,000 would have resulted.