

Echimamish 7 miles from Painted Stone; the Robinson portage is 1,315 yards in length; the difference in level between the upper and lower ends of this portage is 45 feet. Robinson portage to Wapinapis, 34 miles; two rapids occur between 7 and 14 miles from Robinson portage; Wapinapis portage is 24 yards in length; the river falls by a chute at this point 6 feet. Oxford or Holey Lake, 30 miles; Oxford Lake to Knee Lake, 11 miles; Knee Lake, 40 miles. Jack River, Knee to Swampy Lake, ten miles. Jack River has considerable descent in the lower half of its length, the rapids being over ledges of Laurentian gneiss. Swampy Lake, 10 miles—the last lake on the route. From Swampy Lake the river is called High River as far as the junction of the Fox River, where it becomes the Steel River to its confluence with the Shamattawa, from which point to the sea it is called the Hayes River.

From Swampy Lake, 19 miles, the river flows through a labyrinth of islands; a great number of islands occur in this distance, all of which can be run by boats; bed of river and islands mostly gneiss; at end of this stretch clay banks first make their appearance on both sides and continue all the way to the sea. Labyrinth of islands to Brassy Hill, 5 miles. Brassy Hill to the Rock, 13 miles; several rapids and chutes over ledges of gneiss occur in this distance. From the Rock to the sea no more rapids occur. The Rock to Fox River, 39 miles. Fox River to Shamattawa, 29 miles; Steel River, width about three chains; clay banks average height of 70 feet. Shamattawa River to York Factory, 50 miles. Norway House to York Factory, 361 miles.

It is to be regretted that there is no data as to the volume of the Hayes; it is not likely, however, that there

would be any difficulty in procuring the necessary quantity of water for lockage. The average dates of the Hayes River for fifty years, on the authority of Mr. Wood, government meteorological observer, York Factory, are opening 20th May, and closing 23rd November. Dr. Bell says: "In regard to the bay itself there is no data for the opening or closing of navigation because the bay is open all the year round, like the ocean in corresponding latitudes." Temperature: The following is from the Meteorological Department, Toronto—mean average temperature at York Factory is about:—

May	35
June	55
July.....	66
August	57
September	44
October	25

Mr. C. N. Bell in "Our Northern Waters," says: "It will be understood that the readings at York are taken at the fort, which is on tide water, and has been described as most exposed. The fact of the water in the rivers rushing down before the ice is broken up at the lower levels, proves that the climate inland is more genial."

Lake Winnipeg is navigable from Norway House to the mouth of the Red River, and the latter stream can, at a moderate expenditure, be made navigable from its mouth to the city of Winnipeg. The following table shows a comparison in detail between the Nelson and the St. Lawrence routes, from the great wheat area to Liverpool. The dates for the St. Lawrence are on the authority of Mr. Corthell:

FROM WHEAT AREA TO LIVERPOOL.

	Miles.	Time in hours.	No. of days route open.	Cost per ton.
Via Chicago	5,488	414	225	\$8.97
Via Winnipeg	3,826	287	170	4.00