construction of some 500 miles, government can now secure one at the South. Ten years ago, when this question of a road to the Pacific began first to be agitated, government would have had to provide for it all the way from the Mississippi to the Pacific—so it was held—and that would have required a single road about 2,000 miles long. Now, government aid along 1,500 miles will give us two.

These bands give a complete quietus to all objections to the Northern roads, on the score of climate. In other parts of the world roads abound in just such climates. The road from St. Petersburg to Moscow, and the Prussian roads, with others in the same bands in Europe, are even in a higher latitude than the St. Paul road will be; yet climate is no objection to them. Neither is it to the Canada railways, nor to any others as far North as the rails have been laid. We all expect to see the day when Russia will be extending her system of rails into Siberia, and none of us—for in that matter all of us have unbiassed minds—anticipate any difficulty on the score of climate.

Rain maps for these bands show that the average annual amount of rain along this northern route and until you pass the Rocky Mountain range—after which the climate is mild, like that of England—is less than it is along any railway in the Atlantic States, or in the Mississippi valley, or, indeed, in any part of the world. They show that the average amount of precipitation, both snow and rain, in winter, for that part of the route which lies between the Pacific range of mountains and St. Paul, is less than three inches!

Thus, I think, the question of climate, of terrific snow storms and impassable drifts along this route, may be considered as disposed of.

We return now to the paradox, that by these two roads to the Pacific, the markets of Asia will be much nearer to those of the Mississippi valley than either road alone could bring them. To explain this, it is only necessary to remind you how the winds blow and the currents set that control the routes of sailing vessels—the burden cars of the sea—between the eastern shores of Asia and our west coast.

The route to Asia lies through the N. E. trade winds. These winds blow between the parallel of 30 deg. N. and the Equator; and vessels that take this route usually run across the broad Pacific between the parallel of 18 deg. and 25 deg. N. where the trades are strongest. Returning, they take the great circle route—the shortest distance—and keep well up to the North; for now the "brave west winds" of those extra-tropical regions which would have been adverse for the outward voyage, are fresh and fair for the homeward run. So you perceive that a vessel trading under canvass between our Pacific States and China describes on every round voyage, an ellipse; coming out of the straits of Fuca or the Columbia river for instance, her course is first to the southward, as though she were bound round Cape Horn, and until she gets into the N. E. trade winds. Her course is then west until she enters the waters of the China Seas. She then hauls up to the northward and westward for her port. On the return voyage, her course on coming out of her Asiatic port, is to the northward and eastward, until she gets fairly within the "brave west winds." With these she steers to the eastward, following the great circle route gradually shaping her course to the S. of E. until she reaches our own shores again.

If she be bound to San Francisco, her route, until she gains the offings of the Straits of Fuca, would be the same as though she were bound into Puget's Sound or the Columbia river.

Thus you perceive that, on the outward voyage, San Francisco is on the way side from Puget's Sound and Columbia river to China; whereas, Puget's Sound and Astoria are on the way-side of the route from China and Japan to California.

To see how one road only would work, let us suppose it at the north—running from St. Paul to Puget's Sound. Let us now follow a package of merchandize—say of ginseng—that is sent over this road from Memphis to be bartered in China for tea. The ginseng would first go North up the Mississippi to get to the road. Thence it would cross to the Pacific; arriving at Puget's Sound, it would then be shipped for China. Now it must come *back to the South again to get into the trade-wind region.* Thus you observe it would have to go more than a thousand miles up the Mississippi out of the way; and when it reaches the Pacific, it would have to return again as far to the South. Being exchanged for tea in China, it would be nearest for the tea to stop at Puget's Sound, take the Railroad and come South on the Mississippi, instead of coming South by sea along the Pacific coast.

Now let us, in imagination, place the road at the South instead of at the North, and take a bale of furs to illustrate the route of trade and travel. The fur, we will suppose, is sent from St. Paul. It comes down the Mississippi to get to the road. That would not be out of the way for the *fur*, for it is bound South for the Northeast trade winds at any rate; and it would be, in a national point of view, perhaps more desirable to have it go South by the Mississippi, than by sea in the Pacific. But when the silk for which it has been exchanged in China, on St. Paul account, arrives, on its return off the entrance of the Straights of Fuca, it has to turn out of its way. Instead of finding railway transportation to take it through from Puget's Sound across to Minnesota, it has to run away to the South. Perhaps a week after it might have been in St. Paul by a Northern road, it arrives by sea in California, and is carried by rails to Memphis. Now it has to *double upon itself to go North, and recross every parallel of latitude that it crossed after turning out of its way from Juan de Fuca.*