

rard Inlet is its passing within six or eight miles of United States Territory, and its consequent liability to destruction when most wanted in time of war.

11. The second method that of a line of railway across Valdes Island without water conveyance would require very expensive bridging. Valdes is not one island as shewn on the Admiralty Chart, but consists of three or four islands.

The main difficulty, of course, exists in bridging Seymour Narrows, a distance of 2,575 feet, in two spans of respectively 1,200 and 1,350 feet. To execute this work the middle pier has to be erected on a rock, said to be eighteen feet under water at low tide, with a velocity of tide over it of from five to eight knots. This would be a work of vast magnitude and expense, even if it be practicable, to place a foundation on the rock which, I doubt, as there is hardly any slack tide. Nor must it be forgotten that bridging Seymour Narrows would, as regards large ships, obstruct the only practicable channel between Vancouver Island and the Main. This alone should, in my opinion, preclude its attempt.

12. The third method, and the one I recommend, that of ferrying a train from Estero Basin to Otter Cove, is, in my opinion, not only feasible but perfectly simple. I have carefully examined this route and find—

1st. That Otter Cove is well adapted for a pile dock terminus for the steam ferry.

2nd. That the head of Frederick Arm, at the entrance to Estero Basin, is also well adapted for a pile dock terminus.

3rd. That the channel between the two is easy of navigation, being nearly straight, free from dangers, smooth as glass, sheltered from all winds, and having very little tidal stream.

13. The tide in this, the Nodales Channel, is noted on the chart as running from two to three knots, but I think it is much less.

I spent five hours in this channel during what should have been the strength of the tide, the day before the full moon, and found the tide scarcely perceptible.

The distance for steam ferry between the two ports is thirteen miles of still, clear navigation, and I consider it may, with proper signals, be safely traversed in a fog.

14. In advocating the route by Frederick Arm, it will be observed that I am assuming that the railway can be brought to that point.

This assumption is borne out by Mr. Fleming's report of 1877, in which he states it to be "a feasible scheme, but one exacting a heavy expenditure," which expenditure would, I suppose, be in part compensated by the route No. 6, from Yellow Head Pass to the head of Bute Inlet, being estimated at two million dollars less than that by the Lower Fraser (No. 2) to Burrard Inlet.

15. From conversation with Mr. Marcus Smith (the principal officer of the survey, next to the Engineer-in-Chief) I am given to understand that the Rocky Mountains can be crossed at a comparatively low level, and that the line can be carried through a far less mountainous district by avoiding Yellow Head Pass altogether, and selecting a route by Lesser Slave Lake and Pine River Pass, and thence in a more or less direct line to Bute Inlet. Should this prove correct, it will be an additional reason for ending the main land route at Frederick Arm rather than at Burrard Inlet, omitting, as I do, all consideration of taking water conveyance from the head of Bute Inlet on account of its length and tortuous passages, which would be impracticable in foggy weather.

16. Having thus come to the conclusion that the line should pass by Frederick Arm, and that the train should be conveyed by steam ferry through Nodales Channel, to Otter Cove, the extension to one of the good ports of Vancouver Island remains to be considered.

17. In future years, I imagine that for the sake of more direct through ocean traffic, a line will be extended to Quatsino Sound, by bridging Quatsino Narrows, and thence on to a terminus at Winter Harbour.

18. But for present wants it seems that the line should be continued from Otter Cove past Bayne's Sound and Nanaimo to Esquimalt, there to make the ocean terminus. This port is easy and safe of approach at all times; its dock (to take the