

waters pass through so severe & extensive a canyon district—the Great Canyon of the Stikine—that it was considered advisable to ascertain whether a less difficult route could not be found.

From information gained from various competent & reliable sources, it appeared likely that by leaving the Stikine valley and following a north-westerly course to Dease Lake, not only would a better location be discovered, but that from Dease Lake a comparatively easy route could be followed to the head of Teslin Lake, along an existing trail between the two lakes, which would, approximately, be the route adopted, & which had been traversed by prospectors the previous winter in 7 days. From Teslin, the river navigation to Dawson is, of course, that at present followed. Exploration was accordingly carried on with the view to a railway location to Dease Lake in the auriferous Cassiar district, & the results show that a practical route can be obtained from a point (Beaver Creek) above the Great Canyon of the Stikine to that lake, about 59 miles, with but a limited amount of heavy work. An estimate of the cost of the last 111 miles, comprised in 52 miles down the Stikine Valley to Beaver Creek, & the 59 miles from that creek to Dease Lake has been furnished, based on prices in Eastern Canada (to which has, therefore, to be added the cost of labor, transport, supplies & whatever difference there may be in wages) as follows:—74 miles of light work at an average cost of \$14,000 a mile; 32 at \$23,000, and 5 at \$35,000, which together with provision for bridges, \$75,000, aggregates \$2,022,000 as the estimated cost of this section.

Should the line indicated above be followed the approximate distance from the easterly boundary of B.C., to the southerly end of Dease Lake would be 646 miles, & a further distance of 136 miles would bring the railway to the head of Lake Teslin, making a total of 782 miles to the navigable waters of the Yukon district. From Edmonton to the boundary the approximate distance would be 500 miles, making the total approximate distance from an existing railway system to the head of Lake Teslin, 1,282 miles. Of this distance much remains necessarily undetermined; connecting links of surveys have to be made; alternate routes on certain portions have to be carefully considered; & possible improvements may be found by which the location, even where now regarded as clearly defined, may be modified to advantage. Still a good deal of valuable information has been obtained, & the feasibility of constructing the railway without inordinate cost has been demonstrated. It appears, however, highly probable that a very much shorter line of no difficult character can be obtained from the head waters of the Stikine to Dease Lake by following down the valley of the river Clappan (or third south fork of the Stikine) & crossing the main Stikine above the Grand Canyon.

Explorations with a view to location of a railway from a Canadian Pacific ocean port into the Yukon district were carried on, the general results of which may be summarized as follows:—The known ports calling for attention are Port Essington, near the mouth of the river Skeena on its south side, & Port Simpson near the entrance to Portland Inlet. These ports & the possible routes from them eastwards up the Skeena were made the subject of examination in connection with the early surveys for the C.P.R., & the object of the present surveys being to obtain information as to the practicability of a line leaving the river Skeena at some point where its construction northwards would be feasible, Hazelton, at the forks of the Skeena, about 150 miles from Port Essington (which is navigable for steamers of light draught at stages of mean water) was made the starting point for an exploration which extended for about

130 miles to the point of junction of the waters of the Skeena & Sestoot, above mentioned as on the suggested line from Edmonton, from which point the railway might follow the route of that location to the northward as already described.

Port Simpson, the most northerly of the harbours of B.C., is about 50 miles north of Port Essington, & from it a survey was made in 1879, southerly to the river Skeena, about 40 miles; thence up the river on its north side, in a north-easterly direction; the first 60 miles was actually located, the work on the first 32 miles being classed as very heavy. Port Simpson, which, in common with other possible ports, received in 1879 careful examination, has been pronounced both by naval & engineering experts to be an exceptionally fine, deep harbour, well protected from winds; easy of access from the sea; free from frogs & ice; never freezing over even during the winter of 1878, which was an extremely severe one; while the average winter snowfall does not exceed 18 inches, & this does not remain more than a day or two. The officer of the Hudson's Bay Co. records the budding of trees & the blooming of garden flowers on Feb. 10, 1878. These climatic advantages are, of course, due to the Japan current.

Port Essington, about 450 miles from Victoria, is situated on the south side of the Skeena about 11 miles from its mouth. It is not a good harbour, the access from the sea being bad, while it is exposed to winds & the action of masses of ice from the Skeena, which drifting up and down with the tide render it practically ice-bound for the winter months. A good harbour, however, exists beyond the mouth of the river, to which the name of Port Fleming has been given.

A third port might possibly be found on Kitimat Inlet, up the Douglas Channel. At the head of this inlet is the mouth of the river Kitimat, the valley of which, though not fully explored, was to some extent examined by the survey parties of 1876, resulting in the opinion that an easy route could be found up to the river Skeena. It would possibly join that river at a point about half way between Port Essington & Hazelton, considerably reducing the distance for traffic coming up from Victoria and Vancouver & greatly decreasing the cost of railway construction as compared with a line from Port Simpson. In 1898 & 1899 powers were given by the Province of B.C. to a railway company to build a line from the Kitimat Inlet with an objective point, east of Lake Babine, on the river Omenica.

It might also be desirable that a route should be explored up the valley of the Nass, the mouth of which is on the south side of Portland Inlet, & which may be found to afford a practicable means of communication with Telegraph Creek on the Stikine, whence an easy location, with the exception of a small portion, can be found along the present trail to Dease Lake, distant about 72 miles.

RAILWAYS & CANALS.

Annual Report of the Department.

Following is a summary of the report of the Deputy-Minister & Chief Engineer for the year ended June 30, 1899:

The number of railways in actual operation, including the 2 Government roads, the I.C.R. & the P.E.I.R., was 153; some of these, however, are amalgamated or leased; making the total number of controlling companies 84, not including the Government railways. The number of companies absorbed by amalgamation is 33, & the number of leased lines is 35.

The number of miles of completed railway was 17,358, an increase of 488, besides 2,402 miles of sidings. The number of miles laid with steel rails was 17,180, of which 562 miles

was double track. The number of miles in operation was 17,250.

The paid-up capital amounted to \$964,699,784, an increase of \$23,402,747. The gross earnings amounted to \$62,243,784, an increase of \$2,528,679, & the working expenses aggregated \$40,706,217, an increase of \$431,328 compared with those of the previous year, leaving the net earnings \$21,537,567, an increase of \$960,011. The number of passengers carried was 19,133,365, an increase of 689,316, & the freight traffic amounted to 31,211,753 tons, an increase of 2,425,750 tons. The total number of miles run by trains was 52,215,207, an increase of 1,526,924. The accident returns show 20 passengers killed.

The Government expenditure on railways prior to & since Confederation (1867) amounts, on capital account, to \$124,327,857.65 (including a payment of \$25,000,000 to the C.P.R. Co.) & for railway subsidies charged against the Consolidated Fund the further sum of \$20,633,842.16, making a total expenditure of \$144,961,699.81. In addition, there has been an expenditure since Confederation, for working expenses of \$76,726,244.05, covering the maintenance & operation of the Government roads, or a grand total of \$221,687,943.86, all of which, with the exception of \$13,881,460.65, has been expended on railways during the past 32 years. This total does not include an annual subsidy of \$186,600 to the Atlantic & Northwest Ry. Co. for 20 years from July 1, 1889, nor interest at 5% on \$2,394,000, payable to the Province of Quebec for the line from Quebec to Ottawa, which has been transferred to the Public Debt. The revenue derived from the Government roads during the same period amounts to \$68,451,220.29.

Canadian Pacific Ry.—By the payment during the fiscal year of \$233.67, the total amount, \$579,255.20, awarded to this Co. in 1891 by the special arbitrators in respect of transferred works in B.C., & to be expended by the Co., under Government supervision, in certain specified directions, has been earned & paid.

The construction of the Crow's Nest Pass Ry. being considered a necessity for the successful development of the mining interests of B.C., Parliament granted a subsidy of \$11,000 a mile in aid of it. Under the Act the C.P.R. Co. undertook the work of construction & entered into a contract, breaking ground July 15, 1897, since which the works of construction have been prosecuted continuously up to date, there remaining only work to the value of \$60,000 to complete the section between Lethbridge & Kootenay Lake. The length of road under contract is: Lethbridge to Kuskanook Station (Kootenay Lake), 290 miles; Kuskanook Station to Nelson, 54 miles; total length, 344 miles. The maximum grade is 1% or 52.1% ft. per mile, severest curves 10 & 12 degrees, except in one instance, where a 15 degree curve has been introduced. The work of construction has so far been confined to the section between Lethbridge & Kuskanook Station, 290 miles, which section of road is being successfully operated to the great benefit of the country. A train transfer landing has been constructed on Kootenay Lake at Kuskanook, so that cars with their loads are transferred without transhipment from that point to Nelson. The subsidy paid up to Dec. 1, 1899, is \$3,116,250.

The improvements made on the road & rolling stock in the last few years enabled the Co. to increase the speed of its transcontinental express trains during the past summer, which was greatly appreciated by the travelling public. The Co. now has equipped with self-couplers 8,456 freight cars, & has fitted 6,601 freight cars with automatic brakes.

Government Railways in Operation.—The several lines maintained by the Government are: The Intercolonial, the Windsor Branch (maintained only), & the Prince Edward Island Rys. The gross earnings of all the Government