

REPORT  
OF  
THE SECRETARY OF WAR,  
COMMUNICATING,

*In compliance with a resolution of the Senate, the report of Captain H. D. Wallen of his expedition, in 1859, from Dalles City to Great Salt Lake, and back.*

APRIL 12, 1860.—Referred to the Committee on Military Affairs and the Militia.  
APRIL 13, 1860.—Report in favor of printing the usual number submitted, considered, and agreed to.

WAR DEPARTMENT, *April 11, 1860.*

SIR: In compliance with the resolution of the Senate of the 19th ultimo, by which the Secretary of War is requested to communicate "the report of Captain H. D. Wallen of his expedition, made in 1859, from Dalles City to Great Salt Lake, and back," I have the honor to transmit, herewith, a copy of the paper in question.

Very respectfully, your obedient servant,

JOHN B. FLOYD,  
*Secretary of War.*

Hon. J. C. BRECKINRIDGE,  
*President of the Senate.*

*General Harney to the Adjutant General.*

HEADQUARTERS DEPARTMENT OF OREGON,  
*Fort Vancouver, W. T., January 17, 1860.*

COLONEL: I have the honor to inclose, for the information of the War Department, the following named reports of the expedition made from this command the past summer, to open a wagon road to the Salt Lake from the Dalles of the Columbia river; and also to protect the emigration from the Western States to Oregon and Washington Territory, viz:

1. General report of Captain Henry D. Wallen, fourth infantry, commanding.
2. Report of First Lieutenant John C. Bonnycastle, fourth infantry, of the country from Crooked River cañon to the Dalles.

3. Report of Lewis Scholl, guide and topographer, of the country from Harney lake, through the valley of the Owhyee river, to Salt Lake.

4. Report of Brevet Second Lieutenant J. H. Dixon, corps of topographical engineers, of the discharge of the duties appertaining to his department, with his views of the country and route.

5. Report of Second Lieutenant David C. Houston, corps of engineers, upon the use of the pontoon equipment in the crossing of rivers, &c.

6. Copy of the map of the department of Oregon, with the different routes and topographical features of the country marked out upon it, from the different maps of the several exploring parties.

Lieutenant Dixon is now preparing a complete map of the country, as well as the various rivers, mountains, lakes, and valleys, in detail, which will be submitted as soon as it is finished.

It will be perceived from these reports that there exists a succession of large and fertile valleys from the Columbia river to the Great Salt Lake, susceptible of maintaining large populations, and which will soon become occupied, whenever the facilities offered by good roads are presented. The distance from the Dalles to the Great Salt Lake is the shortest and most accessible of any other known route, as indicated by the reports of Lieutenant Bonycastle and Lewis Scholl. The importance of this enterprise, in connection with affording proper protection to the emigrants, is such, that I have determined to send a command over this route the coming season, to complete the road and aid the emigration. Not a single life was lost in the past year, by the emigrants, from Indians.

To enable the emigrants moving into Oregon to do so more expeditiously, I shall cause a route to be opened from the lake named as Harney lake upon the map, to the junction of the road from Eugene City, up the middle fork, to where it crosses Frémont's road of 1843, south of Diamond Peak. Lieutenant Dixon speaks favorably of the country, from what he observed; and from all the information I can gather, an excellent road, not exceeding one hundred miles, will extend to the present settlements in Oregon.

I am, colonel, very respectfully, your obedient servant,

WM. S. HARNEY,  
*Brigadier General, commanding.*

Colonel S. COOPER,  
*Adjutant General U. S. Army, Washington City, D. C.*

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*Captain Wallen to General Harney.*

FORT VANCOUVER, W. T.,  
November 25, 1859.

CAPTAIN: I have the honor to submit, together with the accompanying map, the following report of the expedition under my command; the orders and instructions under which it was organized and conducted are as follows:

HEADQUARTERS DEPARTMENT OF OREGON,  
*Fort Vancouver, W. T., April 27, 1859.*

Special Orders No. 40.]

I. To increase the facilities of communication between the Columbia river and the valley of the Great Salt Lake, in connection with the overland route to the frontiers of the Western States, the following command will be organized at Fort Dalles, to move from that point, by the 1st of June next, for the purpose of opening a good wagon road to the Snake river, in the vicinity of the mouth of the Malheur river, and from thence to a point called "City Rocks," at the junction of the road from Forts Laramie and Bridger with the road from Fort Hall, to the Salt Lake City, viz:

Companies E and H of the first dragoons.

Company H, fourth infantry.

Detachment of engineers, company A.

Captain Henry D. Wallen, fourth infantry, commanding.

Detailed instructions will be given Captain Wallen.

II. Brevet Second Lieutenant Joseph Dixon, Corps of Topographical Engineers, will report for duty with this command.

The detachment of engineers will be provided with the necessary floats and implements to facilitate the passage of any streams this command may be required to cross.

III. The quartermaster, subsistence, ordnance, and medical departments at Fort Vancouver, will furnish four months' supplies to this command, with the necessary transportation, assistance, and means to enable it to accomplish, in a complete and thorough manner, the requirements of this order.

IV. The medical director will designate in time an officer of his department to accompany this expedition.

V. Company G, third artillery, will relieve company H, fourth infantry, by the 25th of May next, at Fort Cascades.

By order of General Harney.

A. PLEASANTON,

*Captain Second Dragoons, Acting Ass't Adj't General.*

COMMANDING OFFICER,

*Fort Cascades, Washington Territory.*

HEADQUARTERS DEPARTMENT OF OREGON,  
*Fort Vancouver, W. T., April 28, 1859.*

CAPTAIN: The general commanding instructs me to inclose a copy of Special Orders No. 40, from these headquarters, assigning you to a command designed to open a road from the Dalles to the Great Salt Lake valley, communicating also with the Western States through the South Pass of the Rocky mountains.

The portion of the road from the Dalles to the Snake river remains to be explored, you are therefore directed to ascertain if a wagon road cannot be made up the John Day river, and thence over to the headwaters of the Malheur, following down that stream to the Snake river.

In this investigation, should any other routes present greater advantages, you will use your own discretion and judgment in the selection.

On reaching Snake river, follow the best and most expeditious route up that river, either to Goose creek, Swamp creek, Raft river, or any other stream whose direction and borders will be most suitable for the road to the point called "City Rocks." On your return, should you possess any information to induce you to believe a shorter or more practicable route exists than the one over which you have passed, you are authorized to examine it, or such portions as will enable you to submit a satisfactory report on the subject.

You will communicate with the commander of the department of Utah, on arriving at City Rocks, giving him all necessary information concerning the opening of the road. You will also cause placards to be left with such of the inhabitants of Utah that you may meet, notifying emigrants to Oregon and Washington Territory of the existence of this road, and such details as will enable them to travel it without any uncertainty.

The distance of each day's march will be accurately measured, and a record kept, by the topographical engineer with you, who will be charged with the construction of a correct map of the road and country through which you will pass, embracing all details.

In organizing your command you will confer freely with Captain R. Ingalls, assistant quartermaster, who will furnish the necessary guides, &c., for the routes. It is important that you should know the country in advance of you some forty or fifty miles each day, to obtain which your principal guides should be kept at this distance to the front, having persons with them by whom they will keep you advised at all times of the country over which they are moving.

A copy of the map of the department of Oregon is inclosed that you may correct any errors that are observed.

You are further instructed to transmit the required returns, reports, and abstracts to this office, with such full advices in reference to the progress of the work with which you are charged as will convey a proper understanding of its accomplishment.

The general commanding assures you of his confidence in the execution of this important duty, to which you have been named by an appreciation of the interest and experience you have always exercised in your service on this coast.

I am, captain, very respectfully, your obedient servant,

A. PLEASANTON,

*Captain Second Dragoons, Acting Ass't Adjutant General.*

Captain H. D. WALLEN, *fourth infantry,*

*Commanding Wagon road Expedition, Fort Cascades, W. T.*

I was relieved from the command of Fort Cascades, Washington Territory, on the 26th of May, and reached Fort Dalles the same day; but it was not until the 4th of June that the command started.

It was my intention, originally, to have followed the John Day's river to its source, with the view of reaching the waters of the Malheur, lying near the base of the Blue mountains, by the most direct route; but, receiving information from a reliable source showing the imprac-

ticability of constructing a wagon road along that river, and not wishing to delay my work longer than was absolutely necessary, I determined to shape my course in a southerly direction from Fort Dalles for the Des Chutes, or Fall river; cross that stream near the mouth of the Warm Spring river, and proceed from thence to the headwaters of Crooked river.

In this I had a twofold object: to supply the deficiency in the map of the department of Oregon, as most, if not all, of that country was unexplored, and to reach the head waters of Crooked river with as little delay as possible, establish a depot, and divide my command; one party to explore and work a road from the depot by the best and most direct route to Fort Dalles; the other to move onward to the valley of the Great Salt Lake.

The greatest difficulty under which I labored, before starting out, was in obtaining guides; for even among the Indians none knew more than small portions of the country we were to traverse, and no white man could be found who had any knowledge of the Blue mountains.

For confirmation of my information as to the impracticability of constructing a wagon road along the John Day's river, I respectfully refer the general commanding to the report of First Lieutenant John C. Bonnycastle, fourth infantry. (See document marked A, appended.)

My command consisted of company H, first dragoons, First Lieutenant Robert Johnston; company E, first dragoons, First Lieutenant Nelson B. Sweitzer; company H, fourth infantry; detachment of company A, sappers and miners, Second Lieutenant David C. Houston; Assistant Surgeon John F. Randolph, medical staff; Brevet Second Lieutenant Joseph Dixon, topographical engineers; First Lieutenant John C. Bonnycastle, fourth infantry, acting assistant commissary of subsistence and acting assistant quartermaster; Second Lieutenant Marcus A. Reno, first dragoons, acting adjutant; Second Lieutenant Henry M. Robert, attached to engineer detachment; and myself. Total strength—nine officers, and one hundred and eighty-four enlisted men.

The mounted men were armed with Sharp's carbines, sabres, and Colt's revolver's; the footmen with the new rifle-musket and the new rifle with the elevating sight; all excellent weapons; the mounted men, however, carrying more arms than the nature of the service required, being an unnecessary weight to the horse and rider.

The topography of the country and itinerary of the route, showing the obstacles met with, daily distance, &c., as well as the barometric profiles, are fully shown in Lieutenant Dixon's map and memoir, and in the report of Lieutenant Houston, marked B, appended.

The dragoon horses numbered 116; and in the quartermaster's department there were 38 horses, 344 mules, 121 oxen, 30 wagons, 1 ambulance, 1 traveling forge, 132 Mexican pack-saddles (*aperejos*), and 75 of the old pattern crosstree pack-saddles.

In the commissary's department, supplies (including 60 head of beef cattle) for 319 persons were furnished for 120 days.

The dragoon horses were in fine condition for the trip, and the mules generally good; some of those received by water from California were too much enfeebled and broken down, before starting out, to have

been sent on the expedition. The Mexican aparejo is the only pack-saddle that should ever be placed on the back of a mule. Fortunately, we were well supplied with these, and they did excellent service during the whole trip; but the ordinary crosstree pack-saddle did not answer, notwithstanding every precaution was used to save the backs of the pack animals.

Our preparations being complete, the command left Fort Dalles on the 4th June, taking up its line of march in a southerly direction, and in the afternoon reached the Eight Mile creek, where we encamped for the night.

Left camp early the next morning, and passed over a rolling country to the Fifteen Mile creek, a cool stream of running water, where we found several thrifty farmers established, with quantities of stock grazing about on the neighboring hills.\* At this camp we found an abundance of wood, water, and grass, the three indispensable requisites for the command.

We moved on the next morning, at 6, a. m., traveling over a pretty good road, through a rolling country, until our approach to the valley of the Tych. In descending to this valley, we passed down a very steep hill for about two thousand feet, to the Tych river, a cool stream of running water, fifty yards wide, and thirty inches deep at the ford. We encamped in the Tych valley, where we found plenty of wood, water, and grass. This valley is about twenty miles long, and from one to two miles wide, where are located several persons doing well as farmers and with their stock ranches, the soil being well adapted to agriculture.

The command was in motion at an early hour on the morning of the 7th, but had not progressed more than a mile when our course was interrupted by White river, a rapid stream of thirty-five yards in width and three and a half feet in depth. The entire day was consumed in crossing this stream and ascending the opposite hill, a height of twelve hundred feet. The Tych river flows into the White river, running in a northeasterly direction until the point of junction, about one mile from the crossing. The water of White river is clear, sweet, and cold, with pebbly bottom, but its width, depth, and strong current were such as to compel us to use our pontoon floats. Sixty men were passed over in ten minutes on a flat, made by uniting four of these floats.

Our course was still south the next morning, and, after traveling some distance, we reached a creek, running easterly into the Des Chutes river, and surrounded by springs and oak trees.

The country between the Tych and Oak Grove is level, but stony in some places. It contains an abundance of nutritious grass, principally the bunch grass, full of seed, and is, therefore, well adapted to grazing purposes.

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\* As an evidence of what Oregon is, as a stock-raising country, I give the following, received from a farmer living on the Fifteen Mile creek: "In the spring of 1851 I purchased a cow, for which I paid fifty dollars. Since then I have sold four hundred and twenty-one dollars worth of stock, have on hand nine cows and calves and eight yearlings, valued at seven hundred and eighty dollars, all the increase from that cow since she has been in my possession."

The following day we remained in camp to recruit the animals and repair wagons and harness. The pack trains, of a hundred mules each, appear to get along well and improve daily, while the oxen move slowly, and seem to falter on the road.

Our next movement was to a stream of water flowing into the Des Chutes. We found several cool springs around this creek, and grass of the best quality. The country passed over to-day is beautifully diversified with gently-sloping hills and valleys. At one point there was a fine view for a long distance in every direction; six majestic snow-peaks were in sight at the same time, Rainer, St. Helen's, Adams, Hood, Jefferson, and Three Sisters. Oak and the short-leaved pine are found in abundance along this route. We named our encampment Quartz Spring, as here we discovered the first quartz that had been seen during the march.

Our course the following day was east of south, to the Warm Spring river, a stream of twenty yards in width, fringed with cotton-wood; water cold and deep, with a swift current, flowing into the Des Chutes river a short distance from the reservation. A very steep hill was crossed over to-day, in passing down to the Warm Spring creek, and the cañon through the Mutton mountains, a mile and three quarters in extent, is difficult for wagons. I consider the last part of the route from Fort Dalles to the Warm Spring reservation a very difficult region through which to construct a good wagon road, as, from the broken nature of the country, the undertaking would involve much labor and expense.

We crossed from the Warm Spring creek to the Des Chutes river over a hilly country. Before reaching the river, a plateau, of a mile in width, extends from the foot of the hills to the margin of the stream, the soil of which is of the lightest character and but a few inches in depth. A few cedar and cotton-wood trees are scattered through this bottom, and the grass immediately along the river is luxuriant in growth, with bunch grass on the hillsides, sweet and nutritious in the highest degree.

The Des Chutes is a rapid stream, eighty-five yards in width, with its banks difficult of access, except at the crossing selected near the mouth of the Warm Spring creek.

From our inexperience in the use of the pontoons, and the difficulty in crossing the animals, four days were consumed in making the necessary preparations, and in crossing the river. The error that we first committed was in attempting to cross a loaded wagon on the pontoon flat, without putting a sufficient amount of freight, as ballast, before rolling on the wagon. The flat being extremely light, and, in consequence, taking such a slight hold of the water, just as it reached the point where the current was deflected from the opposite bank with great violence, it was whipped over in an instant, and the contents of the wagon lost. After this accident several tons of freight were placed on the pontoon float before placing on the wagon, and it worked to a charm.

For a full description of the pontoons, the manner of using them, &c., I have already referred to the report of Lieutenant Houston, corps of engineers, appended and marked B.

After crossing the Des Chutes river, our course was easterly, until we arrived at Trout creek, on the night of the 17th. The delay in reaching this camp was caused by the difficulty in getting up the hill on the east bank of the Des Chutes. The wagons had to be unloaded and the contents packed up the hill by the mule trains.

We remained at Trout creek the next day, to allow the ox train to reach camp. The road from the river to the creek being stony, the feet of the cattle were made quite sore. In consequence of this, they traveled very slowly.

The valley of Trout creek is several miles long, and half a mile wide, with this cool stream of water running through it. The creek is fordable at all points, has a hard, pebbly bottom, and is fringed with willows and cotton-wood.

Several farms can be located in this valley, as the soil is rich and the grass abundant, and its proximity to the Dalles, a market for produce, makes it desirable as a farming locality.

We left Trout creek at an early hour the next day, and traveled over a good road for a short distance, to Sandstone spring, where, by using the spade, the quantity of water was materially increased, giving us quite a sufficiency for the large command. Wood was scarce, but grass abundant.

From Sandstone spring our direction was southeast to Cedar Spring valley; this valley is ten miles long, and varying from a half to a mile in width, with a light, arable soil; timber sparse, but grass abundant.

From this point we passed over a very good road, still moving in a direction south by east, until we encamped on Willow creek, a stream emptying into the Des Chutes, and surrounded for miles with the finest pasture lands I have ever seen. Wood was gotten from the neighboring hills, and trout were caught in the stream—the finest taken since leaving Fort Dalles.

From Willow to Cotton-wood creek (so named from the large growth on its banks) our road lay across a spur of the Blue mountains, by an exceedingly gentle ascent, giving no trouble whatever—most of the distance was through a cañon, with a fine growth of short-leaved pine on either side.

The next day our direction was nearly south until we encamped on the Achera, a branch of Crooked river. Here it became necessary to send parties in advance to explore the country before proceeding onward, as it was unnecessary to follow the meanderings of Crooked river to reach its headwaters.

Obtaining the required information, we took our departure at an early hour the next morning, traveling east by south over a rolling prairie country, interspersed with cedar and pine timber, until we pitched our tents at Antelope spring.\* The spring is situated in a forest of pine timber, with an undulating country for miles around. I have seldom seen a more delightful spot, the scenery is beautiful, soil arable and good, timber in unlimited quantities for building and fencing purposes, and the extent of grazing country sufficient for

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\*So called from the success of our Indians in killing antelope at this camp.



numberless flocks and herds. Had this part of Oregon been explored it must certainly have been settled long since in preference to other portions of the country more remote and far less desirable, as it possesses every requisite to make glad the heart of the farmer.

Antelope Spring valley is only about eight days' travel from the Dalles, over a very good road, located by Lieutenant Bonnycastle on his return from the headwaters of Crooked river.

For the past three days we have gone over the best stock-raising country in Oregon—I doubt if it can be surpassed in any part of the Union.

W<sup>W</sup> left Antelope spring with regret the next morning, traveling along Crooked river, and crossing the stream four times in our day's march. The river is fordable, with pebbly bottom; but its banks had to be improved by cuttings on either side, and by placing in brush and willows. Having so many animals to cross it was necessary to make the banks very firm, the peculiarity of the mule being that he will not pull a pound if his feet become mired in the least. I have frequently seen them throw themselves down in the mud scarce knee-deep, and all the urging of whip and spur could not get them up until unharnessed.

On the 16th we left our camp on the branch of Crooked river, crossing the stream three times during the day; water shallow, bottom good, and banks firm. The road to-day has been good; indeed, the entire distance from Trout creek to our present camp is over the best natural road I have ever seen. The country is filled with nutritious bunch grass, and water and fuel are found at convenient distances for camping and other purposes. All the principal streams and their tributaries are pebbly-bottomed and skirted with willows, some of them from four to six inches in diameter, affording good fuel, and the waters are generally sweet and icy cold.

From this camp we passed over a steep hill to the adjoining valley where Crooked river forks, one branch running north and the other southeast. After traveling a short distance in this valley, we encamped on a small stream of cool water emptying into the south fork.

Having left Fort Dalles on the 4th of June, and not arriving at my present camp until the 27th, I deemed it a proper point to disencumber myself from the ox-train and divide my command.

Accordingly, on the 1st of July, the command being properly apportioned and everything in readiness, I started with my party, consisting of eighty-five dragoons, Lieutenant Sweitzer commanding, twenty-seven infantry and eleven of the sappers and miners; Lieutenant M. A. Reno, first dragoons, acting assistant commissary of subsistence and acting assistant quartermaster.

Lieutenant John C. Bonnycastle, fourth infantry, was left in command of the depot and party, to explore the route and work the road back to the Columbia river. For my instructions to Lieutenant Bonnycastle and his report in reference to their execution, I have already referred to the document (marked A) appended. From this report it will be seen that an excellent route has been marked out from the headwaters of Crooked river to the Columbia, near Fort Dalles.

In following a southerly course from Camp Division we reached

Three Pine creek, a stream of cool, running water, surrounded by excellent grass. There are three large pine trees in the elbow of this creek, hence its name.

A good road was passed over to our next camp on the south fork of Crooked river. We here found but little feed for our animals, and the water was warm, possessing alkaline properties. Crooked river runs over such an extent of country, and is so little protected from the rays of the sun, that its waters are quite warm, besides being impregnated with alkali.

From the south branch of Crooked river to Buck creek our course lay through a barren, sage-brush valley, about thirty-five miles in length and twelve in breadth, the surface, in many places, covered with alkali, and the soil generally loose and dusty. We named this Whirlwind valley, from the singular appearance constantly presented by the wind in carrying immense columns of dust to a great height. We found good water and grass at our camp on Buck creek.

Second Lieutenant Francis Mallory, fourth infantry, having joined yesterday, relieved Lieutenant Reno in the duties of adjutant to the command.

On the 4th of July we traveled on to a round lake, where we found grass for our animals, but the water not good, being colored, and tasting somewhat of the rushes with which the lake is filled.

We found great quantities of water-fowl, a species of curlew, flying about the lake. Some were taken, and pronounced excellent eating.

We still continued to move on, in a southeast direction, to Lake Whatumpa, the water of which, as also that of the adjoining lake, is not drinkable; fortunately, we discovered, just under the bluff running from the largest lake, a cool spring of limpid water.

Lake Whatumpa is two miles long and half a mile broad; the other lake is quite small. On the terrace of the adjoining bluff were several circular foundations, carefully laid in stone, evidently the work and habitations of men in bygone years. We also traced the foundation of a kind of bastioned fortification. This impressed us with the idea that parties had been in the habit of wintering in this neighborhood, or that a small party had been driven to this commanding eminence, intrenching themselves against a superior force on the plains below.

Our camp being a pleasant one, and it was necessary to send in advance to reconnoitre the country, we remained over at this place the ensuing day.

At an early hour on the 7th July the column was in motion, direction east, over a prairie until we came to a small stream which we crossed, and passed on to a large salt lake, twenty miles long and nine broad. We named this Lake Harney, in compliment to the general commanding the department of Oregon. We followed this lake, in which graceful sea-gulls and grotesques looking pelicans were disporting, for ten or twelve miles, with much fear that our animals would suffer for fresh water, when to our agreeable surprise, in crossing over a sand ridge and only one mile distant, we came upon a small lake of fresh water, not very good but still drinkable. We named this Lake Stampede, as here we had some trouble with our horses.

Fearing that we had gotten too much to the south and crossing an

old road we followed it until we reached what we supposed to be the waters of the Malheur river, lying near the base of the Blue mountains. The stream on which we encamped is sluggish, about twenty yards wide and quite deep with miry banks.

It differed in appearance so much from the several branches of the Malheur subsequently crossed that I am fully impressed with the belief that this stream is not the Malheur, but that it is a slough emptying into a chain of lakes and morasses in sight from our subsequent camps, but many miles to the southward.

The grass being so fine at this camp and the crossings requiring considerable labor, our departure was deferred one day to enable the engineers to perform this work, and to survey the surrounding country, as we appear to be approaching the gap in the Blue mountains through which we are to pass.

The next morning we passed up the stream for three miles to the crossing, and over the pontoon bridge, skillfully constructed by the engineers, on a branch of the main stream. After crossing the bridge the command passed on for three miles to the main branch of the same sluggish stream where the banks had to be cut down and filled in with brush before the river could be attempted, we passed the animals and wagons over the ford, but it was necessary to put the pontoons in requisition again for the construction of another bridge over which to pass the ammunition and subsistence stores—the water being too deep for the pack animals to cross with their cargoes.

From this crossing our direction was east by north until we reached a small stream flowing directly from the Blue mountains and near their base. Our camp was then situated in a perfectly level and beautiful valley, extending from the foot of the Blue mountains as far as the eye can reach north and south, and from six to ten miles west, covered with luxuriant grass four or five feet in height. We are now in what Frémont calls the "Big Basin," extending seventy miles north and south and forty miles east and west, shut in on every side by lofty mountains; those lying south being snow-capped, those to the north rugged and precipitous, with the depression in the ridge five or six miles to the southward and eastward. After a careful examination of this ridge we determined, the next morning, to proceed to a mountain stream five miles from the last and almost immediately opposite the lowest point in the mountains.

On Tuesday, the 12th July, we commenced the passage of the Blue mountains, our first day's travel being over a good road, having a gentle ascent, until we encamped on a running stream, lying in a small cañon, where we had good feed for our animals and an abundance of wood and water. At the last three camps we found an abundance of small game, such as curlew, grouse, and sage hens; many of these were taken, and found excellent for the table.

We were compelled to double our teams the next morning to ascend a hill just in front of us; after this the road was good during the day's march. Our camp in the evening was on a branch of the Malheur river, running through a pretty valley, a mile in width. Finding it impossible to follow the chasms made by the Malheur, as it breaks its way circuitously through the mountains, the banks being in many

places a thousand or more feet in depth, and almost perpendicular, we were obliged to bear off to the northward, and traveled over a stony road, which can be improved by removing the stones at small expense and labor.

Our next move was to another branch of the Malheur, a swift, pebbly-bottomed stream of pure, cold water, where we found an abundant growth of berries; among them may be enumerated two kinds of currants, yellow and dark, gooseberry, serviceberry, and the wild grape of Oregon. These berries are juicy and well-flavored, and are much sought after by the Indians.

I was somewhat disappointed in our route, as I expected to find it better than it really is. A wagon road cannot be constructed over a chain of mountains such as these before us without having hills to pull over; all the science of the engineer cannot change the general features of the country. 'Tis true the scientific labors of the engineer will materially improve the route, making it better than many of the roads in Pennsylvania, over which teaming is done every day.

The next day's march was over a stony and rough road, with a few sharp hills, compelling us to double our teams. The next and last day in the mountains was good traveling until we reached the main Malheur, lying east of the chain of mountains. The whole distance across this pass is one hundred and one miles; forty-four and a half miles may, in truth, be called a bad road, requiring the labor of a couple of hundred men for one season to put it in order; the balance, fifty-six and a half miles, is a good natural road, requiring very little improvement. As it turned out, our selection in the pass was indubitably the best that could have been made; for, on coming out on the east side of the mountains, we perceived that, had we attempted the passage further south, we should have had the Owyhee and Goose Creek mountains also to cross, and probably been led into an interminable labyrinth.

After reaching the cañon between the Blue and Owyhee mountains, along which the Malheur river runs, we were forced to keep down the river before we could get round the northern end of the Owyhee range and on our proper course.

While encamped on the Malheur, I detached the topographical officer to explore the cañon through which the Malheur runs, with the view of ascertaining its practicability for wagons.\*

From the Malheur we passed over to the Owyhee river, and found excellent grazing, the river being fordable at all points; water sweet and pure. Fort Boisé, an old trading post of the Hudson's Bay Company, was situated between the Owyhee and Malheur rivers, on the north side of Snake river. The fort was abandoned in 1855, in consequence of the Indian difficulties, nothing now remaining but the adobe walls of the main building. We were now in the valley of Snake river, but before leaving the Owyhee I dispatched Mr. Scholl, the guide, with an escort of dragoons, to explore the country behind the Owyhee and Goose Creek mountains for a wagon road. Mr. Scholl

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\* Lieutenant Dixon was absent three days, having had a difficult trip, most of the time on foot, and reports the cañon impassable for wagons.

was instructed to follow the general direction of Snake river valley, but thirty or forty miles south of it; he joined the command after an absence of nineteen days, reporting the country abundantly supplied with wood, water, and grass of the finest kind, the scenery picturesque and beautiful, and that an excellent wagon road can be constructed, running almost parallel with the present one in Snake River valley, but through a much better country. This route, from the Owyhee to Swamp creek, will require the labor of a command one season to put it in order.

We found the valley of Snake river, from the Owyhee to Swamp creek, a dusty, desolate country, covered with the sombre-looking sage brush. The valley is about two hundred and twenty miles long, width varying from a half to two miles.

There is not much, if any, of the land valuable for agricultural purposes. It is without timber, the fringe of willow and the occasional cotton-wood not deserving the name. It is, however, on the direct line of communication between the South Pass of the Rocky mountains and Oregon, the road passing through the valley and over a level country for a large part of the distance between the points named. It is by no means an inviting country to travel over, still the road is level for most of the distance, and the grass, though not abundant, is found at proper intervals for camping purposes. I am clearly of opinion, from my personal observation, that Snake river, a stream three hundred yards wide and not fordable, can be navigated by steamers such as are now used on the Columbia river, for one hundred and seventy or eighty miles, relieving the land transportation for that distance, and over the worst part of the route, from the scarcity of grass.

If the central Pacific railroad be the one adopted, a branch from Raft Creek valley to the mouth of the Umatilla, steamboat navigation on the Columbia river, over a distance of about four hundred miles, and through a country well adapted to its construction, will connect Oregon and Washington Territory with the Atlantic States. The timber for the construction of this branch road can be floated down Snake river, thereby lessening the expense of building the road very materially.

On the 28th of July, we were agreeably surprised at meeting brevet Major Reynolds, of the third artillery, with his battery. We encamped together that night on Snake river, and in the morning following took our departures in opposite directions.

The next day (29th) we met the first of the emigration, and continued meeting others until we arrived at Raft creek. I gave them every encouragement, and promised to protect them from the hostile Indians.

At Salmon falls we met Indians, the falls being much resorted to for the salmon and salmon trout. As we passed, the Indians were catching them in abundance.

At Raft creek we saw a large encampment of emigrants, the major part getting on well, but some in a starving condition. I relieved their necessities by ordering those who were destitute to be supplied with provisions.

At this point I determined to make a camp to recruit my animals before starting back; to leave Lieutenant Mallory, Fourth infantry, in

charge of the camp, with instructions to fall back to Swamp creek, where the grass was better, if he deemed it advisable, and to make a reconnoissance of Snake river as far up as Fort Hall. The camp was moved to Swamp creek, and the route satisfactorily examined by Lieutenant Mallory during my absence.

On the morning of the 8th August, I left camp on Raft creek, with an escort of twenty dragoons under Lieutenant Sweitzer, to explore the valley of Raft creek, with a view of shortening the route to Salt Lake. We found the road along Raft Creek valley level, the valley being thirty-eight miles in extent; and although my wagons were the first that ever traversed it, I can recommend the route as easy and practicable, with plenty of wood, water, and grass.

Having now reached the broad road leading from Salt Lake to California, at the head of Raft Creek valley, it will be unnecessary for me to describe the route passed over by us thence to Camp Floyd, as so much has already been written on the subject. Suffice it to say, that I have never passed over a better road, and that to the ferry on Bear river the grass and water is sufficient for emigration. After crossing the ferry, the road passes through the Mormon towns of Box Elder, Ogden City, and the city of the Great Salt Lake, and across the river Jordan to Camp Floyd; the distance from the ferry to the camp being one hundred and twelve miles.

Salt Lake valley is irrigated in every direction by streams led from the adjacent Wahsatch mountains. As the valley east of the lake is nearly all under cultivation, pasturage has to be hired for animals—there being no vacant grazing lands.

My detachment arrived at Camp Floyd on the 16th and remained there until the 20th August, drawing such supplies as we were deficient in for the return trip to the Columbia river. I reported to Brigadier General Johnston, commanding department of Utah, in accordance with my instructions, and the general extended to me every facility for the prosecution of my labors.

On the 20th August I left Camp Floyd with the necessary supplies, and reached Major Lynd's camp, on Bear river, on the 26th.

The ox trains moving slowly, and fearing that I might be caught east of the Blue mountains beyond the 1st of October, I applied to Major Lynd for mule teams to transport supplies to my depot on Swamp creek. Major Lynd kindly consented to loan me twelve six-mule teams, detailing part of a company of dragoons, under Lieutenant H. B. Livingston, second dragoons, to accompany me and return as an escort to the wagon train. This service was handsomely performed by Lieutenant Livingston, the train reaching my depot on the 31st August, where I found that all had been conducted by Lieutenant Mallory, during my absence, to my entire satisfaction, and for the best interests of the service.

The morning of the 3d September being bright and beautiful, and the emigration having all passed, we struck our tents and took up our line of march for Fort Boisé. The route along Snake river to that point having already been described, it will only be necessary for me to add that we were compelled, from the large emigration that had passed over the road, to drive some distance up the stream for grass,

and to use several islands in Snake river, where the animals found good grazing.

My return trip was slow, halting several times to allow the emigrants to keep up with the command. On the Owyhee river, I waited nine days, sending back Lieutenant Sweitzer with a mounted command and spare animals to assist several families who were behind us in distress. Three families, consisting of seven men, three women, and fifteen children, were found in a very destitute condition, without food or the means of transportation. They were supplied with both; and but for this timely assistance, they must all have inevitably perished.

Much suffering has been spared those crossing the plains by the presence of my command on Snake river, by protecting them from the hostile Indians, and in supplying provisions and transportation to those families who were destitute.

Many of the emigrants of last summer started from the Missouri frontier under the impression that they could renew their supplies at Fort Hall, and again at Boisé; but as these posts were abandoned long since, they found themselves hundreds of miles from relief, in a starving condition. I trust that my orders to furnish supplies to these distressed and suffering people will meet with the approval of the general commanding and the government.

We left the Owyhee on the 24th September, passing again to the Malheur, and from thence, over a very good road, to Birch Creek.

Before reaching the creek, we passed a sulphur spring; water scarcely drinkable, and not in sufficient quantity for the command. From Birch creek to Burnt river the road is hilly and stony, but the route furnishes good grass and water. We crossed Burnt river, a stream twelve yards wide, a number of times before leaving the district of country through which it winds itself; the crossings had been made by Major Reynolds, on his way to Fort Vancouver, Washington Territory, so that we were relieved from all difficulty.

From Burnt river to Hollow spring, Powder river, and from thence to the Grand Rond, the road is very good, and the encampments furnished plenty of wood, water, and excellent grass. The Grand Rond valley, twenty miles long and twelve wide, with a rich soil, intersected by rivulets that can be conducted in any direction for irrigation, with timber on the surrounding hill-sides for building and fencing purposes, and with a scenery picturesque and grand, offers every inducement for settlement. The hills, in passing in and out of the Rond, are difficult, but our loaded wagons were taken out and over a distance of seventeen miles, between the hours of 8, a. m., and 4, p. m.

Our next camps were at Grand Rond river, Lee's encampment, and the Umatilla. Upon reaching this stream, we had recrossed the Blue mountains, and our road now followed the river to its mouth, and to steamboat navigation on the Columbia river.

The first Indians encountered were near the forks of Crooked river, and about one hundred and eighty miles from the crossing of the Des Chutes.

These were the Digger Snakes, inhabiting the valley of Crooked river and those adjacent, sometimes extending their camps as far north as the headwaters of the John Day, and as far south as the "Two

Buttes," forty or fifty miles south of the mouth of Crooked river. They subsist almost entirely upon roots, insects, and fish taken from the numerous streams flowing from the mountains surrounding the valley of Crooked river on either side. I do not consider these Indians formidable, for the reason that, with few exceptions, they are armed with the bow and arrow, and having no intercourse with the whites, they are not provided with guns and ammunition.

The next Indians met were those living in the "Big Basin," about one hundred and twenty miles further to the southeast. They are of the same class as the Digger Snakes, of Crooked River valley, living on roots and insects, clad in skins, and using the bow and arrow. These Indians are very poor, being entirely without stock of any kind. We remained in the "Basin" several days, and must have seen their traces, had any existed. They are extremely shy of the white man; could not be induced to visit my camps, but communicated through friendly Indians; they had very little knowledge of the existence of white people; the white man, with them, was more a fiction or tradition than a reality.

The next met were at the River Bruneau, and those fishing at the Salmon falls, on Snake river. These were the Bannack Snakes—athletic men, well-armed, and formidable. Doubtless these Indians are in the habit of visiting the valley of the Great Salt Lake, and derive their supply of arms and ammunition from that source.

While on Bear river, at the entrance of the valley, I met a chief of one of the Bannack Snake bands, his band living in the Goose Creek mountains, who spoke broken English; he could have learned the language nowhere else, as he has never had intercourse with white people living west of the Blue mountains. These Bannack Snakes are numerous and formidable, roving about in bands of sixty or seventy, and not having been impressed with the prowess of the white man, are constantly annoying small parties of emigrants passing through their country. They extend from Fort Boise, on Snake river, for several hundred miles along the river, both on the north and south side of it, committing their depredations as far south as the road leading from Salt Lake to California. The emigrants destined for that part of the country were much harassed by these marauding bands during the past summer.

Since leaving Fort Dalles on the 4th of June, our explorations and surveys have extended over several routes, with the view of selecting the shortest and best; the shortest, with reference to speed in carrying the mails and supplying the valley of the Great Salt Lake with provisions; the best, with reference to water and grass, indispensable requisites for emigration.

We have found the country from the Columbia river across to the Blue mountains, near the point where the Malheur winds its way through them, an excellent route for water, wood, and grass. The pass across the mountains will require labor and the expenditure of some money to make it a good wagon road. I am of opinion that all that is required to make this route perfectly practicable and useful, can be accomplished in one season, after a careful survey by a compe-



tent engineer. I can then recommend the route to the emigrant, the feed being abundant, and almost as nutritious to animals as stable food. The road which crosses the mountains at this point leaves the Snake River road at the crossing of the Malheur, and leads directly to those beautiful valleys already described, and should therefore be opened with as little delay as possible.

The route along Snake river, from Fort Boisé to Raft creek, is level, and may be termed a good road, with water and grass at intervals of from fifteen to twenty miles.

I have shortened the route from Fort Dalles, on the Columbia river, to the valley of the Great Salt Lake, ninety-eight miles, by the cut-off from Swamp creek to Raft Creek valley, and up that valley to the California road. The new route is marked by signboards.

The shortest and most direct route, then, that can possibly be found between the Columbia river and Salt Lake, is from the mouth of the Umatilla river, crossing the Blue mountains at the Grand Rond, but not touching Snake river until within forty miles of Boisé, and from thence along Snake river and over the cut-off already described.

There is steamboat navigation on the Columbia to the mouth of the Umatilla, and at no distant day steamers will be plying on Snake river, between the points already mentioned. Fuel for steamboating on that river can be supplied from the Boisé river and from the neighborhood of Fort Hall. If steamers are never placed on Snake river, the fact has been demonstrated, by the expedition under my charge, that Oregon can supply Salt Lake with all articles imported, better and cheaper than they can be derived from any other part of the Union. The entire land travel can be accomplished in one month. I made the trip, with loaded wagons, in twenty-eight days.

In conclusion, I would respectfully state to the general commanding that the expedition intrusted to my command during the past summer has served a double purpose. The resources of a country heretofore unknown have been developed; all the country on both sides of the Blue, Owyhee, and Goose Creek mountains traveled over, carefully measured and mapped; and the troops being among the various tribes of Indians along the several routes over which the weary and defenseless emigrants were to pass, furnished them the required protection to reach their new homes in peace and safety. Much suffering has also been alleviated by our movements, in the timely assistance of transportation and provisions to destitute families.

The health of my command has been excellent, and the condition of the animals on their return very fair, viewing the fact that the most of them have performed a march of nineteen hundred miles in four months and sixteen days.

Not a dragoon's horse has died, and but few of the mules; nor have we suffered the loss of a single animal from theft, by the Indians, during the march.

I feel under obligations to the officers and soldiers of my command

for their cordial coöperation, and to the employés for their willingness and good conduct during the expedition.

All of which is respectfully submitted.

I am, captain, your obedient servant,

H. D. WALLLEN,

*Captain Fourth Infantry, commanding Expedition.*

Captain A. PLEASANTON, *Second Dragoons,*

*Acting Ass't Adj't Gen'l, Headquarters Dep't of Oregon,*

*Fort Vancouver, Washington Territory.*

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*Lieutenant Bonnycastle to General Harney.*

FORT VANCOUVER, WASHINGTON TERRITORY,

*September 15, 1859.*

SIR: In compliance with directions from the general commanding, I have the honor to submit the following report with reference to the route followed by me in returning from the camp on Crooked river, at which the command of Captain Wallen was divided.

On the 30th of June last, I received from Captain Wallen the following instructions:

HEADQUARTERS WAGON ROAD EXPEDITION,

*Camp near the forks of Crooked river, June 29, 1859.*

SIR: Having arrived with my command at this place, near the forks of Crooked river, it becomes necessary for me to divide the column, part taking the right or south branch of the river towards Salt Lake under my command, and the balance the left or north branch towards Fort Dalles.

That portion of the command returning to the Columbia river will be under your orders, and after making the preliminary surveys over the several Indian trails leading across the spur of the Blue mountains, in the direction of Scholl's butte you will select the shortest and best for the wagon road to Fort Dalles.

From the best Indian information, the most direct route from the Camas prairie, on the left or north branch of Crooked river, is over to the Waptaplass, a stream emptying into the John Day; from thence to the Chopomgaz, another stream flowing into the John Day, and from thence to Scholl's butte, within two miles of John Day river.

From that butte to the Des Chutes bridge, the country has been explored, and was found perfectly practicable for wagons.

The route described by these instructions, and the accompanying map will lead you in a northwesterly direction from your depot to the Dalles, and it is desirable that this course be pursued with as little deviation as the mountainous country will admit.

It is important that your success in getting across to Scholl's butte be communicated to me. You will therefore write me by every express messenger the results of your enterprise. If no mail carrier is sent to me, *Indians* must be hired to convey the intelligence.

Your success will enable me to explore the country east of the Blue

mountains and return to the Columbia river by a different route than the one already passed over.

I am convinced that this part of the route could not be left in better hands, and that if a road can be made along the route proposed, you will not go to the Dalles by any other.

Hoping that you may have every success and a pleasant time,  
I remain, very respectfully, your obedient servant,

H. D. WALLEN,  
*Captain Fourth Infantry.*

First Lieutenant JOHN C. BONNYCASTLE,  
*Fourth Infantry, Commanding Wagon Road Expedition.*

At daylight on July 1, Lieutenant Robert Johnston, first dragoons, left my camp to explore the route indicated in the above instructions, *via* the Chopomgaz and Waptaplass rivers, having received from me the following instructions:

CAMP SALT LAKE, WAGON ROAD EXPEDITION,  
*Cañon Crooked river, July 1, 1859.*

SIR: You will proceed on to-day, with fifteen men of your company, accompanied by the Indian Whitka and Mr. Samuel Johnson, wagon master, all rationed for ten days, to examine the country between this point and the stream known on Scholl's map as the Chopomgaz river with reference to the practicability of passing wagons over it. Your course, according to the map above referred to, will be west of north, leaving the valley of Crooked river at or near the point at which a small stream enters that river just above the cañon; following up that stream so long as in your judgment the road continues good for wagons, unless at some point a better route shall present itself; arrived near or at the head of this stream you will cross the ridge to the Chopomgaz, and if the route appears good for wagons, follow down that river till you find an easy route to the westward towards Scholl's butte.

These instructions are given thus explicitly as embodying the directions given by the officer in charge of the wagon road expedition, (Captain Wallen, fourth infantry,) but you are expected to exercise your own judgment in the reconnoissance of the country, and should a better, or a good and more direct route offer, you will, if possible, explore that and decide between the two. Should you find the route indicated bad or impracticable, and if your supply of provisions warrant it, it is highly desirable that you pass from the Chopomgaz river eastward, to the Waptaplass river, and up that stream, coming over to the Camas prairie, and thence back to the camp.

You will endeavor to take such notes of the country as will enable you to make a correct map of the country over which you pass. A rough sketch made, I believe, from Indian reports of the route proposed for you is herewith inclosed.

I am, sir, very respectfully, your obedient servant,

JOHN C. BONNYCASTLE,  
*First Lieutenant Fourth Infantry Commanding.*

First Lieutenant ROBERT JOHNSTON,  
*First Regiment Dragoons, Commanding Troop H.*

On the 6th of July, Lieutenant Johnston returned to my camp and made the following report:

CAMP ON SEPARATION CREEK,  
July 6, 1859.

SIR: In compliance with your instructions of the 1st instant, I proceeded to make an examination of the country to the west of north from this point, with a view of finding a practicable wagon road to a butte known as Scholl's butte.

In compliance with your instructions, I crossed Crooked river at a point about three miles from camp, and moved up a small tributary thereof, which enters it from the northeast about one mile, when I found it cañoned, and I could not follow it further. I then crossed it and ascended the hill to the west, and followed a direction a very little north of west for about three miles, when I came in sight of the timber on the top of the spur of the Blue mountains, which I had to cross; following a direction of about twenty degrees west of north, I ascended a mountain, and reached the top at a distance of about ten miles from camp. I crossed it in a direction north of west on to the headwaters of one of the tributaries of the Waptaplass, in about four miles. I followed this stream down in a direction about north for five miles, and entered the large Camas prairie, which is, in dimensions, about five miles east and west and about three miles north and south. Several small streams run through it, to the east and from the Waptaplass.

Crossing this prairie, I ascended one of these tributaries about north for four miles, when I crossed the last range of mountains and struck the headwaters of Strawberry creek. I followed down this creek about ten miles, to where it leaves the timber; here it turns to the eastward, and runs about northeast into the John Day's river, at a point north of the mouth of the Waptaplass.

The Waptaplass enters the John Day's about twenty miles east of this point, and here I found the headwaters of the Chopomgaz, which river I found ran due west for twelve miles, when it gradually bends to the north, and enters the John Day's directly from the south. The road follows along the north bank of the river Chopomgaz for nine miles, when it ascends a hill, and following in a parallel direction to the river, strikes it again at a distance of three miles. Between these two points, the trail marked on the map furnished me—from the Camas prairie, on Crooked river, *via* the Waptaplass, to the Chopomgaz river—comes in. From this point, where the trail strikes the river the second time, its direction is north of west across the bend, where it crosses it, about one and one half miles from its mouth. A wagon road could be made from Crooked river to this point with a great deal of labor at the Chopomgaz. It is impossible to carry wagons further. The impassable hills on the John Day's river are here connected with the spur of the Blue mountains by a chain of volcanic hills, over which it is impossible to take wagons, and which cannot be turned in any direction. An Indian trail runs over these hills to the mouth of the Tyglo creek. I followed it for some three or four miles; its direction was northeast, across a point of hills, to the John

Day's river, thence along the bank of the river for a few hundred yards, and thence across steep rocky points, where the river bends off to the north, and follows on to the west. At this point, a small tributary of the John Day's enters from the south, and is the last water for a day's ride. I judge it to be about one hundred miles from the Chopomgaz to the mouth of the Tyglo, and about forty miles is over these hills.

The Snake Indian who accompanied the guide furnished me proved of great service, as the guide was perfectly ignorant of the country. The information he (the Snake Indian) gave me of the country before I passed over it, proved to be correct. I have, therefore, reported on the country to the west of the crossing of the Chopomgaz, with every confidence of its truthfulness.

I am, sir, very respectfully, your obedient servant,

ROBERT JOHNSTON,

*First Lieutenant First Dragoons.*

First Lieutenant J. C. BONNYCASTLE,

*Fourth Regiment of Infantry, Commanding.*

Finding from the above report of Lieutenant Johnston that the route along the Chopomgaz and the Waptaplass streams, by the John Day's river, was impracticable, after waiting in camp one day to rest the animals that had been out with Lieutenant Johnston, I moved my train westward, over the same road over which the command of Captain Wallen had passed in going out, hoping, from explorations to the north of that road, to find some practicable route over the spur of the Blue mountains, which, enabling me to pass to the westward of the volcanic hills referred to by Lieutenant Johnston as barring further progress down the John Day's than the mouth of the Chopomgaz, should enable me to strike the John Day's further down, and thus cut off more distance. In this, however, I was disappointed, the long, high hills of the spur of the Blue mountains offering no opening through which I might pass. So I reluctantly continued on the same road until, having reached the gap through which we passed this spur on the outer journey, I left the train encamped with excellent and abundant grass and water, and, accompanied by wagon-master Johnson, a man of good, sound, practical sense, and of experience in road making, and six dragoons, I took the left branch of the stream flowing through this little valley, and following up it as far as practicable for wagons, crossed the spur with but little difficulty, and during the succeeding six days I rode over that portion of the country lying between John Day's river and my camp, finding the whole of it broken by high, bare hills, mostly, and nowhere any road over which it would be advisable to bring wagons. It is true that I could have passed the wagons over this country, but the hills were so long and so numerous that it was far preferable to go over the same road which we followed in coming out. Having ascertained by actual examination that no better road could be found than the one the train was then on, I sent back and had it move on to Trout creek, which enabled me to continue my search a couple of days longer. On the arrival of the train at Trout creek, I having ascertained that the best route lay over the hills down which we had come into Trout Creek valley, and then bore to the

right of the old road, I moved on the next day over this hill to the next water, and thence along a broad ravine, through which ran a stream of fine water, on to a broad and deep ravine, which, after turning in several directions, had its mouth at the John Day's river. About eight miles north of this another deep and broad ravine intersected the country, and, going in the opposite direction, had its mouth at the Des Chutes river. The heads of these two ravines are divided by a low ridge, which, from the numerous ravines intersecting the country, it was not easy to discover at first; but it was along this ridge that the proper road ran, and having found it, there was no further trouble in taking the train into the Des Chutes bridge, though, from want of a guide who knew where to find water, I was forced to lose a large portion of one day, and to make a much longer march on the next than was my wish. I found throughout my return plenty of bunch grass, and generally good water, always sufficient for my large train, and the road over which the train passed I regard a good one, having but two hills of any difficulty, the one at Trout creek, the other at Crooked River cañon.

The distance passed over by my train in returning does not differ materially from that passed over by the command in going out; but while the most difficult portion of the road in going out lay between the Dalles and Trout creek, on my road returning that portion offers only the hill at Trout creek as a difficulty.

The return of my command, with seventeen ox wagons and some six mule teams, from the point on Crooked river at which I separated from the main command, into Fort Dalles, occupied only twelve traveling days, and I am satisfied that, had the route been known beforehand as to watering places, grass, &c., I should have brought the train in easily to the Dalles in ten days, which would have given me an average of seventeen miles or a little more to the day, which fact in itself suffices to demonstrate the character of the road.

Inclosed I offer a map which I have made of the country examined and passed over, which I believe to be, in the main, correct, and from an inspection of which it is believed that a better idea can be had of the difficulties in the way of making a wagon road up to the banks of the John Day's river, or in fact anywhere except along the route actually traveled, than from any written description of the country which I might be able to give.

I am, sir, very respectfully, your obedient servant,

JNO. C. BONNYCASTLE,

*First Lieutenant Fourth Infantry.*

Captain A. A. PLEASANTON,

*Acting Assistant Adjutant General,*

*Fort Vancouver, Territory of Washington.*

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*Mr. Scholl to General Harney.*

FORT DALLES, OREGON,

*December 3, 1859.*

CAPTAIN: I have the honor to submit, herewith, my map and report of the exploration south of the Great Snake river, for the purpose of

finding a more practicable and better adapted road for wagons, than the one now existing along Snake river, to the Great Salt Lake valley.

Referring you to the accompanying map, it will give at a glance in detail a true and correct idea of the country I traversed. As I had no instruments to take observations, there will be some difference in regard to the correctness of my camps as laid down on the map.

I left the mouth of the Owyhee river July 22, about six miles below Fort Boisé. During the first few days I had a somewhat tedious journey, traveling mostly in close proximity to the river, crossing and recrossing the stream many times each day. This river flows for thirty miles in a close and narrow defile, through a solid field of curious shaped lava mountains; sometimes the bluffs run hundreds of feet up from the water's edge. Oftentimes those bluffs appeared to be solid fields of red chalk and zinobe. Only by the greatest care of the animals, my party arrived safely, in about forty-five miles from the mouth of the river at its first tributary. It is a small rivulet of cold clear water tumbling down a narrow stony cañon from the east. A number of Snake Indians, with their wives and children, who had first run up the steep bluffs at our sudden appearance, but had however soon returned, gave me much good information. Game is no doubt in abundance in this neighborhood, as their chief subsistence is dried venison, of which they had an abundance.

*July 26.*—I ascended a narrow gorge, following a well-beaten Indian trail. The landscape changed suddenly as by magic. The somber color of the hill and bluffs, barren the entire distance I traversed to date, changed suddenly to a most cheerful green. Some of the finest flowers I noticed along the trail, which led me, after only two hours' ride, to the summit. The ascent was gradual. A most lovely picture presented itself. The country was covered with all hues of flowers, grass in abundance, timber also. A beautiful but small lake laid close below me in the bright morning sun, and then a level plain beyond, as far as the eye could reach. Towards southeast was a high range covered with heavy timber, and a little scattered snow could be seen towards south. Another higher range of mountains, due east, covered with snow, lost itself in the far-off distance. Towards noon, crossing previously rich bottom land and a few small rivulets, I encamped in a level valley of large extension, close to a small brook. Prairie chickens and sage hens were in abundance here. Signs of a late Indian camp, left in haste, was in close proximity. A few Indian boys, who belonged to the camp at the Owyhee river, returned on horseback close by our camp, having, no doubt, brought the news of our arrival to the valley beyond. The course to-day was southeast.

*July 27.*—The country to-day is still more favorable for extensive settlements. Two large creeks, flowing towards Lake Ella, I crossed. The sod of these broad valleys is excellent. The Indian trail ran due south, and various attempts to cross the rocky ridge towards east were fruitless.

Six miles from camp, I arrived at a fine creek, and four miles further my party followed up a level valley to the head of its waters. Eight miles more, traversing a gold-bearing country, I crossed another large creek. The quartz boulders were scattered all around. They are of

the purest white, and enormous sizes. Passing over a low divide to another creek, there are high bluffs of solid quartz, along a well-beaten Indian trail. To Kearney river is four miles. This stream passes through a rich and broad valley. Only dense willow bushes grow along its banks. The rolling country around abounds in most excellent pasturage. Pea-vines, clover, and timothy cover the rich soil. A high mountain range, with its snow-covered peaks, lay towards the south, its base only 200 yards distant from camp. The river changed here its course, and run due east.

*July 28.*—To-day I attempted to keep a true southeast course, but was forced, on account of high, rolling hills to retrace my steps towards the river. The stream runs here between very high precipices; it abounds in large salmon. Wild berries of all descriptions grow here in abundance. Towards north is an extensive, high range of mountains, with some snow peaks and plenty of timber. My two packers, adjusting a pack which had got loosened, were attacked by two Indians at the crossing of a creek, and post-haste, the pack-mules driven at a rapid pace, they arrived quite excited in camp. The Indian trail which I had left in the morning I followed here for eight and a half miles, crossing various small and large creeks with rapid courses, and crossed the divide between two fine streams. The river flowing through this divide, which extends on the opposite side due south, passes through an enormous, narrow, and rocky gorge, which presents a very picturesque appearance. I estimate the height of the bluff at about 500 feet.

*July 29.*—All the animals last night were very unquiet; we heard human voices, also the neighing of horses, opposite the creek, beyond the willows. About the time of breaking up camp, an Indian on horseback, quite fantastically dressed, charged along the brink of the hill, in close proximity, yelling and swinging his red blanket and rifle. He soon disappeared in the distance, when I rode boldly up to his position. We followed in his own footsteps the entire day, occasionally having a glimpse of him, two or three miles ahead, talking aloud; no doubt reporting, through the valley around, our arrival. In eleven miles from the previous camp I arrived at the first springs of Kearney river, by a gradual ascent. To the west, extending from north to south, a high, rocky, mountain precipice, from four to five miles in length. Here are also a few more springs in this high flat, the waters running in the opposite (southern) direction, and are, no doubt, the headwaters of another tributary of the Owyhee river. This little stream passes through a narrow cañon, covered with dense underbrush and heavy cotton-wood and poplar. Several Indian trails lead to this pass, which I named "Harney Pass." To avoid any collision with the treacherous Indians in the narrow defile, I ascended gradually a high hill, from which summit I had a most excellent view. Towards south, a broad and extensive valley stretches far away, from north to south, in a western direction, and, covered with heavy pine woods, ran a high mountain range; towards east, a dreary and desolate volcanic country extended, which at various intervals presented high, bleak buttes. Greasewood covers sparingly the neighboring low hills. From the summit, with gradual descent, a distance of five miles, I arrived



at several small creeks, heading towards the high, bleak buttes previously mentioned. Distant thunder, and a few rain-drops, mingled with hail, forebode ill, and near plenty of wild sage for firewood I halted, constructing small willow huts for shelter. A heavy thunder-storm raged for an hour, but by approach of night it ceased, and with a feeling of security to have outwitted the redskins, who had no doubt watched our approach through Harney's Pass, we laid down to rest.

By daybreak the next morning, being very sanguine the rain had obliterated all footprints, I sent an Indian out to see if any of the red men had been in our neighborhood since last night, and a few moments after his return, reporting that horsemen had crossed and recrossed our previous day's march, I ordered an early start. Two of the pack-mules were packed, when suddenly, and with a yell, several Indians on horseback charged towards camp, swinging their spears and rifles. Only one ventured to a distance of 100 yards. The dragoon horses, happily well secured, were trying to stampede; and never did I see quicker time made saddling and breaking up camp. The Snake Indian who accompanied me from Fort Dallas did me good service. After a few words of conversation between him and our enemies, they ventured nearer and came into camp. One of these Indians, the spokesman, rode a horse and had a fine silver-mounted rifle in his possession, which belonged to one of a party of six men who left the Dalles late in October, 1858. Only one of them survives, and he reported to us in Salt Lake, where he at present domiciles, all his companions had died or starved to death. He, however, had all the money of the entire company in his possession at the time of his arrival in the valley, and no doubt there was foul dealing amongst them. His own statements were contradictory. The Indians here are large and well-made. A few trifling presents, with blankets and tobacco, took them by surprise, and after giving me a general idea of the country I left them in our camp. Their advice I mistrusted, and instead of keeping a due southern direction, towards which several Indian trails pointed, I followed a due southeast course, over a very rocky, but level country, occasionally crossing deep ravines, which all headed from the few springs and creeks we had encamped on the previous night. These ravines can all be avoided by keeping a mile or two westward. Towards south and southeast, to all appearance a level prairie ranges. Berries abound in all the ravines I crossed to-day. Antelope were seen in every direction. On a high plateau, near a few springs and amidst a heavy shower, I encamped. This far, all the animals had a most excellent opportunity to improve, and only the negligence of the man having had orders to take sufficient horse-shoe nails along for a trip of twenty-five days, especially for the dragoon horses, gave rise to much ill-feeling amongst the men.

*July 31.*—I traveled over a country with about the same features as the previous day, a level country, but covered with small round stones. In about ten miles from camp, I arrived at a fine stream and traveled ten miles in close proximity to this stream, we passed various deserted Indian encampments. The valley widened the further we advanced, and by noon we arrived in a most beautiful prairie about ten miles wide, into which innumerable small streams emptied. Game abounds

here. A high snow peak, with its abrupt bluff, is the eastern boundary of the fine prairie in a distance of about fifteen miles. Towards southwest low rolling hills are seen. We encamped on another fine stream emptying also in this prairie, only three miles from the previous one. Here quite an exciting scene took place. An Indian had encamped only a few minutes before our arrival in sight. His pack animals were to all appearance turned out a few minutes when his squaw noticed us. The next moment she caught the nearest pony, and without bridle or saddle, rode in full gallop towards the nearest mountains. The Indian took advantage of our admiration about the horsemanship displayed by his woman, lassoed the best horse in the small band, and followed her footsteps. A well-selected stock of winter supplies they left behind, buffalo robes, elk and deer, and antelope skins. Kans, kamas, and every variety of wild berries constituted their larder. Our animals well secured for the night made several attempts to stampede.

*August 1.*—To-day I kept a due southeast course, avoiding many rocky ridges, which ran in all directions, in ascending toward the next mountain range. I reached two low hills between which I gave directions to pass, when to my surprise, on both eminences, I discovered Indians looking over some boulders at us below. I immediately ascended the hill with the detachment to our left, to gain a plain view of the surrounding country. Two Indians seeing this maneuver, darted in full tilt down the hill to the right, and joined their brethren in our immediate neighborhood, yelling and howling like wild beasts, they surrounded us, many were on foot, selecting the best hiding places behind the rocks. I halted and gave directions to close the column, Captain Graham and five privates in front, their hands on their sabres, then the pack animals and the two packers, and the rear consisted of the four remaining dragoons, with their Sharp's rifle in hand. The little band rode on whilst I, with only two Indians, boldly rode up to the greatest number of Indians holding consultation. They received me coldly and with frowns. The Indians explained to them our visit into their mountains, and ere many minutes past, we had smoked a pipe and made friendships at my expense of a pair of new red blankets, tobacco, and other minor articles. I gave it to them freely, regretting, however, the loss of this, another pair of fine blankets, which can ill be afforded to be spared in these high mountain regions during the cold nights. They showed me their trail to reach the Great Salt Lake, and advised me to keep it, also informed me that only three days travel ahead several white Bostons were inhabiting a log-house. The fugitive Indian of yesterday informed me that the Mormons had told them the soldiers would come during the summer and kill them all. By giving me all the information of their country, they advised me to keep a due south direction to avoid several very deep ravines not far distant. In a general direction southeast, I crossed to-day many fine streams running all north in narrow defiles of basaltic rock.

*August 2.*—By a gradual ascent, crossing many small ravines, the trail leads in about twelve miles to a very deep cañon. The trail winds its zigzag way both down and up. Eleven miles further brought me

in the immediate vicinity of a snow field. Grass abounds over all the hills and dales, and rich soil extends over both high and lowland.

*August 3.*—To-day I am obliged to change my general course. The high mountain range, with its seven isolated peaks, form here, towards east, a right angle, and a broad and deep gorge cuts the mountain in twain and crosses the country. There are only three deep ravines, which can by a liberal appropriation be made practicable for wagons. These three ravines contain mountain torrents with very swift currents. Our camp at night was on the slope of the steep bank of the last ravine, as close as possible to the water. The banks of this river are covered with large cotton-wood trees.

*August 4.*—The trail leads in a nearly due east direction, and crosses a beautiful level country covered with most luxuriant grass, very often crossing small and large creeks, traveling only four miles distance from the low mountain range running due east. I passed six small creeks and valleys, clad with rich green grass, a true sign of very high latitude, and encamped near several rivulets with crystal water.

*August 5.*—The same due east course I pursued to-day, and crossed creeks at short intervals. Descending from the higher plateau, I arrived in a broad valley. The vegetation changed here entirely. Miles of artemesia and heavier sage covers the surface. Basalt and volcanic rocks are in close proximity near the small river. A solitary high black butte stands on the right bank, and the surrounding level country is covered with a number of small and large perforated black stones, no doubt thrown from the crater of this isolated peak. The valley up this creek due south is about thirty miles wide, and stretches far away, higher hills covered with a reddish barren sandstone descend on both sides to the valley's edge. After ten miles brisk trot, crossing a small rivulet about half way, I encamped on the opposite side of the valley. Here I reconnoitered towards south and east, but finding no signs of any trail, I directed next morning, August 6, my course northeast for about seven miles, when I entered the valley of Snake river again. To-day I kept in close proximity to the mountain range and arrived, crossing only one large creek, in the evening near the old emigrant road on Rock creek. The Indian trail follows along the foothills as far as Swamp creek, a distance of about forty miles, thence across the Raft River valley, south of Colonel Landers's wagon road.

On the 7th of August, I continued my march on the dusty old road, and arrived on Raft camp happily that same afternoon, as our stock of provisions was entirely exhausted by liberal issues to the begging Indians. Thus far the entire distance from leaving the Owyhee river, a most excellent wagon road can be made, with the only exception of three deep cañons near the seven peak hills. On various places such a road must necessarily pass and deviate a short distance, either to the right or left from the true course I pursued.

For agricultural purposes there can be no better soil found in Oregon. Water is at very short intervals and of the purest kind. The emigrant road should be laid through the country I traversed, avoiding the Snake river entirely from the Owyhee river to Harney lake, which, according to astronomical observations taken near Lake Harney, and others near the mouth of Malheur river and Fort Boisé, does not

exceed sixty miles, and from my actual observations from a high plateau near Lake Harney, the road would pass through a well-watered and fine grazing country. I would also state that the Blue mountain range does not connect with the so-called winter ridge, but like the Snake river turns suddenly due east.

I left Raft river the 10th of August, and pursuing the same old Indian trail, which I found near the Sublettes cut-off, I arrived that night at the Summit springs, traveling through a very favorable country all day for a wagon road. From these springs, turning down into a broad, open valley the succeeding day, thence across a divide to Deep creek and Hansel's springs, on the old California wagon road, a good wagon road can be constructed, cutting through about six miles of heavy sage, north of the sink of Deep creek. Thence to Blue and Mountain spring to the Bear river a most excellent wagon road already exists.

I attach herewith a table of distances from the Owyhee river to the Bear river ferry, and I presume the distance from the Owyhee river to Harney lake is not above sixty miles, and thence to Fort Dalles only 180 miles; the entire distance by land from Fort Dalles to Great Salt Lake valley is 630 miles.

	<i>Miles.</i>
July 26 .....	16
July 27 .....	26
July 28 .....	19
July 29 .....	22
July 30 .....	18
July 31 .....	24
August 1 .....	23
August 2 .....	23
August 3 .....	11
August 4 .....	24
August 5 .....	25
August 6 .....	19
August 7 .....	30
August 8 .....	25
August 9 .....	...
August 10 .....	24
August 11 .....	25
August 12 .....	29
August 13 .....	7
Total .....	<u>390</u>

Respectfully, your obedient servant,

L. SCHOLL.

Captain ALFRED PLEASANTON, *Second Dragoons,*  
*Acting Ass't Adj't Gen'l, Headquarters Dep't of Oregon,*  
*Fort Vancouver, Washington Territory.*

*Lieutenant Dixon to General Harney.*

OFFICE OF MILITARY ROADS, DEPARTMENT OF OREGON,  
*Fort Vancouver, W. T., January, 1860.*

CAPTAIN: I have the honor to submit the following preliminary topographical report on the result of the explorations conducted by me, as topographical engineer, on the wagon road expedition to the valley of the Great Salt Lake, under the command of Captain H. D. Wallen, fourth infantry, in the year 1859.

This report is divided as follows:

1. The routes explored, and discussion of the merits of the different routes. *A*—Table of distances and altitudes.
2. *B*—Table of latitudes, longitudes, and variations of the compasses.

The method pursued in determining the data upon which are based the maps and reports of the survey, are wholly of practical character.

I have carefully avoided all narratives of the daily incidents of the expedition, and I have found it necessary to defer to some subsequent report the tables of astronomical and meteorological observations, as well as the result of our collections and observations in mineralogy, geology, botany, and the itinerary of the route.

The table of distances and altitudes, which is appended to this report, was determined by Mr. Streeter and myself with as much accuracy as our time permitted.

The distances were measured by an odometer, which was carefully compared with the measurements by the chain from time to time.

Also, a complete compass line from Fort Dalles to the ferry on Bear river was run by Mr. Streeter, who devoted himself zealously and assiduously to the care of the compass and odometer, and taking numerous bearings each day on all the mountain peaks and prominent land marks along the route.

The altitudes were determined by barometrical observations, made by myself, and are only offered of the best indications that we have.

We had two mountain and one aneroid barometers when we left Fort Dalles, but the aneroid barometer proved to be so inferior an instrument that the observations taken with it were not used.

The table of latitudes and longitudes, and variations of the compass, were determined by myself, with as great accuracy as my instruments and means at hand allowed.

The sextant was one by Gamby, and worked in admirable adjustment during the whole trip.

The latitudes were deduced principally from observations made on *Polaris*; at other times on north and south stars, nearer the meridian, or by meridian altitudes of the sun.

The longitudes are chronometric, the chronometers being three-box chronometers, purchased in San Francisco, from Messrs. Barrett & Sherwood. The one used directly for observations was by Charles Grodshaw, No. 1974, and it was carefully compared every day with the other two.

The chronometers were carried by hand from day to day with great care.

The variations of the compass were determined from observations made with a schmalculder on the sun, either at noon, sunrise, or sunset.

The map is on a scale of 1 to 1,200,000, showing the main route passed over by large red and blue lines, as well as the route requiring future examinations by dotted lines. The map has a meager and skeleton appearance to the general eye, as we were careful not to include anything that was not wholly founded on position, data, and actual operation in the field.

It is to the skill of Mr. DeGirardin, supported by the pleasure he felt in the execution of his duty, that I am indebted for the continuous topographical sketches representing, with great accuracy, the features of the country through which we passed.

To the officers and men, both civil and enlisted, who always through the expedition lent me their cordial assistance, I would here return my sincere thanks.

Copies of my orders and instructions are transmitted herewith.

Very respectfully, your obedient servant,

JOSEPH DIXON,

*Brevet Second Lieutenant Topographical Engineers.*

Captain A. PLEASANTON, *Second Dragoons,*

*Acting Assistant Adjutant General Department of Oregon.*

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[Extract.]

HEADQUARTERS DEPARTMENT OF OREGON,  
*Fort Vancouver, W. T., April 27, 1859.*

Special Orders No. 40.]

I. To increase the facilities of communication between the Columbia river and the valley of the Great Salt Lake, in connection with the overland route to the frontier of the Western States, the following command will be organized at Fort Dalles, to move from that point by the 1st of June next, for the purpose of opening a good wagon road to Snake river, and from thence to a point called City Rocks, on the projection of the road from Forts Laramie and Bridger with the road from Fort Hall to Salt Lake City.

\* \* \* \* \*

II. Brevet Second Lieutenant Joseph Dixon, corps of topographical engineers, will report for duty with the expedition.

By order of General Harney.

A. PLEASANTON,

*Captain Second Dragoons, Acting Asst. Adjutant General.*

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[Extract.]

Special Orders No. 46.]

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IV.—Brevet Second Lieutenant J. Dixon, corps of topographical engineers, will proceed to San Francisco, to obtain the necessary

ments of his department for service with Captain Wallen's command.  
By order of General Harney.

A. PLEASANTON,  
*Captain Second Dragoons, Acting Ass't Adjutant General.*

MAY 16, 1859.

SIR: Having been assigned to duty with the command organized under Special Orders No. 40, of 1859, headquarters department of Oregon, for the purpose of opening a wagon road from Fort Dalles on the Columbia river to Salt Lake City. You are provided with the requisite astronomical and surveying instruments to enable you to execute the duties specified in the instructions of the department commander.

Herewith is inclosed a check on the Assistant Treasurer of the United States, at San Francisco, California, for the sum of two thousand five hundred dollars, [\$2,500] out of the appropriation made for surveys for military defenses, geographical explorations, and reconnoissances for military purposes, and surveys with armies in the field, payable to you on your checks to meet the authorized expenses of the outfit, and of the duties to which you have been assigned by the department commander, for which funds you will be accountable to the United States Treasurer at Washington, District of Columbia.

You will please render me when practicable monthly reports of your progress, and transmit through me the usual monthly statements and quarterly returns and accounts to the bureau of topographical engineers required by the army regulations.

I am sir, very respectfully, your obedient servant,

GEORGE THOM,  
*Captain Topographical Engineers.*

Brevet Second Lieutenant J. DIXON,  
*Corps of Topographical Engineers.*

*General description of the country along the road.*

In glancing at the topographical features of the country passed over, in our outward journey from Fort Dalles, Oregon, to the valley of the Great Salt Lake, the first great peculiarity that strikes the attention is the natural division of the route into five sections, which present characteristics distinct from each other in every respect.

FIRST SECTION.

Between Fort Dalles and the point where we crossed the Des Chutes river, near the mouth of the Warm Spring river; distance, seventy miles; general direction, south. The line surveyed in this section follows for sixty miles the usual traveled route to the Indian reservation near Warm Spring river.

Commencing at the steamboat landing at the city of the Dalles, Oregon, the road ascends the bluff of the Columbia river in southeast direction, by a dry ravine. At this point the bluff is divided into three benches, but the summit can be reached by gradual ascent, and without much trouble. From the summit of the bluff, the general direction of the road is nearly due south, crossing a small stream, with narrow but fertile bottoms, called Three Mile creek, about three miles above its junction with the Columbia river, and from thence over a ridge, the height of which is about 1,200 feet above the level of the sea, to a rapid running stream, called Five Mile creek. The valley of this stream, though gravelly, appeared fertile. From this creek the road ascends a long and steep hill, leaving the old trail to the right and crossing the beautiful but narrow valley of Eight Mile creek about one mile below the crossing of the old trail. From this creek, by a lateral defile, the road ascends a long and high ridge, from the summit of which fine views are had of the dark, fir-covered cascade range, and good bearings of the prominent mountain peaks, Hood, Adams, and Jefferson. From the summit of this ridge the road descends to a wide and smooth valley, containing several fine ranchos on the banks of a clear mountain stream called Fifteen Mile creek. This country affords excellent grazing lands; the grass is highly nutritious; there is plenty of timber for all practical purposes; and the soil along the streams is fertile and productive. The road this far had passed over a hilly country.

From this valley, we entered by a dry ravine into a beautiful grove of pine trees, and from this point we passed over a gently undulating country covered with bunch-grass, interspersed with patches of fremontia; also, a large portion of the country was covered with low and rounded mounds, with an altitude from four to five feet, and a diameter from twenty to twenty-five feet. They appeared in great numbers on the hill-side, as well as on the plains. There has been much speculation in reference to their origin, but it still remains a mystery.

These mounds give place to fields of lava on the summit of the mountains north of the Tych creek, which renders the road very rough in some places. The valley of the Tych is about 1,500 feet below the summit of the mountains, and the descent to it so very rough and steep that it is even difficult to conceive how heavily-loaded wagons can pass over it.

The banks of the Tych are fringed with willow, alder, and cottonwood; the valley is from one to two miles wide, covered with a luxuriant growth of good grass, as are also the hills on either side. The Tych rises in the Cascade range, and flows with a rapid current over a rocky bed into the Des Chutes river.

The southern branch of this stream, which is called White river, is about forty yards wide and about two feet deep; it flows with rapid current over a pebbly bed, and enters the main stream about eight miles above its junction with the Des Chutes. The southern bluff of the valley is nearly as steep and difficult to pass over as the northern one.

From the summit of the southern bluff to the northern base of the Mutton mountains, a distance of about twelve or fifteen miles, there



is a plain called Tych prairie, elevated about 2,200 feet above the sea. This plain is covered with bunch grass, and here and there a few cedar trees.

Oak Grove creek skirts the southern edge of this prairie, with its bottoms covered with beautiful groves of oak trees. By following up this stream about four miles, the mountains can be crossed by a much better pass than that where the old Indian trail crosses them.

A magnificent panorama bursts forth upon the view from the summit of the Mutton mountains; the surrounding scenery lay spread before us for more than an hundred miles. Several of the great snow peaks rise majestically above the rolling sea of the dark fir-covered Cascade range. From the pass in the Mutton mountains to the cañon of the Warm Spring river, the road passes over a high plain, covered with good bunch grass, interspersed with frequent beds of volcanic rocks and a few scattered cedar trees, as well as several springs of cold water.

The descent into the cañon of Warm Spring river is so very steep and rocky that it is nearly impassable for wagons.

The Warm Spring river rises in the Cascade range, and flows through a narrow and deep cañon, with sides in many places vertical, or even overhanging, and from three to four hundred feet high. These vertical cliffs extend down, in some places, to the water's edge, rendering it impossible to follow its banks to its junction with the Des Chutes river. But to the left of the cañon the country is of a more gentle undulating character, and heavily-loaded wagons can pass over it with very little trouble to the point where we crossed the Des Chutes river, near the mouth of the Warm Spring river.

This section of the route is abundantly watered with numerous streams, which pour down from the neighboring mountains.

These streams flow through narrow, chasm-like valleys, from eight to twelve hundred feet below the plains. At the verge of these plains there generally commences vertical precipices of basaltic rocks, which leave only here and there a place where they can be entered on horse-back.

The road across the country, which would otherwise be very good, is rendered nearly impassable for wagons on this account.

Of the eastern side of the Des Chutes cañon but little was known until we passed over it this summer. Much of it is high plateau, the greater portion of which is level. As the greater number of the tributaries of this river flow from the Cascade range, the numerous lateral cañons which follow the western side, and render it impracticable for a wagon road, do not exist to such an extent on the eastern side. The Des Chutes river, where we crossed it, flows through a deep cañon, with a rapid current, and it is said to be broken by many rapids, which have given it the name of Des Chutes. It is about two hundred and fifty feet wide, and from six to eight feet deep; its banks are fringed with willows and cotton-wood; its bottoms are very narrow, sterile, and bare.

## SECOND SECTION.

Between the Des Chutes river and the western base of the Blue mountains—distance, 250 miles. General direction, southeast.

The ascent from the eastern bank of the Des Chutes to the table lands east of the above-named stream was very steep, and in some places quite rocky, rendering it nearly impracticable for heavily-loaded wagons to reach the summit of the bluff, which is about eight hundred feet above the river. From the edge, or the top of the cañon of the Des Chutes to Toswego creek the road passed over high table lands, covered with bunch grass and scattered cedar trees. In order to avoid a deep cañon which intervenes between these two points, it makes a long detour to the north. The descent from the plain into the valley of Toswego creek is in some places very steep, but a good road can be made with little labor.

From this valley we crossed a low ridge of sandstone into a beautiful and level valley, from one to two miles wide, and covered with a luxuriant growth of fine grass.

By following up this valley about five miles, we came to a remarkable pass, leading through a broken range of low mountains into a large sand plain, covered with artemesias, the first we had seen since we started.

Near the center of the plain we came to a cold spring of pure water, gushing out of a ledge of sandstone. From this spring to the western spur of the Blue mountains, a distance of about twenty-four miles, the country is level, covered with fine bunch grass and scattered groves of cedar trees. The soil is of a light gravelly character; there are occasional outcrops of trap and other volcanic products.

The banks of the stream are generally fringed with willow, cottonwood, and alder, and the bottoms fertile.

The western spur of the Blue mountains, which has been referred to before, is a branch of the main chain, and dividing the headwaters of the John Day's and Crooked rivers; this spur extends down to the north side of Crooked river nearly to the Des Chutes.

We crossed this spur or chain at a remarkable depression, being about 4,000 feet above the level of the sea. The mountains are covered with a dense growth of timber, fir and pine, extending to the summit of the highest pinnacles.

The ascents are gradual, and the road is very good. From the summit down into the valley of Cottonwood creek the road is good, with a gradual descent.

Cottonwood creek is a mountain stream flowing in a southern direction over a rocky bed into Crooked river. It has but little timber on its banks, with the exception of cottonwood; its bottoms are narrow and sterile.

From the above-named stream to Achera creek we crossed a low sandy ridge covered with cedar trees and artemesia. We forded Achera creek, about one mile above its junction, with Crooked river. The valley of Crooked river near the mouth of Achera creek is about five miles wide, low and sandy, covered with artemesia and fremontia, but very little grass.

Crooked river at this point makes a large bend towards the south, and to avoid the circuit we crossed the mountain by a good road. The mountain sides are rich and productive, being covered with a luxuriant growth of excellent grass, wild pea vine, and red clover. The rocks displayed on the mountains as we approached the summit, which is about 4,330 feet above the sea, was a compact trap decomposed on the exposed surface. We reached the valley of Crooked river again by a little ravine which was so narrow in some places that there was scarcely room for wagons to pass.

The general direction of the valley of Crooked river is nearly northwest, but on account of the tortuous course of the river through its sterile valley, it well deserves the name. The bottom lands of the valley will average from half a mile to a mile in width, and the surface consists of a very light and porous soil, but the road is generally good. Groves of alder and cotton-wood, with dense thickets of willows, exist on its banks; the hills which inclose this valley are generally low and sandy, covered with a growth of stunted cedars and scattered pines; the plains back of the hills are mainly formed of immense beds of trap, and clothed with a carpet of luxuriant bunch grass, (*jestuca*), which is almost universal on the plains and mountains of this region, and is always nutritious, even in a dry state.

Most of the tributaries of this river form narrow cañons through the igneous rocks and possess little soil capable of cultivation.

We left the valley of the Crooked river, a few miles below its fork, by a lateral cañon, and reached by almost imperceptible ascent a high prairie somewhat cut up by gentle valleys. From this prairie to Buck creek, which is the headwater of the southern branch of Crooked river, a distance of about thirty-five miles, the road passes over an undulating country, the soil of which is of a light and sandy character with outcrops of trap and lava. The road crosses several small streams which are evidently tributaries of the southern branch of Crooked river. Although the surface of this region is undulating, the general slopes are so uniform that from high eminences the appearance is that of nearly a level country.

There extends from this undulating region a sloping plain to the wide valley in which the southern branch of Crooked river takes its rise, and from this plain an extensive panoramic view is obtained of the lofty and dark range of the Blue mountains, with lesser ranges intermediate; also to the south and in front of us lay spread out a vast sage plain extending as far as the eye could reach, bounded by a broken range of low mountains. This plain is destitute of vegetation, with the exception of artemesia; even the banks of the small streams that meander through it are lined with a white efflorescence like snow, instead of their usual foliage. The elevation of this plain above the sea is about 4,335 feet, and it is dotted with several small lakes, with low and alkaline banks.

The soil of the surrounding hills has a dry and calcined appearance.

From Buck creek to Lake's valley, a distance of about forty-five miles, the country is an uninterrupted dense field of artemesia, having, in some places, such a luxuriant growth that it was very difficult and laborious to force our way through it. This region is a high plateau,

constituting the dividing ridge between the waters of Crooked river and the small streams, which flow in an opposite direction, losing themselves either in the sand or in the chain of lakes situated on the above-named valley.

The ascent to the summit of the dividing ridge is so remarkably uniform, and the depression so gentle in its declivity, that it rendered it difficult to define the exact position of the dividing crest, which is about 4,765 feet above the sea.

The chief supply of water along the traveled route on this plateau depends on small lakes, which have a disagreeable alkaline taste; the soil is thin and stony, and in many places large outcrops of trap and lava are visible.

The road descends from the summit of this divide by long and gentle reaches in a large saline valley or basin, being, in many places, for miles, as level as a house floor. Here the vegetation consisted chiefly of fremontia, with smaller saline shrubs; and the surface was whitened with fields of alkali, resembling, very much, fields of snow. In many places there were isolated peaks terminating in nearly perfect craters of an oval or circular form. These peaks are composed of a brown-colored scoriaceous lava, evidently the production of modern eruptions.

This valley or basin is about eighty miles in length from east to west, and about eighty in width. There are situated in this valley several lakes, some of them are very shallow, and the water is so strongly impregnated with alkali as to be totally unfit for use. Near the center of this valley we came to a much larger lake than any we had yet seen. It was spread over a length of about eighteen miles, and in breadth about ten miles; it had every appearance of being very deep, and the water was so salty that our animals would not drink it. There was a considerable stream flowing into it from the north, but from all appearance there was no outlet. Its shores were low and sandy. This lake, when first presented to our view, was a handsome sheet of water, and we gave it the name of Lake Harney, in honor of the present commander of the department of Oregon.

From observations made on the bank of a small lake two miles northeast of Lake Harney, the altitude was 4,196 feet above the level of the sea; the latitude  $43^{\circ} 12' 25''$  north, and the longitude  $118^{\circ} 41' 40''$  west of Greenwich.

We traveled from Lake Harney to the western base of the Blue mountains in a northern direction, over an extremely level country, and in many places resembling very much the flat sandy bed of shallow lakes.

From this plain, looking towards the north and east, we had a fine view of the Blue mountains, sweeping far around to the south, and appearing to terminate into isolated peaks about sixty miles below. And still at a greater distance to the south, stood out clear to the sky, a lone mountain with a pure mantle of snow, and from the best examination that our time permitted, we were inclined to believe that it is entirely isolated from the main chain of the Blue mountains.

The road from Lake Harney to Stillwater slough, a distance of about fourteen miles, is level and good with the exception of drifting sand, which rendered it heavy in some places. The country is partially

covered with artemesia and fremontia. The above-named slough was very deep and narrow, having no perceptible current, its banks were fringed with dense groves of willows.

From this slough to the base of the mountain, a distance of about eighteen miles, the country is a beautiful level valley, covered with a luxuriant growth of bunch grass, wild pea vines, and red clover, interspersed with fields of kamass on a rich soil, abundantly watered by numerous mountain streams, all of which converged towards the southern end of the valley, where they loose themselves in a large marsh. This savannah or meadow is bounded on the north and east by the Blue mountains, the cañons of which are well-timbered with pine and cotton-wood.

This wide savannah or grassy meadow, or rather a succession of meadows, of rich soil separated by lines of cotton-wood trees growing along the many streams that flow from the surrounding range of mountains, make a picture that would delight the eye of a farmer, if he could be content to live in such seclusion as it imposes. Game along this section is also abundant, antelope, deer, and several species of grouse, prairie chicken, ducks, geese, &c.

In conclusion we would say for emigrants who may take this route, or are desirous of recruiting their animals, or troops on scouting expeditions, this section presents many advantages, such as permanent water, plenty of good grass, the cañons and mountain slopes covered with timber, pine, fir, cedar, cotton-wood, and willows, and last, and most important of all, a good road.

#### THIRD SECTION.

Between the western base of the Blue mountains and the Owyhee river near its junction with Snake river—distance 143 miles. General direction—first northeast, second southeast.

This section may be subdivided into the mountain or hilly division, and the lower or valley division.

By referring to the map, it will be perceived that there is but one main mountain mass or chain of the Blue mountains, and that this is a continuous range presenting but few depressions or openings, dividing the waters flowing into Snake river from those flowing into the Columbia river and the chain of lakes in Lake valley. It will be observed that there are two secondary ranges or spurs branching off from the main chain, one dividing the headwaters of the John Day's and Des Chutes rivers, which is called the western spur, and the other dividing the waters of the Burnt and Malheur rivers, which is called the eastern spur.

In locating the Blue mountains and its spurs, we were very careful in taking as many bearings as possible of all the mountains, peaks, and prominent landmarks, as well as determining the position of the points where we crossed them, with as much accuracy as our instruments would give and our time permitted. From the western spur of the Blue mountains there are many secondary spurs extending down towards the Malheur river, between which there are flowing many small streams, which enter into the Malheur river.

The ascent of the Blue mountains is about six miles long, and very steep and rocky in some places, rendering it both laborious and tedious to reach the summit, which is about 6,265 feet above the level of the sea. The principal rocks displayed on the summit are a dark slate-stone, and trap on either side.

The view from the mountain top, looking toward the east, was rugged and wild in the extreme. The whole face of the country, as far as the eye could reach, was broken up into mountains and narrow valleys or cañons, through which mountain torrents rushed foaming and roaring over their rocky beds. But looking towards the southwest, from the same spot, the scene is quite the reverse. There one beholds a plain as boundless as the ocean, alternating with lakes and prairies covered with waving grass, and numerous streams winding their serpentine course through it, between banks fringed with willow and cotton-wood thickets.

We descended the Blue mountains by a very circuitous and precipitous route. We often had to make sharp turns to avoid high cliffs and deep gorges, which rendered the country rugged and wild beyond description. The descent brought us to the rocky bed of a small mountain brook, flowing in a northeast direction into the Malheur river. The bed of this brook was rocky, principally with the debris of quartz, which had good indication of gold. We crossed the little brook about five miles from the cañon of the Malheur river; but the cañon was so narrow, and the rocks, by falling from the cliffs above, had so completely blocked it up that we were forced to cross the small spur of the mountains to our right, by a very rough and rocky road, and reached the river further below, where the cañon had widened out into a valley nearly one mile wide, that was covered with some good grass. We crossed the river at a good ford, and traveled down the valley on its left bank; but we had not gone far when we discovered a black gorge with high precipices of basaltic rocks, between the walls of which the river flowed with a rapid current over a rocky bed, and the banks were so rugged as to render it impossible to follow it any further; so turning to the north, we ascended diagonally the eastern spur of the Blue mountains, over a heavy, rolling country, covered with good grass, but very rocky.

The mountain tops were well timbered with pine and cedar. We traveled on the southern side of the eastern spur of the Blue mountains until we entered the narrow of the northern branch of the Malheur river, by the worst road we had yet seen. This stream flows with a rapid current over a rocky bed, clearing a way through for itself, and leaving the mountains on either side towering thousands of feet above its narrow bottoms. Our road followed the direction of this stream for some distance, sometimes finding room along the borders of the river, and then nearly to the tops of the hills by ascents and descents so precipitous as to render it decidedly bad and dangerous for wagons. Finding it impossible to follow this stream to its junction with the Malheur river, we turned again to the north, and traveled over the most rugged country we had ever seen to a small creek, the banks of which were fringed with birch, cotton-wood, and willow. This being the first birch timber we had seen on our journey, we gave to this stream the name of Birch creek. The bottoms of this stream

are narrow, but are covered with a luxuriant growth of good grass, as well as the mountain sides that bound it. From this creek, it was necessary to cross a range of hills nearly as high as the Blue mountains. The road went up diagonally, but the ascent was by far the most toilsome operation that we had ever undertaken.

The mountains were rugged and destitute of timber, with the exception of a few stunted cedar trees, but they were covered with a luxuriant growth of good bunch grass. The view from this mountain top showed a country broken still, but on a much smaller scale than that we had passed over. There appeared to be very little order or regularity to the rolling sand hills in front of us, but the whole had the appearance of the surface of a large boiling caldron suddenly stricken motionless.

From the summit of this ridge, we descended by a rocky ravine into the broken, sandy country below, and then we wound our way around sand hills, over a sandy plain covered with artemesia, to the valley of the Malheur river once more.

It will be observed that the road in this division passes over a mountainous country, the streams flowing rather in ravines than in valleys, and the road is decidedly bad and dangerous, but entirely impracticable for heavily-loaded wagons without much labor; but still it presents some advantages, such as plenty of good water, the mountain slopes are covered with a luxuriant growth of good bunch grass, and the gulches are filled with pine, cotton-wood, and willow. Game is also plenty—antelopes, deer, grouse, prairie chickens, &c. There are also found in great abundance, in the numerous streams, several species of the mountain and salmon trout.

*Second Division.*—This portion of the section may be called the lower or valley division, as it is much lower than the first division, and being principally in the valleys of the Malheur and Snake rivers.

The Malheur river, about eight miles above the point where we came to it, debouches from a black gorge of high precipices, formed of basaltic rocks, and following up this stream it is found to be shut in among lofty mountains, confining its narrow valley (or more properly cañon) in a very rugged country. The river flows through this gorge or cañon with a rapid current, over a rocky bed, but below the gorge it has a slow and sluggish current.

The river was, in July, about sixty feet wide, and from two to three feet in depth; its banks were fringed with willow and cotton-wood. Below the gorge, the valley opens out into a broad plain, increasing in width down to Snake river, with the exception of a few places where the hills extend down, and the basaltic rocks impinge upon the stream in salient points. The bottoms were covered with sage bushes, with occasional intervening patches of grass, which, however, become less frequent as the river descends. The country on the right side of the river presents itself as a high plateau, intersected by deep cañons, extending back several miles. This plateau, like the rest of the country east of the mountains, is covered everywhere with the same interminable field of sage, and occasionally large outcrops of lava and other volcanic productions.

The country on the left side of the river, below the mountains, consists of low masses of sandy hills. We traveled down the valley

mostly on the left side of the hills, until we reached the point where the old emigrant road to Walla-Walla crosses it. We crossed the river at the old ford, which is by no means a good one, and followed up a dry sandy hollow until we reached the summit of the dividing ridge between the Malheur river and the Owyhee; the rocks displayed on the summit were of a coarse granular sandstone. From the top of the ridge we crossed a sandy plain covered with sage bushes, by a succession of gentle descents, to the Owyhee river.

It will be perceived that the road in this division is level and good, with the exception of some places where it is rendered quite heavy by the sand. There is but very little grass, and no game except sage-cocks, which are in great abundance.

#### FOURTH SECTION.

From the Owyhee river to the summit of the dividing ridge between the waters of the Snake river and the valley of the Great Salt Lake—distance, 300 miles. General direction, southeast.

By referring to the map, it will be perceived that this section may be subdivided into two divisions; the first including that portion between the Owyhee river and the headwaters of Swamp creek; the second including the remainder of the section. Although these two divisions are entirely included in the valley of Snake river, they differ from each other in several characteristics.

*First division.*—The general appearance of the valley of Snake river, between the northern bank of the river and the distant Salmon River mountains, is one vast, high plain, broken and rent into chasms and deep ravines, covered with black, volcanic rocks, and artemesia.

The country on the southern side of the river, along the line of the road, is a barren valley, varying in width from five to sixty miles. From the Owyhee to the lower end of the first cañon of the Snake river, a distance of about sixty miles, the valley is narrow and broken up into bare sand hills, but its general character is that of an inclined plane, sloping down towards the river and extending back to the river chain of mountains. The country between the lower end of the above named cañon and Burnt Mountain creek is a high sage plain, broken up into deep cañons. This plain is formed by successive layers of basalt rocks, interstratified with clay-stone and conglomerates. There are also many isolated masses of coarse conglomerates, broken up into tunnel-shaped heaps, colored by some ferruginous substances, from a brilliant red to a deep black.

This plain or plateau is perfectly bare, with the exception of artemesia; not a tree can be seen as far as the eye can reach.

Burnt Mountain creek takes its name from two line buttes situated near the point where it empties into Snake river, which are covered with piles of scoriaceous basalt of a reddish tinge, interspersed with black volcanic rocks, which gave them the appearance of old furnaces surrounded by ashes and blackened by smoke. From Burnt Mountain creek to Bruneau river, the country has truly a melancholy and strange appearance; it is whitened with fields of alkali; the river banks are sterile and destitute of both timber and grass, and the plain sloping



back to the distant mountains is sterile and darkened with gloomy and barren artemesia.

The country between Bruneau river and the headwaters of Swamp creek, and stretching over an immense region to the south, is one vast sage desert, heaved up into wild table lands, from which there bursts forth low hills and isolated buttes, covered with volcanic ashes and lava of different colors.

This region is also broken up into many lateral ravines, some of which are dry and destitute of either timber or grass, whilst through the others flow small streams with narrow bottoms and scanty grass.

This country is destitute of timber, with the exception of the small willows along the banks of the streams, and the stunted cedars on the rocky shores of Snake river and the distant mountain slopes. At some distance from the river, there appears to be a series of sand fields and drifts, extending nearly across this region. The principal rocks are basaltic conglomerates, which are very abundant near the river, rendering the road very rough in many places. The bottoms of Snake river occur at wide intervals from each other, and are narrow and sterile. Some of them are white fields of alkali, whilst others are covered with a thin clothing of saline shrub and a rough grass of an alkaline quality.

The road follows up the left bank of Snake river, leaving it in no places more than eight miles, and in some places it winds its way between the bluffs and the river where there is scarcely room for wagons to pass. It is generally level, but is quite rocky in several places, whilst a large portion of it passes through a sandy country, which renders it very heavy and fatiguing.

In taking a general view of the valley of Snake river, between the Malheur river and the headwaters of Swamp creek, it presents a vast and barren plain, where there does not occur, for a distance of 260 miles, a fertile spot of ground large enough to produce grain and pasturage in sufficiently large quantities to allow even a temporary repose of a small train.

This route, which would otherwise be a very good one for emigrants and troops on scouting expeditions, is rendered nearly useless on account of the great scarcity of grass.

By referring to the map it will be perceived that there is a trail along the distant mountains on the right, and, from the general character of the country, it is reasonable to believe that this trail, passing near the heads of the streams flowing into Snake river, would be a much better road than the one we have followed. This trail, if it can be followed with wagons, is much shorter than the route we have passed over. It is on a direct line with the road we traveled to Lake Harney and the headwaters of Swamp creek, or, if it is practicable to cross the Goose Creek mountains, still better, intersecting the emigrant road to California near the City of Rocks; and there is no reason to apprehend any insurmountable obstacles in view as we passed around it. But, as the country is broken, only actual explorations can determine its practicability. This route, however, cannot be more difficult than the one we followed, and it certainly would not be one half the distance.

Here it may be remarked, as every traveler on this western slope of our continent has observed, that the usual order of the distribution of good and bad soil is often reversed, the river and creek bottoms being often sterile and darkened with the gloomy and barren artemesia, while the mountains are fertile, and covered with rich grass, pleasant to the eye, and good for animals.

It will be observed, by following the above-mentioned trail to the vicinity of Lake Harney, and then turning to the left and traveling in a westerly direction, crossing the Cascade range by a trail near Diamond peak, which is at present traveled, and is said to be practicable, the emigrants can reach the valley of the Willamette by a much nearer route than either of the others that are at present traveled. For working parties on construction, or to emigrants who are desirous of recruiting their animals, or to troops on scouting expeditions, I am confident that this route would present many advantages far superior to either of the others, such as plenty of wood and water, luxuriant growth of fine bunch grass, which is always nutritious, even in a dry state.

*Snake River.*—The altitude of Snake river, near the point where the Owyhee river empties into it, is about 2,130 feet above the level of the sea. From this point to the foot of Salmon falls, a distance of about 140 miles, the river flows with gentle current, forming several large islands, which are covered with tall, rough grass, and thickets of willow bushes. The river was, in July, about four feet below high-water mark; but still it appeared to be very deep, and from 400 to 500 yards wide.

Its altitude, near the foot of Salmon falls, is about 2,896 feet above the level of the sea. The Salmon falls are a succession of rapids, and are about fifteen miles in length; the altitude of the river, near their head, is about 3,226 feet above the sea. The great cañon of Snake river commences about ten miles above the point where the Salmon Fall river empties into Snake river, and extends up the river about sixty miles. This cañon is about 800 feet deep near the mouth of Rock creek; its sides are nearly perpendicular, and are formed of basaltic rocks, overlaid with claystone.

The great Shoshonee falls of Snake river occur about eight miles above the mouth of Rock creek. The river is about 600 feet wide above the falls, and is immediately contracted at the falls in the form of a lock, by jutting piles of scoriaceous basaltic to a space of about 300 feet, between which the river rushes, dividing itself into two branches, one falling over a precipice 180 feet in height and the other 160 feet, over which the foaming river presents a wild and grand appearance beyond description.

The elevation of the river at the upper end of the cañon is about 4,296 feet above the level of the sea. The river, from the upper end of the cañon to the mouth of Swamp creek, (the point where we left it,) flows with gentle current through narrow bottoms with scanty vegetation.

*Second division.*—From the headwaters of Swamp creek to the dividing ridge between the waters of Snake river and the valley of the Great Salt Lake.

The country between the headwaters of Swamp creek and the point where Lander's cut-off crosses Raft creek is slightly undulating, with several outcrops of rocks. This portion of the route passing over the base of the mountain is relieved from the interminable fields of artemisia (sage) which flourish in such great abundance along the banks of Snake river.

I would here remark that I have been informed that in the valley of the Great Salt Lake wheat is grown on the ground that once produced this shrub; if this be true, it certainly relieves the soil from much of the sterility that has been imputed to it. But, be this as it may, there is one thing certain, that the mountain slopes of this country are always covered with a luxuriant growth of excellent grass.

The country between Raft creek and the crest of the dividing ridge, rising gradually up to the summit of this ridge, or rather a succession of plains, separated by lines and groves of willow thickets growing along the numerous streams flowing from the surrounding mountains into Raft creek.

The mountain sides and ravines are covered with groves of cedar trees, with a few scattering pines. The banks of the many streams are fringed with cotton-wood and willow, and the bottoms are covered with a luxuriant growth of fine grass.

The road is good; it follows along the base of the mountains, crossing Raft creek at the point where Lander's cut-off crosses it, and following up the right bank of this stream and intersecting the emigrant road to California near the summit of the dividing ridge.

#### FIFTH SECTION.

From the summit of the dividing ridge, between the waters of Snake river and the valley of the Great Salt Lake, to Bear river—distance, sixty-six miles. General direction, southeast.

The country from Cedar springs, which are near the dividing ridge, to a small creek with narrow bottoms called Deep creek, is a level sage plain, with an alkaline soil and scanty grass.

From the above-named stream to the valley of Bear river, the country consists of a series of rolling prairie hills, with occasional small groves of cedar trees. It is also covered with a rich and luxuriant growth of grass at every point.

The valley of Bear river is from ten to twelve miles wide at the ferry. It is very level, and from the right bank of the river to the foot hills it is covered with sage bushes, and the soil is of alkaline character. The soil from the left bank of the river to the base of the mountains appears to be of a fertile character, and the vegetation such as is usually found in good ground. The river flows with a gentle current at the ferry, and is sixty yards wide, and from eight to ten feet deep.

From Cedar springs we followed the old emigrant road to California, across Deep creek, and by Hansell's, Blue, and Emigrant springs, to the ferry of Bear river, crossing the Riviere Aux Roseaux at the bridge. This is a good and easily traveled wagon road in all seasons of the year.

## HOMEWARD JOURNEY.

On our homeward journey, we returned by nearly the same road that we traveled to the city of the Great Salt Lake, as far as the ford of the Malheur river.

From the ford of the Malheur river we followed the old emigrant road, *via* Grand Rond, to McKay's Agency on the Umatilla river, and from thence by the usually traveled road from Fort Walla-Walla to Fort Dalles.

The country along this route has been so thoroughly examined and so fully described by various surveying parties, who enjoyed superior advantages to myself, from the number of their instruments and assistants, that any further description of it on my part would be altogether unnecessary.

In conclusion, I would say that this country, like all the rest of the mountainous regions on this part of the Pacific slope, possesses a good soil, covered with nutritious grass, and a dense forest, embracing many varieties of trees. The country is broken, many of the streams flowing rather in ravines than valleys, and the road is decidedly bad and dangerous for wagons, requiring considerable labor and expense to make it a good and easily traveled wagon road.

*General discussion of the merits of the different routes.*

From the South Pass to the State of Oregon and the Territory of Washington, there are at present two traveled routes—one following down the valley of the Snake river, crossing the Blue mountains, *via* Grand Rond, into the valley of the Columbia; the other following down the valley of the Humboldt, and entering into the State of Oregon by what is known as the Great Oregon cañon.

To the first of these routes there has been, and always will be important and insurmountable objections, as nearly three hundred miles of it passes through the sterile valley of Snake river, which is nearly destitute of one of the most indispensable articles to emigrants or troops, that is grass. Besides these objections, it makes a long detour to the north, crossing the Blue mountains by a rough and rugged pass into the valley of the Columbia river.

The second route passes entirely too far to the south to ever be a good thoroughfare to the State of Oregon and the Territory of Washington.

The proposed route indicated on the map obviates all of the above-mentioned difficulties in passing near the headwaters of the numerous streams flowing into Snake river from the south. It offers to the trains going to and from the valley of the Great Salt Lake, as well as those coming through the South Pass, a continuous supply of the indispensable articles of wood, water and grass. The route proposed, as will be perceived by referring to the map, leaves Fort Dalles and follows the usual traveled road to Fort Walla-Walla, as far as the Des Chutes river. Crossing this stream at the bridge near its junction with the Columbia river, and from thence passing up the western side of the Des Chutes river, and intersecting the road that we passed over this

summer, near the point where it enters the valley of Trout or Oswego creek.

This part of the route was examined by Lieutenant Bonnycastle, of the fourth infantry, who reports it to be an easily traveled wagon road, and having plenty of wood, water, and grass for large trains.

From the valley of Trout creek to Lake Harney, as has been mentioned before in the report, there is a good wagon road, with abundance of wood, water, and grass.

The country from Lake Harney to the forks of the Owyhee and Kearney rivers, a distance of about sixty-five miles at the furthest, has not been examined, but from the general appearance of it on both sides, much of which was in view as we passed around it this summer, it is a level plain possessing all the requisites necessary for the traveler in this remote region.

The country from the forks of the Owyhee and Kearney rivers was examined by Mr. Scholl, the chief guide of the expedition, and he reports that wagons could have passed over it without any difficulty, with the exception of three cañons or ravines, which require working; and he also reports that the soil is fertile in many places, and that the mountain slopes and valleys are covered with a luxuriant growth of grass, and there is plenty of wood and water.

It will also be readily observed, by referring to the map, that the proposed route from Fort Dalles to the headwaters of Swamp creek, or still better, if practicable, intersecting the emigrant road to California near the City of Rocks, is a central one, and much nearer than either of the others, and that all of it has been examined with the exception of the small portion from Lake Harney to the Owyhee river.

Official :

A. PLEASANTON,

*Captain Second Dragoons, Ass't Adj't Gen'l.*

HEADQUARTERS DEPARTMENT OF OREGON,

*Fort Vancouver, W. T., January 17, 1860.*

## APPENDIX A.

*Distances and altitudes from Fort Dalles, Oregon, to Great Salt Lake City.*

Date.	Station.	Intermediate distances.	Total distance from Fort Dalles.	Altitude.	Remarks.
		Miles.	Miles.	Feet.	
1859. June 1	Three Mile creek.....	.....	3.0	782	Hourly observations for three days with the barometers.
4	Five Mile creek.....	2.5	5.5	848	
5	Eight Mile creek.....	2.25	7.75	.....	
5	Fifteen Mile creek.....	4.75	12.50	1,411	
6	Tych valley.....	17.50	30.0	1,264	
7	White river.....	0.50	30.50	1,246	
8	Oak Grove creek.....	13.0	43.50	2,281	Showers of rain.
10	Quartz creek.....	7.75	51.25	2,829	
11	Warm Springs river.....	9.0	60.25	1,504	Near the ford.
12	Crossing of the Des Chutes river..	9.25	69.50	1,286	
15	Crossing of the Des Chutes river..	.50	70.0	1,278	Left bank.
17	Trout, or Oswego creek.....	17.50	87.50	1,827	Right bank.
19	Sandstone springs.....	7.50	95.0	1,907	Spring half way.
20	Cedar springs.....	11.0	106.0	2,722	
21	Willow creek.....	10.75	116.75	3,517	
22	Cottonwood creek.....	11.25	128.0	2,910	
23	Achera creek.....	9.0	137.0	2,800	
24	Antelope springs.....	10.50	147.50	4,372	Dividing ridge.
25	Crooked river, (1st).....	12.75	160.25	3,649	
26	Crooked river, (2d).....	15.0	175.25	3,791	
27	Crooked River cañon.....	5.0	180.25	3,859	
July 1	Pine grove.....	2.0	182.25	3,936	
1	Three Pine creek.....	5.75	188.0	.....	No barometer observations.
2	Spring valley.....	17.0	205.0	4,385	
3	Buck creek.....	13.0	218.0	4,437	
4	Dividing ridge.....	11.0	229.0	4,755	Summit.
4	Round lake.....	9.75	238.75	4,671	
5	11 miles from Round lake.....	11.0	249.75	4,477	
5	Lake Whatumpi.....	9.75	259.50	4,287	
7	Stampede lake.....	23.75	283.25	4,196	
8	Still Water slough.....	14.75	298.0	4,212	
10	Camp Surprise.....	18.0	316.0	4,314	
11	Small creek, north side of Big meadows.....	5.50	321.60	4,234	
12	Summit of Blue mountains.....	10.0	331.50	5,637	
12	Carrot creek.....	5.0	336.50	5,083	
13	Malheur river.....	14.50	351.0	3,937	
14	Rock Creek cañon.....	16.0	367.0	562	
15	South bend of Malheur river.....	8.0	375.0	.....	
15	Birch creek.....	5.25	380.25	4,799	
16	Ice springs.....	15.50	395.75	5,034	
17	Malheur river.....	26.00	421.75	2,458	
21	Crossing of Malheur river.....	25.50	447.25	2,107	
22	Owyhee river.....	17.50	464.75	2,121	
23	Big Rock creek.....	17.50	482.25	2,407	
24	Hot springs.....	22.0	504.25	2,442	
25	Old Iron springs.....	11.0	515.25	2,468	

APPENDIX A—Continued.

Date.	Station.	Intermediate distances.	Total distance from Fort Dalles.	Altitude.	Remarks.
1859.		<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
July 26	Burnt Mountain creek.....	24.0	539.25	2,660	
27	Bruneau river .....	20.0	559.25	2,829	
28	Camp Reynolds, (on Snake river)	15.0	574.25	2,847	
29	Rattlesnake meadows.....	18.0	592.25	2,879	
30	Top of cañon of Snake river.....	16.50	608.75	3,102	
31	Salmon Fall river.....	20.25	629.0	2,513	
Aug. 2	Rock creek, (1st).....	23.00	652.0	3,753	
3	Rock creek, (2d).....	17.25	669.25	3,994	
4	Snake river .....	20.75	690.0	3,990	
5	Swamp creek.....	19.25	709.25	4,367	
6	Raft creek, (1st).....	13.25	722.50	4,297	
8	Raft creek, (2d).....	19.0	741.50	4,314	
9	Cedar springs, (on California road)	24.0	765.50	4,439	
10	Hensell's spring.....	32.0	797.50	5,373	
11	Bear River ferry.....	34.0	831.50	4,334	
12	Mud springs.....	27.0	858.50	4,470	
13	Philips village.....	26.0	884.50	4,327	
14	Great Salt Lake City.....	17.0	902.50	4,351	

HOMeward JOURNEY.

*Distances and altitudes from Great Salt Lake City, Utah, to Fort Dalles, Oregon.*

Date.	Station.	Intermediate distances.	Total distance from Great Salt Lake City.	Altitude.	Remarks.
1859.		<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Aug. 22	Farmington .....	17.50	.....	4,321	
23	Ogden city.....	15.50	33.0	4,341	
24	Pebbley spring.....	14.50	47.50	4,286	
25	Brigham city.....	12.0	59.50	4,312	Hurricane, with showers of rain.
26	Bear River ferry.....	8.0	67.50	4,434	
27	Emigrant springs .....	9.0	76.50	5,162	
28	Hensell's springs .....	26.0	102.50	5,400	
29	Cedar springs .....	32.0	134.50	5,439	
30	Raft creek .....	27.0	161.50	4,314	Thunder, snow with rain.
31	Dividing ridge between Raft creek and Swamp creek .....	.....	.....	5,162	
31	Swamp creek .....	15.0	176.50	4,382	
Sept. 3	Snake river .....	19.25	195.75	3,990	
4	Rock creek, (1st).....	20.75	206.50	3,994	
5	Rock creek, (2d) .....	13.25	229.75	3,753	

## APPENDIX A—Continued.

Date.	Station.	Intermediate distances.	Total distance from Great Salt Lake City.	Altitude.	Remarks.
1859.		<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Sept. 6	Salmon Fall river.....	22.0	251.75	2,231	
7	Top of cañon.....	20.25	272.0	3,112	Steady rain during the day.
8	Rattlesnake meadows.....	16.25	289.25	2,872	
10	Camp Reynolds.....	18.0	307.25	2,847	
11	Top of hill between Camp Reynolds and Bruneau river.....			3,102	
11	Bruneau river.....	12.50	319.75	2,829	
12	Burnt Mountain creek.....	20.0	339.75	2,660	
13	Top of hill between Cañon creek and Iron springs.....	7.50		2,910	
13	Old Iron springs.....	16.50	363.75	2,468	
14	Hot springs.....	11.0	374.75	2,443	
15	Big Rock creek.....	23.0	397.75	2,407	
16	Owyhee river.....	17.50	415.25	2,221	
24	Crossing of Malheur river.....	17.50	432.75	2,107	
25	Birch creek, (from Snake river)...	24.75	453.50	1,979	
26	Burnt river.....	11.50	465.0	2,407	
27	Small creek near Burnt river.....	14.75	479.75	3,102	
28	Small branch of Powder river.....	22.0	501.75	3,147	
29	Powder river.....	20.75	522.50	3,109	Snow and rain. Continued rain all day.
30	Grand Rond.....	20.75	543.25	2,940	
Oct. 3	Grand Rond river.....	17.0	560.25	3,492	
4	Summit of Blue mountains.....	11.0		4,970	
4	Lee's encampment.....	7.0	578.25	4,287	
5	Small creek foot of mountain.....	9.0			
5	Umatilla river.....	3.0	592.25	1,504	
6	Umatilla river, (McRay's).....	8.50	600.75		
9	Umatilla, (1st crossing).....	4.50	605.25	1,240	
11	Umatilla, (2d crossing).....	20.25	625.50	1,137	
12	Butter creek.....	9.50	635.0	1,085	
13	Well springs.....	15.25	650.25		
14	Willow creek.....	16.0	666.25		
15	Rock creek.....	23.0	689.25		
16	Des Chutes river.....	32.0	721.75		
17	Dalles.....	15.75	737.50		



## APPENDIX B.

Table of latitudes, longitudes, and variations of the compass, determined on the line of travel of the wagon road expedition to the valley of the Great Salt Lake, and prepared by Brevet Second Lieutenant Joseph Dixon, topographical engineer of the expedition.

Date.	Place of observation.	Latitude.	Longitude.	Variation.
1859.		° ' "	° ' "	"
June 2	Three Mile creek, near Fort Dalles .....	45 33 55	120 56 11	19.45
9	Oak Grove creek .....	45 06 22	121 04 48	19.20
10	Quartz springs .....	45 01 52	.....	.....
12	Crossing of the Des Chutes .....	44 47 12	120 50 23	19.15
18	Trout, or Oswego creek .....	44 25 21	120 42 08	.....
19	Sandstone springs .....	44 42 14	120 49 22	.....
21	Willow creek .....	44 27 15	120 42 47	18.55
22	Cottonwood creek.....	44 22 27	.....	.....
24	Antelope springs .....	44 15 13	120 28 07	.....
30	Crooked River cañon.....	44 03 24	119 50 30	18.40
July 3	Buck creek .....	43 42 35	119 32 30	.....
6	Lake Whatumpi.....	43 16 12	119 05 15	18.10
7	Stampede lake .....	43 12 25	118 42 40	.....
8	Stillwater slough .....	43 25 27	118 37 45	18.10
10	Surprise creek .....	43 36 45	.....	18.25
12	Carrot creek, in the Blue mountains .....	43 43 07	118 15 45	.....
13	Right bank of Malheur river .....	43 46 32	.....	.....
14	Rock Creek cañon .....	43 55 53	117 57 0	18.30
16	Ice springs .....	43 43 44	.....	.....
17	Left bank of Malheur river .....	43 48 49	117 09 37	18.15
23	Great Rock creek .....	43 35 59	.....	.....
24	Hot springs on Snake river .....	43 22 49	116 18 19	17.50
26	Burnt Mountain creek.....	43 03 01	115 33 21	.....
27	Bruneau river.....	42 57 44	115 35 60	.....
29	Rattlesnake meadows.....	42 55 29	115 06 25	17.00
Aug. 1	Salmon Falls river.....	42 42 25	114 38 37	17.11
2	Rock creek, (1st).....	42 36 10	114 20 32	.....
3	Rock creek, (2d).....	42 26 52	.....	.....
4	Snake river .....	42 29 53	113 45 05	.....
5	Swamp creek .....	42 31 57	113 24 33	.....
6	Raft creek.....	42 35 36	113 08 15	16.45

## HOMEWARD JOURNEY.

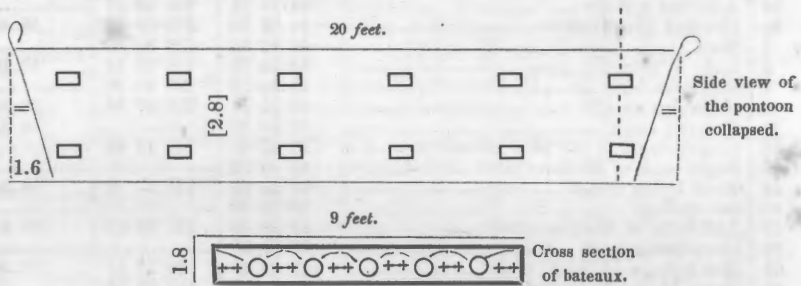
1859.		° ' "	° ' "	"
Sept. 13	Old Iron spring, on Snake river.....	43 18 33	.....	.....
16	Ford of the Owyhee river.....	43 46 51	116 47 45	18.04
24	Ford of the Malheur river .....	43 57 43	116 57 08	.....
25	Birch creek, of Snake river.....	44 16 09	.....	18.09
28	Branch of Powder river .....	44 46 03	.....	.....
Oct. 2	Grand Rond valley.....	45 16 16	117 32 57	18.20
3	Grand Rond river.....	45 20 27	117 47 17	19.00
4	Lee's encampment, Blue mountains.....	45 32 41	.....	19.20
5	First camp, Umatilla river .....	45 40 52	.....	20.00
8	Near McRay's agency, on the Umatilla .....	45 40 30	.....	20.05

*Lieutenant Houston to Captain Wallen.*

FORT CASCADES, W. T.,  
October 29, 1859.

CAPTAIN: In accordance with your direction, I submit the following report concerning the means used, on the recent expedition to Salt Lake, to effect the crossing of rivers.

The detachment of engineer troops under my command were provided with India rubber pontoons or floats, which were used in the construction of bateaux. These pontoons, when inflated, are cylindrical in form, with the ends shaped somewhat like the bow of a boat. Each pontoon is twenty feet in length, twenty inches in diameter, and is in three compartments. There are loops on each side of the pontoons for the purpose of fastening them together, and loops on the top to which poles may be attached to stiffen the bateaux. The following figures will show the construction of the pontoons, and the method of joining them together:



The pontoons are fastened together either by straps or ropes. Straps are the best. The poles are also strapped on, being fastened to the outer loops. Notches are cut on the poles, or staples driven in to prevent the straps from slipping. Poles are run through the loops at the ends of the pontoons, which assist to stiffen the bateau. A canvas deck is stretched over the bateau to protect the India rubber cloth. The weight required to submerge a bateau is about 2,600 pounds for each pontoon. A bateau intended to transport a wagon requires five pontoons. These will safely bear the wagon, its load, and as much more of ordinary freight as there is room for. In a perfect arrangement, a platform would be used to support the wagon; but where transportation is limited, three or four short planks placed transversely and two placed lengthwise are sufficient. These, with two planks to run the wagon on and off the bateau are all that are absolutely necessary. Much time, however, would be saved by a more perfect arrangement. In crossing streams with a moderate current paddles may be used, but where the current is swift a rope is necessary.

At the crossing of the Des Chutes river, which is about eighty yards wide, a rope one inch in thickness was securely fastened to a tree on the opposite side of the river. The other end of the rope, the length of which was considerably greater than the width of the stream, was attached to the bateau, which was connected with our side by a smaller

rope. In this way, by paying out the small rope, the loaded bateau was carried over by the force of the current alone. The empty bateau was hauled back by a yoke of oxen. With one bateau the whole command of nearly three hundred men, thirty wagons with their loads, and a large quantity of additional freight, were ferried over in three days, with frequent interruptions from the swimming of animals at the ferry. One accident occurred—the upsetting of a wagon. The cause of this was, that the bateau, as at first used, consisted of only four pontoons, and was found to be too narrow to afford the requisite stability. An additional pontoon was added, and, for greater security, part of the load taken from each wagon and placed beneath it. The wagon-covers were taken off, as they presented a large surface to the wind. After this no difficulty was experienced. The arrangement was intended originally to be used with a pack train, in reference to the contemplated expedition against the northern Indians last fall; but in the hands of one who has used them, wagons can be crossed safely and rapidly.

The average weight of a pontoon collapsed is ninety-six pounds, and with the straps, a pair of bellows, and the canvas bag in which it is carried, about one hundred and six pounds. The entire weight of a bateau of five pontoons, with its platform and the plank for running the wagons on and off the bateau is about 1,350 pounds. This, with the necessary rope, is, in ordinary circumstances, a light load for one wagon. If this pontoon equipage were to be prescribed for general use, one wagon should be used exclusively for its transportation, and this wagon would be so constructed as to admit of its being taken apart and used as a platform.

With a pack train, four pontoons are sufficient for one ferry, and can easily be carried on four mules, with all the appurtenances, rope excepted. The engineer detachment was also provided with two India rubber boats, each ten feet long. These consist of India rubber covers stretched over extension frames. On each side is a cylinder, which, when inflated, gives great buoyancy and stability. They were not used on the expedition, as it was found that the pontoon bateau answered the purposes of a boat much better than they. Three pontoons make a very excellent boat. Two of them in the hands of an Indian are equal to a canoe.

The pontoons were also used to construct a bridge over a slough about twenty feet wide, which was too deep to be forded. As we had not sufficient plank for a flooring, the pontoons were covered with willows and grass. Earth was thrown over them, and the bridge answered every purpose. The pack-mules went over it loaded; one horse jumped off the bridge, being frightened by the undulating motion, which is inseparable from bridges of this kind. All the other streams that we crossed during the expedition were fordable at the season of the year when we reached them.

I am, sir, very respectfully, your obedient servant,

D. C. HOUSTON,

*Second Lieutenant Engineers.*

Captain H. D. WALLEN, *Fourth Infantry,*

*Commanding Wagon Road Expedition to Salt Lake.*