

TELEGRAPHS & CABLES.

Vancouver Island Cables.

The first telegraph connection with Vancouver Island belonged to the Western Union Telegraph Co., consisting of a cable 16 miles in length, between the then territory of Washington, via San Juan Island, & Vancouver Island. It was removed after the laying of the Dominion Government cables as mentioned below.

The present cables were laid by the Dominion Government in 1881, & were taken over by the C.P.R. Co. in 1886. The route of the present line from Vancouver to Victoria is as follows: Pole line through the woods from Vancouver to Point Grey, 12 miles; 24 miles of cable from there to Valdez Island; pole line along that island through the woods for about 3 miles; cross over to Gabriola Island by a long aerial span; pole line for 6 miles along a roadway on the island; 1 mile of cable to Vancouver Island, landing at a point about 10 miles south-east of Nanaimo; pole line through the woods to Nanaimo, & thence along the E. & N. Ry. to Victoria. The conductor in these cables is composed of 7 strands of copper wire, weighing 107 lbs. per knot; insulator, 150 lbs.; & a sheathing, over an adequate serving, of 12 no. 8 or 9 galvanized iron wires.

Between Gabriola & Valdez Islands the currents are so swift & the bottom so rocky that a cable cannot be used, & recourse was had to a long aerial span, supported on trees about 200 ft. in height, with the branches & tops cut off so as to present a small surface to the wind. An extra span on two other trees is maintained, so that, in case of the one in use breaking, communication can be quickly regained. The repair of these spans is carried on under great difficulty. The wire can only be carried across at slack water, which lasts only a few minutes at turn of tide, & it must be raised free of the water before the tide turns or it will be either broken or carried away. Sometimes a week is spent before the wire can be successfully erected. The land line stretches between Vancouver & Nanaimo have been subject to considerable interruption from falling trees, etc., & owing to their great height, it is out of the question to cut a trail wide enough to be free from this annoyance. To have repairs made as quickly as possible, line men are stationed at Vancouver, Valdez Island, Nanaimo, & latterly on Gabriola Island.

To avoid the difficulty & danger of frequent interruptions, the C.P.R. Co. concluded last year to lay a cable the whole way from Vancouver city to Nanaimo, a distance of 40 miles. The old cable had only one conductor, which was sufficient to carry all the business of Vancouver Island, but looking forward to the large increase expected by the people of Victoria, owing to the Yukon excitement, & the development of the mineral resources of the island, it was decided to lay a three conductor cable. One of these conductors will connect at Nanaimo with a through wire to Victoria, & will be quadruplexed, so that four messages can be simultaneously transmitted over the one circuit. The second cable conductor will be connected with a second wire through to Victoria, giving communication with all intermediate offices, & in case the quadruplex cannot carry the entire business of Victoria, this will furnish a fifth circuit. The third cable conductor will, for a time at least, be used for Nanaimo business with the Mainland, but if necessary will be carried to Victoria with a third wire & quadruplexed.

The cable has been made by the Telegraph Construction & Maintenance Co., London, Eng. It was originally intended to bring it by steamship from London to Halifax, & then across the continent by rail. To accomplish this, the cable would have had to be coiled in a tank on the steamship so that each turn

would average the same length as when coiled on the cars after being transhipped at Halifax, so as to avoid kinks. It weighs about 220 tons, & would require a train of 13 or 14 cars to transport it. This was quite a proposition, as any accident happening to the train would perhaps ruin the cable. However, the C.P.R. recently purchased two steamships in England for use on the Yukon route, & as they were to leave London about the time the cable would be finished, the original shipping instructions were cancelled, & arrangements made to transport the cable by SS. Tartar direct from London to Vancouver, & it is now on the way.

Although actually only 40 miles of cable are required for the work, 45 miles have been secured. The cable will be laid almost immediately on its arrival. The following is a portion of the specifications for the manufacture of the cable: Each of the 3 conductors to be composed of 7 strands of copper wire twisted together, containing not less than 98 per cent. of pure copper, & weighing 100 lbs. per nautical mile. Each conductor is then insulated with gutta-percha weighing 100 lbs. per nautical mile, & then served spirally with a saturated tape. The 3 insulated conductors are then twisted together & served with the best tanned jute, free from knots, & with 14 best extra galvanized iron wires, .203 of an inch in diameter, each sheathing wire to be treated with bituminous compound, & the sheathed cable to be covered with two coatings of tape, laid on in opposite directions, & saturated with compound. The insulation resistance of each conductor to be not less than 4,000 megohms per nautical mile.

THE WESTERN UNION TELEGRAPH CO.,

with which the Great North Western Telegraph Co. connects, is extending its wires from Seattle, Wash., to Victoria, B.C. The work between Seattle & Port Angeles is proceeding as rapidly as possible. The cable, which will be laid from Port Angeles to Victoria, has been ordered, & it is expected that communication will be had with that place by this new route in the course of a few weeks.

C.P.R. Telegraph Improvements.

Not many years ago it was quite a feat to work a telegraph wire for a greater distance than, for instance, Montreal to Toronto; & in bad weather it was difficult to work even half that distance. Better construction improved this, & the invention of automatic repeaters still further extended the working distance. It was found that circuits requiring more than two automatic repeaters were unsatisfactory. To lengthen out the different sections recourse was had to larger wires (iron), the size being increased by steps from 300 to 570 lbs. a mile.

Copper is only about one-sixth of the length (electrically) of iron; but its use was for a long time prevented by the much greater cost of the material, & the fact that, owing to its delicate nature, it had to be handled with extreme care; the cost of stringing it is nearly double that of iron. The telegraph business has increased so enormously of late years between important centers that many more wires have had to be erected, & stringing heavy iron wires had to be discontinued & light copper wires became a necessity. The size has been gradually increased.

The Yukon excitement, & the greater prosperity now prevailing throughout Canada, has resulted in an enormous increase of the telegraph business between the far West & Eastern Canada, & the present facilities of the Canadian Pacific Railway Co.'s Telegraph will probably be insufficient to carry it during the coming summer, therefore the Co. has decided to largely increase them. In addition to numbers of new wires connecting interme-

diate points, a through wire from Montreal to Vancouver is to be erected immediately. In order to get the greatest amount of work out of this wire it is to be composed of copper, weighing 300 lbs. a mile. It is being manufactured by the Dominion Wire Manufacturing Co. at Lachine, according to specifications drawn up for the highest grade that can be obtained, & will be subjected to severe mechanical & electrical tests before shipment. When completed the wire will cost in the neighborhood of a quarter of a million dollars, the total weight of copper being about 440 tons.

It will be used only for business between the east & the Pacific Coast, Montreal working direct with Vancouver, with automatic repeaters at Fort William, Ont., & Swift Current, Assa. This wire will be worked duplex, i.e., two messages transmitted at the same time in opposite directions. At present Montreal works direct with Winnipeg, with repeaters at Sudbury and Fort William, & all messages are received & re-transmitted at Winnipeg; but with the new wire Vancouver will be brought as close, practically, to Montreal as Ottawa is.

It is expected that between 200 & 250 men, divided into gangs of 20 each, will be engaged on this work.

Telegraph Office Changes.

GREAT NORTHWESTERN.

Offices opened: St. Michel Station, Que.; Cascades Point, Que.

Offices closed: St. David's, Ont.; Winthrop, Ont.; Osnabrock Centre, Ont.; Rosebank, Man.

CANADIAN PACIFIC.

Offices opened: Comaplix, B.C.; Esquimalt, B.C.; Harrison, B.C.; Notch Hill, B.C.; Lear Springs, B.C.; Seventh Siding, Crow's Nest Pass Ry., Alta.; Anson, Ont.

Offices closed: Bird's Hill, Man.; Caron, Alta.; Cheney, Ont.; Dinorwick, Hord's Station, Ont.; Kenilworth, Ont.; Deschambault Station, Que.; Vacluse, Que.

Cow Bay, N.S., has been changed to Port Morien.

At Qu'Appelle, Assa., recently, Hartley Gisborne, for the past 16 years District Superintendent of Government telegraph lines in the Northwest Territories, was presented with an address & silver tea-set by the employes of the service, on his leaving it in consequence of J. S. Macdonald, of Moose Jaw, having been appointed in his stead. Mr. Gisborne is removing to Winnipeg.

J. Galt, W. Hespeler, R. J. Campbell, F. A. Drummond & F. W. Heubach give notice of their intention to apply for incorporation under the Manitoba statutes, under the name of the Manitoba District Telegraph & Delivery Co., to maintain & lease electric call boxes, to supply messengers, to deliver parcels, collect accounts, post bills & distribute handbills, & to print & publish the same. The head office is to be at Winnipeg; capital stock \$10,000.

The Commercial Cable Co.'s report for 1897 gives the revenue from operating the cables, after deducting all expenses & reserving \$11,750 to meet depreciation of spare cable, as \$1,200,155.53, as compared with \$1,123,653.46 for 1896, an increase of \$76,502.07. The revenue from the land lines, after deducting all operating expenses & setting aside \$60,000 to a land lines depreciation reserve account, amounted to \$645,185.59. The net revenue of the combined systems was \$1,845,341.12, out of which has been met the interest on the 1st mortgage bonds & debenture stock amounting to \$640,000, & dividends of 7% & bonus of 1% on the capital stock, absorbing \$800,000, a total of \$1,440,000, and leaving the balance of net revenue for the year \$405,341.12.