

EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN,
WAR DEPARTMENT.

NARRATIVE

AND

FINAL REPORT

OF

EXPLORATIONS FOR A ROUTE FOR A PACIFIC RAILROAD,

NEAR

THE FORTY-SEVENTH AND FORTY-NINTH PARALLELS OF NORTH LATITUDE,

FROM

ST. PAUL TO PUGET SOUND.

BY

ISAAC I. STEVENS,
GOVERNOR OF WASHINGTON TERRITORY.

1855.

GENERAL TABLE OF CONTENTS.

INTRODUCTION.

PART I.

GENERAL REPORT.

PART II.

BOTANICAL REPORT:

- No. 1.—Report upon the Botany of the Route. By J. G. COOPER, M. D.
No. 2.—Catalogue of Plants collected east of the Rocky Mountains. By Prof. ASA GRAY.
No. 3.—Catalogue of Plants collected in Washington Territory. By J. G. COOPER, M. D.

PART III.

ZOOLOGICAL REPORT:

- No. 1.—Report upon Insects collected on the Survey. By JOHN L. LECOQTE, M. D.
No. 2.—Report upon the Mammals collected on the Survey. By J. G. COOPER, M. D., and Dr. SUCKLEY, U. S. A.
No. 3.—Report upon the Birds collected on the Survey. By J. G. COOPER, M. D., and Dr. SUCKLEY, U. S. A.
No. 4.—Report upon the Reptiles collected on the Survey. By J. G. COOPER, M. D.
No. 5.—Report upon the Fishes collected on the Survey. By Dr. G. SUCKLEY, U. S. A.
No. 6.—Report upon the Mollusca collected on the Survey. By WM. COOPER.
No. 7.—Report upon the Crustacea collected on the Survey. By J. G. COOPER, M. D.

APPENDICES.

APPENDIX A.

TABLE OF HEIGHTS AND DISTANCES.

APPENDIX B.

METEOROLOGICAL REGISTER.

American Fur Company have navigated it they have never lost a boat from that cause. From Fort Union to Fort Benton there are but few snags, and the only obstruction is the rapids. There is plenty of wood for fuel all the way from St. Louis to within 200 miles of Fort Benton, but within that distance, for a space of about 100 miles, wood is scarce, though it can be had at a few points. The river may be considered navigable through its whole extent for seven months of the year. The ice at the coldest section of the river, say from Fort Union to Fort Clark, on an average of a term of years, will commence making so as to obstruct navigation about the 20th of November, and would break up about the 10th of April. The distance from St. Louis to the mouth of the Yellowstone is 1,887 miles; to the mouth of Milk river, 2,067½ miles; to Fort Benton, 2,415 miles; to the mouth of Highwood creek, 2,430 miles; and to the Great Falls, 2,445 miles.

The Missouri has numerous tributaries from the north. Commencing at Fort Union, one of the most important is the Big Muddy, which has its rise probably near our parallel; has a course generally south, with a fine body of arable land on its banks, and finds its junction with the Missouri in the midst of a large forest of cottonwood. In 117 miles from Fort Union by the wagon road we reach the mouth of Milk river, after passing many tributaries between it and the Big Muddy. Milk river is described by Lewis and Clark, and has been laid down on all the maps until within comparatively a recent period as having a due north and south course, its source being in British territory; its course is nearly east; west for one hundred and eighty-five miles near the parallel of $48^{\circ} 30'$, and it affords a remarkable river valley, looking to its own resources, as well as a good approach to the mountain passes. The Milk river has several inconsiderable tributaries, both from the north and south; but it has its rise in the main Rocky mountain range immediately southeast of Chief Mountain lake, and between latitude $48^{\circ} 50'$ and $49^{\circ} 15'$, whence it flows a little to the north of east for about 100 miles, then, turning to the southeast in longitude $111^{\circ} 45'$, runs for 120 miles until it takes its eastern direction to the Missouri, which it follows for 85 miles, crossing the boundary in longitude $110^{\circ} 30'$ north of the line of the Missouri and Milk river to the divide of the Rocky mountains. The country is a rolling prairie; no mountain ranges are visible, except the Three Buttes, which rise up three thousand feet out of a plain one hundred miles east of the mountains, in about latitude $48^{\circ} 50'$. Between the Milk river and the Missouri there are two upheavals—the one is the Bear's Paw, which nearly fills up the country between these two rivers, 160 miles east of the divide, east of which is a less considerable upheaval—the Little Rocky mountains. The Bear's Paw is an exceedingly difficult country, although it is intersected by trails easy for pack mules, and said to be practicable for wagons, which are well known to the voyageurs of the country. The Little Rocky mountains, as well as the Bear's Paw, have an abundance of thrifty and available pine. They occur in localities and in bodies which will make it easy to supply the surrounding country. This region, from the Bear's Paw to the mouth of Milk river, between the Missouri and the Milk, is an exceedingly fine grazing country. It is well watered by the streams flowing into the Milk river and the Missouri. It is a great resort for game. The buffalo is found here in very large numbers, as well as on the Milk river itself. The Milk river, from the Bear's Paw to near its mouth, is both the summer and the winter home of the Gros Ventres tribe of the Blackfeet nation. This tribe numbered in 1855 two thousand five hundred and twenty souls, and owned, at least, three thousand horses. It is unquestionable that from Fort Union, all along the general region of the Bear's Paw, the country is generally cultivable. Locations can be made by small farmers throughout its extent, and a thrifty and

hardy population will grow up. There will be no difficulty about supplying such a population with water, or with wood for buildings, for the Missouri itself from the Gate of the Mountains can carry down the timber required for a considerable population. From the Bear's Paw to the Rocky mountains the great feature of the country is, first, the extension of the plateau to the base of the mountains, and the comparatively gentle and gradual approach which it furnishes; and, second, the extraordinary network of streams which, passing down from the main chain, form by their several junctions the southern tributary of the Saskatchewan, Milk river, Marias river, Teton river, Sun river, and Dearborn river.

The numerous branches of the Milk, Marias, Teton, and Sun rivers all have beautiful and fertile valleys, while, even in the mountains, numerous rich prairies are met with, and the hills themselves are often covered with a fertile soil. The character of the country is even better for agricultural purposes close to the mountains than further off. In the vicinity of Birch and Badger rivers it was beautiful, and even in May covered with a luxuriant green turf and numerous flowers, the soil being a dark loam. The main stream of the Marias came from a gap in the mountains, ten or fifteen miles in width, the valley partially timbered and partially rich prairie. This stream, evidently not the one explored by Mr. Tinkham, seemed to lead through the true Marias Pass; going up the valley for several miles, he still found it wide, and without any apparent obstruction towards the west, while the stream continued so deep that he found a ford with difficulty.

The valleys of the numerous streams he crossed, between Sun river and the upper streams of Milk river, occur so close together that there can be no deficiency of water; not only the valleys but a great part of the upland is arable. Sun river, with its south fork, called Elk Fork, eight streams running into the Teton, seventeen tributary to Marias, and ten sources of Milk river were crossed in this interval of 140 miles, having each an interval of from a half a mile to ten miles in width, with an abundance of excellent timber in close proximity.

Coursing along under the eastern base of the mountains, in the months of May and June, you constantly cross these little streams, having a volume of water, showing that they have a considerable course over a country much of it arable, and all decked out in the gayest flowers of spring. The Mo-ka-un, or Belly river, a tributary of the Saskatchewan, has its rise in Chief Mountain lake, under the 49th parallel, which is fed by several tributaries, whose most southern source is about latitude $48^{\circ} 30'$. About the Chief Mountain lake, in the neighborhood of these several tributaries and to the eastward, is much arable land.

Standing on one of the elevated mountain peaks near this lake, and looking to the northeast upon the country through which passes this tributary of the Saskatchewan, a vast plain, or more properly a prairie, is spread before the eye for more than fifty miles, for in richness of soil, luxuriant vegetation, and bright colored flowers, it closely resembles the prairies of the western States. The river next in size to the Milk, on the northwest side of the Missouri, is the Marias, which, rising in the Rocky mountains about latitude $48^{\circ} 30'$, runs a little south of east for about one hundred and sixty miles in a direct line, though much more by its windings, and empties into the Missouri eleven miles below Fort Benton. It is supposed to be navigable for small steamboats for fifty miles, forming the extreme of water communication towards the northwest in longitude $111^{\circ} 30'$. About a mile above its mouth it receives the Breast or Teton river, which, flowing from the mountains near latitude 48° , has a more winding but general easterly course for about one hundred and thirty miles, and is a smaller stream than the Marias. The next met with is Medicine or Sun river, which, rising also in the main range about latitude $47^{\circ} 30'$, pursues a

nearly direct course eastward for eighty miles, discharging into the Missouri three miles above the Falls. About fifty-five miles from its mouth it receives Elk Fork from the mountains a little south of west, up which a good approach can be made to Lewis and Clark's or Cadotte's Pass. Crown Butte creek is a stream not more than fifteen miles long, which rises near the hill of that name, and running eastwardly empties into a lake, together with a smaller stream from the south. Its outlet runs only a short distance and then sinks into the ground five miles from the Missouri, between Sun river and Beaver creek. The Dearborn, rising in the main chain, about ten miles southeast of Elk Fork, runs first northwestwardly for ten miles, and then turning to the southeast flows nearly parallel to the dividing ridge for twenty miles, receiving a tributary from both Lewis and Clark's and Cadotte's Passes, when it gradually curves round to the east, and twenty miles further empties into the Missouri near latitude $47^{\circ} 09'$. Two miles from its mouth it receives from the northwest Beaver creek, a stream not more than forty-five miles long, and running also nearly parallel to the dividing ridge. These two streams, together with the broken character of the country adjoining their lower portions, make an approach from the Missouri difficult above Sun river.

Twenty-eight miles southeast of Cadotte's Pass rises Little Prickly Pear creek, and, taking a crooked course towards the northeast for about twenty-five miles, empties into the Missouri thirteen miles above the Dearborn. Its valley forms a part of the approach from Fort Benton to the Hell-Gate passes. The principal Prickly Pear creek, however, rises by several heads from the Blackfoot passes and vicinity, and, running more towards the east for about twenty-five miles, empties into the Missouri above the Gate of the Mountains, and eighteen miles southeast of the preceding stream. It forms part of the approach to these passes from the head of the Muscle Shell by the route explored by Lieutenant Mullan in September, 1853.

No large stream runs into the Missouri above this stream until the three great forks, called by Lewis and Clark Jefferson, Madison, and Gallatin, are reached, about sixty-eight miles to the southeast. These three rivers, of nearly equal size, form the sources of the Missouri flowing from the lofty mountains which almost encircle its headwaters towards the west, south, and east. Only the Jefferson Fork has, however, been traced to its sources, which were found by Lieutenant Mullan in the vicinity of Big Hole prairie and pass, where there is an excellent communication with the Bitter Root valley at its head near longitude $113^{\circ} 50'$, and another pass to Deer Lodge prairie, sixty-five miles further east. Captain Clark followed it down in a canoe through its very winding course for about eighty-five miles in a direct line to where it joins Madison Fork. The Muscle Shell is the principal river which enters the Missouri on the south side, joining it near longitude 108° . It rises in the Girdle mountains in latitude $46^{\circ} 30'$, longitude about 110° , and running eastward for about one hundred and sixty-five miles, turns a spur of the Judith range and takes a general northeast course for ninety miles to its mouth. When crossed by Lieutenant Mullan, at least one hundred miles above its mouth, it was forty or fifty yards in width and from two to four feet deep, with a very rapid current. This was in the dry season in September. Judith river is the next, emptying about eighty-four miles west of the Muscle Shell, and rising by numerous branches in the Girdle and Judith ranges between which it runs, having a course generally north for about sixty miles. From the frequency of its branching, it does not seem likely to be useful for the purposes of navigation. Arrow river, which empties nine miles west of it, also rises by three branches in the Highwood range, a spur of the Girdle mountains. Its sources are not more than thirty-five miles from the Missouri, and it can only be serviceable for rafting. The next streams on this side are above Fort Benton. Shonkin.

creek is a small prairie stream, rising near the Highwood range, and running northwest empties nearly opposite the fort. Highwood creek has the same origin and general course, but is a larger stream, emptying twenty miles southwest of the fort. It is the stream by which the Fur Company obtain their lumber from the mountains. Belt Mountain creek empties six miles higher up, and has the same general course, but is a larger stream, and probably rises much further up, or perhaps within the basins lying beyond the Girdle mountains. At its mouth Mr. Tinkham found some difficulty in selecting a place shallow enough for his mules to ford in November. Its navigation, if any, is, however, cut off from that of the Missouri by rapids below its mouth. Smith's river, still further above the Falls, is said by Lewis and Clark to be eighty yards wide at its mouth, and as flowing through a charming valley from the southeast, visible for twenty-five miles before it was hidden by mountain spurs. It is supposed to be the same stream struck near its source by Lieutenant Mullan in going west from the Muscle Shell, about eighty miles southeast of the Missouri, where it had beautiful green meadows in its valley, which is there from a mile to a mile and a half wide, the stream fifty feet in width, and having many tributary branches and valleys. He travelled down its course for a day, finding it to improve as he descended it.

The Blackfeet have often desired to have farming locations. Through this region are many landmarks which will attract the especial attention of the voyageur. South of the Missouri, the Highwood, Girdle, and Judith mountains furnish an inexhaustible quantity of mountain pine, and make the southern limit of the plateau. Besides these, there are prominent buttes near the line of travel, often of striking and fantastic forms, such as the Boque d'Otard, Knee, and Trunk, between the Marias and Teton; the Oksut, south of the Teton; the Big Knees, Crown Butte, and Bird Tail rock, near Sun river; and Heart mountain, (of which a sketch is given,) near the sources of Elk Fork. There is much excellent land and abundant groves of cottonwood on these many streams. The plateau itself is arable in many portions, though not often continuously so. There is no reason why Indian corn should not attain great perfection throughout the whole country from Fort Union to near the divide of the mountains, that is, to Medicine river. There is nothing to prevent a good crop of any of the cereals. Vegetables of all kinds will thrive here. This is an extraordinarily fine grazing country. The quantity of buffalo who find their sustenance over this plateau, and thence down to Fort Union, is almost inconceivable. The winter homes of the Blackfeet, some six to seven thousand in number, are on the Teton, the Marias, and Milk rivers. They are the owners of great numbers of horses, and they find sustenance for their animals and food from the buffalo through the winter. It has been the habit of the fur companies to have winter posts on Milk river at the point known as Hammell's Houses, and also at the forks of the Marias river. So we have all the results of their twenty-five years' observation for the estimate of the number of Indians and the mode of their sustenance, as well as how their animals thrive. The country in the vicinity of the Girdle, Belt, and Highwood mountains, and thence southward along the upper waters of the Missouri and of the Muscle Shell, to the three forks of the Missouri and the extreme upper waters of the Yellowstone, abounds in wood, is well grassed, and furnishes arable land. About the forks of the Missouri there are rich, extensive, and beautiful prairies, which are described by Lewis and Clark as follows, they having reached this point on their upward voyage on July 27, 1804:

Here the country suddenly opens into extensive and beautiful meadows and plains, surrounded on every side with distant and lofty mountains. On the right side of the Missouri a high, wide,

and extensive plain succeeds to this low meadow, which reaches the hills. In the meadow a large spring rises about a quarter of a mile from this southeast fork, into which it discharges itself on the right side. Between the southeast and middle forks a distant range of snow-topped mountains spread from east to south above the irregular broken hills nearer to this spot. On the middle fork the low grounds are several miles in width, forming a smooth, beautiful green meadow. Between these two forks, and near their junction with that from the southwest, is a position admirably well calculated for a fort. An extensive plain lies between the middle and southwest forks which is more serpentine in its course than the other two, and possesses more timber in its meadows. This timber consists almost exclusively of the narrow-leaved cottonwood, with an intermixture of box-elder and sweet willow. Nearly all around us are broken ridges of country like that below, through which these united streams appear to have forced their passage. On Captain Clark's route from the forks of the Missouri, in 1806, to the Yellowstone, across a spur of the Belt mountains, he found the distance forty-eight miles, the greater part of which is through a level plain; indeed, from the eastern branch of Gallatin river, which is navigable for small canoes, the distance is not more than eighteen miles, with an excellent road over a high, dry country, with hills of considerable height and no difficulty in passing.

CHAPTER XIV.

THE MOUNTAINS WEST OF FORT BENTON.—THE ROCKY MOUNTAINS.—BITTER ROOT RIVER.—CLARK'S FORK.—THE PASSES.—THE COLUMBIA RIVER, ITS TRIBUTARIES AND VALLEY.—CASCADE MOUNTAINS.—THE RIVERS AND ISLANDS OF THE SOUND.

THE MOUNTAINS WEST OF FORT BENTON.—THE BLACK HILLS.—THE RISE BETWEEN FORT BENTON AND FORT UNION.—OBSERVATION ON THE CLIMATE AND SOIL.—THE ROCKY MOUNTAINS.—LEWIS AND CLARK'S DESCRIPTION.—THE SOIL.—METEOROLOGICAL OBSERVATIONS.—THE KAMAS PRAIRIES ON THE KOOSKOOSKIA.—THE WESTERN BACKBONE.—THE EASTERN BACKBONE.—THE COUNTRY BETWEEN THEM.—THE WATER LINES.—THE BITTER ROOT RIVER NEAR BIG HOLE PRAIRIE.—JUNCTION OF THE HELL-GATE AND THE BLACKFOOT.—HELL-GATE RIVER AND THE LITTLE BLACKFOOT VALLEY.—DEER LODGE PRAIRIE AND THE BOILING SPRINGS.—TRIBUTARIES OF THE BITTER ROOT BELOW HELL-GATE.—FLINT CREEK VALLEY.—CLARK'S FORK.—FLATHEAD LAKE.—TRIBUTARIES ABOVE AND BELOW THE LAKE.—NAVIGATION OF THE RIVER.—SOIL OF THE VALLEY.—THE KOUTENAY.—THE PASSES BETWEEN THE MISSOURI AND THE COLUMBIA: BIG HOLE PASS.—ROSS'S HOLE.—HELL-GATE PASS.—THE SOUTHERN AND NORTHERN LITTLE BLACKFOOT.—CADOTTE'S PASS.—LEWIS AND CLARK'S PASS.—THE MARIAS PASS.—THE PASSES TO THE GREAT PLAIN OF THE COLUMBIA: THE SOUTHERN AND NORTHERN NEZ PERCÉS TRAILS.—CŒUR D'ALÉNE OR STEVENS'S PASS.—AREA OF ARABLE AND TIMBERED LAND.—THE GREAT PLAIN OF THE COLUMBIA.—THE COURSE OF THE COLUMBIA.—ITS NAVIGABILITY.—OBSTRUCTIONS.—TRIBUTARIES ON THE EASTERN SHORE, SNAKE, SPOKANE, KOOSKOOSKIA, SALMON, WALLA-WALLA RIVERS AND THEIR VALLEYS.—THE CŒUR D'ALÉNE.—CHARACTER OF THE COUNTRY.—MINERALS AT THE KOUTENAY.—THE BLUE MOUNTAINS AND THE TRIBUTARIES OF THE WALLA-WALLA.—LAKES PEND D'OREILLES AND ROOTHAM.—TRIBUTARIES ON THE WESTERN SHORE OF THE COLUMBIA: THE YAKIMA.—THE PISQUOUSE.—FALSE REPORTS CONCERNING THIS REGION.—AGRICULTURE OF THE YAKIMA DISTRICT.—TRIBUTARIES OF THE COLUMBIA FROM THE SOUTH: THE UMATILLA.—WILLOW CREEK.—BUTTER CREEK.—JOHN DAY'S RIVER.—DES CHUTES RIVER.—CASCADE MOUNTAINS.—THEIR DISTANCE FROM THE COAST.—THE PENINSULA BETWEEN PUGET SOUND AND THE COAST.—SHOALWATER BAY.—GRAY'S HARBOR.—CHEHALIS RIVER.—WILLOPAH RIVER.—THE QUI-NAUITL.—THE COWLITZ.—THE DES CHUTES.—THE NISQUALLY.—THE SNOHOMISH AND THE SNOQUALMOO FALLS.—THE STOLU-KWHA-MISH.—THE DWAMISH.—THE NACHESS.—TRAILS AT LAKE KITCHELUS.—THE NACHESS AND SNOQUALMOO PASSES.—THE SKAGIT.—CHARACTER OF OTHER RIVERS.—THE NORTHERN BOUNDARY LINE.—QUALITY OF THE LAND.

ROCKY AND BITTER ROOT MOUNTAIN REGION.

My attention was early given to the character of the country between Fort Benton and the emigrant route by Fort Laramie and the South Pass, and I became satisfied that it was entirely practicable, easy for wagon or pack roads, much of it wooded, and generally arable and grassed. It was reported by Indians and voyageurs to be well watered. This conclusion of mine in 1853, and the judgment which I then formed that the country ought to be examined in order to establish the connexion between our northern passes and the great emigrant trail by the South Pass, thus far seems to have been verified so far as the explorations have progressed. Lieutenant Warren has examined the country for some 175 miles north of Fort Laramie, and thence to the eastward, and has found a country similar to the wooded country, soon to be described, on the northern route, having large quantities of fine pine and much arable and grazing land. It is to be hoped that this efficient and enterprising officer will be intrusted with a thorough examination of the country and the establishment of the connexion. The Black Hills, which have been a great bugbear to geographers and to voyageurs not acquainted with them, are inconsiderable, and portions of the country which have been laid down even on the maps of climatologists as barren and sterile are pronounced by geologists who pass over them as being arable.

Fort Benton is 2,780 feet above the sea, and Fort Union 2,019 feet. Thus the general rise of the country between these two points, a distance along the 48th parallel of latitude of 306 miles, is 761 feet, and the rise from Fort Benton to what may be deemed the western edge of the plateau is 1,630 feet on a distance of eighty-one miles. It is somewhat difficult to form

a general estimate as to the quantity of arable land in this region. Nothing but the detailed surveys of the land office can furnish minute data; but the eye of the experienced observer going over a country can discern whether it is adapted to agriculture or to grazing, or to a union of the two; whether it can be occupied in the small farms previously alluded to, or simply by ranches, having about them flocks and herds. This whole country would be a fine country for stock, for horses, and especially for sheep. In a meteorological paper which follows, the climate, constituents of the soil, and the snows of winter will be presented; but we will now pass on to the consideration of the Rocky mountain region. This region stretches from the 111th meridian to the 117th meridian on the 47th parallel, and both north and south has a generally northeast and southwest direction. I have already referred to the good arable country on its eastern slope.

On the western slope the following description from Lewis and Clark will show the delightful and promising character of the country. When encamped in the Kooskooskia valley on May 17, 1805, they say: "The country along the Rocky mountains, for several hundred miles in length and about fifty wide, is a high level plain, in all its parts extremely fertile, and in many places covered with a growth of tall, long-leaved pine. This plain is chiefly interrupted near the streams of water, where the hills are steep and lofty, but the soil is good, being unencumbered by much stone, and possesses more timber than the level country. Under shelter of these hills the bottom lands skirt the margin of the rivers, and though narrow and confined are still fertile and rarely inundated. Nearly the whole of this wide-spread tract is covered with a profusion of grass and plants, which are at this time as high as the knees. Among these are a variety of esculent roots, acquired without much difficulty, and yielding not only a nutritious, but a very agreeable food. The air is pure and dry, the climate quite as mild, if not milder, than the same parallel of latitude in the Atlantic States, and must be equally healthy; for all the disorders which we have witnessed may fairly be imputed more to the nature of the diet than to any intemperance of climate. This general observation is, of course, to be qualified, since in the same tract of country the degrees of the combination of heat and cold obey the influence of situation. Thus the rains of the low grounds near our camp are snows in the high plains, and while the sun shines with intense heat in the confined bottoms, the plains enjoy a much colder air, and the vegetation is retarded at least fifteen days; while at the foot of the mountains the snows are still many feet in depth, so that within twenty miles of our camp we observe the rigors of the winter cold, the cool air of spring, and the oppressive heat of midsummer. Even on the plains, however, when the snow has fallen, it seems to do but little injury to the grass and other plants, which, though apparently tender and susceptible, are still blooming at the height of nearly eighteen inches through the snow. In short, this district affords many advantages to settlers, and if properly cultivated would yield every object necessary for the subsistence and comfort of civilized man." Proceeding eastward they reached one of the Kamas prairies on the Kooskooskia, within the spurs of the Bitter Root mountains. There they encamped in a point of woods bordering the extensive level and beautiful prairie, and as the kamas was in blossom, it being the 10th of June, the surface presented a perfect resemblance to a lake of clear blue water. The country, though hilly around them, was generally free from stone, extremely fertile, and well supplied with timber, consisting of several species of fir, pine, and birch. Thus we have now to describe a mountain region whose western slope is described by Lewis and Clark as extremely fertile, and which is known by the late explorations to be extremely fertile, and is bordered on the east by an exceedingly

well-watered and most arable region, whose southern portion has also been described by Lewis and Clark as fertile and beautiful.

It will thus be seen that the mountain system lying between the plains of the Missouri and the great plain of the Columbia is denominated by Lewis and Clark as the Rocky mountains, but which, in my narrative, has been spoken of as the Rocky mountains and as the Bitter Root and Cœur d'Aléne mountains. Indeed, this mountain system consists of two backbones. The Rocky mountain chain, passing north from the sources of Snake river, branches off in about latitude $45^{\circ} 30'$ and longitude $113^{\circ} 45'$. One branch moves to the east and northeast, about ninety miles on the parallel. The other branch moves to the west and northwest about forty-five miles, also on the parallel. The two branches then continue in about the same general direction, north 40° west, and at a distance apart of about one hundred and thirty-five miles on the parallel. The western backbone, or the Bitter Root and Cœur d'Aléne mountains, decline somewhat in their northern course, so that on reaching Clark's Fork the chain becomes much broken and the system confused. It may be said to cross Clark's Fork at about the Cabinet mountain, and then it changes its course more to the west, forming the divide between Clark's Fork and the Koutenay river. The main range of the Rocky mountains, which, between the source of Snake river and the three forks of the Missouri, has a high altitude, and continues to be elevated along the region whence the Jefferson Fork has its source, begins to fall soon after it branches to the east. The divide has a singular course from this point: it makes a great bend to the east and a return again to the west, making nearly a semicircle, from which flow streams to the Clark's Fork of the Columbia. The semicircle commences at the Big Hole prairie, where you pass from the Bitter Root river to the upper tributaries of Wisdom river, and may be said to end at the Gates of Sun river. Its radius is eighty miles, and its periphery one hundred miles, the centre being near the junction of the Hell-Gate and Bitter Root rivers. Through this entire distance the whole chain is broken down, affording great numbers of passes, all of them having an altitude not far from 6,000 feet above the sea. Going north from the Gate of Sun river the mountains rise in elevation, so that when we come to our parallel the height of the passes exceeds 7,000 feet above the sea; and when we go further north to the 52d or 53d parallel of latitude, the divide exceeds 10,000 feet above the sea. It is the country, therefore, between these two great backbones of the Rocky mountains which I wish now to describe, and especially will I first call attention to that beautiful region whose streams, flowing from the great semicircle of the Rocky mountains before referred to, pass through a delightful grazing and arable country, and find their confluence in the Bitter Root river opposite Hell-Gate.

From the Big Hole prairie, on the south, flows the Bitter Root river, which has also a branch from the southwest, up which is a trail much used by Indians and voyageurs passing to the Nez Percés country and Walla-Walla. This trail was used in the exploration by Lieutenant Macfeely and Mr. Tinkham, and has since been used very much by my expressmen and trains. The Bitter Root valley, above Hell-Gate river, is about eighty miles long and from three to ten in width, having a direction north and south from the sources of the Bitter Root river to its junction with the Hell-Gate. Besides the outlet above mentioned towards the Kooskooskia, which is the most difficult, it has an excellent natural wagon road communication at its head, by the Big Hole Pass to Jefferson Fork, Fort Hall, and other points southward, as well as by the Hell-Gate routes to the eastward. From its lower end, at the junction of the Hell-Gate, it is believed that the Bitter Root river is, or can be made, navigable for small steamers for long

distances, at least, thus affording an easy outlet to its products in the natural direction. Hell-Gate (see sketch) is the debouche of all the considerable streams which flow into the Bitter Root, eighty-five miles below its source at the Big Hole divide. The distance from Hell-Gate to its junction with the Bitter Root is fifteen miles. It must not be understood from the term Hell-Gate that here is a narrow passage with perpendicular bluffs; on the contrary, it is a wide, open, and easy pass, in no case being less than half a mile wide, and the banks not subject to overflow at all. At Hell-Gate is the junction of two streams; the one being the Hell-Gate river and the other the Big Blackfoot river. The Hell-Gate itself drains the semicircle of the Rocky mountains from parallel $55^{\circ} 45'$ to parallel $46^{\circ} 30'$, a distance on the divide of eighty miles. The main stream of the Hell-Gate has its source in the Rocky mountains in parallel $46^{\circ} 30'$, longitude $112^{\circ} 30'$, and pursuing nearly a northerly course for sixty-five miles then receives the waters of the Little Blackfoot river, and continuing in the general direction north 50° west for forty-eight miles, receives the waters of the Big Blackfoot. The upper waters of this river connect with the Wisdom river, over a low and easy divide, across which Lieutenant Mullan with his party moved on December 31, 1853. Moving down this valley fifteen miles, we come to a most beautiful prairie known as the Deer Lodge, a great resort for game, and a favorite resting place for Indians—mild through the winter, and affording inexhaustible grass the year round. There is a remarkable curiosity in this valley—the Boiling Springs, which have been described by Lieutenant Mullan. This Deer Lodge prairie is watered by many streams, those coming from the east, having their sources also in the Rocky Mountains divide, and those coming from the west in the low, rolling, and open country intervening between the Hell-Gate and Bitter Root rivers. The Little Blackfoot, which has been referred to, is one of the most important streams in the line of communication through this whole mountain region. It has an open, well-grassed, and arable valley, with sweet cottonwood on the streams, and pine generally on the slopes of the hills; but the forests are quite open, and both on its northern and southern slopes there is much prairie country. The divides between the Little Blackfoot and Big Blackfoot, as well as between it and the tributaries to the south, are low, grassed, and much of them arable. The Little Blackfoot river furnishes two outlets to the country to the east. It was the southern one of these passes, connecting with the southern tributary of the Prickly Pear creek, that Mr. Tinkham passed over in 1853, and determined a profile of the route. It was also passed over by Lieutenant Mullan on his trip from the Muscle Shell, in 1853; but the northern pass was first discovered by Lieutenant Mullan when he passed over it with a wagon from Fort Benton, in March, 1854. There is another tributary of the Little Blackfoot flowing into it twenty-five miles below the point where Lieutenant Mullan struck it with his wagon, which may furnish a good pass to the plains of the Missouri. Its advantages and character were described to him by the Indians. Passing down the Hell-Gate river from the mouth of the Little Blackfoot, we come to several tributaries flowing from the south. Flint creek, one of them, is a large stream, up the valley of which there is a short route to the Bitter Root valley, in a direction west-southwest from its junction with the Hell-Gate. This route is described by Major John Owen, Indian agent, and Mr. Adams, late Indian agent, as more rough than that down the Hell-Gate, but can be travelled in from six to twelve hours less time.

A sketch is here given of the crossing of Hell-Gate river, January 6, 1854.

On these rivers are prairies as large as the Deer Lodge prairie, and the whole country between the Deer Lodge prairie due west to the Bitter Root valley consists much more of prairie than

of forest land. The Hell-Gate river is thus seen to be 130 miles long, flowing for 60 miles through the broad and fertile Deer Lodge prairie, which is estimated to contain 800 square miles of arable land. Then, taking a direction more transverse to the mountain, opens its valley, continues from two to five miles wide, until its junction with the Big Blackfoot, at Hell-Gate, after which it widens out to unite with the valley of the Bitter Root. On this part of it there are at least 150 square miles of fine arable land in the valley, and much grazing prairie on the adjoining hills. Around the Little Blackfoot most of the country is a hilly prairie, suitable for grazing, while in the immediate valley is sufficient arable land for the subsistence of a grazing population. The Big Blackfoot drains the semicircle from the Hell-Gate to somewhat north of the Gate of Sun river; the main stream flowing from the mountains at Cadotte's and Lewis and Clark's Pass in latitude $47^{\circ} 12'$ and longitude $112^{\circ} 20'$. In the narrative a very minute description has been given of this valley and of its tributary streams; and it will be sufficient in this memoir to state that it furnishes undoubtedly at least four passes to the Missouri, two of which have been carefully examined in the course of the explorations. There is, properly speaking, on this river, as on the Hell-Gate river, no cañon; but the term cañon, which has been used, has reference to points where the wide and extensive prairies bordering the river narrow to a comparatively limited space, and is also used to describe passes where there are no special difficulties, and where there is in all cases room enough for any kind of construction, looking to the movement of men and goods. The river itself has a general course a little south of west, winding considerably in some parts, but the length of its valley is about seventy-five miles, varying from half a mile to twelve miles in width. Neither this nor the Hell-Gate can be considered navigable above their junction. Its greatest rise and fall is six feet, as determined by careful observation of its water marks. On the 18th July, 1855, its water level was from 8 to 12 inches above low-water mark and 5 feet below high-water mark. These streams, together with the Bitter Root river, constitute a system of waters flowing from the semicircle, and after their junction, opposite Hell-Gate flow in a general course north 45° west to their junction with Clark's Fork at the Horse Plain, latitude $47^{\circ} 21'$, longitude $114^{\circ} 38'$. I have not deemed it necessary to speak especially of the western tributaries of the Bitter Root in this general connexion, as perhaps they have been sufficiently described in the particular description of the Bitter Root valley. Clark's Fork above its junction with this system of waters at Horse Plain assumes another name, and is known as the Flathead river. Indeed, Clark's Fork may be considered to be formed by the junction of the two systems of waters, the Bitter Root from the south and the Flathead from the north, which, in its turn, drains nearly as large an extent and as fine a country as the Bitter Root itself. These two systems of waters, the Flathead and the Bitter Root, are separated by a low mountain spur, which runs from about Stevens's prairie, on the Big Blackfoot, to their junction, opposite Horse Plain. This spur is low, generally well timbered, well watered, and a large portion of the land arable.

Passing from the Hell-Gate to the Flathead river, we cross over this spur by a low divide, going through the Coriakan defile, and coming upon the waters of Jocko river.

The height of this divide above the Hell-Gate is 560 feet, and above the Flathead river, at the mouth of the Jocko, is 650 feet. From this divide a view of surpassing beauty, looking northward, is presented to the beholder. He sees before him an extraordinarily well-grassed, well-watered, and inviting country. On the east are the divides, clothed with pine, separating the Jocko and its tributaries from the streams running into the Big Blackfoot and into Flathead lake; and along the line of which two rivers Mr. Tinkham moved in September, 1853.

To the north the Flathead lake, twenty-five miles long and six miles wide, is spread open before you, with extensive prairies beyond ; and on the west, sloping back from the banks of the Flathead river, a mingled prairie and forest country is seen. Here in a compact body, is one of the most promising countries in this whole region, having at least two thousand square miles of arable land. Flathead river above the lake is formed by the waters of three streams, the northeast flowing from the pass pursued by Mr. Tinkham in October, 1853, and which, in the reports, has been named the Marias Pass. Its northwest branch, Maple river, has its rise in longitude $114^{\circ} 50'$ and in latitude $48^{\circ} 40'$, and connects by a low divide and through a timbered country with the Koutenay river, furnishing a route which was pursued by Lieutenant Mullan in his trip to the latter stream in April, 1854. The eastern branch, Swan river, joins it only three miles above the lake, and probably furnishes a route to the two Marias Passes, partially explored by Mr. Doty in 1854. Below the lake the Flathead river flows, following its windings some fifty miles to its junction with the Bitter Root, where the united streams assume the name of Clark's Fork. In this distance it is 100 to 200 yards wide, and so deep as to be fordable with difficulty at low water, its depth being three feet at the shallowest places. Its current is rapid, and there is a fall of fifteen feet five miles below the lake. About eighteen miles below the lake it receives a considerable stream from the northwest, called Hot Spring creek, which was followed down by Lieutenant Mullan, on his return from the Koutenay, in May 1854, for thirty miles. In its valley, and around it, is also a large extent of fine land. Nearly opposite a small stream runs in from the east, and another from the same side ten miles below, by which there are routes to the upper part of Big Blackfoot valley. Three miles below the last it receives Jocko Fork from the south, and then turns abruptly in its course from south to northwest, receiving in the remaining nineteen miles to the Bitter Boot only small streams, of which Kamas Prairie creek, from the north, is the principal. None of the branches of Clark's Fork above the junction can be considered navigable, but the river itself, (Flathead,) with the exception of the rapids and falls below the lake, which may be passed by a short canal, gives a navigation of at least seventy-five miles to the head of Flathead lake.

Clark's Fork empties into the Columbia about four-tenths of a mile north of the 49th parallel, as determined by a single observation made in 1853, but it cannot, however, be considered as accurately fixed. At its mouth is a fall of fifteen feet in height and a hundred and fifty yards in width. At a distance of a quarter of a mile from the main stream it passes through a deep gorge in the range, where it has a further fall of three feet. From this point to the Mission of St. Ignatius (seventy miles by the river) it has never been explored. About one hundred and thirty miles above its mouth is the Pend d'Oreille or Kalispelum lake, which is a beautiful sheet of water about forty-five miles in length, formed by a dilation of the river. The river is sluggish and wide for some twenty-six miles below the lake, where rapids occur during low water. Steamboats could ascend from this point to a point nine miles above the lake, or eighty miles in all. At high water they could ascend much further. Between the Cabinet (twenty-five miles above the lake) and a point seventy-five miles below the lake (a total distance of one hundred and forty miles) the only obstacle which occurs is where the river is divided by rocky islands, with a fall of six and a half feet on each side. The Hudson Bay Company's large freight boats are in the habit of ascending from the lower end of Pend d'Oreille lake to the Horse Plains, a distance of about one hundred and thirty-five miles, making only two portages. Above the Cabinet the river would be excellent for rafting purposes. Its greatest rise and fall is fifteen feet. The valley of Clark's Fork is generally wide, arable, and inviting settlement, though

much of it is wooded. The prairies occupy but an inconsiderable portion of its valley and the surrounding country, yet there is no deficiency of grass, even for large trains, on this route, where care is taken in selecting camps. On the contrary, on this river are several very celebrated wintering places for Indian horses. Horse Plains derives its name from this circumstance. Thompson's prairie and the country about the Pend d'Oreille lake are other instances. The Koutenay river enters into our territory for a short distance, preserves a general parallelism to Clark's Fork, and flows into the Columbia some twenty miles north of the boundary. From its headwaters are at least two passes over the Rocky mountains, but there has been no exploration of the river, and it is not probably navigable for any considerable distance.

Having now described somewhat the rivers and the adjacent country of this mountain region, I will proceed to describe the passes which take you to the plains of the Missouri and to the plains of the Columbia. Big Hole Pass, as approached from the north, or Bitter Root valley, has an excellent road for fifteen miles above the forks, where it becomes somewhat difficult for wagons for two or three miles across the spur called Ross Hole mountain. Above this is another broad, open prairie called Ross's Hole. This mountain can, however, easily be avoided by cutting away the trees which occupy the valley around its base. From Ross's Hole Lieutenant Mullan thinks that wagons can ascend, without much difficulty, the dividing ridge called Big Hole mountain to the waters of Wisdom river, to which the descent is perfectly easy, without any obstruction. The pass called Hell-Gate, sixty-five miles further east, crossed over by him on December 31, 1853, in returning north from Fort Hall, was found to offer no obstacle whatever to wagons, the ascent and descent being both easy and gradual. It leads into the large and beautiful Deer Lodge prairie, on Hell-Gate river. From Wisdom river, at their passes, down to its junction with the Jefferson Fork, is an excellent prairie route, which is believed, from Lewis and Clark's account, to extend down to the forks of the Missouri.

The Southern Little Blackfoot was traversed by Mr. Tinkham in November, 1853, and by Lieutenant Mullan in March, 1854, when going from the Bitter Root valley to Fort Benton. It is considered by Lieutenant Mullan practicable for a wagon road, but less advantageous than the northern. Its elevation, as ascertained by Mr. Tinkham with the barometer, is 6,283 feet. The dividing ridge is but from 300 to 500 feet high, and the eastern approach is practicable for a railroad with a grade of 50 to 60 feet per mile, the ridge being passed with a two-mile tunnel, and the western descent with a grade of 30 feet. The broken character of the country between it and Fort Benton makes it, however, less fit for a main route than the passes further north, though it may be suitable for a direct route in the direction of Council Bluffs. It passes from Big Prickly Pear creek on the east to the south branch of the Little Blackfoot on the west. Its distance from the Hell-Gate Pass is about fifty miles, in a northeast direction. The Northern Little Blackfoot Pass, six miles to the north of this, is the one crossed by Lieutenant Mullan with a wagon in March, 1854. It is described by him as perfectly easy, the descent being so gradual on the west side that his wagon was driven down with the mules trotting. The descent of the Little Blackfoot and Hell-Gate river is $22\frac{1}{2}$ feet per mile, and with a little cutting this can be made a better wagon route than any other. Cadotte's Pass, forty miles northeast of the last described, connects a tributary of Dearborn river on the east with a branch of the Big Blackfoot on the west. The approach from the east is up the narrow valley, bordered on each side by high wooded hills. The summit is a narrow, sharp ridge, about a mile and a half wide from base to base, and partially covered with small trees. The western base is about 500 feet higher than the eastern, and the descent is very rapid, favoring the construction of a tunnel.

Lewis and Clark's Pass is but a few miles north of Cadotte's, and connects the more northern branches of Dearborn and Big Blackfoot rivers. Its elevation is 6,519.3 feet, and it also has a narrow ridge, only two miles and a quarter from base to base. The most northern pass, supposed by Mr. Tinkham to be the Marias, connects one of the principal sources of Marias river with a branch of Flathead river on the west. The approaches on each side are through deep mountain ravines, and a wall-like divide over 7,600 feet high separates the streams of opposite sides. A tunnel might be made at about the elevation of 5,450 feet, but as the branch of the Flathead falls 2,170 feet in seventeen miles, this route is not likely to be used. The pass last described is not, however, the true Marias Pass, for after leaving it and coming upon the chief tributary of the Marias, and moving southward eight miles, the true Marias Pass is plainly discernible. The true Marias Pass connects with the Badger tributary of the Marias, is wide, open, and easy, so far as it was examined by Mr. Doty in 1854, and as described by the Little Dog, the particulars of which are given in the narrative. It is probable that another pass, intermediate between the Northern Little Blackfoot and Cadotte's Pass, will be found entirely practicable, and it should be examined. The passes which lead to the great plain of the Columbia are the southern Nez Percés trail, to which reference has already been made, leading from the upper waters of the Bitter Root; the northern Nez Percés trail, the route pursued by Lewis and Clark in their great explorations, and which was followed by Lieutenant Mullan on his return trip in 1854; the Cœur d'Aléne or Stevens's Pass, pursued by me in 1853; and Clark's Fork, pursued by Lieutenant Saxton and the main train in 1853. The following is a brief description of these passes: The southern Nez Percés trail goes up the southwest fork of the Bitter Root river, and crossing a dividing ridge, winds about over the summits of the high and rugged mountains separating the Kooskooskia from a more southern branch of Snake river, taking a very circuitous course to the junction of the main forks of the Kooskooskia. At the point where Mr. Tinkham's observations with the barometer ended, it had reached a summit over 7,600 feet above the sea, probably the same point where Lieutenant Macfeely found snow early in September. This is a mere Indian trail, which avoids the densely wooded valleys, and goes over the mountain summits, where the elevation prevents the growth of trees, and substitutes a growth of grass. Should it be found practicable to cut a road down the valley of the Kooskooskia, the divide between it and the Bitter Root is here still nearly 7,000 feet in altitude, making more northern lines preferable. The distance over mountains by this route was estimated by Mr. Tinkham to be one hundred and thirty-eight and a half miles. The northern Nez Percés trail is in character much the same, but its course is more direct. It passes up the valley of the Lou-Lou branch of the Bitter Root, (Traveller's Rest creek of Lewis and Clark,) and, crossing to a northern branch of the Kooskooskia, winds along the heads of branches flowing into this and the Peluse (?) in a southerly direction, till it comes out on the Great Plain on the same place as the southern trail. The distance travelled across mountains by this route is about one hundred and twenty miles. The mountain dividing the waters which flow east and west is lower than some of those crossed in going up Lou-Lou creek, but covered with pine and fallen timber. This may be found a tolerable wagon route from valley to valley, if the timber which now obstructs them shall be found the only obstacle.

The Cœur d'Aléne or Stevens's Pass, leading from St. Regis de Borgia creek, (which empties into the Bitter Root river about half way between the Jocko cut-off and Horse Plain,) takes a west-northwest direction up that stream, and crossing a divide only 5,089.7 feet above the sea, continues in the same course down the Cœur d'Aléne river to the lake at the border of the Great

Plain. In this pass the western ascent is the most rapid. The western base of the dividing ridge is of the same height as the eastern. The ridge will require a tunnel only $1\frac{3}{4}$ mile through. For a wagon road this is decidedly the best and most direct route, being almost in a line with Hell-Gate valley, and requiring but a moderate amount of work to make it practicable, chiefly the cutting out of timber in the valley. The route down Clark's Fork crosses by the Jocko cut-off from Hell-Gate to the Flathead river, and crossing this, follows down its north bank in a northwest direction for $165\frac{1}{4}$ miles to the south end of Flathead lake. The only mountain ridge which could not be removed in making a railroad by this route is that between Hell-Gate and the Jocko, which is a rise of 560 feet, requiring a grade of fifty feet in ascending and sixty in descending to the north. This would probably be preferable to following down the Bitter Root to its junction with the Flathead, as that is reported by Mr. Lander to require many crossings, rock cutting, and embankments, below the mouth of the St. Regis de Borgia.

Lieutenant Donelson estimates that ten men, in seventy-eight days' work of ten hours, would make this a good wagon road from Hell-Gate to the mouth of Pend d'Oreille lake. An examination of Lewis and Clark's narrative shows this curious incident: The Indians impressed them with the idea that the route which they pursued was altogether the most practicable of any route across these mountains, and yet it is unquestionably the worst route of the whole. They adopted the same policy in reference to these passes which they afterwards did in the Yakima country with the parties of the exploration. Indeed, so tenacious not only are the Indians, but even the missionaries, of their right of occupation, that it is impossible for them to resist the inclination to underrate the country and the routes, in order to keep white people out of it. Now, this route of Lewis and Clark is frequently taken by Indians at the present day, not because it is a good route, but because salmon and roots are found higher up the stream than on any other route, and it is a route, therefore, which furnishes them their food. They get high up the Koos-koos-kia on this route large stores of salmon, indispensable to their subsistence on their way to the plains of the Missouri. There are unquestionably other passes across the Bitter Root mountains which future exploration will develop. Reference in the narrative is made to a probable pass from the Peluse, which has its rise in the main chain of the Bitter Root mountains to a few miles from the Bitter Root valley, and has a nearly straight course to the westward, through a wide, open, and heavily-wooded valley from fifteen to twenty miles wide. This pass may connect with the Lou-Lou Fork. The St. Joseph's tributary of the Cœur d'Aléne river unquestionably furnishes another pass; and there are passes and known routes from points on Clark's Fork, just below Horse Plain, where you can pass into the Cœur d'Aléne country. From the divide of the Rocky mountains to the divide of the Bitter Root mountains there is an intermediate region, over one-third of which is a cultivable area; and a large portion of it is a prairie country, instead of a wooded or mountain country. The following estimate gives in detail the areas of arable land, so far as existing information enables it to be computed: In the region watered by the Bitter Root river and its tributaries, not including Hell-Gate, the prairie region may be estimated at 3,000 square miles; in that watered by the Hell-Gate and its tributaries, including the whole country south and west to the Bitter Root, but not including the Big Blackfoot, there is a prairie region of 2,500 square miles; in that watered by the Big Blackfoot and its tributaries, the prairie region is 1,300 square miles. The country watered by the Flathead river, down to its junction with the Bitter Root, and thence down Clark's Fork to the Cabinet, has a prairie region of 2,500 miles. The country watered by the Koutenay has 2,000 square miles of prairie. Thus we have, in round

numbers, 11,200 square miles of prairie land. The whole area of the mountain region (from divide of Rocky mountains to divide of Bitter Root, and from $45^{\circ} 30'$ to 49°) is about 30,000 square miles, and it will be a small estimate to put the arable land of the prairie and the forest at 12,000 square miles. Thus the country in the forks of the Flathead and the Bitter Root, stretching away east above the Blackfoot cañon, is mostly a table-land, well watered, and arable; and on all these tributaries—the Bitter Root, the Hell-Gate, the Big Blackfoot, the Jocko, the Maple river, the Hot Spring river, and the Lou-Lou Fork itself—the timber land will be found unquestionably better than the prairie land. It will not be in the immediate bottom or valley of the river where farmers will find their best locations, but on the smaller tributaries some few miles above their junction with the main streams. The traveller passing up these rivers, and seeing a little tributary breaking out in the valley, will, in going up it invariably come into an open and beautiful country. The observer who has passed through this country often; who has had with him intelligent men that have lived in it long; who understands intercourse with the Indians, and knows how to verify information which they give to him, will be astonished at the conclusions which he will reach in regard to the agricultural advantages of this country; and it will not be many years before the progress of settlements will establish its superiority as an agricultural region.

BITTER ROOT MOUNTAINS TO CASCADE MOUNTAINS.

Between the Rocky mountains and the coast are the Cascade mountains, which, in the Territory of Washington, have nearly a north and south course. This range, in about parallel $47^{\circ} 15'$, is extremely narrow and low, but both northward and southward widens out, having a base on the Columbia river extending from Mount St. Helen's to Mount Adams, and on the forty-ninth parallel from Mount Baker to the sources of the western tributaries of the Okinakane. The region between the Cascade and the Bitter Root and Cœur d'Aléne mountains, just described, is remarkable for the great interior plain occupying nearly two-thirds of the country, and which has been denominated the Great Plain of the Columbia. This central portion of the Territory is watered by the main Columbia itself and its great southern branch, the Snake river. The Columbia, having its source in latitude 50° , pursues a northern course to latitude $52^{\circ} 10'$, when it receives the Canoe tributary, whose source is in latitude $53^{\circ} 30'$. It then turns immediately to the west and south, and continues on a course generally south until it comes below the boundary, then it flows through this great plain in a general direction nearly south; when arriving at Old Fort Walla-Walla it turns to the west and flows into the ocean in about latitude $46^{\circ} 15'$, longitude 124° . In its north and south course there are remarkable bends, one in about latitude $47^{\circ} 55'$, longitude $118^{\circ} 10'$; it turns nearly due west and it continues this course to the Okinakane, in longitude $120^{\circ} 05'$, a distance on the parallel of about eighty-five miles, but by the river at least one hundred and twenty miles. It then flows southwesterly for about fifty miles, and at the mouth of the Pisquouse, in latitude $47^{\circ} 22'$, again turns towards the southeast, which course it preserves as far as Walla-Walla, a distance by the river of one hundred and sixty-five miles, or one hundred and forty in a direct line. From the Columbia entrance up to the Cascades, a distance of one hundred and sixty-five miles, the river is without obstruction and can be navigated by large steamers. Sea-going steamers can ascend as far as Vancouver, one hundred and fifteen miles from its mouth. The Indians say that at the Cascades the river used to be perfectly free, but the gradual encroachments on its precipitous banks at length gave rise to a land slide, which, falling into the river, made a sort of natural dam, which is evidently the case from the appearance of the shore. There is a portage

Cascades in their seed time being very much shorter; but with ordinary care as to the time of putting in seed no danger need be apprehended from droughts. This portion of the country is wooded about half way from the divide of the Cascade mountains to the Columbia itself, but you pass up the main Yakima seventy miles before you reach the building pine, although cottonwood is found on its banks sufficient for camping purposes; but when you reach the Pisuouse, or Wenatshapam, you come to a wooded region which extends to the main Columbia. The forest growth of the upper waters of the Clearwater and of the main Columbia, from above the mouth of the Wenatshapam, furnishes inexhaustible supplies, which, after being rafted down the streams—that is, the Snake and Columbia rivers—will furnish settlements in the vicinity of those rivers with firewood and lumber at moderate rates. So great are the facilities for rafting that it almost amounts to a continuous forest along these streams. The Blue mountains, which were referred to as bordering the Walla-Walla valley on the south, have a general course westward, south of the main Columbia, until they unite with the Cascade mountains, from which flow many streams to the Columbia, the Umatilla, Willow creek, Butter creek, John Day's river, and the Des Chutes river. (A sketch is here given of the junction of the Des Chutes and Columbia rivers.) On the immediate banks of the Columbia the country is not promising; but going back a little distance the grazing is very luxuriant and excellent, and the soil rich, particularly in the river valleys. The traveller, starting from the Des Chutes river and simply passing southward a mile or two from the trail, will be struck with the freshness and luxuriance of the grass in August, September, and October, and with the arable qualities of the soil. This is especially true of the country up John Day's river; its principal tributary coming from the North Rook creek, or Butter creek, Willow creek, and the Umatilla. When this interior becomes settled there will be a chain of agricultural settlements all the way from the Walla-Walla to the Dalles, south of the Columbia, along the streams just mentioned, and north of the Columbia on the beautiful table-land which has been described to border it from the Walla-Walla westward. The Dalles is a narrow place in the Columbia river, where the channel has been worn out of the rocks, below which about ten miles is the mouth of the Klikitat river, whose general valley furnishes the route of communication with the main Yakima and the several intermediate streams, the trails pursuing a generally northerly direction. In this Klikitat valley is much good farming land.

It is also worthy of observation that gold was found to exist, in the explorations of 1853, throughout the whole region between the Cascades and the main Columbia to north of the boundary, and paying localities have since been found at several points, particularly on the southern tributary of the Wenatshapam. The gold quartz also is found on the Naches river. The gold bearing, crossing the Columbia and stretching eastward along Clark's Fork and the Koutenay river, unquestionably extends to the Rocky mountains.

CASCADE MOUNTAINS TO COAST.

The Cascade mountains in Washington Territory are 130 miles, as an average, from the coast. The waters of Puget Sound, Admiralty Inlet, Hood's Canal, and the several channels connecting them with the Georgian bay—the whole system being popularly known as Puget Sound—lie between the Cascades and the coast. The Straits de Fuca, through which they pass to the ocean, extend eastward nearly a hundred miles, from which point the waters referred to run nearly due south as many miles more. The peninsula thus formed, lying between Puget Sound and the coast, is partly a rolling and partly a mountainous country. The Coast range

reaches a considerable altitude half the distance to the Straits de Fuca from opposite the head of the sound. The country generally, however, west of the Cascade mountains, is heavily timbered, and the prairie land is perhaps not one-third of the whole. Starting with the western coast, the principal points of interest are Shoalwater bay, an extensive body of water into which flow a number of considerable streams, and where abound shell-fish of all kinds, and especially oysters, for the San Francisco market; Gray's harbor, into which flows the Chehalis river, whose valley is the most extensive and richest of the river valleys west of the Cascade mountains. The Chehalis has its source near to the Columbia river, runs nearly due north for thirty-five miles, and then taking a general direction north of west for forty miles flows into Gray's harbor. It receives many tributaries: from the east, Newaukum and the Skookum-Chuck; and from the north, the Black river, the Satsop, the Wanoochee, and other streams. On these last-named rivers are extensive prairies and rich bottom lands. The whole country from the Chehalis to the head of the sound and the head of Hood's Canal is remarkably well adapted to farming purposes. South of the Chehalis and separated from it by a narrow mountain spur is the Willopah river, having a course nearly parallel to that of the Chehalis, and which flows into Shoalwater bay. It has a rich river valley, which, though smaller than the valley of the Chehalis, is equally inviting. Those who have passed over the trail in the Willopah valley to the Cowlitz river speak of the wooded country as being arable and adapted to farming. Around both Shoalwater bay and Gray's harbor there are extensive meadows and natural prairies, and the grass is green throughout the year. Perhaps in no month is the grass better adapted for fattening cattle than the months of February and March. North of Gray's harbor, in which also flow quite a number of streams, making the whole country about it full of resource and full of inducement for settlement, are several other streams—the Quinaiutl river, which flows from a lake of the same name, where a particular kind of salmon abound, of a small size, and which is a favorite resort for Indians. Without going into further details of the country on the coast, it may be observed that the timber lands, which cover nearly the whole surface of the country west of the Coast range, are arable and rich. The Indian agents who have traversed the country have given very special attention to this question, and have made official reports in regard to it.

Coming now to the Columbia river, there are several streams flowing into it from the north—Gray's river, the Cowlitz river, the Cathlapootle, the Washougal, and the White Salmon, the latter being east of the Cascade mountains. The Cowlitz is worthy of mention because it furnishes a route used in passing from the river to Puget Sound, navigable for thirty miles for canoes to the Cowlitz Landing, with water enough for boats some miles further up to the Cowlitz farms. It is rather a remarkable river in that country; its bottom lands are exceedingly productive and the soil literally inexhaustible. It has several branches, all flowing from Mount Saint Adams.

The Cathlapootle also flows from Mount Adams and the spur of the Cascades lying between it and Mount Saint Helen's, having near its mouth much excellent land. This river, however, cannot be said to be a navigable stream for canoes, with the exception of its lower portion for a few miles. It will not be necessary to elaborate any further the rivers flowing into the Columbia, and we will now return to the rivers flowing into the sound. These are the Des Chutes river, flowing into Budd's inlet, on which Olympia is situated; the Nisqually river, flowing into the sound at Nisqually; the Puyallup river, the Dwhamish, the Snohomish, the Skagit, the Lummi, the Neuksack, and other streams, all flowing in from the east. Of all