per 100 metres—or translating into our own less civilized scale of measurement, 1° F. equal 5-9° C.; and calling the metre 39 inches, we have 1° F. lost for each 345 feet. Now, supposing an altitude of 6,900 feet for the main range of the Rockies (a slight exaggeration), we have a loss of 20° of heat. But in descending the mountains again 1° F. is gained for each 172 feet of fall. Taking Calgary at 4,000 feet in altitude, there is a descent of 2,900 feet, equivalent to a gain of 17° F. nearly. In the Peace River country the result is more striking, as the height is only 2,300 feet, and therefore the fall is much greater. The mean winter temperature of the Pacific for a wide zone off the coast of North America is given at 56° F. The problem is simply 56° less 20°, plus 17—a net loss of 3°, leaving 53° as the heat of our chinook winds in the region of Calgary. [I am sorry not to have had the privilege of access to any statistics of observations in the locality of Calgary. With more time for correspondence I hope to be able to compare my figure with the results of observations.] In this estimate we are not bound to take the mean winter temperature of the ocean, but rather we should take the temperature of winds with sufficient force to carry them over 500 miles of Mountain ranges. These winds come from the southwest far away over the ocean, and not cooled by the colder current along the coast inside of the Japan Current.

We have constantly to remember the looseness that prevails in our ideas of heat and cold. Two quite different standards prevail, one the thermometer, the other our feelings. In summer 40° F. is quite too near the freezing point to be pleasant, while as we all know anything near zero in the winter is bracing and delightful. But water freezes and snow melts, not by our feelings but by the thermometer. 35° F. with dry air is quite sufficient to remove six inches of new-fallen snow. And we must not think of these winds as constant. They alternate with their contending brothers from the north, this belt of alternate winds extending around the whole globe.

In the somewhat limited range of my search there is no part of the globe regarding which statistics of winds are so meagre as in the region under consideration. Yet the conditions are evident, and now that the facts are becoming known, the correspondence between them is not wonderful.

The fact is simply this: The great fertile belt lies just on the border where the polar winds, somewhat moist and decidedly cold, meet and contend with the heated air from the Pacific, dried but only partially cooled by the mountain ranges it has crossed. This contact of heat and cold in the air always produces precipitation, rain or snow. The Arctic Sea and Hudson's Bay, a cold region, do not give so much moisture as the warm currents of the Pacific. (Hot air holds more vapor than cold.) Hence we have little rain or snow, decreasing fram N. E. to S. W. till in the high dry barren desert country south of 49° the supply is exhausted. In fact the so called Great Desert is in a sense outside of the region of precipitation. It is too far from the Arctic and Hudson's Bay to get either rain or snow, which have been evenly distributed over the intervening country, there being no mountain range to intercept the clouds. It is too far from the Pacific, for south of latitude 45° the mountains are very much wider and higher, forming a barrier to any possible clouds, moreover the plateau itself is very elevated—almost out of the way of any respectable cloud region. Finally, it is out of the way of the Gulf winds, which have quite enough to do to water the Southern and Central States, and lose all their moisture long before they reach this lofty citadel of barrenness. For all that I am far from saying that this same region does not exercise a great influence on the climate of our western plains. A south wind blowing from these elevated plains would largely partake of the nature of the Chinook winds, dry and warm for very much the same reasons and with the same effect. But here in Winnipeg we know that a wind from the south in January has to blow for several days before it produces much effect in the thermometer.

Returning again to our Fertile Belt, it may not be superfluous to call attention to the fact that the same cause which now keeps up the fertility of the Great North West, evidently produced that fertility.—Even in remote ages—geological ages—there must have prevailed the same climatic conditions, the same warm Pacific winds, dry to a degree probably forbidding forest growth, the same colder and damper winds from the north, the same mantle of snow and same deep grip of winter's frost to modify the too ardent flame of