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American Railroad Journal.

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Saturday, November 26, 1853.

ENTERED according to Act of Congress, in the year 1853, by EDWIN F. JOHNSON, in the Clerk's Office of the District Court of Connecticut.

Railroad to the Pacific--Northern Route.

Its General Character, Relative Merits, etc.

BY EDWIN F. JOHNSON, C. E.

(Continued from Page 742.)

OBSTRUCTIONS FROM SNOWS.

Objections have so frequently been raised to a route for a railroad to the Pacific, lying so far to the north as the one proposed, in consequence of apprehended greater obstructions from snows in winter, as to make it proper to devote some space to the subject.

In passing from the equatorial to the polar regions the rain and snow which falls annually is found to decrease in quantity, and a similar result follows in respect to places in the same latitude in passing from the seacoast into the interior. The density or rarity also of the atmosphere and its temperature have both much to do with its capacity for retaining moisture.

In ascending from the level of the ocean, a reduction of temperature usually accompanies the decrease in density, and both are unfavorable to the retention of moisture, and hence, where there is a very wide extent of elevated country, the

rains are often precipitated soon after entering the elevated region and the winds pass on over the remaining portion of the surface, incapable of contributing the rains which are needful for vegetation.

These causes conspire to produce a great diminution in the fall of rain and snow in the interior of continents compared with the quantity which falls in the regions near the sea coast, or in the vicinity of the larger lakes.

In very wide continents, this diminution is so great as to give to the interior often the character of a Desert.

Under the equator the annual fall of rain amounts to an uniform depth on the surface, as computed by Humboldt, for the mean of both continents of 96 inches.

In lat. 19°.....	80 inches.
" " 45°.....	29 "
" " 69°.....	17 "

The above is the estimated average for the latitudes named, varying of course in particular places from local causes and includes both rain and snow.

The portion of the proposed route extending from the Haut Terres of the Mississippi to the Pacific, being the part which will probably be considered the most exposed to be obstructed by snows in winter, is situated in latitude 48° N. nearly, where the average annual fall of rain and snow by the above would be about thirty inches, adding four inches for the greater amount which falls on the continent of America compared with Europe, as ascertained by numerous observations; a quantity which if uninfluenced by other considerations than that of the latitude would give about six inches in depth derived from the snow alone that being the proportion as ascertained by observations in the latitude of Vermont. It has also been ascertained that about twelve inches of newly fallen dry snow gives about one inch in depth of water. This makes about six feet of snow for the entire fall through the winter; a quantity which if not dissipated by the occasional thaws and rains will give when compacted by lying a long time on the surface, a depth of not more than 2 to 3 feet.

The actual fall of rain and snow throughout the region, is not correctly known from observation and can only be obtained approximately from such

evidence as is within reach.

At Fort Brady, Sault Ste. Marie, outlet of Lake Superior, lat. 46½° N., the mean for six years, of rain and snow is 29.58 inches. At Prairie du Chien, on the Mississippi, lat. 43° N., it is thirty inches. At the mouth of the St. Peter's it is a little less than this, while at Green Bay on Lake Michigan, it is thirty-five inches, owing to its position on the lake.

Observations made in Minnesota, show that the prevailing winds in winter, are from the north and west, occasionally from the south, but very rarely from the east. This is doubtless true of the country west to the mountains.

The northerly winds at that season bring no moisture the entire surface to, and including the Arctic sea, being fast bound in ice,

Those from the west and south-west, which are frequent in winter west of the mountains, bring with them from the Pacific a large amount of moisture, but meeting near the coast the snow capped summits of the Cascade mountains, the moisture is condensed rapidly, and falls the most of it in rain on their western slopes. Hence the winter in Oregon and Washington, as in California, is the rainy season, in which but very little snow falls in the region adjoining the coast, even as far north as the latitude of 50°.

Whatever moisture is not condensed in passing the Cascade range is probably mostly precipitated on the higher points of the Kooakootskie or Salmon River mountains, so that to the east of them in the vicinity of the Rocky mountains, on the route of the proposed railroad, and especially upon the plains of the Upper Missouri, it is fair to conclude, that but little snow or rain falls in winter, which can properly be considered as the result of the evaporation on the Pacific.

When the winds are southerly, as they are at times in the winter in the region in question, as elsewhere, the humidity with which they may be charged, if not condensed on the high plains of the Great Basin, the Colorado, the Del Norte, and Upper Arkansas, within the limits of which are many mountain ranges of great elevation, are very completely deprived of their moisture, by the cordon of mountains stretching from the Cascade Range of Southern Oregon to the Great Bend of the Missouri, including the Blue mountains, the Green