

REPORT
OF
THE SECRETARY OF WAR,

COMMUNICATING

*The report of an exploration of the Territory of Minnesota, by Brevet
Captain Pope.*

MARCH 21, 1850.

Ordered to lie on the table.

MARCH 22, 1850.

Ordered to be printed.

WAR DEPARTMENT,
Washington, March 20, 1850.

SIR: In compliance with a resolution of the Senate of the 8th ultimo, I have the honor to transmit, herewith, a copy of the report and map of Brevet Captain John Pope, of an expedition in the Territory of Minnesota.

In connexion with this subject, I have to state that the report of Major Woods, the officer in command of the detachment despatched to Pembina settlement, was communicated to the House of Representatives, in answer to its resolution of the 13th ultimo.

I have the honor to be, very respectfully, your obedient servant,
GEO. W. CRAWFORD,
Secretary of War.

HON. MILLARD FILLMORE,
President of the Senate.

BUREAU OF TOPOGRAPHICAL ENGINEERS,
Washington, March 19, 1850.

SIR: I have the honor of sending, herewith, a copy of the report and map of Brevet Captain Pope, corps topographical engineers, of an expedition in the Territory of Minnesota, called for by a resolution of the Senate of the 8th of February.

Respectfully, sir, your obedient servant,
J. J. ABERT,
Colonel Corps Topographical Engineers.

HON. G. W. CRAWFORD,
Secretary of War.

REPORT OF AN EXPLORATION OF THE TERRITORY OF MINNESOTA.

BY BREVET CAPTAIN JNO. POPE, CORPS TOPOGRAPHICAL ENGINEERS.

ST. LOUIS, MO., *February 5, 1850.*

COLONEL: In obedience to your instructions, I have the honor to forward to you, herewith, a map and report of the expedition of the past summer to the valley of the Red river of the North.

Although not so full and complete as might have been desirable, I yet hope they present, as concisely as possible, all necessary information as to the movements of the expedition, and the character and resources of the country which was traversed.

I have the honor to be, with great respect, your obedient servant,

JNO. POPE,

Brevet Captain Topographical Engineers.

Colonel J. J. ABERT,

Corps Topographical Engineers, Washington, D. C.

CHAPTER I.

Introductory.—General description of the Territory of Minnesota.—Country between the Mississippi and St. Croix.

In determining upon the plans for reports of explorations of new territories, the great difficulty presents itself of embodying in them that kind of information which the geographical position of the country, and the peculiar nature of the interest attached to it, would render most useful and important to the country.

The vast extent of the unexplored regions between the frontiers of our western States and the Pacific ocean, the numerous and warlike tribes of Indians which roam through them, and the ancient and mysterious relics of a people whose origin is unknown to us, have furnished materials for personal adventure and historical incident which have given to the narratives and journals of Long, Frémont, Emory, and Abert a great and well-merited popularity.

The Territory of Minnesota, though perhaps equally unknown, yet, from its vicinity to the Mississippi and Lake Superior, more easy of access, than the interior of many of the States of the Union, has begun to attract so much attention throughout the United States, and particularly among those desirous of emigrating to the West, that I am satisfied an account of its character and resources would be far more interesting and useful than the detailed journal of the officer who explored it, and who, in the present instance, has not met with an adventure of sufficient interest to repay the perusal.

I have determined, therefore, to deviate altogether from the methods pursued by the above-named officers, and to make a report which shall be entirely practical in its nature.

I shall attempt to describe, with as much accuracy and detail as possible, the geographical and physical features of the country, the comparative amount of prairie and timber to be found within its borders, the nature of the soil, and its capacity for the production of the different kinds of grain; the lengths and directions of the rivers, and the facilities presented by them for navigation, or for supplying a water-power; the kinds of timber to be found on their banks; the channels of communication at present in existence, and those which should be constructed at the earliest practicable period, and the character not only of the present inhabitants, but of the numerous emigrants who are daily arriving in the Territory.

I shall also recommend such appropriations of money and lands for improving the navigation of the rivers, and for the construction of roads, as I deem necessary to the immediate prosperity of the country, and, in consequence, such as should engage the early attention of Congress.

The geology and botany of the entire country I have examined have been well described in the reports of Colonel Long and Mr. Nicollet, and in the geological reports of Dr. Owen, acting under the instructions of the Commissioner of the General Land Office. I shall, therefore, refer to their reports those desirous of detailed accounts of the geology and botany of the country, contenting myself with giving such general information upon the subject as may be useful to those emigrating to Minnesota.

The plans which I have pursued in the construction of accurate maps have been as follows, viz:

I have determined by astronomical observations the latitudes and longitudes of all the important points along the routes pursued. I have taken the directions by the compass between the points thus determined, and by the aid of an odometer, which, attached to the wheel of a wagon, gives the number of its revolutions, ascertained the lengths of the compass courses.

By plotting the compass courses with the variation of the compass, which was frequently determined between the points thus astronomically fixed, I have been enabled to make a map of that portion of the Territory over which I have passed with considerable accuracy.

I have also employed the Indians and half-breeds, encountered at different points along the route, in making out rude maps of the country they have themselves passed over, and, by a comparison of these sketches, I have been enabled to form very correct ideas of large tracts of country on each side of the routes pursued to and from our northern frontier at Pembina.

While ascending the Red river of the North, my encampments were determined each night by observations for latitude and longitude, and the river meandered its entire length by the compass. I sounded the river at all the crossings we made, and ascended the principal tributaries some distance above their mouths to ascertain whether they preserved a uniform depth of water. The results embodied in the map are, therefore, to a great degree reliable.

I do not flatter myself that I shall acquire for a report of this character all that public interest and attention which are attracted by sprightly narrative or the recital of wild adventure; but I hope to accomplish the more useful object of placing in the hands of the hardy pioneers, in the settlement of a mighty State, all the information which I possess as to its

character and resources, and to enable them to fix upon the locations of their distant homes, and to select the most available routes for reaching them.

The country which I have in part traversed during the past summer embraces about one-third of the Territory of Minnesota, and lies to the north and east of the St. Peter's, and to the north and west of the Mississippi, including within its borders about sixty thousand square miles. I shall commence with a general description of the country within these limits, referring those desirous of more detailed description of peculiar localities to the detailed journal which follows.

The Territory of Minnesota, as at present organized, embraces all that portion of the northwest which lies to the north and west of Iowa and Wisconsin, and contains about one hundred and sixty thousand (160,000) square miles. The first great peculiarities which strike the attention of those examining the northeastern portion of this immense extent of country are the wide valleys of two great rivers—the Mississippi and Red river of the North—which, heading within a few miles of each other, discharge their waters, respectively, into the Gulf of Mexico and the Arctic sea. To the east, the western extremity of Lake Superior projects far into the Territory, affording several fine harbors; and to the south stretch the fertile valleys of the St. Peter's and Jacques rivers—the one heading within thirty miles, the other approaching within ninety miles, of the head of navigation of the Red river of the North.

Even a hasty glance at the maps of this vast region cannot fail to impress one with the immense natural facilities thus presented for discharging the produce and manufactures of these great valleys, to the east through Lake Superior into our great Atlantic cities, and to the south through the Missouri and Mississippi, into the Gulf of Mexico.

When it is also known that the Mississippi is navigable for at least four hundred miles of its course within this Territory, the Red river of the North nearly an equal distance, the St. Peter's, with an improvement at one point only, for one hundred and twenty miles, and the Jacques river through nearly three degrees of latitude, it becomes a matter of vast interest to the world to ascertain the capacities for agriculture and manufactures of a country so bountifully supplied by nature with outlets for its productions.

The examination of a portion of this Territory during the past summer has convinced me that nature has been even more lavish in her gifts of soil than in her channels of communication, and has still left to the enterprise and industry of man to complete what she has so well begun.

The immense number of lakes laid down upon the inaccurate maps of this Territory now in existence, and which seem to indicate a low and swampy region, are even more numerous than they are represented, but are surrounded by gently undulating country of the most fertile soil, and abundantly supplied with all the forest trees common to so northern a latitude. The streams which connect these lakes, and which are the sources of the rivers which intersect the country in all directions, abound with rapids, which afford a water-power as available as it is inexhaustible. I have traversed this Territory from north to south a distance of five hundred miles, and, with the exception of a few swamps, I have not seen one acre of unproductive land.

For the purpose of giving a description of that portion of the country

over which I have passed, it will be better to divide it into three portions, which present physical features entirely distinct from each other—first, the country east of the Mississippi, and between that river and the St. Croix; second, the country west of the Mississippi, and lying between the Mississippi, the St. Peter's, and a line from the head of the St. Peter's to the head of the Mississippi; and, third, the lower valley of the Red river of the North.

In reference to the country between the Mississippi and St. Croix, I have only to say that I have had neither the time nor authority to examine any portion of it, and am therefore unable to give any accurate or well-grounded description of it.

The settlements along the St. Croix are prosperous and flourishing, and the immense lumber trade of that region is daily becoming more valuable. My exploration was confined to the west side of the Mississippi; and I can only say here, from my own observation, that the road along the east bank of the river, from the mouth of the St. Peter's to the Sauk rapids, passes through a very fertile and rapidly settling country: what the width of this fertile tract is I do not know.

CHAPTER II.

General description of the Territory of Minnesota continued.—Peculiar advantages of the country west of the Mississippi.—Valley of the Red river.—Navigation of Red river.—Objections to valley of Red river.—Proposed remedies.—Wild rice, &c., &c.—Geology of valley of Red river.—Falls of St. Anthony.—Limestone, &c., &c.

The second division, embracing the country between the Mississippi, the St. Peter's, and the head of navigation of the Red river of the North, contains the sources of all the tributaries of the Mississippi from the west, of the St. Peter's from the north, and of the Red river from the south. It is a gently undulating country, high and rolling in some places, abounding in beautiful lakes, and containing about equal proportions of prairie and timber. The tributaries of the St. Peter's, Mississippi, and Red river of the North overlap each other in all directions, and have their sources in the numerous lakes which abound in this region. These lakes are connected with each other by small streams, varying from fifteen or twenty yards in width and three or four feet in depth, to a few feet in width and a few inches in depth. They, as well as the lakes, possess gravelly or sandy bottoms, and are so numerous, and contain so many rapids, that I doubt if one could travel ten miles in any direction without finding beautiful locations not only for agricultural, but manufacturing, purposes.

The soil is the black vegetable mould, several feet in thickness, with various proportions of sand—sufficient, however, to give the necessary warmth.

The pineries of the upper Mississippi are mostly upon its tributaries, and I think are not found on the west side further south than the parallel of 46° north latitude. They alternate, even where most abundant, with much larger tracts of fertile country. The facilities of communication are

good throughout, and I know no country on earth where so many advantages are presented to the farmer and manufacturèr. They have not only the advantages of fine soil, unlimited water-power, and a climate proverbially healthy, but they have opening to them on all sides the shortest and most convenient channels by which to throw to the Mississippi and Missouri, and at points navigated by steamboats, all their produce and every article of their manufacture.

I have no means of judging of the temperature of this region, as compared with the country to the east and south; but I am much inclined to the belief that on the southern and eastern slopes of this division the climate will not be found to differ greatly from that of Iowa or northern Illinois.

I am at a loss to express myself with sufficient force to do justice to the beautiful country embraced within this division, which is perhaps the most remarkable in the world for its peculiar conformation and vast productiveness, and I can only attribute to ignorance of its great value the apathy and indifference manifested by the government in failing as yet to extinguish the title of the Indians, and to throw open to the industry of the American people a country so well adapted to their genius and their enterprise. From its great fertility, fine water-power, and the facilities for immediate and rapid communication with the Mississippi and St. Peter's, I regard this division as being by far the most valuable portion of Minnesota, and the numerous emigrants who are arriving in the Territory, and who are awaiting with anxiety and impatience an opportunity to purchase these valuable and productive lands, will compel the United States to adopt some speedy measures to extinguish the title of the Indians, and to throw into market a portion at least of this fertile country.

The valley of the Red river of the North, which is the third division I have made of the Territory, is about three hundred miles in length from north to south, and one hundred and fifty in breadth from east to west, and is bounded on the west by the dividing ridge between its waters and those of the Missouri, called the "Coteau des Prairies," and on the east by a line from the head of Red river through the most northeastern point of Red lake. In this whole extent it presents an almost unbroken level of rich prairie, intersected at right-angles by all the heavily timbered tributaries of the Red river from the east and west—the Red river itself running nearly due north through its centre, and heavily timbered on both banks with elm, oak, maple, ash, &c., &c. This valley, from its vast extent, perfect uniformity of surface, richness of soil, and unlimited supply of wood and water, is among the finest wheat countries of the world. The exploration of the past summer was on the west side of the river, and the route pursued about half way between it and the "Coteau des Prairies" on the west. We were thus enabled to cross, about their centres, all the tributaries of the Red river from the west, and to form very correct opinions of the agricultural and geographical features of the western half of the valley.

The principal tributaries from the "Coteau des Prairies" are the Wild Rice, Shayenne, Elm, Goose, Turtle, Park, and Pembina rivers. Almost all these streams are navigable in the spring and summer fifty or sixty miles for flat boats, and probably in high water for vessels of much larger draught, and are well timbered with elm, oak, ash, &c., &c. With their tributaries, and the smaller streams which flow into the Red river, they intersect the

valley at distances of ten or twelve miles apart; and although on the west side of the river the greater proportion of the country is level prairie, I am satisfied a sufficient quantity of timber can be found for all the uses of cultivation. As might be expected from its alluvial character, there is no pine timber in the valley of the Red river, but the oak and elm there attain to a size which I do not think I have ever seen elsewhere.

In the settlement of the west side of the valley, I should recommend for the enclosures of the fields the earth and ditch fence, for the several sufficient reasons; that, they would be less expensive; that they would economise timber; and that, being a protection against the fires upon the prairies, they would have the effect of accumulating the timber which is now yearly destroyed by the fires. For the fact that this effect would be produced, it is only necessary to advert to the state of the country in the vicinity of St. Louis, which twenty or thirty years ago was open prairie, and which, in consequence of the protection from fires, by settlement and cultivation, is now covered with dense groves of oak. The east side of the valley has never been examined, and I should strongly represent to the government the necessity of being well informed as to the value of that portion of the country at as early a period as practicable. I have been informed by the half-breeds who have traversed portions of it, that it is equally fertile with the west side, and is much better timbered. I ascended the Red river in boats from our northern frontier, at Pembina, to Ottertail lake, and found it navigable for boats of three or four feet draught for nearly four hundred (400) miles of its course, and to a point within one hundred and ten (110) miles of the navigable portion of the Mississippi. For two hundred and fifty miles of its course from Pembina the bottom is of soft mud, and but one obstruction to navigation, and that of too little consequence to be noticed, occurs in the whole distance of four hundred (400) miles.

The head of navigation is at a point in the vicinity of the mouth of the Sioux Wood river, and distant about forty (40) miles from the St. Peter's. I had not the time to make any examination of the Sioux Wood river, which, with its source, Lake Travers, approaches within one mile of the St. Peter's; but I ascended it a mile or two, and found a uniform depth of three feet. As this stream passes through an alluvial level country, I am inclined to believe that in the high waters during the spring it would be found navigable for small boats to the southwestern extremity of Lake Travers. I took particular care to ascertain at what periods of the year the Red river was frozen, and when clear of ice; and I am convinced that it is navigable for four months, and at favorable seasons for five months of the year. The descent to the north of the dividing ridge, embraced in the second division of the country I have made, as it looms up from the valley of the Red river, presents the appearance of a range of lofty hills, which, upon a nearer approach, dwindles into a gentle slope, probably two hundred feet above the level of the country to the north.

But two objections can be made to the belief that the valley of the Red river of the North, as a wheat country, is unsurpassed. The one is the coldness of the climate, and the other its distance from market. To the first of these objections it can be said, that but a very small portion of Minnesota is north of the rich wheat regions of Canada, and facts go to prove that Canada is neither too cold for the cultivation of grain nor for the comfort of the inhabitants. The second is a much more valid objection, but it is one which a little attention from the government can entirely remedy. It has been with this view that I have recommended, as will

be found, grants of land for the construction of railroads to connect the head of navigation of Red river with Lake Superior, and with the Mississippi below the falls of St. Anthony. The whole valley of the Red river, as well as of the country between it and the Mississippi, will thus be brought as near, or nearer, our eastern and southern markets than the interior of Iowa, Wisconsin, or Illinois. As regards the country west of the Mississippi and north of the St. Peter's, which is included in the second division I have made, I am of opinion that the climate would be too severe, and the seasons too short, for the successful cultivation of corn, but all other grains would be produced most abundantly. The wild rice abounds in the lakes and streams, and is a favorite article of food with the Indians. It is very palatable and easily collected, and I do not doubt would prove a valuable article of commerce. The sugar maple is very abundant along the lakes, and large quantities of the maple sugar are manufactured by the Indians. The white oak, however, is most common, and as it is necessarily hardy, and grows to a large size, it is peculiarly adapted to the building of vessels.

The valley of the Red river is entirely alluvial in its formation, no rocks in place being found in its entire length within the territories of the United States. It abounds with boulders or erratic blocks of granite, which in all cases are very much rounded by the action of water. They are most abundant upon the highest ridges of the prairies, and cause all the rapids in the small streams tributary to the Red river, the St. Peter's, and Mississippi. About seventy (70) miles north of our frontier (at Pembina,) a secondary limestone appears at the falls of the Red river, which is unquestionably the basis of the whole valley, but at what depth below the surface at different points it is impossible to say. There are no rocks in place found west of the Mississippi along the route pursued by the expedition to the Red river of the north, and the geological features of the banks of the Mississippi have been given in the report of Mr. Nicolle, published in the year 1842. The falls of St. Anthony are occasioned by beds of sandstone, and as the rock is soft and easily worn away, the falls are receding with considerable rapidity. A short distance above, the sandstone disappears, and is replaced by beds of primary rock, and as soon as the falls have receded thus far the erosion will be infinitely slower. The limestone does not appear north of the Falls of St. Anthony, but is found of indifferent quality along the Mississippi to the south. The best lime to be used in the interior of houses is found on the Mississippi north of Alton, Illinois, and is transported from that place to all the points above

CHAPTER III.

General description of Minnesota continued.—Routes from Mississippi to valley of Red river.—Country west of the St. Peter's.—Location of military posts.—Settlements along the Red river.—Half-breeds.—Settlements along the Mississippi.—St. Paul.—St. Anthony.—Stillwater.—Population.—Best routes for emigrants from the east and south.—Lines of grants for railroads.—Purchase of lands west of the Mississippi.—Military reserve of Fort Snelling.—Territorial wagon roads.—Obstructions to navigation above the Falls of St. Anthony, &c., &c.

There are three routes at present known by which to reach the valley

of the Red river of the North from the Mississippi, and which, until the expedition of the past summer, were only known to the traders and trappers who made their yearly pilgrimages to St. Peter's and the Upper Mississippi with their furs and peltries.

The most southern follows the valley of the St. Peter's and descends into the plains of the Red river near Lake Travers.

The middle route leaves the Mississippi at Sauk rapids, seventy-six miles above the mouth of the St. Peter's; and intersects the Red river near its most southern point. This is the route pursued by the expedition.

The northern route follows for some distance the valley of the Crow Wing river, and turning the northern extremity of Ottetail lake, descends into the valley of the Red river near the mouth of Buffalo river.

These routes are mere trails, used only once a year by the few traders and trappers who visit St. Peter's, and follow, as far as possible, the open prairie, as the traders have not the time, nor are they disposed to expend the means necessary to construct roads through a wooded country: this will account for the fact of so much prairie having been passed over by the expedition, and for the circuitous character of the route pursued.

It will be perceived that I do not include in these divisions that portion of Minnesota lying to the south and west of the St. Peter's, nor that portion bordering on Lake Superior and Rainy Lake river. I have attempted no description of these sections of country, as I could not obtain any reliable information regarding them from any one.

The whole of the Territory of Minnesota lying west of the valleys of the Red river and the St. Peter's is still unexplored, and the expedition of the past summer has for the first time developed the resources of the north-eastern portion of the Territory. As the immense region included within the boundaries of Minnesota west of the St. Peter's and valley of the Red river embraces nearly two-thirds of the whole Territory, it will, of course, be the labor of some years fully to examine and report upon it. The expedition of the past summer has brought to the notice of the government much fertile and available country, and there can be no doubt but that the surveys and examinations of the remainder of the Territory will be prosecuted at as early a period as practicable.

Three tribes of Indians—the Sioux, the Winnebagoes, and the Chipewas—occupy at present that portion of Minnesota I have attempted to describe; and as they do not number more than 20,000 souls, and are as yet entirely ignorant of the great value of their lands, I would suggest to the government the propriety of purchasing immediately as much of the country as can be negotiated for. An immediate purchase would also prevent the appearance of the immense hordes of the Sioux and Sissetons from the Missouri, who, upon the receipt of intelligence that the country was to be sold, would flock to the commissioners with demands for the extinction of a roving title, for which they probably have no foundation. There is no doubt but there is fertile country enough in the Territory of Minnesota, and east of the Jacques river, for the population of at least two States; but as my examinations have not been as yet sufficiently extensive, I cannot suggest a boundary between them with sufficient precision to render the suggestion worthy of notice.

I shall here give my views as to the location of the military posts referred to, in the instructions organizing the expedition to the Red river of the North.

There are three conditions which I consider necessary to be fulfilled in the location of military posts along the western frontier of the United States, viz: first, that they should be so placed as to interpose, as much as possible, between tribes of Indians at war with each other; second, that they should possess all the advantages of defence and easy supply; and, third, that they should be most advantageously situated for the support and supply of posts which, in course of time, must necessarily be thrown further in advance. In the location of the proposed military post all these conditions are presented.

The section of country in which it is proposed to establish a military post is inhabited by three tribes of Indians—the Sioux on the south and west, the Winnebagoes along the Mississippi in the centre, and the Chippewas on the north and east.

The Winnebagoes have lately been interposed between the other two tribes, for the purpose, I suppose, of preventing hostilities. The Sioux and Chippewas have been at war from time immemorial, and the only effect of the interposition of the Winnebagoes has been to transfer the seat of war from the Mississippi to the valley of the Red river of the North. A post, therefore, on the Red river, and immediately in rear of the Winnebago country, would best fulfil the first condition.

In reference to the second condition, there are two routes by which a post thus located could be supplied, and, if necessary, reinforced, from the Mississippi, viz: by land, from some point on the Mississippi above the Sauk rapids, one hundred and ten miles over a gently undulating country, through which roads could easily be made; and by water through the St. Peter's and Sioux Wood rivers. I have not made any examination whatever of the St. Peter's, and only ascended the Sioux Wood for a short distance; but I am satisfied that during the spring and summer freshets this route would be entirely practicable, and would possess over the other the two advantages of being more economical, and of communicating with the Mississippi below the falls of St. Anthony.

As to the third condition, I am quite satisfied that the government will, ere long, station a military force along our northern frontier, either at or in the vicinity of Pembina. This post would necessarily be supplied for a time, at least, with provisions and munitions of war from the Mississippi, and the first post on Red river should therefore be so chosen as to communicate as easily and rapidly as possible with Pembina. It became necessary, therefore, in my opinion, to examine the Red river of the North, to ascertain what facilities for navigation it presented. It will be seen by perusing my report of the examination of the Red river, that it is navigable for steamers about four hundred (400) miles by water from our northern frontier, and to a point above the mouth of the Sioux Wood river. A point, therefore, in the vicinity of the mouth of that stream would best fulfil all the required conditions for a military post; and previous to any action of the government upon the subject, I would strongly recommend an examination of the St. Peter's and Sioux Wood rivers, and of the country in the vicinity of the confluence of the last named river with the Red river of the North.

The settlements along the Red river of the North were made about the year 1812, and extended up the river to the parallel of 47° north latitude, (about.) It was supposed at the time that the country in which they had located themselves belonged to the English government, but, upon ascer-

taining to the contrary, the colony was removed to points lower down on the Red river, and within the known boundaries of the English possessions. This colony was established by Lord Selkirk, upon a grant of land from the Hudson's Bay Company, but the rapid increase of half-breeds, resulting from the connexions between the colonists and Indians, and the constant rivalry in trade with the Hudson's Bay Company, occasioned the most serious disturbances, and several encounters took place, in which many were killed and wounded on both sides.

The half-breeds at present number about eight thousand, (8,000,) and, with the exception of about nine hundred, who are collected round the trading post of the American Fur Company at Pembina, they reside upon the English possessions, and are entirely under the control of the Hudson's Bay Company. For a detailed account of these singular people, I refer to the narrative which follows.

The settlements of Americans in Minnesota are at present entirely on the east or left bank of the Mississippi, as the lands on the west are still in the possession of the Indians. The three villages most prominent are St. Paul's, about nine miles below the mouth of the St. Peter's, and on the east bank of the Mississippi; St. Anthony, at the falls of that name, and Stillwater, at the head of Lake St. Croix. The east bank of the Mississippi, as far north as the mouth of Crow-Wing river, and the west bank of the St. Croix, are fast filling up with inhabitants, and the fact that four or five steamboats are necessary for the trade with Galena and St. Louis, is sufficient evidence of the prosperity and success of this portion of Minnesota.

A boat is in process of construction to ply between the falls of St. Anthony and the Crow-Wing river, and the present state of things, which has resulted within the last two years, is sufficient to convince the most incredulous that the rapid growth of Minnesota in wealth and population has surpassed the anticipations of the most sanguine. The present settlers are almost entirely from the eastern States, and the coldness of the climate, and the fact that the new State will necessarily be a free State, render it certain that the future population of Minnesota will be composed almost wholly of New England people.

There are four routes by which emigrants from the east and south can reach Minnesota: one from St. Louis by boats, distant eight hundred miles from the mouth of the St. Peter's; another by land from Chicago, Illinois, to Galena, to connect with the steamers from St. Louis; a third from Milwaukie, across Wisconsin by land; and a fourth from Chicago by land to the mouth of the St. Peter's. There are two other points nearer to the Territory of Minnesota which can be reached by boats, viz: Green Bay and "Fond-du-Lac," or the western extremity of Lake Superior; but as it would be impossible to purchase at either of these points the necessary stock and outfit for a farm, I should, in view of all the circumstances, recommend Chicago as the point of debarkation for all the emigrants from the east, and as the most desirable and cheapest place to lay in all the supplies necessary for commencing a settlement in Minnesota.

The policy of distributing the public lands for the benefit of internal improvements has been so universally admitted by all the western States, that I am induced here to suggest grants of land for three lines of railroad which I regard as most important to the prosperity of Minnesota: one from the head of navigation of the Red river of the North, to the head of navigation of the St. Peter's, in the vicinity of its most southern point;

another from the head of navigation of Red river to a point on the Mississippi at or near the mouth of Crow-Wing river; and a third from some point on the Mississippi which can be attained by boats, to the western extremity of Lake Superior.

These routes pass through the richest portions of the Territory, and connect the valley of the Red river with the eastern and southern markets. There is another route perhaps equally important, but of which I can say but little, as the country has not as yet been carefully examined. This line would connect the head of navigation of the Red river with the head of navigation of the Jacques river, is about ninety (90) miles in length, and would form a direct connexion between the valleys of the Missouri and Red river of the North. An examination of the accompanying map will show the lengths and directions of these lines, and I think cannot fail to exhibit their great usefulness.

It may be supposed that I am premature in such suggestions, but the great difficulty under which every man has labored who has projected improvements in the United States has been, that he has found himself rather behind than in advance of the times. I therefore strongly recommend that Congress make grants of land for the construction of these roads as soon as the Indian title to the country has been extinguished, and before the lands are thrown into market, for the very obvious and sufficient reason that no sectional opposition can then be made to the location of the routes, and the fact that such grants are in existence will accumulate a population along the lines which will insure their construction at the earliest practicable period.

I cannot conclude this imperfect sketch of the Territory of Minnesota without strongly urging upon Congress the necessity of adopting speedy measures to sanction and carry into effect the following measures which I have recommended, and the reasons for which I have given in some detail in the body of this report:

First. To negotiate with the Indians for the purchase of the lands west of the Mississippi, at least as far north as the Crow-Wing river, and as far west as the head of the St. Peter's.

Second. As soon as this purchase has been effected, to relinquish the military reserve of Fort Snelling to the settlers, and to remove the troops now garrisoning that post to points near the northern and western limits of the territory thus acquired.

Third. To make grants of alternate sections of land for the construction of the railroads I have mentioned.

Fourth. To make appropriations for the construction of good wagon roads to connect the valley of the Red river with the Mississippi and Lake Superior; and,

Fifth. To make an appropriation of money sufficient to remove the obstructions to navigation in the Mississippi from the falls of St. Anthony to the mouth of the Crow-Wing river.

As the Territory is entirely under the control of the general government, the legality of these grants and appropriations cannot be questioned, and as they are matters of vital necessity to Minnesota, it is to be hoped they will meet the early attention of Congress.

It is vain to predict the extent of the prosperity of any portion of the United States, since anticipations which have been a thousand fold surpassed twenty-five years ago would have been considered the wildest

dreams of a visionary; but if the speedy action of Congress upon the subject can be obtained, I do not hesitate to predict that the new State which shall be formed in the Territory of Minnesota will in twenty years rival in wealth and population the most prosperous of the western States.

CHAPTER IV.—(From May 15 to June 13.)

Departure from St. Louis.—Arrival at Fort Snelling.—Fort Snelling.—Mendota.—St. Paul.—St. Anthony.—Mill.—Importance of mouth of St. Peter's.—Military reserve of Fort Snelling.—Reasons for abandoning it.—Object of frontier posts.—Purchase of lands west of the Mississippi.—Departure from Fort Snelling for the valley of the Red river of the North.—Country between Fort Snelling and Sauk Rapids.—Banfill's.—Gilman's, &c., &c.—Rapids in the Mississippi.—Proposed plan of improving the navigation.

In obedience to instructions received from Colonel J. J. Abert, corps of topographical engineers, I left St. Louis, Missouri, on the 16th of May, 1849, for the purpose of joining at Fort Snelling, Minnesota Territory, the expedition about to set out for the valley of the Red river of the North, with a view to the location of military posts in that quarter. After a pleasant passage of six days, I arrived at Fort Snelling on the afternoon of May 22, 1849. I found that the company of dragoons which formed the military escort of the expedition would not be able to march for some weeks, in consequence of the backwardness of the prairie grass, upon which it was necessary to subsist the dragoon and wagon horses during their absence from Fort Snelling. As soon as I ascertained that I was to be detained so long a time in that neighborhood, I determined to employ myself in making some examination of the country in the vicinity, and in regulating my chronometers, with a view to subsequent observations for latitude and longitude. A serious accident, occasioned by a fall from my horse the second day after my arrival, prevented me from executing these intentions as fully as I had proposed.

Fort Snelling is situated at the confluence of the St. Peter's and Mississippi rivers—on the north side of the St. Peter's, and west side of the Mississippi. The buildings of the garrison are upon a high bluff, probably two hundred (200) feet above the level of the water in the rivers, and which stretches to the north and west in a gently undulating and very fertile prairie, interspersed here and there with groves of heavy timber. The steamboat landing of Fort Snelling is directly opposite the mouth of the St. Peter's, from which a low island extends about two and a half miles down the Mississippi.

Mendota, which lies about half a mile below the mouth of the St. Peter's, has been for many years a trading post of the American Fur Company, and is still a depot of goods and provisions for the supply of the fur traders, who, at this time, have penetrated much farther into the interior of the Indian country. It is the place of residence of the Hon. H. H. Sibley, delegate in Congress from Minnesota, but as it belongs to the Indians, and is also included in the military reserve of Fort Snelling, it has not attained that degree of prosperity so remarkable in the villages of St.

Paul and St. Anthony, and which its far more favorable position might justly have secured for it. St. Paul is on the east or left bank of the Mississippi, nine miles by water below Fort Snelling; and, as it is the nearest point of steamboat landing to the mouth of the St. Peter's, without the limits of the military reserve, it has increased to an amazing extent in business and population within the last year. It now contains a population of about one thousand (1,000) souls, and requires for the transaction of its business four or five regular steamboats from St. Louis and Galena. The back country about the village is said to be very fertile and productive, but I had not myself the opportunity of seeing any portion of it. It connects with Fort Snelling, Mendota, and St. Anthony by a road along the east bank of the Mississippi. St. Anthony is also situated on the east or left bank of the Mississippi, and at the falls of the same name, seven miles above the mouth of the St. Peter's. It possesses one of the most extensive and available water-powers in the west, if not in the world, and, from its healthy location and great advantages, it bids fair to be one of our most thriving manufacturing towns. The steamboats which ply in the Upper Mississippi can approach within two hundred yards of the falls, and the landing proposed for them is at the lower end of the town. A steamboat is in process of construction to ply between St. Anthony and the mouth of the Crow-Wing river, and to take the place of the barges now used in that trade. The falls of St. Anthony are over ledges of sandstone, and are divided in half by a rocky island which extends up the river about one and a half mile. The eastern channel has been dammed, and a saw-mill constructed, at an expense of \$30,000 or \$40,000. The bed of the channel is almost level, and of solid rock. It has only been necessary, therefore, to bolt the timber of the buildings to the perfect foundation provided by nature. A boom has been thrown across the river above the head of the island, and all that is now necessary to present the logs literally to the saw is to throw them into the Mississippi and its tributaries, where they are cut, and they are received and retained in the reservoir formed by the dam and the island. The mill has been commenced on the east bank, and is being extended across the channel dammed up, which is about one hundred yards in width. When completed it will work something like twenty saws.

The opposite side of the river presents equal advantages for applying the water-power to useful purposes, and this will unquestionably be done as soon as the military reserve shall have been relinquished to the settlers. A water-power will thus be presented to the manufacturer as easily put into operation as any in the world, and almost unlimited. Three saws are now in constant operation, and others are being constructed; yet it is altogether impossible to supply sufficient building material for the use of the numerous settlers of St. Paul, St. Anthony, and the upper Mississippi.

The valley of the St. Peter's has been represented as remarkably fertile, and the river navigable for one hundred and twenty miles above its mouth; and, as I know that the valley of the Mississippi above the falls is at least equally productive, and the navigation much more favorable, it cannot be doubted that this portion of Minnesota is destined to play a considerable part in the commerce of the northwest. As the St. Peter's will transport to its mouth all the productions of its valley, and as the obstruction to the navigation of the Mississippi by the falls of St. An-

thony will make the vicinity of the falls the depot for all the business of the country above, it is plain that some point near the mouth of the St. Peter's will eventually be the site of a large town.

The country west of the Mississippi, and the whole valley of the St. Peter's, are still in the possession of the Indians—an attempt to purchase a portion of it having proved unsuccessful in consequence of the lateness of the season and the want of proper preparation. It is to be hoped that the attention of Congress will be given to this subject at an early day, and that negotiations will be opened with the Indians, not only for the purchase of the valley of the St. Peter's, but of the whole country west of the Mississippi, at least as far north as the mouth of the Crow-Wing river. In connexion with this purchase, I would also seriously recommend the propriety of giving up to purchasers the military reserve of Fort Snelling, which embraces several of the most desirable points in this portion of the Territory. It is difficult to understand the necessity of so large a reserve of lands for a post situated in the midst of a settled country, or in fact to understand the necessity of a military force at all. Before the lands of the military reserve of Fort Snelling had been three days in market they would be purchased, and settlements commenced upon them immediately. When the lands west of the Mississippi shall have been negotiated for by the United States, the Indians will necessarily be removed further to the west and north, the military posts must of course be in their vicinity, and Fort Snelling will only be serviceable as a depot for stores and provisions for the supply of the posts further in the interior. In view of the present and prospective state of affairs, I am clearly of opinion that Fort Snelling should be abandoned as a military post as soon as the purchase of the lands west of the Mississippi shall have been effected. There is really no necessity for a military force in this part of the country for military objects merely; but the frontier posts serve the much more useful purpose of forming, further and further towards the west, the "nuclei" of settlements which, in course of time, become competent to sustain themselves. It is clearly the policy of our government to push a little in advance of our settlements in the west the military forces now disposable, and to maintain them at particular points no longer than they are necessary for the support and encouragement of our advancing emigration. Fort Snelling no longer fulfils this condition; and I would therefore suggest to the government the propriety of removing to the northern and western limits of the territory to be purchased the military force now occupying Fort Snelling, and of so placing them that they can be easily removed and kept constantly in advance of the march of emigration.

Having completed all the necessary preparations, and ascertained that the grass upon the prairies was sufficiently advanced for the use of our animals, we marched from Fort Snelling on the 6th of June, 1849. From all the information to be obtained, it was deemed advisable to choose the middle route to the Red river of the North, which, leaving the Mississippi at Sauk rapids seventy-six (76) miles above Fort Snelling, intersects the Red river near its most southern point.

As the road to Sauk rapids is through the settlements along the east bank, we crossed the Mississippi at a ferry about half a mile above the falls of St. Anthony, and, after five days of constant rain, we reached the house and store of Mr. Gilman, about one mile above the Sauk rapids.

We there met the company of dragoons which had marched from Fort Gaines to join us, and, after two or three more days of very bad weather, we completed the crossing of our baggage and supplies on the 13th instant, and formed a camp on the west side of the Mississippi, proposing to remain a few days, until the prairies should have become dryer.

The route we pursued from Fort Snelling to the Sauk rapids for the first seven miles lies on the west side of the Mississippi, and as it is upon the military reserve of the fort, the country through which it passes is wholly uncultivated, although capable of producing in great abundance all the varieties of grain. After crossing the Mississippi at the falls of St. Anthony the road is nearly straight to Sauk rapids, the river departing at some points eight or ten miles from it, and at others approaching within half a mile. It is intersected nearly at right-angles by the numerous streams which flow into the Mississippi from the east. The principal of these tributaries, between the falls of St. Anthony and the Sauk rapids, are the Rice river or creek, Rum river, and Elk river. By far the largest of these is Rum river, which is ferried at its mouth, where it is about seventy-five yards wide, and which, from its appearance, I should suppose, in a good stage of water, could be ascended forty or fifty miles by small steamers. The country is gently undulating, containing nearly equal proportions of prairie and timber, and possessing a very fertile soil. The timber most abundant is the white and black oak, ash, elm, and birch—several other species being found in less abundance. High up on these streams, towards the St. Croix, are found large forests of the white and yellow pine which furnish the lumber which constitutes so important an article of the trade of this region. From St. Paul to St. Anthony there is almost a continuous settlement. From St. Anthony, the first settlement is at the mouth of Rice creek, about seven miles distant. A ferry-privilege across the Mississippi has been granted to Mr. Banfill, who resides at this point. The next settlement is about ten miles distant from Banfill's, and at the mouth of Rum river. The next is distant thirteen miles, at the mouth of Elk river. This river, heading near the Mississippi at Sauk rapids, runs nearly parallel with it to the junction, distant by land thirty-six miles. The next is also on Elk river, the valley of which is followed by the road nearly its entire distance. This settlement is remarkable for its vast meadows of fine hay, from which it has derived the name of "The Big Meadows." We next came, at a distance of nine miles from the Big Meadows, to the settlements at Sauk rapids, which extend along the river about one mile and a half to the residence of Gilman, at which there is a ferry across the river.

The whole of the country along this road is rapidly filling up with settlers; and, although it is not so fertile nor well timbered as the west bank of the Mississippi, yet, as it is the only portion of Minnesota which does not still belong to the Indians, the lands are eagerly sought after by persons desiring to locate themselves. We spent the 11th, 12th, and 13th days of June at Gilman's, which, from my observations, was in latitude — north, and longitude — west, from Greenwich.

The odometer, which, attached to the wheel of a wagon, measured with great exactness the route passed over, gave us as the distance by the road from Fort Snelling to Gilman's seventy six and two-thirds ($76\frac{2}{3}$) miles.

There are two rapids in the Mississippi between the falls of St. Anthony and the ferry of Gilman—one at the mouth of Coon creek, twelve (12)

miles above the falls, and the other at the mouth of the Sauk or Osakis river. Of these, by far the most difficult of ascent are the Sauk rapids, from the sinuous character of the channel. In high water they would present little or no obstruction, but when the water is low they are almost impassable. From my slight examination of them as I descended the river upon my return from Pembina, I am of opinion that the navigation could be greatly improved with little labor, and at small expense.

The difficulty of ascending and descending the rapids is not occasioned by ledges of rock, but is due to the presence, in the bed of the river, of large boulders or loose rocks, varying from twenty-five and thirty feet square to those of much smaller size. These rocks are scattered so confusedly over the bottom, that although there is abundance of water in the channel, yet it is so much diverted from its direct course, that in descending with so rapid a current, it would be impossible to keep in the deep water. The plan I would propose for improving the navigation at such points is to remove, by machinery, the immense loose rocks which now obstruct the channel, and to drag them from the centre of the river both ways towards the shores, opening by this means a channel of eighty (80) or one hundred (100) yards in width, as may be desirable. These rocks, piled up in this manner between the shores and the edges of the channel thus made, would form a dam which would force the water from above to discharge itself through the opening left, and would thus always provide sufficient water for the navigation.

There are two objections which might be made to this method of improvement. First, that there would be danger of tearing away the banks on each side at the periods of freshets; and second, that the dam thus formed would produce a velocity of current too great to be overcome by boats. In reply to the first, it is only necessary to say that the banks of the river are rocky and not liable to washings, and that during the freshets a great deal of the water would be discharged over the dams. To the second objection it can be said, that if the velocity of the current be found too great, it will only be necessary to increase the width of the artificial channel. All the tributaries of the Mississippi I have seen contain rapids of a character precisely similar, alternating with intervening pools of deep water. As soon as the country has become settled, and there is a necessity for open navigation, these improvements can be made by this plan without difficulty and at little expense.

CHAPTER V.—(From June 16 to July 11.)

Departure from Sauk rapids.—Sauk river.—David Lake.—Lightning lake.—Description of country between the Mississippi and Lightning lakes.—Bad condition of the prairies.—Peculiar advantages of the numerous lakes.—Traders to St. Peter's.—Mr. Kittson.—Departure from Lightning lake.—White Bear lake.—Pike lake.—Elk lake.—Chippewa river.—Elbow lake.—War party of Chippewas.—Potato river.—Rabbit river.—Dividing ridge.—Red river of the North.—Lines of grants for railroads, and reasons therefor, &c., &c.

The encampment which had been formed on the west bank of the Mississippi was on the territory of the Sioux Indians, and about one mile

south of the Wataub river, their northern boundary line. Between them and the Chippewas, higher up on the Mississippi, the Winnebagoes have been interposed since the purchase of their lands at Prairie du Chien, for the purpose of preventing, as far as possible, the constant warfare between those tribes. The only effect of this interposition has been to remove the seat of war from the banks of the Mississippi to the valley of the Red river of the North.

Having awaited the drying of the prairies until the 16th of June, we determined on that day again to commence our march for the Red river. The route to be pursued, from having been so little used, was barely perceptible in the high grass, and followed the narrow strip of prairie between the woods of the Sauk and the Wataub rivers. After ferrying the Sauk river about twenty-one miles from its mouth, we reached a small lake tributary to the Crow river on the 20th of June. The weather still continued very bad, the rain falling incessantly, and it was therefore determined to remain for a few days at this lake, in the hope that a favorable change would take place in the weather and the road. On the 26th we again marched, and on the 27th reached two lakes very near each other, and tributary also to the Crow river.

The heavy and incessant rain since the 4th of June had so saturated the prairies of rich soil, that it was found absolutely necessary to halt for a few days at these lakes for the purpose of recruiting the wagon horses, which had already been nearly exhausted by the bad roads and heavy loads. It then became very perceptible to all that heavily loaded wagons were not the most favorable modes of transportation in the exploration of new countries, and the officer who had been charged with the arrangements for the expedition began, I think, to be fearful that the command would not be able to get through with the large wagons and great store of baggage and provisions with which we had marched from Fort Snelling. The two lakes at which we were thus compelled to remain until the 3d of July are about sixty-one (61) miles from the Mississippi at Sauk rapids, and in making a march of this distance we had consumed seventeen (17) days! These lakes were named by us Lightning lakes, from the circumstance of having received in our camp a stroke of lightning, which tore in pieces one of the tents, and prostrated nearly all the persons who were in the camp. The larger of these lakes is four or five miles in length and half a mile in width, and, in common with all the lakes in the country, was filled with fish.

The road from Sauk rapids to the crossing of the Sauk river lies along a very narrow strip of prairie, separating the waters of the Sauk and Wataub rivers. By far the greater portion of this entire tract is timber—oak, ash, elm, maple, &c. Small prairies are interspersed throughout, and the two rivers, running nearly parallel and so near together, offer many advantages of timber and water to those desirous of settling. This is an exceedingly valuable tract of land, with scarcely a perceptible elevation in the whole distance, and with an exceedingly fertile and productive soil. There would be probably too much timber for the easy cultivation of wheat. There are slight rapids in the Sauk and Wataub rivers a short distance above their mouths, and in the Sauk river a second rapid occurs about twenty-four or twenty-five miles further up.

After crossing the Sauk river the prairie became more extensive, though the woods were in plain view on both sides of the road. We be-

gan to meet with the numerous lakes common to this section of country, and which, from their pure clear water, the quantity of wild fowl and fish found in them, and the heavy timber surrounding them, form so favorable a feature of the country. The level character of the prairies, which are only partially drained by the occasional depressions in their surface, and the incessant fall of rain from the day of our departure from Fort Snelling, gave us great difficulty in making much progress with our heavy wagons; but as the season was a most uncommon one, we saw the country in its most unfavorable aspect.

The first large lake is about thirty-five (35) miles from Sauk rapids; is about three miles in length, and one in breadth, and is called "David lake," from the name, I think, of one of the first Americans who visited it. Henrie lake is seven miles further, and probably one-third larger, being also fringed with heavy timber, and pouring its waters into the Crow river about four miles distant towards the west. After leaving Henrie lake we crossed the Crow river about six miles distant, running through the open prairie, and about fifteen yards wide and three feet deep. Although there is no timber on the banks of this stream where we crossed it, the woods were plainly visible on all sides upon the small lakes and streams which discharge themselves into the Crow river. About twelve miles beyond this river we came to Lightning lakes, distant from the Mississippi sixty-one (61) miles. At this point we again approached the heavy timber, but the road did not enter it, for the reasons I have previously stated.

In the whole section of country between the Mississippi and Lightning lakes the surface is gently undulating, the soil exceedingly fertile, and the timber most abundant.

From this peculiar formation of country, the entire want of anything like a road, and the continuous heavy rains for several weeks previous, the rich black soil of the prairies had become perfectly saturated, and many were under the impression that the whole country was swampy, but I was informed by the guides that such a season had not been known for twenty years, and that they had never seen the country in such condition before. After heavy falls of rain there is not a State in the northwest, which, in the absence of roads, could be traversed by heavily loaded wagons; and in countries of the character of that we had just traversed, the badness of the roads in wet weather is just in proportion to the richness of the soil.

The peculiar advantages of the lakes common to this region of country are, that they abound in wild fowl and fish, supply pure clear water, and enable a farmer, by building a flat boat or barge at his own door, to load it with the produce from his fields, and transport it without further expense, and in a very short time, to navigable points on the Mississippi.

On the third of July we left Lightning lake, and after accomplishing a hard day's march of fourteen miles, we reached the eastern shore of "White Bear lake," where we awaited until the 6th of July the arrival of Dr. Castor, who had been sent back from David lake for additional wagons and supplies. On the 6th of July we reached a small lake which we named Pike lake, from the great number of fish of that species it contained.

On the 9th we arrived at another small lake (Elk lake) which, with Pike lake and several others between, is tributary to the Chippewa river.

We had thus turned all the streams flowing into the Mississippi, and began to cross the northern tributaries of the St. Peter's near their sources.

On the 10th we crossed the Tipsinah or Potato river, also a tributary of the St. Peter's, and reached a lake, to which, from its peculiar form, we gave the name of Elbow lake. When within a few miles of the lake we encountered a small war-party of Chippewas from Ottertail lake, numbering about twenty-five, the first Indians we had seen since leaving the Mississippi, with the exception of five or six Winnebagoes on a hunting expedition near "White Bear lake." We had thus left the Winnebago country, and, in approaching the Red river of the North, were coming upon the battle ground of the Sioux and Chippewas. The party of Chippewas who met us gave us their war-dance for some trifling presents of paint and tobacco, and left us early the following morning to resume their war-path.

On the morning of the 11th we crossed the Rabbit river, and after passing over a high rolling prairie about twelve (12) miles, we encamped upon the banks of the Red river of the North, having consumed five weeks in accomplishing a distance of one hundred and forty (140) miles. Although we made this day a march of twenty-five miles, and, even on horseback, suffered greatly from the heat and mosquitoes, we found we had been accompanied by several of the war-party of Chippewas, who had managed easily to keep pace with us on foot.

About mid-day we met a detachment of French and English half-breeds, and a few miles further the agents of the American Fur Company, with a train of wagons, making their yearly expeditions to St. Peter's with their furs and peltries. Mr. Kittson, the chief person belonging to the American Fur Company, not only kindly offered us the use of his house when we should reach the settlements at Pembina, but sent back with us one of his men to see that we should be supplied from his place with everything we might require. We were much struck with the primitive appearance of the train of carts, without a particle of iron about them, each drawn by a single ox in the shafts, and carrying about one thousand pounds:

It will be perceived that I have arranged the marches made upon the expedition in groups of four or five days, and that I describe with some detail the subdivisions of country thus passed over. This arrangement has been made for the purpose of including sections of country which differ somewhat from each other in their appearance and physical structure.

This last subdivision, including the country between Lightning lakes and the Red river of the North, is much higher and more uneven than any portion of that between Lightning lakes and the Mississippi, and contains a far greater proportion of prairie.

White Bear lake is much larger than any of the lakes we had seen, and is a most beautiful sheet of water, bordered by gently rolling country, with alternating groves of oak and open prairie descending gently to the water, which abounds with fish and wild fowl. The lake is about eight miles in length and three in breadth, and discharges its waters through a small stream into a branch of the Chippewa river four or five miles toward the west. Pike lake is about eight miles further, is very small though heavily timbered, and abounds with the pike fish.

About ten (10) miles beyond this lake, we crossed the main branch of the Chippewa river, which at this point runs through the open prairie, and is about fifty yards wide and three feet deep. It receives in this vicinity the

waters of a great many small lakes, the timber of which was plainly visible on all sides. The banks of this river are higher, and the country in the immediate neighborhood far more uneven, than upon any other stream we had previously seen. There are many beautiful locations along the small streams and on the borders of the lakes which empty into the Chippewa river, and although the route pursued by us was by no means well chosen, for the reasons I have previously stated—to see the best lands in this region of country—yet we encountered many of the most beautiful and fertile places I have ever seen.

About eight (8) miles further towards the northwest we crossed the Tipsonah or Potato river, so called from the vast quantities of the wild potato found on its banks. It is about forty yards wide and about two and a half ($2\frac{1}{2}$) feet deep. We crossed it, of course, in the open prairie, the timber along its banks being plainly visible on both sides of us.

Elbow lake is about nine (9) miles further towards the northwest, and was so named by us from its peculiar shape. It differs in no respect from the other lakes I have mentioned. Rabbit river is distant about four miles from Elbow lake, and is the last tributary of the St. Peter's which intersects the route we were pursuing. The dividing ridge between the waters of the St. Peter's and those of the Red river of the North is about twenty miles in width where we crossed it, is high and rolling prairie, and no woods visible from the road. This strip is by far the most unproductive portion of the country we had seen.

We had thus passed entirely across the region comprised in the second general division I have made in a previous part of this report, and were about to descend into the plains of the Red river of the North. Our first point of crossing the Red river is distant from the Sauk rapids one hundred and forty (140) miles, although I am of opinion a direct road could be made to the Mississippi near the mouth of Crow-Wing river which should not exceed one hundred (100) miles in length. A point about ten (10) miles lower down on the Red river, I consider the head of its navigation.

The portion of country which is least fertile in this whole extent of territory lies along the Red river on both sides, commencing at a point a short distance above the head of its navigation and extending about twenty five miles to the northeast, and the same distance to the northwest. Throughout this whole distance, the Red river coming from the northeast runs through the open prairie, gradually changing its character from the clear, bold, mountain stream, filled with rapids, to the muddy and almost sluggish appearance it assumes after its descent into the vast alluvial valley which it waters.

The most important tributaries of the Mississippi which are contained in the region of country we had thus traversed, are the Crow, the Sauk, the Wataub rivers, and the Long Prairie river, which is tributary to the Crow-Wing. The principal streams emptying into the St. Peter's are the Chippewa and Tipsonah.

The immense number of smaller tributaries to the St. Peter's and Mississippi, and the countless streams and lakes forming these tributaries and those of the Red river of the North, present a perfect net-work of water communication which affords every facility desirable to the farmer, and with little labor would furnish to the manufacturer a water-power almost inexhaustible.

It may be as well here to state the advantages to be given to this sec

tion of country by the railroads, to aid in the construction of which I have recommended grants of land: and first, the route from the head of navigation of the Red river to some point near the mouth of Crow-Wing river. The whole of the fertile region bordering on the Red river and Ottertail lake, and the valley of the Crow-Wing itself, embracing the country between Ottertail lake and the Mississippi to the east, will necessarily have their outlets through the Crow-Wing river. A point, therefore, near its mouth would be the depot for all the produce and manufactures of its valley, at which the steamboat navigation of the Mississippi could be used. The mouth of Crow-Wing river is not only an important point in reference to the productions of its own valley, but it is in a direct line from the head of navigation of the Red river of the North to the western extremity of Lake Superior. The line of grants, therefore, for a railroad from the head of navigation of the Red river to the mouth of Crow-Wing river, would be prolonged nearly in a straight line to the Fond du-Lac, and would be the shortest line from the head of navigation of Red river to Lake Superior.

It can, therefore, be easily seen that this road will discharge to the east not only the productions of the valley of the Mississippi above, of the Crow-Wing, and of the upper Red river, but of the whole wheat region of the lower Red river, and of the valley of the Mississippi above the Sauk rapids. The consequent importance of the mouth of Crow-Wing river is therefore plain. I regard it as not at all more difficult to deliver the produce of this whole country at the western extremity of Lake Superior, than it is to deliver the produce of the interior of Wisconsin or Illinois at any point on Lake Michigan. The distance from Buffalo, New York, to Chicago, is little less than to Fond-du Lac, and in open steamboat navigation would be of little consequence.

This line of railroad, therefore, to connect the head of navigation of the Red river of the North with Lake Superior, could be easily built by the appropriation of the alternate grants of land, and would enable Minnesota to compete in the eastern markets with Illinois and Wisconsin. The second route from the head of navigation of the Red river to the head of navigation of the St. Peter's would open the valleys of the Red river and St. Peter's to the Mississippi, below the falls of St. Anthony, and would bring both of these valleys quite as near to the southern market as the interior of Iowa, Wisconsin, or Illinois.—

The exact directions of these lines of road I am of course unable to give, but a reference to the accompanying map will exhibit their general course, and I hope their great usefulness.

CHAPTER VI.—(From July 11 to August 1.)

Valley of Red river.—Heavy timber.—Arrival at spur of ridge.—Country in elbow of Red river.—Leaf mountain.—Peculiarity of Red river and its tributaries.—Wild Rice river.—Shayenne.—Maple.—Rush.—Sioux Wood river.—Connexion between valleys of Red river and St. Peter's.—Valley of Shayenne.—Mr. Nicollet.—Country along spur of ridge.—Goose river.—Wild flax.—Turtle river.—Salt lakes.—Big and Little Salt rivers.—Park river.—Poplar island.—Heavy timber towards the west.—Tongue river.—Pembina river and settlement.—Valley of Red river.—Vegetables.—Flour.—Corn.—Buffalo, Elk, &c., &c.—Furs, &c., &c.

We crossed the Red river of the North near the point where it commences to make a long stretch to the southwest to receive the waters of the Sioux Wood river, before it takes up the northern direction, which it maintains, with little variation, to its entrance into Lake Winnepeg. At our first point of crossing, the river was about sixty yards wide, and about three feet deep; but where we crossed the second time, below the mouth of Sioux Wood river, it had become broader and deeper. About three miles below the second crossing, and fifteen (15) miles below the mouth of the Sioux Wood river, the continuous heavy timber which characterizes the banks of the Red river commences and continues without interruption as far north, at least, as our northern frontier. We spent the 13th and 14th of July at a point on Red river three miles below the second crossing, and on the 15th marched for the Shayenne, where we encamped the same night. We spent one day at that stream ferrying our baggage and stores, and part of another day awaiting the return of a party which had been sent out to recover a number of our horses which had stampeded the day previous. On the evening of the 17th we reached Maple river, and spent the whole of the next day in ferrying. On the 19th we reached Rush river, and again spent a day in crossing. On the 21st we encamped upon the open prairie, near a small tributary of Elm river, and within two or three miles of a spur of the dividing ridge of the waters of Red river and the Shayenne.

The country embraced in the elbow made by the Red river, between the points of crossing, is about twenty miles in length from east to west, and about fifteen in width; is very low and flat, and during periods of continuous heavy rains is covered to the depth of an inch or two with standing water. When the country shall have become settled, and the earth and ditch fence constructed, with some little view to drainage, this difficulty will be entirely obviated. In passing over the low and flat country in this elbow, we could see to our right and rear what appeared to be a continuous range of lofty hills, but which was merely the descent towards the north of the dividing ridge of the waters of the Red river, Mississippi, and St. Peter's, which we had crossed higher up several days previous. On account of its mountainous appearance as seen from the low country along the Red river, it has been called by the half breeds "La Montagne de la ferrille," or Leaf mountain. It is heavily timbered as far as the eye can reach.

After crossing the Red river the second time, the prairie becomes much higher, and the valleys of the Wild Rice and Shayenne are as fertile as

any in the country. The peculiarity of the Red river and its tributaries is, that they run through a perfectly level country, and you are only admonished that you are approaching a river by the heavy timber on its banks. They have rather the appearance of canals than of rivers, and when I speak of their valleys, I only refer to the country between them. The Wild Rice river is so named from the immense quantity of wild rice found along its shores, and, where we crossed it, is about twenty yards wide, and two and a half feet deep. The fires upon the prairies have prevented, to some extent, the abundant growth of timber natural to the banks of this stream, but its position and course is visible as far as the eye can reach, by the fringe of heavy timber along its shores. The prairie country embraced between the second crossing of the Red river and the Rush river is high, level, and astonishingly fertile; and although some portions of it, from the imperfect natural drainage, are wet during periods of continuous rains, an easy method of obviating it is presented by the mode of fencing I have proposed.

From the second crossing of Red river to the crossing of Wild Rice river the distance is ten (10) miles, to the Shayenne eleven (11) miles further, to Maple river sixteen (16) miles further, and to Rush river eighteen miles—making the whole distance fifty-five (55) miles. The Wild Rice, Maple, Shayenne, and Rush rivers are fairly timbered on both banks, and the Red river of the North has the largest growth of oak and elm I ever saw. The railroad route I have previously mentioned, from the head of navigation of the Red river to the head of navigation of the Jacques river, lies along the level alluvial prairie, between the Wild Rice and Sioux Wood rivers.

The Sioux Wood river is, in some respects, the most important of the streams I have mentioned, from its peculiar position with reference to the valleys of the Red river and the St. Peter's. It has its source in Lake Travers, which, at its southeastern extremity, approaches within one mile of Big Stone lake, on the St. Peter's. The Sioux Wood river is about twenty-five miles in length from Lake Travers to its mouth, which I consider to be about the head of navigation of Red river. The Sioux Wood is navigable for small boats to the southeastern extremity of Lake Travers, and a water communication is thus nearly established between the valleys of the St. Peter's and Red river. It is by this route that the voyages in canoes are made, from our frontier settlements at Pembina, to the mouth of the St. Peter's. By far the largest stream in this section of country is the Shayenne river, which, rising near the southwestern extremity of Devil lake, in latitude—— north, has a southeastern direction about three hundred miles to a point near the head of the St. Peter's, where it makes an abrupt turn to the north to empty its waters into the Red river of the North. It is crossed by the route we pursued, about fifty (50) miles from its mouth, and is about sixty yards wide, and, where we crossed, about fourteen feet deep. The upper valley of this river was visited by Mr. Nicollet, who is enthusiastic in his description of it. It can, no doubt, be navigated by barges one hundred and fifty miles above its mouth. Maple and Rush rivers are its tributaries, and, after joining each other, empty into the Shayenne about twenty-five (25) miles above its mouth. The high water in these rivers compelled us to depart greatly from the Red river, and we had thus approached very near the dividing ridge between the Red river and Upper Shayenne.

The whole region between the Shayenne and Sioux Wood rivers, and particularly that portion along the Red river of the North, is the most remarkable country I have ever seen for its singular uniformity of surface, the wonderful fertility of its soil, its peculiar fitness for the production of all kinds of grain, and the great healthiness of its climate.

The whole valley of the Red river is of the same character, intersected, at almost equal distances, by its numerous tributaries, the remainder of which we were compelled to cross higher up on the ridge which contains their sources, to avoid the time and labor necessary to ferry them lower down. As a country peculiarly adapted to the construction of canals, it is perhaps unrivalled—presenting no obstacles of unevenness of surface or formation of ground, and, but for the coldness of its climate, it could be made a most delightful region. It is covered in the summer with the most luxuriant growth of prairie grass, and all the varieties of wild flower; and, even uninhabited as it is, it presents the appearance of a vast cultivated garden.

On the morning of July 22d we ascended, at about two miles distance from our camp, the ridge I have mentioned, and encamped that night upon the most southerly tributary of the Goose river. The next morning appeared the first buffalo we had seen, and we were glad to lay in a supply of fresh provisions, of which we were much in need. On the same morning we reached a small salt lake, and determined to devote the remainder of the day in preparing and drying the meat of the buffalo killed that day. The next day we encamped upon the main branch of Goose river, and on the succeeding day we reached Turtle river. On the morning of the 26th of July we marched for Big Salt river, where we encamped late in the day. On the 27th we encamped near a long lake, and on the 28th reached the southwestern edge of the Poplar islands. Two days more brought us to the settlements along our northern frontier, and we encamped at Pembina on the 1st of August, having consumed fifty-seven days in accomplishing a distance of four hundred and ninety-seven miles—something less than eight miles per day.

The country embraced in this subdivision ought properly to have been divided into two portions, viz: the high, rolling country, about ninety-five (95) miles in width, along the spur of the ridge; and the low country, about fifty-five (55) miles in width, between the northeastern slope of the spur and the mouth of Pembina river. In the first portion the country is one hundred and fifty (150) or two hundred (200) feet above the level of the valley of the Red river; the streams crossed upon it are narrow, and are not generally heavily timbered, and chains of salt lakes intersect the ridge in various directions.

From the point at which we ascended the ridge we passed over a high and rolling country (all prairie) to the most southerly tributary of Goose river, nineteen (19) miles distant. Between this branch and the main stream, distant eighteen (18) miles, there is a rich, level valley, which contains great quantities of the wild flax. The chain of salt lakes which intersects this valley extends fifty or sixty miles to the west, towards the Shayenne and the sources of the Big and Little Salt rivers. The beds and shores of these lakes are composed either of dark-colored sand or gravel, and the water contained in them is quite clear and salt. There were no deposits or incrustations of salt to be found on their banks. This peculiar feature is so common to the whole region of country west of the valley of Red river, and on the Upper Shayenne, that Mr. Nicolle, in the report of

his expedition along the dividing ridge between the waters of the Red river and Missouri, calls it the "salt-water region." Almost all the streams flowing into the Red river from this ridge receive the waters of the salt lakes, and in dry seasons are slightly saline in the vicinity of the lakes. Salt lakes are also found along the valley of the Red river and near that stream, though not nearly so numerous.

After leaving Goose river, our route was along the eastern slope of the ridge to Turtle river, distant from Goose river twenty-one (21) miles. Neither of these rivers is more than two and a half ($2\frac{1}{2}$) feet deep where we crossed, the Goose river being much the most abundantly supplied with timber. The country between Turtle river and Long lake, seventeen and a half ($17\frac{1}{2}$) miles, is in all respects the same, and is intersected by many streams, some of which are fringed with timber. The most important are Big and Little Salt rivers, the one distant by the road twenty (20,) the other twenty seven (27) miles from Turtle river. At Long lake we commenced again to descend into the lower valley of the Red river, and the timber, principally oak, became much more abundant than at any other point of the valley we had yet seen.

We crossed in succession, and within a few miles of each other, Little Hill river, Clear Water river, Steep Hill river, Hartshorn river, and, about seven miles distant from the last-named stream, we encamped on Mud river, which traverses the western edge of the Poplar islands. All the above-named rivers join each other in the valley of the Red river, and form a considerable stream called Park river, which empties into the Red river of the North, about thirty miles from our northern frontier.

They are most abundantly timbered, and to the northwest extends a heavy and continuous mass of hard-wood timber, which I was informed by the guides extended back, without prairie, about thirty (30) miles, to Pembina mountain.

The "Poplar islands" are detached groves of poplar, scattered confusedly over a country covered with a growth of dwarf bushes, and when we passed was quite swampy. The trees composing what are called the islands are small, and hardly serviceable even for firewood. This peculiar formation is about seven (7) miles across from southeast to northwest, and about ten miles in length.

After leaving the Poplar islands we passed over a low, alluvial prairie, twelve (12) miles, to the Tongue river, a tributary of the Pembina river, the woods of which became perceptible as soon as we had emerged from the islands. Of all the streams I have noticed as contributing to form the Park river, by far the largest and most sinuous is the Mud river, which is twenty yards wide, and three feet deep.

From the point at which we struck the Tongue river, we followed it down nearly to its junction with the Pembina. It is a small stream, fifteen yards wide, and four or five feet deep where we crossed, and has taken its name from a peculiar fork of the river at a place called Berchienneau Point, ten miles distant from the mouth of Pembina river. At the mouth of the Pembina river, and on its left bank, two miles south of the northern frontier of the United States, is situated the settlement of half-breeds known as the "Pembina settlement," and which constitutes the only population, other than Indian, between the Mississippi and the British possessions.

We had thus accomplished the march from Sauk rapids, on the Mississippi, to the northern boundary of the United States, a distance of four

hundred and twenty (420) miles, and had traversed a country which, for fertility and beauty, had far exceeded the expectations of all.

This vast valley of the Red river, extending three hundred miles from north to south, and about fifty miles to the west of the river, is among the most fertile tracts of country I have ever seen. From its very level character and great productiveness it is peculiarly adapted to the cultivation of wheat, oats, barley, &c. Vegetables are produced most abundantly, and the potato attains a size and flavor rarely met with further south. Considerable quantities of wheat and barley are raised north of our frontier, and the flour which is made at the Selkirk settlement, at the mouth of the Assiniboin river, is exceedingly good.

It is said by those who have passed some years of their lives in this part of the country that the small corn can be raised successfully, but I am much inclined to believe that corn would be among the least valuable of the productions of the valley of the Red river. Buffalo range in immense herds between the Pembina and Shayenne rivers, are found in great numbers, winter and summer, along the Red river, and are frequently killed in the immediate vicinity of the settlements at Pembina. The elk, the antelope, the moose, and all possible varieties of wild fowl, are found in great abundance, and afford an easy means for the support of the Indians. The furs which are found in this valley are the beaver, marten, otter, fisher, bear, elk, minx, muskrat, lynx, buffalo, wolverine, red and silver gray fox, &c., &c.

The climate is far more healthy than that of the wheat regions of Iowa and Illinois, and the numerous and available communications by water, which exist in the most profuse abundance, would give to those cultivating the soil any easy outlet for all their surplus produce.

As a grazing country it is remarkably fine, as may easily be understood from the fact that the expedition of the past summer made a march of nearly a thousand miles with heavy wagons over a country without roads, and heavy from continued rains, and the wagon horses subsisted during the whole period upon the prairie grass.

The coldness of the climate will be no great objection to that class of persons emigrating to Minnesota from New England, and I can scarcely doubt that in process of time the valley of the Red river will become a most valuable part of the United States.

CHAPTER VII.—(From August 1 to August 26.)

Settlements at Pembina.—English forts.—Policy of Hudson's Bay Company.—Paper currency.—Line of posts to Oregon along boundary of the United States.—Outrages of the troops and agents of the English trading companies.—Neglect of the United States government.—Proposed remedies.—Forts.—History of Selkirk colony.—Character of the half-breeds.—Habits.—Buffalo hunts.—Pemmican.—Petition of half-breeds.—Pembina river and mountain.—Rev. Mr. Belcourt.—March of dragoons for Fort Snelling, &c., &c.

Our settlements in this country consist at present of eight or ten houses of the half-breed French, the trading-house of Mr. Kittson, and the

house of the Catholic priest; the great body of the half-breeds still living in lodges, from the uncertain tenure by which they hold their lands and the entire want of protection and encouragement exhibited by our government. The settlements under the dominion of the Hudson's Bay Company begin at our northern boundary line, two miles north of the mouth of the Pembina river, and extend along both banks of the Red river of the North to its entrance into Lake Winnipeg, one hundred and twenty (120) miles further north. There are two military posts in this distance; one at the mouth of the Assiniboin river, sixty miles north of our frontier, called Fort Garry; and the other, called Fort Douglass, fifty (50) miles further north.

The whole population within the territory of the United States amounts to about one thousand (1,000) French half-breeds, and in the possessions of the Hudson's Bay Company to about seven thousand (7,000) English, French, and Scotch half-breeds.

The English company has maintained in the forts I have mentioned a military force of several hundred men, but within a few years they have been withdrawn, and their places supplied by invalid pensioners, amounting to about one hundred (100) men. The policy of the Hudson's Bay Company has been to keep these people in a deplorable state of ignorance as to the value of their lands and of the goods furnished them, in order to make use, as far as possible, of the services of the adventurous hunters and trappers among them. A paper currency has been established among them which, from its peculiar character, would be considered as savoring rather too much of fraud by the laws of the United States. The notes are worth from one shilling to a number of pounds, and are payable on demand at the York factory on Hudson's bay, (800 miles from the settlements on the Red river,) in a bill of exchange payable sixty days after sight at the Hudson's Bay Company's house in London. It is quite certain, from the character and habits of the people among whom these notes have been issued, that many of them will be lost, and that no necessity exists for redeeming any one of them, as it is always in the power of the agents of the company to break up the settlements in the country, with the whole of this paper currency in circulation, and without the fear that the people among whom they have issued it will ever be able to present the notes for liquidation in London. It is quite impossible to say what amount of this spurious currency has been issued; and it is a deplorable proof of the ignorance in which the half-breeds have been kept, that they prefer these notes to the gold and silver coin of the United States, which was offered them in payment of our purchases. The sole traffic of the Hudson's Bay Company in this region has been in the furs and peltries obtained by the employed hunters and trappers, and their value for the years 1847, 1848, and 1849 has been about \$400,000 for each year. This vast amount of peltries has, to a great extent, been withdrawn from the territory of the United States, and it is quite impossible to say what amount has been paid for them to the hunters and trappers, as there can be no other than an arbitrary price for the goods exchanged for them. It is quite certain that, by affording proper facilities of communication between the Mississippi and Red river of the North, and by giving protection to those residing within our borders, goods and supplies can be thrown into the country cheaper, and three months earlier, than by Hudson's bay. For the purpose of insuring a successful traffic, the policy of the English company has been,

of course, to oppose anything like permanent settlement and cultivation of the soil, since the greater the dependence of the half-breeds for means of subsistence, the greater the amount of the fur trade and its consequent profits.

Not content with their influence along the Red river of the North, the company has established a chain of trading posts along our northern frontier to connect with their settlements in Oregon. Every year numerous carts pass along these posts into Oregon through two passes in the Rocky mountains, which are said to be very easy of access, and within the boundaries of the United States. The half-breeds who have accompanied these expeditions to the Columbia represent the whole country along the northern frontier of Minnesota to be exceedingly fertile, and the vegetation rapid and luxuriant. They have described to me the rich and beautiful valleys of several rivers flowing to the north across our boundary, but in terms which appeared to me so extravagant and romantic, that I have hesitated to state anything upon the subject in this report. The total want of interest manifested by the government of the United States in the settlements along the Red river of the North, and the presence and constant influence of English troops and English traders, have convinced the people that it is far better to submit to the utmost exactions and most lawless conduct of the Hudson's Bay Company, than, by opposing them, to be deprived of those articles of convenience and comfort which have now become necessary to them.

The presence of a single American trader has done much to improve this condition of things; yet, unprotected and unsupported as he finds himself by the authorities of his government, it is quite improbable that he can long maintain, with success, an opposition to a body so powerful as the Hudson's Bay Company.

Mr. Kittson, the American trader at Pembina, though an intelligent and energetic man, and well disposed to maintain the honor of his country and the rights of her citizens, is nevertheless forced, by the strange neglect of his government, to witness the alienation of a large body of people from the authority of the United States, and the constant and barefaced acts of injustice and oppression which are daily perpetrated by the Hudson's Bay Company. The encroachments of the English upon American territory, the withdrawal of large amounts of property belonging to the United States, and the constant and shameless insults to our national honor by the arbitrary acts of the agents and soldiers of the Hudson's Bay Company within the Territory of Minnesota, would, I think, produce sufficient reasons to attract the immediate notice of our government. The American traders are not only forced to submit to the constant insults of the authorities of the Hudson's Bay Company, but they labor under the almost insuperable disadvantage of being compelled to observe the strict laws of the United States in reference to the introduction of spirituous liquors among the Indians, while the English traders flood the whole country under their very eyes with this all-powerful weapon. They are themselves compelled to observe a law which a foreigner can violate with impunity. That the United States will consent, by the merest neglect, to have withdrawn from their authority and influence a population of seven thousand (7,000) hardy and industrious people, who are only awaiting the slightest encouragement to settle and develop the rich resources of this portion of Minnesota, is no

less deplorable than true, and is only to be accounted for by the belief that this melancholy state of affairs has never been properly represented.

The course now necessary is the immediate establishment of a military post at or in the vicinity of the settlement at Pembina, which shall manifestly exhibit the intention of the government of the United States to encourage the enterprise and industry of the people, protect them against lawless aggressions, and redeem the honor of the country from the slights now daily lavished upon it. Such a course would accumulate at some point along the Red river of the North a settlement of seven thousand (7,000) or eight thousand (8,000) persons, who could be favorably compared in their enterprise, industry, and law-abiding character with any people on earth.

I do not suggest the proper location for this military post, since the country in the vicinity of Pembina was not carefully examined; but it is quite certain that it should be placed near the Red river of the North, in order that it may easily communicate by water with, and be supplied for some time at least from, the post I have recommended near the mouth of the Sioux Wood river.

It would also be most desirable that the territorial authorities of Minnesota should establish among the half-breeds of Pembina courts of justice, and locate among them official persons, who should encourage the habits of life and forms of law of the people of the United States, and who should promote by all means in their power a constant association with the Americans along the Mississippi. The location of these two military posts, and the construction of good roads to connect the Red river of the North with the Mississippi, are therefore matters which should engage the early and serious attention of the government.

The settlements along the Red river of the North were made about the year 1812, by a colony of Scotch, English, and Canadian French, who were located upon a grant of land by the Hudson's Bay Company to Lord Selkirk, extending along both sides of the Red river to about the parallel of 47° north latitude. It was supposed at the time that the grant was contained in the possessions of the English, and the settlements were therefore made near the mouth of Red Lake river, or what is now called "La Grande Fourche," or the "great fork of Red river."

Large numbers of Indians being soon attracted to the settlement by the presence of so many strange people and the display of so many tempting articles for traffic, and many of the colony being at once induced to take to themselves Indian wives, in a few years the half-breeds who resulted from these connexions amounted to several thousands. It was not until about the year 1820 that it was ascertained that these settlements had been made within the territories of the United States; and, as it became necessary for the traders who had settled among the people, and who belonged to the English trading companies, to remove their stores to some point within the British possessions, they forced all the people, who had by this time become dependant upon them for their goods and supplies, to break up their settlements and remove to points lower down on the Red river. They now extend along both banks of the river from the northern frontier of the United States to the entrance of the river into Lake Winnepeg, in latitude 51° north. In the difficulties which occurred between the Hudson's Bay and Northwest companies the half-breeds took an active part,

and many of them were killed and wounded in the numerous encounters between the agents of the companies.

Since the junction of the two companies they have lived altogether in the English possessions, and are completely under the control of the Hudson's Bay Company. They have no acknowledged head, and are subject to no control beyond the influence of the English company, and are proud of calling themselves "*Les gens libres*," or "free people." By far the greater number of them are French, and they speak indifferently the language of their male or female ancestors. Their costume and manners are closely assimilated to those of the English traders, and they have no appearance whatever of the Indian, but more closely resemble their male ancestors. I speak from the experience acquired in the constant daily association with twelve of the French half-breeds who accompanied me in my long canoe expedition from Pembina to Fort Snelling, when I say that a more industrious and intelligent, subordinate, and law-abiding people I have never seen. Their active habits of life, and the constant hardships to which they are exposed in their hunting, trapping, and voyaging expeditions, have given an air of reckless and confident daring to every action, which is strangely fascinating.

They subsist almost entirely upon the dried buffalo meat, which is procured and prepared for use during their hunts in the autumn and summer. About the 10th of June the half-breeds of the Selkirk settlements join those of Pembina, and having selected some persons to manage their marches and the affairs of their internal police, they set out upon their hunt for the buffalo, which are only found within the territory of the United States. They observe with great regard and unwavering fidelity any agreements as to government which were made before starting, and are entirely submissive to the authority of those whom they have selected as leaders until the return of the expeditions, when everything like control is at once abandoned.

The greater portion of them own fine horses upon which to pursue the chase, and those who have none are provided for by permitting them to follow on foot the hunters, and, by assisting to cut up and prepare for use the slaughtered buffalo, to share the profits of the hunt. Some six or eight hundred of the small French carts, usually drawn by one ox or horse in the shafts, and capable of carrying eight hundred or one thousand pounds, are taken out by the hunters, and are loaded with their yearly supplies of provisions. The women and children always accompany the expeditions—the women being principally charged with the preparation of the dried buffalo meat and the manufacture of the "pemmican." This nutritious compound is made by cutting up and beating very fine the dried meat, packing it into bags made of buffalo skin with the hair outside, and pouring into it the melted tallow or marrow. Each of these bags, when filled, weighs about eighty pounds, and, as soon as the marrow or tallow becomes cold, is a solid mass of the richest and most nutritious character, and is of such consistency as to require the use of an axe to cut it up. It is either eaten as it is taken out of the bags, or is cooked with the admixture of a little flour. It is very palatable, and, from its exceeding richness, but little is required to satisfy the appetite.

The half-breeds make all their long voyages and lakerious expeditions with this sole article of food; and they can march further, and with far less of baggage and supplies, than any people I have ever seen. They

are brave and hardy, fine horsemen, and skilful marksmen, and would make the finest soldiers in the world. I suppose one thousand (1,000) men could be got together within five or six days by government officers for any military purpose whatsoever. Opposed as is our northern frontier of Minnesota to the English possessions and to the soldiers and agents of the English trading companies, a body of hardy and gallant men like these would, in the event of any difficulty of a national or local character, be most useful in sustaining the official persons of the government who should be charged with administering the laws over that portion of the country. An effort was made to establish among them (what they greatly desired) some legal head who should be sustained by the government of the United States; but, as I heard great complaints upon the subject of the arrangements which had been made, and as the whole party which accompanied me from Pembina made a remonstrance to Governor Ramsey, I presume they were much dissatisfied.

The petition made by them to the governor of Minnesota embraces, I believe, all their subjects of complaint, and all their wishes in relation to the solicited action of the government. They complain, and very justly, that the English traders and their agents are permitted to invade with impunity the territory of the United States in large numbers to carry off their supplies of provisions, to hunt and trap for the English companies within our borders, and, by the illegal use of ardent spirits, to produce bad feeling among the Indians towards American citizens, and to destroy almost entirely all the business and all the traffic of American traders. They further complain that, although the English companies make free use of the territories of the United States, the settlers of Pembina are not permitted to trade or hunt upon the English possessions, and that the troops at the English forts will for such offences, or any other, invade the territory of the United States, and carry off American citizens to Fort Garry for trial and punishment. They petition Congress to adopt some means of redress for such outrage and injustice; and as some speedy action will, I suppose, be taken upon the subject, I would respectfully suggest the propriety of establishing at once the two military posts I have recommended, to be garrisoned by forces now stationed at Fort Snelling.

The Pembina river has its source in the British possessions, about one hundred miles west of Pembina, and, intersecting the boundary line between the English and American territories, about thirty (30) miles from the Red river of the North, it runs nearly parallel to the frontier to its confluence with the Red river. It is about thirty yards wide and three or four feet deep; is heavily timbered on both banks with oak, elm, ash, &c., &c., and abounds with a berry much resembling the wild currant, and which is called the Pembina berry. The strip of land between the river and the boundary line is low alluvial prairie, which, from its imperfect drainage and the incessant rains which had been falling for some weeks previous, was quite wet and soft during our stay at the settlement.

The Pembina mountain, as it is called by the half-breeds, is the northern terminus of the dividing ridge between the Red river and the Upper Shayenne. Its geological formation I do not know, as I was not able to visit it before my departure from the settlement. It is said to contain silver ore in grains; but as no specimens could be obtained, I judge the whole story to have been fabulous.

A good road along the left bank of the Red river connects the settlement

at Pembina with the English forts, and is in constant use for the daily intercourse of the inhabitants. Large quantities of wheat and barley are raised by the people of the English colony, and potatoes and many other vegetables are of easy cultivation. Instead of using the water-power so abundantly supplied by nature, the wind is altogether depended upon to work their grist-mills, saw-mills being unknown to the people. As I have before stated, the limestone is found at the falls of the Red river, a short distance below Fort Garry.

The Red river at the Pembina settlement is one hundred and twenty-five (125) yards wide and sixteen feet deep, gradually diminishing in size until, at its head of navigation, about five hundred miles by water above Pembina, it is not more than forty yards wide and four feet deep. Its banks are fifteen or twenty feet high, bold and steep from the water, and, without departing much towards the east or west, its course is extremely tortuous. The east side of the valley has been represented to be, in all respects, similar to the west side, as to soil and productiveness, but as possessing the decided advantage of being much more heavily timbered.

The country about Red lake, about ninety (90) miles east of the Red river, is said to be very fine, and settlements of Indians and whites are scattered along its banks. During our long march to Pembina, we were much struck with the extreme length of the days in the month of July. The twilight would last until 10 o'clock at night, and the sun again appear above the horizon about 3 o'clock a. m. The exhibitions of the aurora borealis while we remained at Pembina were brilliant in the extreme, brilliant rays of light shooting up suddenly from the horizon to the zenith, and the whole heavens illuminated in the most vivid manner.

Having procured the necessary supplies for their return, the dragoons marched for Fort Snelling on the 26th of August. I greatly regretted that I was unable to accept the kind invitations extended to me to visit the English forts, but my constant employment at Pembina, in making out maps and prosecuting my astronomical observations, rendered it quite impossible.

I cannot conclude this imperfect description of the Pembina settlement without expressing my warmest thanks to the Rev. Mr. Belcourt, the intelligent and most excellent Catholic priest who resides there, for his great kindness and attention in furnishing me with the greater portion of the information concerning the half-breeds above given. This gentleman has done much to better the condition of these people by his self-denying residence among them, and has greatly advanced both their moral and temporal interests, by instituting among them the ceremonies of religion, enforcing among them, by his influence, the forms of marriage, and by encouraging them to the best of his ability in making permanent settlements, and depending for their subsistence upon the fruits of their agricultural labors instead of the uncertain spoils of the chase.

Determination to ascend Red river.—Birch-bark canoe.—Lieutenant Gardner's departure from Pembina.—Mode of life during canoe voyage.—Astronomical observations.—Arrival at mouth of Red Lake river.—Depth of Red river.—Width.—Riviere ou Marais.—Park river.—Big Salt and Turtle rivers.—Remains of English settlements.—La Grande Fourche.—Departure from Red Lake river.—Arrival at mouth of Sioux Wood river.—Goose, Elm, Buffalo, Shayenne, and Wild Rice rivers.—Rapid.—Heavy timber on east side of Red river.—Depth.—Departure from Sioux Wood river.—Leaf mountain.—Rapids.—Lakes.—Lake Gardner.—Ottetail lake.—Beautiful country, &c., &c.

Nothing new or interesting was to be seen in returning to Fort Snelling by the same route pursued in coming, and I regarded a thorough examination of the Red river of the North most important, not only to the geography of the country and with a view to the establishment of military posts, but as directly and vitally concerning the future settlement and cultivation of the soil of its valley.

I determined, therefore, to separate myself from the military command which I had accompanied to Pembina, to ascend the Red river in canoes, and, by making a portage from it to some tributary of the Mississippi, to reach Fort Snelling by water.

I was well aware that the voyage would be long and uncertain, and that the season was too far advanced, on account of our unfortunate delay, for any unnecessary experiment, but I deemed this exploration of sufficient importance to justify me in running almost any risk to accomplish it.

I procured, through the kindness of Mr. Bellenden, the chief factor of the Hudson's Bay Company at Fort Garry, a birch-bark canoe thirty-three (33) feet in length and five and a half ($5\frac{1}{2}$) feet in breadth, and which, when empty, was easily carried by two men. Having employed eleven French half-breeds as voyageurs, and loaded the canoe with pemmican and dried Buffalo meat sufficient for thirty days, I embarked on the 26th of August, 1849, and commenced the ascent of the Red river of the North. Lieutenant J. W. T. Gardner, of the first dragoons, volunteered to accompany me upon the expedition, and I am greatly indebted to his kind assistance for the astronomical observations for latitude and longitude which enabled me to fix, with considerable accuracy, the geographical positions of all the important points along the river.

When the expedition first reached Pembina, the incessant rains for weeks previous had caused all the rivers to overflow their banks; but when I embarked to ascend the Red river, it had subsided into its usual channel.

As I have already given a description of the valley of Red river, which, although very general in its character, embodies all the information I was able to obtain, I shall only say here that I have every reason to believe, from observation, that the accounts of the half-breeds in reference to the heavy timber found on the eastern side of the valley are strictly true.

It is only necessary to give a description of our usual mode of procedure for one day of our voyage, to enable one to understand our whole life for the thirty-seven days consumed in reaching Fort Snelling.

We embarked in the morning as soon as it was light enough to see dis-

tinctly, and rowed steadily until eight and a half o'clock a. m. We then landed and consumed about an hour and a half in cooking and eating breakfast, during which time I occupied myself in taking altitudes of the sun with a sextant. We again landed at two and a half o'clock p. m., for dinner, which occupied about one hour, during which I again observed several altitudes of the sun. At sundown we encamped for the night at some favorable spot for the continuation of my astronomical observations. Every favorable night I took ten or twelve altitudes of stars both north and south of the zenith, and east and west of the meridian. The computed results of these observations have enabled me to fix many points along the Red river with some accuracy.

After six days of constant labor we reached, on the 31st of August, 1849, the mouth of Red Lake river, the largest tributary of the Red river of the North.

As I have before stated, this river discharges the Red lake, which is distant by the river about one hundred and twenty (120) miles.

Between Pembina and the mouth of this stream the Red river has a uniform depth of fifteen feet from one bank to the other, with a soft muddy bottom and no snags, sawyers, or overhanging limbs. It has a width of one hundred and twenty-five (125) yards between Pembina and the mouth of Red Lake river. During the six days occupied in reaching the mouth of this stream, we passed successively the mouths of the "Two rivers," of "Park river," of the "Riviere au Marais" No. 1, from the east; "Big Salt river," the "Riviere au Marais" No. 2, from the west; "Turtle river," "Riviere au Marais" No. 3, from the east; and a small stream called the "Couleé de l'Anglais," from the murder of an English family on its banks while the country was in the possession of the Hudson's Bay Company.

Of these rivers the largest are the "Riviere au Marais" No. 1, and the "Park," "Big Salt," and "Turtle" rivers.

They are about eighteen yards wide, and were about six feet in depth.

The remains of the English settlements are still quite perceptible at the mouths of Turtle and Red Lake rivers, and at many intervening points.

The Red Lake river was about fifty yards wide near its mouth, and fourteen feet deep, and has a much more rapid current than the Red river of the North. It has been often ascended in canoes to Red lake, and is susceptible of navigation by barges or even larger vessels. The junction of Red Lake river with the Red river of the North is called by the half-breeds "La Grande Fourche," or the Great Fork.

On the morning of September 1 we left the mouth of Red Lake river, and continued the ascent to the Red river, which diminished to a width of one hundred yards, and to a depth of fourteen feet. After passing the mouths of the numerous tributaries of the Red river from the east and west, (the most important of which are the Sand Hill river, the Riviere au Marais No. 4, Goose, Wild Rice from the east, Elm, Buffalo, Shayenne, and Wild Rice rivers,) we arrived at the mouth of the Sioux Wood river on the 11th of September, 1849. There is little to be said of the river or of the country along its banks, other than I have previously stated. A slight rapid occurs between the mouths of the Sand Hill and Goose rivers, but there were five and six feet of water upon it, and the current was not sufficiently rapid to retard our canoe.

This is the only obstruction to the navigation of Red river from our northern frontier to its head of navigation.

The tributaries of the Red river from the east are far more heavily timbered than those from the west; and as they overlap in all directions the wooded tributaries of the north Red river and Mississippi, it is easy to understand why the east side of the valley of the Red river should be more heavily timbered than the west side.

We found immense quantities of wild fowls in ascending the river, and so little accustomed were they to the presence of human beings, that we had not the slightest difficulty from our canoes in killing as many as we could possibly use. The elk was also numerous along the wooded banks of the river, and supplied us with a most palatable addition to our stores of provisions. About ten miles below the mouth of the Sioux Wood river commences the heavy timber of the lower Red river. A strip of open prairie about thirty miles in length from northwest to southeast, and probably half that width, extends from a point ten miles north of the Sioux Wood river, to a point about twenty miles east. The land route we pursued lies across this strip, which is by far the most indifferent land in the country. I ascended the Sioux Wood river about one mile, and found a uniform width of thirty yards, and depth of three feet.

The remains of many encampments of the Sioux Indians were found at and in the vicinity of the mouth of this stream. From Pembina to the mouth of Sioux Wood river the distance is about 417 miles, and in the whole of this distance the river is navigable for vessels of a draught not exceeding three feet, and for at least four months of the year.

From Pembina to Red Lake river the depth is fifteen feet, without shoal or impediment. From Red Lake river to Goose river the depth is thirteen feet, with a slight rapid near the mouth of Sand Hill river, having a depth of water over it of five and a half and six feet. From mouth of Goose river to mouth of Shayenne, eleven feet; from mouth of Shayenne to mouth of Wild Rice river from the west, nine feet; from mouth of Wild Rice river to mouth of Sioux Wood river, eight, six, and four feet.

The banks are steep, in some places falling, and with no rock visible. The slight rapid near the Sand Hill river is occasioned by loose boulders in the bed of the river, which could be removed at little or no expense. The current of the Red river below the mouth of the Sioux Wood river is about two and a half miles per hour. Above the mouth of Sioux Wood river it begins to change its character, from a muddy, sluggish stream, to the clear, bold appearance it presents where it breaks through what is called the Leaf mountain.

On the 12th of September we left the mouth of the Sioux Wood river with the expectation of reaching within four days the Ottertail lake. Above the mouth of the Sioux Wood the Red river takes the name of Ottertail Lake river, and, with a constant depth of water of four feet, becomes much more tortuous in its course. As we approached the western and northwestern slope of the Leaf mountain, at the point where the river debouches from it into the level plains to the north, the current becomes sensibly more rapid and the water clearer, until at about fifteen miles east of the crossing of the land route we found it necessary to use the cordelle. The banks become also much higher, with a tract of level, swampy land three-fourths of a mile in width between them, the river running from side to side through the swamp in the most serpentine manner. Small islands

begin to be numerous, and the steep banks are perforated in a thousand places with clear, cold springs. The woods along the banks become also much larger and more dense, oak being the more common tree. At about thirty miles above the mouth of the Sioux Wood river the rapids commence, and are almost continuous to Ottertail lake.

There are two and a half and three feet of water over them, and in the intervening pools of still-water about three and a half feet. The bed of the river is filled with loose boulders of all sizes, and the deep water assumes an extremely crooked channel among them. Every hour of our advance towards the east increased the amount of heavy timber on the banks, and we began, also, to perceive at various distances on each side large groves of heavy timber upon the borders of numerous lakes, which I have described as forming so peculiar a feature of the country between the Mississippi and St. Peter's. We had thus again entered the second general division of country I have made in a previous part of this report, and as we progressed towards the east the lakes became much more numerous, and the timber much heavier and more abundant. From Ottertail lake to its entrance into Leaf mountain the river passes through a number of beautiful lakes, surrounded by rolling country, heavily timbered, with a depth of water of from nine (9) to twenty (20) feet, and filled with the most luxuriant growth of wild rice. The largest and most beautiful of these is Lake Gardner, which is within eight miles of Ottertail lake. On the 14th of September we reached the mouth of Little Pelican river, which at its confluence with Ottertail river is about twenty yards wide and about three feet deep.

On the morning of the 17th we arrived at Ottertail lake and encamped near its northeastern extremity, at the remains of several small trading-houses. Upon entering this lake from the southwest the woods to the northeast, although very large, are not visible, and it is by far the largest sheet of water we had yet seen. It is about ten miles in length from southwest to northeast, and four or five miles in width, filled with fish, with clear, pure water, with a depth of twenty feet, and no islands. The fish are white, and said to be the same known as the white fish of the lakes, so celebrated for their flavor.

To the west, northwest, and northeast, the whole country is heavily timbered with oak, elm, ash, maple, birch, bass, &c., &c. Of these the sugar-maple is probably the most valuable, and in the vicinity of Ottertail lake large quantities of maple sugar are manufactured by the Indians. The wild rice, which exists in these lakes in the most lavish profusion, constitutes a most necessary article of food with the Indians, and is gathered in large quantities in the months of September and October. To the east the banks of the lake are fringed with heavy oak and elm timber to the width of one mile. The whole region of country for fifty miles in all directions around this lake is among the most beautiful and fertile in the world.

The fine scenery of lakes and open groves of oak timber, of winding streams connecting them, and beautifully rolling country on all sides, renders this portion of Minnesota the garden spot of the northwest. It is impossible in a report of this character to describe the feelings of admiration and astonishment with which we first beheld the charming country in the vicinity of this lake; and were I to give expression to my own feel-

ings and opinions in reference to it, I fear they would be considered the ravings of a visionary or an enthusiast.

CHAPTER IX.—(From September 17 to October 5)

Ottertail lake.—Portages.—Artificial dams.—Leaf lake.—Leaf river.—Pine.—Crow-Wing river.—Fort Gaines.—Arrival at Fort Snelling.—Rapids in the Mississippi between the Falls of St. Anthony and the mouth of Crow-Wing river.—Mistaken ideas of the distance of Minnesota from market.—Important points to be included in the new State to be erected in Minnesota.—General remarks.

Ottertail lake is about ten (10) miles in length from southwest to northeast, and about four or five in breadth, without islands. The southeast side of the lake is bordered with timber to the width of one mile; while to the east, north, and west, the heavy timber covers the country to a distance of many miles.

The Indians who reside along the banks informed me that the whole country towards the Crow-Wing river, and the heads of the north Red river and Mississippi, contained very little prairie, but was covered with dense groves of oak and elm, interspersed with sparse forests of pine.

I employed the Indians, during the 17th and 18th days of September, in making rude maps of all the country in the vicinity of the lake; and from their accounts, there can be but little doubt that this whole region of country to the north and east of Ottertail lake, comprising the valleys of the north Red river, Crow-Wing and Mississippi rivers, is among the most beautiful and fertile portions of the northwest. I am not aware that it has ever been traversed by any white person, but it appears to me most desirable that it should be carefully examined at as early a day as practicable.

On the 19th of September we made a portage of one mile towards the east, to a small round lake about one and a half mile in diameter. This lake is completely isolated, having no apparent outlet or inlet. From the dip of the land, and the evident marks of an artificial obstruction, (said to be a beaver dam,) I am quite satisfied that this lake at one time discharged its waters into Ottertail lake. The evidences of this kind of obstruction are numerous throughout this region of country; and whatever may be the theory as to the original extent of the waters, it is quite certain that the largest of the lakes has been divided into several smaller ones by the occurrence of these artificial dams.

The small lake on which we again embarked in our canoe is about ten feet deep, the water very clear, and no doubt containing abundance of fish.

A second portage, of about twenty yards, over a dam of the same character, brought us to another lake about the same size; a third portage, of about half a mile through dwarf oak, found us at the western extremity of Leaf lake, the source of Leaf river, which is a tributary of the Crow-Wing. We had thus, in two hours, passed with our boat and baggage from the waters of the Red river of the North, which flow into the Hudson's bay, to the waters pouring into the Gulf of Mexico.

The tributaries of the Red river of the North and those of the Mississippi overlap each other to such an extent, that I suppose there are a thousand places where a portage even shorter would have enabled us to pass from the waters of one into those of the other.

When we reached Leaf lake, and were about to embark upon the waters of the Mississippi, after a canoe voyage of nearly seven hundred miles upon the Red river of the North, the half-breeds informed us that they were about to go through a ceremony never neglected by them in passing from the waters of one river to those of another. They proceeded to trim an oak tree upon Leaf lake of all its branches, blazed it on both sides, loaded all their guns, and, after presenting me with one, directed me to fire it at the blaze in the tree. As I did so, they discharged all their guns, and gave three cheers. After Lieutenant Gardner had gone through the same operation, they informed us that the ceremony was complete, and was intended to invoke good fortune for the expedition while it remained in the waters of the Mississippi. Whether this effect was produced or not I do not pretend to say, but the remainder of our voyage to Fort Snelling was unattended with any accident.

Leaf lake is about six miles in length, and two in breadth in the widest place—its length being nearly east and west. Near its eastern extremity it pours its waters into Leaf river; its outlet, which, after a course of about seventy-five (75) miles by water, and probably twenty-five (25) in a straight line, empties into the Crow-Wing river. Leaf river is about fifteen yards wide and two and a half feet deep near the lake, gradually increasing in size to its mouth, where it is about twenty-five yards wide and four feet deep. It runs from side to side of a narrow valley about one mile in width, and lying nearly east and west.

The sides of the valley are high, and covered with a heavy growth of oak. The valley itself is a swamp of wild rice, the river winding through it in the most circuitous manner possible. As the wild rice projected several feet above the surface of the water, we would have appeared to any one on the ridge on either side to be pushing our way through a meadow. As we descended the river, however, the rice began to disappear, the swamp became more and more narrow, and the heavy growth of oak and elm upon the banks began to be interspersed with occasional groves of white and yellow pine. At mid-day on the 21st of September we reached the Crow-Wing river, which we considered nearly the terminus of our long voyage through an uninhabited country. Where we struck the river it was about one hundred and twenty (120) yards in width, running with a gentle current through a country slightly undulating, and, so far as we could learn, heavily timbered. It presents the appearance of a series of long, narrow, and shallow lakes, filled with small islands, and connected with each other by a stream varying from one hundred (100) to one hundred and twenty yards in width, and, in ordinary seasons, about four and a half ($4\frac{1}{2}$) feet in depth. The widenings of the river and the numerous loose boulders in its bed produce a swift current, amounting in some places nearly to rapids. I have already suggested a method of improving the navigation at such points, which will enable the Crow-Wing river to discharge to the Mississippi all the productions of its valley. On the 22d of September we arrived at Fort Gaines, on the west side of the Mississippi, and opposite the mouth of the Nokay river. This post has been very lately established, and is at

present garrisoned by one company of the 6th infantry and one of the 1st dragoons.

The American settlements opposite the mouth of the Crow-Wing river are, I believe, the most northern in Minnesota, and extend along the Mississippi to St. Paul's.

As I have already, in the second general division of the country I made in a previous part of this report, given a description of its peculiar conformation, I need only say here that the region to the east, south, and northeast of Ottetail lake and the Crow-Wing river is in all respects identical, except, probably, in containing a larger proportion of timber. The pineries along the Crow-Wing river are among the most extensive and valuable found on the tributaries of the Mississippi.

On the 27th of September we arrived at Fort Snelling, and completed a voyage of nearly one thousand miles, never before made by any one with a like object. I found that the dragoons, who had marched from Pembina the same day I left there, had reached Fort Snelling eight or ten days before me, having found the prairies dry, and the roads in fine order.

There are six rapids in the Mississippi between the falls of St. Anthony and the mouth of Crow-Wing river, only two of which, (the first and the Sauk or second rapids,) in ordinary stages of water, offer any obstruction to the navigation. I again urge upon the government the propriety of making a small appropriation for improving the navigation of these points, not only as being of great and immediate advantage to the Territory, but as securing to the government itself great economy of transportation in the supply of Fort Gaines.

After completing my business at Fort Snelling I left that place for St. Louis, for the purpose of making out a map and report of the expedition, in obedience to the instructions of Colonel J. J. Abert, corps of topographical engineers.

In concluding this imperfect account of the expedition to the Red river of the North, which, in consequence of domestic affliction, has been delayed several weeks longer than I had wished or intended, I cannot refrain from alluding to some important considerations which, although matter for future deliberation for the legislature and people of the Territory of Minnesota, cannot, I think, be too soon brought to their notice.

There are two points which I regard as most important to be included within the limits of the first new State which shall be erected in the Territory, viz: a safe and commodious harbor on Lake Superior, and the head of navigation of the Red river of the North.

It is equally important that the whole of that portion of the Mississippi which can be navigated by steamboats, and which is now included within the boundaries of the Territory, should also be embraced in the new State.

The State formed to comprehend this amount of land will contain about forty thousand (40,000) square miles, including the valleys of the St. Peter's and Jacques rivers, and all the second general division of country I have made in a previous part of this report.

The only feasible objection I have ever heard made to the settlement and cultivation of Minnesota has been that it is too far from our present markets.

It is true that, as merely regards leagues and miles, this Territory is further from our eastern and southern markets than any of the northwest-

ern States; but in point of time (which is the proper view to be taken of the subject) it can be proved that there is scarcely an acre of the whole of the northeastern portion of Minnesota which is not as near to the markets as the interior of the States of Iowa, Wisconsin, or Illinois.

The peculiar conformation of the whole region of country between the St. Peter's, Mississippi, and head of navigation of the Red river of the North, and the water communications, remarkable not only for their great number, but for their almost unlimited extent, will enable the farmer or manufacturer to transport to Lake Superior or the Mississippi all his surplus produce and articles of manufacture in one-fourth the time, and at one-twentieth the expense, that the same amounts could be carted from the interior of Illinois, Iowa, or Wisconsin, to any navigable stream. In point of time and expense, therefore, (the two great considerations,) Minnesota has equal advantages, at least, with the interior of either of the States above mentioned.

As the numerous navigable tributaries of the St. Peter's and Mississippi run towards the south, east, and west, they would cross the railroad lines I have recommended at numerous points, and the choice, therefore, would be given to the farmer or manufacturer of throwing his articles for export either into the eastern or southern market, as might be most desirable.

The valley of the Red river of the North is further still from the markets, and is therefore more open to this objection. The railroads I have mentioned having been constructed, the productions of the whole valley having been delivered at the head of navigation of Red river, can be thrown to Lake Superior and the St. Peter's from that point within twenty-four hours. The valley of the Red river, therefore, will possess the remarkable advantage of a connexion with either southern or eastern markets, as may be most advantageous, with equal expense of transportation.

Providence seems to have designed that the valley of the Red river of the North should find within the United States a market for its productions, since, although the river is navigable for four hundred (400) miles of its course within the boundaries of this Union, it is not navigable eighty (80) miles north of our frontier.

Without dwelling at length upon the considerations I have thus presented, I hope sufficient has been said to exhibit the propriety of securing for the State to be formed in the present Territory of Minnesota the important points above mentioned. I have become so much interested in the country, and so fully convinced of the rapid progress it will make in wealth and population, that it would not only be a high honor but a deep gratification to me should I be so fortunate as to be selected for the purpose of continuing the explorations yet to be made within its borders.

Without being too sanguine or enthusiastic, it appears to me that no State or Territory in the west presents so many or such remarkable advantages to the farmer or manufacturer; and I am well convinced that those who may be induced by the perusal of this report to emigrate to the Territory of Minnesota will find their anticipations more than realized, and will be rather disposed to condemn me for having said too little than too much.

APPENDIX.

Table of distances by the land route from the mouth of the St. Peter's to the Pembina settlement.

From Fort Snelling—	Miles.	Total.
To falls of St. Anthony.....	7 $\frac{1}{2}$	
To Banfill's, at mouth of Rice creek.....	9 $\frac{1}{2}$	16 $\frac{1}{2}$
To mouth of Rum river.....	9	25 $\frac{1}{2}$
To mouth of Elk river.....	13	38 $\frac{1}{2}$
To Big lake.....	8 $\frac{1}{2}$	47
To Big meadows.....	18 $\frac{1}{2}$	65 $\frac{1}{2}$
To Gilman's, near Sauk rapids.....	11	76 $\frac{1}{2}$
To David lake.....	29	105 $\frac{1}{2}$
To White Bear lake.....	39	144 $\frac{1}{2}$
To Pike lake.....	8	152 $\frac{1}{2}$
To main branch of Chippewa river.....	11	163 $\frac{1}{2}$
To Pomme de terre or Potato river.....	10	173 $\frac{1}{2}$
To Rabbit river.....	12	185 $\frac{1}{2}$
To first crossing of Red river of the North.....	18	203 $\frac{1}{2}$
To second crossing of Red river of the North.....	20	223 $\frac{1}{2}$
To Wild Rice river.....	13 $\frac{1}{2}$	237
To Shayenne river.....	11	248
To Maple river.....	17	265
To Rush river.....	18 $\frac{1}{2}$	283 $\frac{1}{2}$
To second point of Rush river.....	9 $\frac{1}{2}$	293
To point of ridge.....	16	309
To main branch of Elm river.....	7 $\frac{1}{2}$	316 $\frac{1}{2}$
To south branch of Goose river.....	8 $\frac{1}{2}$	325
To Salt lakes.....	8 $\frac{1}{2}$	333 $\frac{1}{2}$
To main branch of Goose river.....	10 $\frac{1}{2}$	344
To crossing of Goose river.....	2 $\frac{1}{2}$	346 $\frac{1}{2}$
To Turtle river.....	18	364 $\frac{1}{2}$
To Big Salt river.....	19 $\frac{1}{2}$	384
To Little Salt river.....	9	393
To Little Hill river.....	12 $\frac{1}{2}$	405 $\frac{1}{2}$
To Steep Hill river.....	4 $\frac{1}{2}$	410
To Hartshorn river.....	3	413
To Mud river and Poplar island.....	7	420
To branch of Tongue river.....	16	436
To mouth of Pembina river.....	10 $\frac{1}{2}$	446 $\frac{1}{2}$

Table of soundings of Red river of the North.

	Feet.
From mouth of Pembina river to the mouth of Red Lake river.....	15
From Red Lake river above mouth.....	14
From Red Lake river to mouth of Goose river.....	13
Over rapid near mouth of Sand Hill river.....	6
Goose river above mouth.....	6 $\frac{1}{2}$
From mouth of Goose river to mouth of Shayenna.....	11
Shayenne river above mouth.....	6 $\frac{1}{2}$
From Shayenne to mouth of Wild Rice river.....	9
From Wild Rice to Sioux Wood river.....	8 6.4
Sioux Wood river above mouth.....	3
Ottetail lake.....	19

APPENDIX—Continued.

Table of distances by water from Pembina settlement to head of navigation of Red river of the North.

From mouth of Pembina river—	Miles.	Total.
To Black river (mouth).....	24	
To mouth of Couleé de Bois percéé.....	3	27
To rivière aux Essineés.....	28	55
To mouth of Park river.....	3	58
To mouth of rivière au Marais (No. 1).....	18	76
To mouth of Salt river.....	13	89
To mouth of rivière au Marais (No. 2).....	4	93
To mouth of Turtle river.....	28	121
To mouth of rivière au Marais (No. 3).....	11	132
To mouth of Coulée de L'Anglais.....	18	150
To mouth of Red Lake river.....	4	154
To mouth of Coon creek.....	4½	158½
To mouth of La Grande Coulée.....	8	166½
To mouth of Coulée de jeune bœuf.....	2½	169
To mouth of rivière au Marais (No. 4).....	3	172
To mouth of Coulée du "nezrouge".....	8	180
To mouth of Coulée de "la batte de sable".....	4½	184½
To mouth of Coulée des vaches.....	1	185½
To mouth of Sand Hill river.....	5½	191
To mouth of rivière au Marais (No. 5).....	23½	214½
To mouth of Goose river.....	½	215
To mouth of Wild Rice river from the east.....	22½	237½
To mouth of Elm river.....	6½	244
To campment D'Ours.....	12	256
To mouth of Buffalo river.....	9	265
To mouth of Shayenne river.....	10	275
To mouth of Wild Rice river from the west.....	45	320
To mouth of Cut-off.....	5	325
To mouth of Sioux Wood river.....	92	417
To Lake Travers.....	30	447
To southwestern extremity of Lake Travers.....	15	462

Variations of the compass.

	deg.	min.	sec.
At the mouth of the St. Peter's river.....	E. 10	28	40
At the mouth of the Sioux Wood river.....	E. 12	27	15
At the mouth of the Pembina river.....	E. 13	16	32.5

Tables of latitude and longitude.

Mouth of St. Peter's, latitude 44° 52' 46"; longitude 93° 4' 54".....	Nicollet.
Mouth of the Osakis, latitude 45° 35' 35"; longitude 94° 12'.....	do.

Observations at David lake, June 24, 1849.

Double altitudes of sun's upper limb.—For time.

A. M.			Angle.			P. M.		
<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>min.</i>	<i>sec.</i>
9	21	38	93	1	45	3	34	40
9	28	5	95	16	0	3	27	54
9	34	40	97	32	10	3	20	7
9	40	0	99	35	15		Lost.	
9	46	31	101	9	30	3	10	12
9	52	5	103	12	30	3	3	41

Index error, 2 min. 52.5 sec.

Longitude of David lake, 94 deg. 48 min. 15 sec.

*At David lake, June 24, 1849.*Double altitudes α Bootes (Arcturus) west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
11	28	11	89	0	30
11	34	58	87	4	45
11	39	12	85	6	45
11	44	4	83	42	30

Index error, 2 min. 52.5 sec.

Latitude of David lake, 45 deg. 36 min. 7.5 sec.

*David lake, June 24, 1849.*Double altitudes α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
11	50	29	87	45	30
11	54	28	88	45	15
11	59	24	89	48	30

Index error, 2 min. 25.5 sec.

Latitude of David lake, 45 deg. 34 min. 37.5 sec.

Mean of results from two stars, 45 deg. 35 min. 22.5 sec.

At Lightning lake, June 29, 1844.

For time.—Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
9	16	34	88	39	10
9	22	4	90	32	45
9	27	59	92	27	45
9	32	40	94	7	30
9	37	39	95	46	45
9	42	37	97	26	30

Index error, 2 min. 45.5 sec.

Longitude of Lightning lake, 94 deg. 57 min. 55 sec.

At Lightning lake, June 30, 1845.

For time.—Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	42	2	92	12	45
8	44	55	93	15	30
8	48	16	94	23	10
8	51	24	95	25	15
8	56	21	97	4	45
8	59	24	98	7	30

Index error, 2 min. 45.5 sec.

Longitude in arc, 94 deg. 57 min. 11.5 sec.

Mean of observations for longitude, 94 deg. 57 min. 32.2 sec.

*At Lightning lake, June 30, 1849.*For latitude.—Double altitudes of α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
10	16	25	79	12	45
10	20	27	80	39	45
10	26	41	82	23	15
10	30	33	83	27	0

Index error, 2 min. 52.5 sec.

Latitude of Lightning lake, 45 deg. 36 min. 51.5 sec.

*At Lightning lake, June 30, 1849.*For latitude.—Double altitudes of α Bootes (Arcturus) west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
11	2	54	75	47	30
11	6	20	74	36	45
11	10	27	73	12	30

Index error, 2 min. 52.5 sec.

Latitude of Lightning lake, 45 deg. 40 min. 7.5 sec.

Mean of observations for latitude, 45 deg. 38 min. 29.5 sec.

*At mouth of Sioux Wood river, September 11, 1849.*For latitude.—Double altitudes of α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
6	29	39	99	44	30
6	30	50	99	54	30
6	31	55	100	4	45
6	32	57	100	13	30
6	34	53	100	27	30
6	35	55	100	36	15
6	36	44	100	43	45
6	37	43	100	49	30
6	39	6	101	1	15

Latitude deduced, 46 deg. 14 min. 21.5 sec.

Index error, 1 min. 52.5 sec.

	<i>Deg. min. sec.</i>
Double meridian altitude α Aquilæ (Altair)	104 32 15
Latitude by meridian altitude	46 14 45.5

Double altitudes of η Ursæ Majoris, west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
6	51	35	78	16	45
6	52	22	78	4	30
6	53	39	77	42	45
6	55	58	77	5	15
6	56	47	76	50	30
6	57	55	76	32	15
6	58	47	76	16	45

Latitude deduced, 46 deg. 15 min. 21.5 sec.

Index error, 1 min. 52.5 sec.

Mean of latitudes deduced at mouth of Sioux Wood river, 46 deg. 14 min. 9 sec.

Observations for time a short distance below the mouth of Sioux Wood river, September 11, 1849.

Double altitudes of sun's upper limb.

Afternoon.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
2	8	3	66	52	45
2	9	1	66	36	45
2	9	34	66	28	15
2	10	12	66	18	15
2	10	41	66	7	45
2	11	9	66	0	45
2	11	43	65	49	45
2	12	14	65	41	10
2	12	53	65	29	30
2	13	32	65	18	10

Deduced longitude in arc, 96 deg. 12 min. 7.5 sec.

Index error, 1 min. 52.5 sec.

At the camp of September 8, on the bank of Red river.

For latitude.

Double meridian altitude of α Aquilæ (Altair) 103 deg. 52 min. 30 sec.

Deduced latitude, 46 deg. 36 min. 9 sec.

Index error, 2 min. 45 sec.

Observations for time a short distance below camp of September 8, 1849, on bank of Red river.

Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
2	11	31	69	1	30
2	12	29	68	45	15
2	13	16	68	32	0
2	13	50	68	21	30
2	14	19	68	13	30
2	14	52		(Error.)	
2	15	28	67	54	15
2	16	9	67	41	30
2	16	43	67	31	45
2	17	16	67	23	15
2	18	9	67	7	30

Deduced longitude in arc, 96 deg. 13 min. 27.5 sec.

Index error, 2 min. 45 sec.

At mouth of Wild Rice river, September 7, 1849.

For latitude.

Double meridian altitude of α Aquilæ (Altair) 103 deg. 28 min. 15 sec.
Deduced latitude, 46 deg. 46 min. 45 sec.
Index error, 2 min. 45 sec.

*Observations for time a short distance below the mouth of Wild Rice river,
September 7, 1849.*

Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
9	7	45	81	27	15
9	8	21	81	36	0
9	9	21	81	49	45
9	9	21	81	58	45
9	10	1	82	9	15
9	10	40	82	17	45
9	11	18	82	27	15
9	11	54	82	34	45
9	12	27	82	40	15
9	12	56	82	48	45
9	13	32	82	55	45
9	14	3			

Deduced longitude in arc, 96 deg. 19 min. 32 sec.
Index error, 2 min. 45 sec.

At mouth of Shayenne river, September 5, 1849.

For latitude.—Double altitudes α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
6	57	24	97	39	0
7	1	31	98	16	30
7	2	50	98	26	45
7	4	36	98	40	45
7	6	15	98	55	15
7	9	8	99	18	45
7	10	45	99	29	30
7	12	13	99	42	45
7	15	4	99	59	15

Deduced latitude, 47 deg. 7 min. 55.5 sec.
Index error, 2 min. 20 sec.

*At mouth of Shayenne, September 5, 1849.*For latitude.—Double altitudes η Ursæ Majoris, west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
7	21	59	79	43	45
7	24	15	79	5	15
7	26	1	78	35	45
7	28	5	78	1	45
7	29	21	77	40	45
7	30	22	77	23	10
7	31	37	76	3	30
7	33	23	76	34	30
7	35	45	75	56	15

Deduced latitude, 47 deg. 11 min. 42.5 sec.

Index error, 2 min. 20 sec.

Mean of results from 2 stars, 47 deg. 9 min. 49 sec.

Observations for time at the campment D' Ours, a short distance below the mouth of the Shayenne, September 5, 1849.

Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	25	43	70	12	30
8	26	37	70	27	45
8	27	29	70	41	45
8	28	33	70	59	45
8	29	32	71	17	15
8	30	28	71	32	45
8	31	12	71	45	30
8	32	56	72	14	15
8	33	43	72	28	15
8	35	20	72	53	10

Deduced longitude in arc, 96 deg. 32 min. 15 sec.

Index error, 2 min. 10 sec.

*At mouth of Goose river, September 3, 1849.*For latitude.—Double altitudes of α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
7	3	27	96	9	15
7	4	55	96	24	45
7	6	22	96	37	15
7	7	40	96	50	15
7	8	32	96	59	15
7	9	45	97	9	30
7	10	51	97	18	45
7	12	21	97	30	30
7	13	10	97	38	45

Deduced latitude, 47 deg. 26 min. 52.7 sec.

Index error, 2 min. 52.5 sec.

Double meridian altitude of α Aquilæ, 102 deg. 7 min. 45 sec.

Deduced latitude, 47 deg. 28 min. 30 sec.

*At mouth of Goose river, September 3, 1849.*For latitude.—Double altitudes η Ursæ Majoris west of meridian.

h.	min.	sec.	Deg.	min.	sec.
7	24	31	82	35	30
7	26	44	81	56	15
7	29	12	81	16	15
7	32	7	80	29	15
7	34	39	79	44	30

Deduced latitude, 47 deg. 30 min. 52.5 sec.

Index error, 2 min. 52.5 sec.

Mean of results from two stars, 47 deg. 28 min. 43 sec.

*At encampment of September 2, 1849.*For latitude.—Double meridian altitude α Aquilæ, (Altair,) 101 deg. 59 min. 15 sec.

Deduced latitude, 47 deg. 32 min. 15.5 sec.

Index error, 2 min. 52.5 sec.

At rapids of Red river.

For time.—Double altitudes of sun's lower limb.

h.	min.	sec.	Deg.	min.	sec.
2	17	10	73	7	10
2	18	50	72	54	45
2	19	44	72	40	45
2	20	16	72	30	30
2	20	43	72	26	15
2	22	12	71	55	15

Deduced longitude, 96 deg. 49 min. 9.5 sec.

Index error, 2 min. 52.5 sec.

Observations for time a short distance above mouth of Red Lake river, September 1, 1849.

Double altitudes of sun's upper limb.

h.	min.	sec.	Deg.	min.	sec.
9	5	36	80	25	45
9	6	51	80	46	15
9	7	50	81	1	45
9	8	32	81	14	30
9	9	36	81	24	15
9	10	19	81	39	30
9	11	10	81	50	45
9	11	47	82	2	10
9	12	31	82	10	30
9	13	29	82	26	45
9	15	40	82	57	45
9	16	35	83	13	45
9	17	34	83	27	45
9	18	48	83	45	45

Deduced longitude in arc, 96 deg. 53 min. 12.5 sec.

Index error, 2 min. 52.5 sec.

Ex.—4

*At mouth of Red Lake river, August 31, 1849.*For latitude.—Double altitudes α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
7	34	8	97	8	15
7	36	21	97	25	45
7	37	49	97	37	15
7	39	44	97	50	15
7	41	10	98	0	45
7	42	10	98	8	15
7	44	15	98	22	15
7	45	15	98	27	45
7	46	35	98	37	15
7	47	48	98	44	30

Deduced latitude, 47 deg. 46 min. 51 sec.

Index error, 1 min. 52.5 sec.

Double meridian altitude α Aquilæ, 101 deg. 11 min. 45 sec.

Deduced latitude, 47 deg. 49 min. 23.5 sec.

*At mouth of Red Lake river, August 31, 1849.*For latitude.—Double altitudes α Ursæ Minoris, (Polaris.)

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
9	5	39	96	46	30
9	7	43	96	47	10
9	10	21	96	49	30
9	13	5	96	51	45
9	15	45	96	53	30
9	18	37	96	55	45

Deduced latitude, 47 deg. 48 min. 5.5 sec.

Index error, 1 min. 52.5 sec.

Mean of results from two stars, 47 deg. 48 min. 8.3 sec.

Observations for time a short distance above encampment of August 29, 1849.

Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	58	58	78	7	45
9	0	15	78	27	10
9	1	14	78	45	45
9	2	10	78	57	30
9	3	5	79	12	30
9	4	39	79	35	45
9	5	54	80	54	45
9	6	41	80	8	45
9	7	37	80	21	15
9	8	25	80	37	15

Deduced longitude, 96 deg. 56 min. 10 sec.

Index error, 1 min. 52.5 sec.

At encampment of August 29, 1849, near Big Salt river.

For latitude.

Double meridian altitude α Aquilæ, (Altair,) 100 deg. 27 min. 45 sec.
 Deduced latitude, 48 deg. 17 min. 28.5 sec.

*At encampment of August 27, 1849.*For latitude.—Double altitudes α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
7	49	6	94	34	15
7	51	10	94	52	15
7	52	44	95	3	30
7	54	7	95	16	30
7	56	28	95	36	15
7	57	57	95	47	30
7	59	29	95	57	45
8	1	13	96	11	30
8	3	7	96	26	45

Deduced latitude, 48 deg. 34 min. 23.7 sec.
 Index error, 2 min. 5 sec.

Double meridian altitude α Aquilæ, (Altair,) 99 deg. 50 min. 30 sec.

Index error, 2 min. 5 sec.

Deduced latitude, 48 deg. 37 min. 7 sec.

Double meridian altitudes η Ursæ Majoris, west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	8	12	83	13	15
8	10	48	82	46	30
8	13	21	82	3	30
8	15	39	81	21	45
8	17	7	80	59	30
8	18	33	80	36	30

Deduced latitude, 48 deg. 39 min. 17.5 sec.

Index error, 2 min. 5 sec.

Mean of results from two stars, 48 deg. 37 min. 2 sec.

Observations for time near encampment of August 27, 1849.

Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
2	26	10	77	17	30
2	27	21	77	2	15
2	28	4	76	48	45
2	29	1	76	32	30
2	29	45	76	21	45
2	30	35	76	5	45
2	31	27	75	53	30
2	32	32	75	33	30
2	33	22	75	20	45

Deduced longitude in arc, 96 deg. 59 min. 13.5 sec.

Index error, 2 min. 5 sec.

*Observations for time a short distance above encampment of August 26,
1849.*

Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
9	3	5	78	24	45
9	4	36	78	47	45
9	6	15	79	21	45
9	7	20	79	39	30
9	8	18	79	54	45
9	9	26	80	8	0
9	10	26	80	25	45
9	11	32	80	45	15

Deduced longitude in arc, 97 deg. 23.5 sec.

Mouth of Pembina river, at Pembina, August 21, 1849.

For time.—Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
9	59	20	93	39	15
10	0	57	93	58	45
10	4	25		(Error.)	
10	5	38		(Error.)	
10	7	44	95	28	45
10	8	55	95	38	45
10	10	22	95	58	15
10	11	38	96	14	50
10	12	51	96	28	15
10	14	30	96	47	45
10	16	2	97	6	30
10	17	39	97	28	15

Deduced longitude in arc, 97 deg. 15.5 sec.

Index error, 1 min. 2.5 sec.

Magnetic bearing of sun's centre for last observation, S. 44 deg. E.

Same day, August 21, 1849.

Double altitudes of sun's lower limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
1	44	31	92	44	30
1	45	48	92	30	15
1	47	50	92	0	45
1	48	10	91	42	15
1	50	26	91	25	30
1	51	21	91	12	50
1	52	30	90	57	30
1	53	51	90	37	15
1	55	5	90	17	45

Deduced longitude in arc, 97 deg. 1 min. 7.5 sec.

Index error, 1 min. 2.5 sec.

Magnetic bearing of sun's centre, S. 38 deg. W.

*At Pembina, August 21, 1849.*For latitude.—Double altitudes of α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
7	55	42	90	1	45
7	59	5	90	37	45
8	1	25	91	2	15
8	3	30	91	22	45
8	5	8	91	41	45
8	7	45	92	8	15
8	9	24	92	22	30
8	12	34	92	53	45
8	15	7	93	18	45

Deduced latitude, 48 deg. 58 min. 27.5 sec.

Index error, 2 min. 52.5 sec.

Double meridian altitude α Aquilæ (Altair), 99 deg. 4 min. 30 sec.

Deduced latitude, 48 deg. 58 min. 38 sec.

Index error, 2 min. 52.5 sec.

*At Pembina, August 21, 1849.*For latitude.—Double altitudes of α Ursæ Minoris (Polaris) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	20	9	97	34	45
8	24	42	97	37	15
8	30	41	97	40	45 Doubtful.
8	34	43	97	42	45
8	39	18	97	45	30

Deduced latitude, 48 deg. 57 min. 27.5 sec.

Index error, 2 min. 52.5 sec.

*At Pembina, August 21, 1849.*For latitude —Double altitudes of η Ursæ Majoris west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	53	38	79	42	10
8	57	10	78	49	45
8	58	16	78	17	30
9	1	24	77	37	15
9	3	40	77	0	30
9	5	31	76	29	54
9	7	32	75	56	30
9	9	15	75	29	55

Deduced latitude, 48 deg. 59 min. 23.5 sec.

Index error, 2 min. 52.5 sec.

Mean result from three stars, 48 deg. 50 min. 29 sec.

At Pembina, August 22, 1849.

For time.—Double altitudes of sun's upper limb.

A. M.						P. M.		
<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>min.</i>	<i>sec.</i>
9	0	50	78	35	45	2	33	55
9	1	55	78	53	45	2	32	47
9	3	14	79	14	15	2	31	35
9	4	25	79	32	30	2	30	28
9	5	9	79	43	45	2	29	23
9	6	8	80	2	15	2	28	40
9	6	48	80	10	45	2	28	2
9	8	12	80	34	45	2	26	40
9	8	48	80	45	45	Lost.		
9	9	31	80	56	45	2	25	38
9	10	12	81	11	45	Lost.		
9	11	8	81	26	30	2	23	25

Deduced longitude in arc, 97 deg. 32.5 sec.

Index error, 2 min. 52.5 sec.

At Pembina, August 22, 1849.

For latitude.—Double altitudes of *a* Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	3	30	92	7	30
8	7	49	92	45	45
8	9	32	93	4	15
8	11	59	93	27	30
8	14	10	93	47	30
8	15	59	94	2	15
8	17	20	94	16	15
8	18	43	94	26	15
8	20	40	94	41	15

Deduced latitude, 48 deg. 58 min. 56.5 sec.

Index error, 2 min 52.5 sec.

Double meridian altitude *a* Aquilæ, 99 deg. 4 min. 45 sec.

At Pembina, August 22, 1849.

For latitude.—Double altitudes of *a* Ursæ Minoris (Polaris) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	23	49	97	39	15
8	27	22	97	42	15
8	31	22	97	44	15
8	34	56	97	46	

Deduced latitude, 48 deg. 57 min. 49.5 sec.

Index error, 2 min. 52.5 sec.

*At Pembina, August 22, 1849.*For latitude.—Double altitudes of α Aquilæ (Altair) west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
10	26	35	94	59	30
10	28	56	94	42	30
10	31	4	94	26	15
10	33	40	94	2	45
10	36	32	93	41	15
10	39	5	93	15	15
10	42	31	92	42	15
10	45	1	92	19	15
10	49	31	91	56	0

Latitude deduced, 48 deg. 59 min. 34.5 sec.

Index error, 2 min. 52.5 sec.

*Same place and night, August 22, 1849.*Double altitudes of η Ursæ Majoris, west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	39	38	62	21	45
8	42	34	81	28	30
8	44	27	80	58	45
8	46	25	80	24	15
8	48	2	79	59	15
8	49	48	79	32	15
8	51	12	79	7	45
8	53	37	78	29	45

Deduced latitude, 48 deg. 59 min. 2.5 sec.

Index error, 2 min. 52.5 sec.

*Same place and night, August 22, 1849.*Double altitudes of α (Lyra) west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
10	51	35	120	0	45
10	55	5	118	52	15
10	57	45	117	58	15
11	1	50	116	38	15
11	4	58	115	36	45
11	9	28	114	7	45
11	11	25	113	28	45
11	13	40	112	44	15
11	16	15	111	55	15

Latitude deduced, 48 deg. 59 min. 10.5 sec.

Index error, 2 min. 52.5 sec.

Mean result of 4 stars for August 22, 48 deg. 58 min. 40.6 sec.

Mean of results for 2 days, and latitude of mouth of Pembina river, 48 deg. 58 min. 34.5 sec.

Mean of longitudes for mouth of Pembina river, 97 deg. 38.1 sec.

*At mouth of Pelican river, September 14, 1849.*For latitude.—Double altitudes of α Aquilæ (Altair) east of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
6	29	18	101	51	15
6	30	41	101	59	30
6	31	50	102	5	45
6	34	8	102	21	30
6	34	55	102	25	45
6	36	0	102	30	30
6	36	55	102	37	45
6	37	28	102	41	45
6	38	54	102	45	30

Deduced latitude, 46 deg. 17 min. 52.5 sec.

Index error, 2 min. 7 sec.

At mouth of Pelican river, September 14, 1849.

For latitude.—Double altitudes η Ursæ Majoris, west of meridian.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
6	43	45	75	38	30
6	45	12	75	12	45
5	47	29	74	37	15
6	49	1	74	10	15
6	50	12	73	53	45
6	51	40	73	27	15

Latitude deduced, 46 deg. 20 min. 9.5 sec.
 Index error, 2 min. 7 sec.

Same place and night, September 14, 1849.

	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
Double meridian altitude of α Aquilæ.....	104	24	30
Latitude deduced.....	46	18	53
Mean of results for two stars.....	46	18	53.3

Camp of September 15, 1849.

For latitude.

	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
Double meridian altitude of α Aquilæ, (Altair)	104	23	30
Index error.....	0	2	7
Latitude deduced	46	19	23

A point within eight miles of southwestern extremity of Ottertail lake.

For time.—Double altitudes of sun's upper limb.

<i>h.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
9	15	56	81	30	45
9	16	33	81	40	45
9	17	3	81	46	15
9	17	32	81	52	15
9	18	0	81	57	30
9	18	36	82	4	15
9	19	9	82	9	30
9	19	34	82	13	15
9	20	2	82	20	30
9	20	32	82	26	30
9	22	2	82	39	30

Longitude in arc, 95 deg. 39 min. 11 sec.

Mouth of Crow Wing river, latitude $46^{\circ} 16' 50''$; longitude $94^{\circ} 22' 45''$ Nicolle