

ing up on the Pacific side of the Continent—and that the wheat crop alone of California in 1867 was 25,000,000 bushels.

We are certain that a saving of so much time will draw travel, and will not the use of the capital involved in so valuable merchandise, also tend to have it carried over the quickest and safest route? We can put it to instances in New England where such bulky freight as lumber, and that along the shore of the finest navigation, is continually carried over 150 miles by rail.

Leave out all these fair means of increasing our estimate, take only the figures of Mr. Mansfield, or a gross revenue of \$31,040,000, deduct 50 per cent. for working expenses, and there remains a net revenue of \$15,520,000, or the interest at 7 per cent. per annum on a capital of \$221,715,000 or sufficient at \$35,000 per mile to build two lines of Railway of over 3,200 miles each.

2nd. What advantages will the Canadian Pacific have in competing for this business?

In the United States the Union Pacific and Central combined form one line which is now nearly completed. Let us compare it with the proposed Canadian, and for data on that we will take their most recent reports, while for the Canadian we will take such information as, with the assistance of Mr. Dawson, can be gathered from official surveys and reports of the country to be traversed.

1st. Distance from Ocean to Ocean by the Union Pacific.

New York to Omaha	1,550 miles
Omaha to San Francisco	1,845 "
Total	3,395 "

By the Canadian Pacific

Montreal to Ottawa	120 miles
Ottawa to Ft. Garry	1,185 "
Ft. Garry to Bute Inlet	2,785 "
Montreal to Halifax by Commercial route	730 "
Total	3,515 "

Making Montreal the eastern terminus, as it must be for 8 months in the year, we have a saving over the line to New York of 600 miles, or 30 miles per hour for 20 hours, making Halifax the eastern terminus, New York has the advantage of 120 miles, or 4 hours.

Take the through route from Asia to Europe, we find Montreal 240 and Halifax 700 miles nearer Liverpool than New York, while on the Pacific side, vessels from Asia by the force of currents and winds invariably make Vancouver's Island on their way to Francisco, thus necessitating a coast voyage of over 700 miles. So seriously is it supposed these currents in the ocean will affect the business of the Union Pacific that they have proposed a branch of over 700 miles, from their line west of Salt Lake to Puget Sound (there are no harbors between this and San Francisco) Gen. Dodge, Engineer-in-Chief of their line, for this reason, and to avoid the snows of Sierra Nevada, reports; "Puget Sound must be the western terminus of the route between the Atlantic and East Indies." This, then, will give them a saving in water communication between Europe and Asia of 1000 miles in favor of Montreal, and 1400 miles for Halifax via Canadian line, over New York via Union Pacific.

Allowing 14 miles per hour as the rate of travel for steamers, we have a saving respectively of 70 and 100 hours, or making the addition and subtraction necessary in combining land and water between Europe and Asia, 90 hours or 3½ days for Montreal, and 96 hours or 4 days for Halifax via Canadian Pacific, over New York via Union Pacific.

It is quite evident the Canadian side has the advantage in distance.

3rd. What is the nature of the country through which each will pass?

1st. As to speed in running and economy in operating. Both of these are largely dependent upon the grades and curvature required in crossing the continent.

From the reports to further the sale of their bonds, and which we take as as favorable as possible, we find the elevation above sea level of the Union and Pacific Railway at different stations, and the distance of each station from Omaha, their eastern terminus. We copy it, and from these, extend in three additional columns in a few instances the distance and difference of levels between stations, and the rise or fall per mile, supposing a continuous grade established from station to station, which is the most favorable light in which we can put it.

Name of Station.	Dist. from Omaha.	Elevation above sea.	Dist. from previous station.	Diff. of elevation from last station.	Rise or fall per mile.
Omaha	0	567			
Wymont	46	1215			
Columbus	91	1475			
Kearney	199	2125			
North Platte	290	2830			
Julburg	377	3557			
Cheyenne	517	6962	140	2505	
Sheridan	550	8262	33	2200	66
Laramie	576	7174	26	1128	-3
Beaton	600	7534			
Green River	820	602			
Fort Bridger	845	7000	25	917	36
Weber Canon	935	4954	150	2354	
Humboldt Wells	1213	5650			
Humboldt Lake	1493	4047			
Big Bend Truckee	1534	4217			
Truckee River	1602	5863			
Summit Sierras	1817	7042	14	1176	84
Disco	1624	5711	8	131	166
Alta	1752	3625	23	2086	74
Oelax	1667	2443	18	1177	78
Sacramento	1721	68	54	2392	44
Stockton	1768	22			
San Francisco	1845				

We will now add a similar table for the Canadian line, which, with the assistance of Mr. Dawson, we have gathered from the most authentic, and we believe reliable, sources; but as in no place does it show a rise or fall sufficient to necessitate grades of even 50 feet per mile, the three last columns will not be needed.

STATION	Distance from Montreal.	Elevation above Sea Level.
Montreal		15
Ottawa	120	250
Mattawan	313	499
Montreal River	495	540
Estateau, at source of Montreal River	565	850
End of Sinclair's Survey	617	1050
Nippegon	885	1100
Summit between Nippegon and Lac Seul	990	1400
Lac Seul	1075	1100
Rab. Portage	1175	900
Fort Garry	1305	700
Fort Ellipse	1530	1200
Fort Edmonton	2130	2100
Fort Henry	2275	3460
Summit of Tete Jaune Pass	2397	3760
North Fork	2450	2490
Summit North Thomson	2476	2900
Quesselle Lake	2555	2040
Deep Creek	2592	1450
Chilcooten Plains	2651	2143
Cascade Summit	2698	3343
Bute Inlet	2785	

We also know that by leaving the above line near Fort Edmonton, running northwest, and making the Pacific Coast at Bentinck Inlet, or even by the Skeena River, the Rocky Mountains may be crossed at an elevation of not over 3,500 feet, and consequently with much easier work and lighter grades. I will pass through a good wheat growing country, and with a milder climate, (so much so that snow sometimes disappears from the ground in mid winter,) and does not perceptibly lengthen the line.

Comparing the two preceding tables we see

that on the Union Pacific long continuous stretches of grades, 60, 74, 78, 84, and even 106 feet per mile are required to overcome the great altitude at which it passes the mountains, while on the Canadian 50 feet per mile is the maximum. Nearly 5,000 feet difference in maximum elevation will readily account for this. From their own reports, sharp curves will be required, so that at least eight times the power will be required to do the same amount of work on a large portion of their line, as on a corresponding length of the Canadian line. Again we notice from the table, that over 1200 miles of the American Pacific, or two thirds of its entire length from Omaha, is at an elevation of over 4000 feet above the level of the sea, or higher than the summit of Bute Inlet route, and nearly twice the elevation of the summit by a more northern pass. Also 400 miles is over 6000 feet above the sea, 150 miles over 7000, and a summit is reached of 8262 feet above sea level. We know the effect of such an elevation must be to make a more severe climate, and in this opinion we are confirmed by their reports. By this we learn that in addition to extensive tunnels, they have been obliged to build not less than 46 miles of snow shed of most massive structure, and roofed entirely with iron, to resist the pressure of avalanches of snow from hills, and it is stated, in order to keep their line open at least 100 miles of it will be necessary. On the Canadian line, after we leave Ottawa, from observation extended over years, we learn that even in the mountains a depth of snow of a foot is rarely attained, and never exceeded, while for almost the entire distance it rarely exceeds 14 inches. Also, we notice by the report of the Union Pacific Company's Land Agent, that 190 miles west of Omaha artificial irrigation is necessary to produce full crops; hence we infer a poor country and scanty supply of fuel. Further west we know they traverse immense deserts; and we find in the report of their survey that oxen were required to accompany the party to supply the men with water. No coal of any extent has yet been found, consequently in the important item of fuel and water, we may predict difficulty in obtaining a sufficient supply.

On the Canadian Route, leaving the Ottawa on which we have an abundance of both, we cross several well timbered streams before we reach Red River. Thence the Saskatchewan and its tributaries stretch along our course even to the Rocky Mountains, furnishing an abundant supply of both, while on the Pacific Slope we can draw even more abundantly from the forests on the Fraser and other rivers running west. Besides, there are immense deposits of coal on both sides of the Mountains.

In passing we may also note the great advantage the water communication by the Saskatchewan will furnish in transporting material and supplying wood in the construction of the road, while on the Union Pacific everything had to be carried from one end and at great expense, the one item of ties alone costing as high as \$3 each.

We have already seen that from the great elevation and consequent cold, desert nature of the country traversed by the American line, a large portion of it is ill adapted for producing grain while that on the Canadian line, from its more temperate climate, has been shown beyond a doubt to be most admirably suited for that purpose. Indeed so highly is it prized by the Americans that Mr. Greeley, anticipating the exhaustion of the soil of the Western States in producing wheat (which is going on more rapidly than many suppose), has stated before the New York Chamber of Commerce:—We must look to the great Northwest basin of Valley of the Saskatchewan as the future granary of the Continent. In the construction of the American Line, much difficulty was met with from hostile Indians. Sometimes parties after months of toil on surveys were swept off with all their notes, thus increasing