

15. Great Bear Lake has been described in paragraph 4. It is the haunt of the reindeer. The fish are mostly trout and herring, but there are white-fish fisheries in places. The trees around Bear Lake are small. There is a portage of only 6 miles from water running into Great Bear Lake to water running into the Coppermine River ; so that if copper is worked on the Coppermine, this might be the readiest way of bringing it to market. A tramway might be made over the portage. But at present the cost of transport from Great Bear Lake to Manitoba is reckoned at fully 25 cents per pound, and this appears too close upon the value of raw copper to leave sufficient margin for mining, repairs and profit.

16. I have no personal knowledge of "Lesser Slave Lake" or "Hay Lake" or other important lakes, except La Lacte and Ile à la grosse lakes.

17. Sea-going steamers would only ascend the Mackenzie if constructed for it. But a light draught steamer drawing say 6 feet might make the round from Victoria, British Columbia, through Behring Straits and mount the Mackenzie. It is true that Point Barrow is often encumbered by ice, but I make no doubt but that a passage could be effected by a steamer either inside or outside the ice, according to the wind and weather. On a large sea-going vessel being brought as far as Point Barrow, a steam launch could be despatched thence along the coast to meet the Mackenzie.

18. On the Athabasca River it is understood that two steamers are this year (1888) run by the Hudson's Bay Company, one the "Graham", about 150 feet long and carrying about 100 tons, and running between the Grand Rapids and Clearwater River and Fort Smith Landing on Horn River, and also up Peace River as far as the Falls. Another steamer has been built for the Upper Athabasca River, above the Grand Rapids to run to Athabasca Landing and Lesser Slave Lake.

On the Mackenzie River only one steamer is at present running about 100 feet long and 14 feet beam, carrying about 60 tons, with high pressure engine and screw. This is a lake steamer, drawing about 6 feet of water, but hardly enough for the traffic required. It is named the "Wrigley", and is also run by the Hudson Bay Company.

19. I know nothing of Hudson's Bay.

20. What little knowledge I have of these would hardly be of service. The old route from York Factory to Portage La Loche, formerly used by the Hudson's Bay Company for their York route, is well known. It runs through Nelson River, Lake Winnipeg, Saskatchewan River, Sturgeon River, English River, La Leche River and many lakes, including Cross Lake, Cedar Lake, Cumberland Lake, and Fleet Cross Lake. The route is very much impeded, having about 100 portages enroute. It could not be adopted in these days of steamers and railways.

21. This question is very general. The rainfall varies much in Mackenzie River in different seasons. We have wet summers and dry summers, but dry weather predominates. If there occur sufficient showers in spring to promote vegetation, the crops are unusually successful. Unsettled weather often occurs about the end of July or early in August. I cannot give the rainfall in inches. The average depth of winter is probably about 4 feet, but varying from 2 or 3 to 6 feet in special seasons ; and the snow may be deep towards the south and scanty towards the north in the same season, or *vice versa*.

22. This is a difficult question, but can be determined probably by general principles, after ascertaining average annual temperature of the air at any given point. It is understood that a certain known distance below the surface, the soil will be found permanently of this average annual temperature, and below that point the temperature of the soil rises as you descend, at a known fixed rate. Where the temperature at the surface is averaging below freezing point, there is permanently frozen ground at a certain depth. Such is the case in latitudes higher than 65.

23. At Peel River, latitude 68, the soil hardly thaws more than 2 feet from the surface in summer. Below this is permanently frozen ground for a good depth, say 20 feet at least. At Fort Simpson I do not think the ground is permanently frozen : I suppose, therefore, the average temperature of the place is above freezing point, but I think the winter frost will penetrate the ground to the depth of 8 or 10 feet. In Peace