

they form a barrier to the ascent of the salmon; and the great fisheries, from which the inhabitants of this barren region almost entirely derive a subsistence, commence at this place.

These appeared to be unusually gay savages, fond of loud laughter; and, in their apparent good-nature and merry character, struck me as being entirely different from the Indians we had been accustomed to see. From several who visited our camp in the evening we purchased, in exchange for goods, dried salmon. At this season they are not very fat, but we were easily pleased. The Indians made us comprehend that when the salmon came up the river in the spring they are so abundant that they merely throw in their spears at random, certain of bringing out a fish.

These poor people are but slightly provided with winter clothing; there is but little game to furnish skins for the purpose; and of a little animal which seemed to be the most numerous, it required twenty skins to make a covering to the knees. But they are still a joyous, talkative race, who grow fat and become poor with the salmon, which at least never fail them—the dried being used in the absence of the fresh. We are encamped immediately on the river-bank, and with the salmon jumping up out of the water, and Indians paddling about in boats made of rushes, or laughing around the fires, the camp to-night has quite a lively appearance.

The river at this place is more open than for some distance above; and, for the time, the black precipices have disappeared, and no calcareous matter is visible in the soil. The thermometer at sunset, 74°; clear and calm.

October 2d.—The sunrise temperature was 48°; the weather clear and calm. Shortly after leaving the encampment we crossed a stream of clear water with a variable breadth of ten to twenty-five yards, broken by rapids, and lightly wooded with willow, and having a little grass on its small bottom land.

The barrenness of the country is in fine contrast to-day with the mingled beauty and grandeur of the river, which is more open than hitherto, with a constant succession of falls and rapids. Over the edge of the black cliffs, and out from their faces, are falling numberless streams and springs; and all the line of the river is in motion with the play of the water. In about seven miles we reached the most beautiful and picturesque fall I had seen on the river.

On the opposite side, the vertical fall is perhaps eighteen feet high; and nearer, the sheet of foaming water is divided and broken into cataracts, where several little islands on the brink and in the river above give it much picturesque beauty, and make it one of those places the traveller turns again and again to fix in his memory. There were several lodges of Indians here, from whom we traded salmon.

Below this place the river makes a remarkable bend; and the road, ascending the ridge, gave us a fine view of the river below, intersected at many places by numerous fish-dams. In the north, about fifty miles distant, were some high snowy peaks of the Salmon River Mountains; and in the northeast the last peak of the range was visible, at the distance of perhaps one hundred miles or more. The river hills consist of very broken masses of sand, covered everywhere with the same interminable fields of sage, and occasionally the road is very heavy.

We now very frequently saw Indians, who were strung along the river at every little rapid where fish are to be caught, and the cry *haggai, haggai* (fish), was constantly heard whenever we passed near their huts or met them in the road. Very many of them were oddly and partially dressed in overcoat, shirt, waistcoat, or pantaloons, or whatever article of clothing they had been able to procure in trade from the emigrants; for we had now entirely quitted the country where hawks' bells, beads, and vermilion were the current coin, and found that here only useful articles, and chiefly clothing, were in great request. These, however, are eagerly sought after, and for a few trifling pieces of clothing travellers may procure food sufficient to carry them to the Columbia.

We made a long stretch across the upper plain, and encamped on the bluff, where the grass was very green and good; the soil of the upper plains containing a considerable proportion of calcareous matter. This green freshness of the grass was very remarkable for the season of the year. Again we heard the roar of a fall in the river below, where the water in an unbroken volume goes over a descent of several feet. The night is clear, and the weather continues very warm and pleasant, with a sunset temperature of 70°.

October 3d.—The morning was pleasant, with a temperature at sunrise of 42°. The road was broken by ravines among the hills, and in one of these, which made the bed of a dry creek, I found a fragmentary stratum, or brecciated conglomerate, consisting of flinty slate-pebbles, with fragments of limestone containing fossil shells.

On the left the mountains are visible at a distance of twenty or thirty miles, appearing smooth and rather low; but at intervals higher peaks look out from beyond, and indicate that the main ridge, which we are leaving with the course of the river, and which forms the northern boundary of the Great Basin, still maintains its elevation.

About two o'clock we arrived at the ford where the road crosses to the right bank of Snake River.

An Indian was hired to conduct us through the ford, which proved impracticable for us, the water sweeping away the howitzer and nearly drowning the mules, which we were obliged to extricate by cutting them out of

the harness. The river here is expanded into a little bay in which there are two islands, across which is the road of the ford; and the emigrants had passed by placing two of their heavy wagons abreast of each other, so as to oppose a considerable mass against the body of water.

The Indians informed us that one of the men, in attempting to turn some cattle which had taken a wrong direction, was carried off by the current and drowned. Since their passage the water had risen considerably; but, fortunately, we had a resource in the boat, which was filled with air and launched; and at seven o'clock we were safely encamped on the opposite bank, the animals swimming across, and the carriage, howitzer, and baggage of the camp being carried over in the boat.

At the place where we crossed, above the islands, the river had narrowed to a breadth of one thousand and forty-nine feet by measurement, the greater portion of which was from six to eight feet deep. We were obliged to make our camp where we landed, among the Indian lodges, which are semicircular huts made of willow, thatched over with straw, and open to the sunny south. By observation, the latitude of our encampment on the right bank of the river was $42^{\circ} 55' 58''$; chronometric longitude $115^{\circ} 04' 46''$, and the travelled distance from Fort Hall two hundred and eight miles.

October 4th.—Calm, pleasant day, with the thermometer at sunrise at 47° . Leaving the river at a considerable distance to the left, and following up the bed of a rocky creek, with occasional holes of water, in about six miles we ascended, by a long and rather steep hill, to a plain six hundred feet above the river, over which we continued to travel during the day, having a broken ridge two thousand or three thousand feet high on the right. The plain terminates, where we ascended, in an escarpment of vesicular trap-rock, which supplies the fragments of the creek below. The sky clouded over, with a strong wind from the northwest, with a few drops of rain and occasional sunlight, threatening a change.

Artemisia still covers the plain, but *Purshia tridentata* makes its appearance here on the hill-sides, and on bottoms of the creeks—quite a tree in size, and larger than the artemisia. We crossed several hollows with a little water in them and improved grass; and, turning off from the road in the afternoon in search of water, travelled about three miles up the bed of a willow creek, toward the mountain, and found a good encampment, with wood and grass, and little ponds of water in the bed of the creek; which must be of more importance at other seasons, as we found there several old fixtures for fishing. There were many holes on the creek prairie, which had been made by the diggers in search of roots.

Wind increased to a violent gale from the northwest, with a temperature at sunset of 57° .

October 5th.—The morning was calm and clear, and at sunrise the thermometer was at 32° . The road to-day was occasionally extremely rocky, with hard volcanic fragments, and our travelling very slow. In about nine miles the road brought us to a group of smoking hot springs, with a temperature of 164° .

There were a few helianthi in bloom, with some other low plants, and the place was green roundabout; the ground warm, and the air pleasant, with a summer atmosphere that was very grateful in a day of high and cold searching wind. The rocks were covered with a white and red incrustation; and the water has on the tongue the same unpleasant effect as that of the Basin Spring on Bear River. They form several branches, and bubble up with force enough to raise the small pebbles several inches.

The following is an analysis of the deposit with which the rocks are incrustated:

ANALYSIS.	
Silica.....	72.55
Carbonate of lime.....	14.60
Carbonate of magnesia.....	1.20
Oxide of iron.....	4.65
Alumina.....	0.70
Chloride of sodium, etc. }	1.10
Sulphate of soda.....	
Sulphate of lime, etc. }	
Organic vegetable matter }	5.20
Water and loss.....	
	100.00

These springs are near the foot of the ridge (a dark and rugged-looking mountain), in which some of the nearer rocks have a reddish appearance, and probably consist of a reddish-brown trap, fragments of which were scattered along the road after leaving the spring. The road was now about to cross the point of this mountain, which we judged to be a spur from the Salmon River range.

We crossed a small creek, and encamped about sunset on a stream which is probably Lake River. This is a small stream, some five or six feet broad, with a swift current, wooded principally with willows and some few cotton-woods. Along the banks were canes, rose-bushes, and clematis, with *Purshia tridentata* and artemisias on the upper bottom. The sombre appearance of the country is somewhat relieved in coming unexpectedly from the dark rocks upon these green and wooded water-courses, sunk in chasms; and, in the spring, the contrasted effect must make them beautiful.

The thermometer at sunset 47° , and the night threatening snow.

October 6th.—The morning warm, the thermometer 46° at sunrise, and sky entirely clouded. After travelling about three miles over an extremely

rocky road, the volcanic fragments began to disappear; and, entering among the hills at the point of the mountain, we found ourselves suddenly in a granite country. Here the character of the vegetation was very much changed; the artemisia disappeared almost entirely, showing only at intervals toward the close of the day, and was replaced by *Purshia tridentata*, with flowering shrubs and small fields of *dieteria divaricata*, which gave bloom and gayety to the hills. These were everywhere covered with a fresh and green short grass, like that of the early spring. This is the fall or second growth, the dried grass having been burnt off by the Indians; and wherever the fire has passed, the bright-green color is universal.

The soil among the hills is altogether different from that of the river plain, being in many places black, in others sandy and gravelly, but of a firm and good character, appearing to result from the decomposition of the granite rocks, which is proceeding rapidly.

In quitting for a time the artemisia (sage) through which we had been so long voyaging, and the sombre appearance of which is so discouraging, I have to remark that I have been informed that in Mexico wheat is grown upon the ground which produces this shrub; which, if true, relieves the soil from the character of sterility imputed to it. Be this as it may, there is no dispute about the grass, which is almost universal on the hills and mountains, and always nutritious, even in its dry state.

We passed on the way masses of granite on the slope of a spur, which was very much weathered and abraded. This is a white feldspathic granite, with small scales of black mica; smoky quartz in which there are garnets appear to constitute this portion of the mountain.

The road at noon reached a broken ridge, on which were scattered many boulders or blocks of granite; and, passing very small streams, where, with a little more than the usual timber, was sometimes gathered a little wilderness of plants, we encamped on a small stream, after a march of twenty-two miles, in company with a few Indians.

Temperature at sunset, 51°; and the night was partially clear, with a few stars visible through drifting white clouds. The Indians made an unsuccessful attempt to steal a few horses from us—a thing of course with them, and to prevent which the traveller is on perpetual watch.

October 7th.—The day was bright, clear, and pleasant, with a temperature of 45°; and we breakfasted at sunrise, the birds singing in the trees as merrily as if we were in the midst of summer. On the upper edge of the hills, on the opposite side of the creek, the black volcanic rock reappears; and ascending these, the road passed through a basin, around which the hills swept in such a manner as to give it the appearance of an old crater. Here were strata and broken beds of black scoriated rock,

and hills composed of the same, on the summit of one of which there was an opening resembling a rent.

We travelled to-day through a country resembling that of yesterday, where, although the surface was hilly, the road was good, being firm and entirely free from rocks and artemisia. To our left, below, was the great sage plain; and on the right were the near mountains, which presented a smoothly broken character, or rather a surface waved into numberless hills. The road was occasionally enlivened by meeting Indians, and the day was extremely beautiful and pleasant; and we were pleased to be free from the sage, even for a day. When we had travelled about eight miles we were nearly opposite to the highest portion of the mountains on the left side of the Smoke River Valley; and, continuing on a few miles beyond, we came suddenly in sight of the broad, green line of the Valley of the *Rivière Boisée* (wooded river), black near the gorge where it debouches into the plains, with high precipices of basalt, between walls of which it passes on emerging from the mountains. Following with the eye its upward course, it appears to be shut in among lofty mountains, confining its valley in a very rugged country.

Descending the hills, after travelling a few miles along the high plain, the road brought us down upon the bottoms of the river, which is a beautiful rapid stream, with clear mountain water, and, as the name indicates, well wooded with some varieties of timber—among which are handsome cotton-woods. Such a stream had become quite a novelty in this country, and we were delighted this afternoon to make a pleasant camp under fine old trees again.

There were several Indian encampments scattered along the river; and a number of their inhabitants, in the course of the evening, came to the camp on horseback with dried and fresh fish to trade. The evening was clear, and the temperature at sunset 57°.

At the time of the first occupation of this region by parties engaged in the fur trade, a small party of men, under the command of — Reid, constituting all the garrison of a little fort on this river, were surprised and massacred by the Indians; and to this event the stream owes its occasional name of *Reid's River*.

On the 8th we travelled about twenty-six miles, the ridge on the right having scattered pines on the upper parts; and, continuing the next day our road along the river bottom, after a day's travel of twenty-four miles we encamped in the evening on the right bank of the river, a mile above the mouth, and early the next morning arrived at Fort *Boisé*. This is a simple dwelling-house on the right bank of Snake River, about a mile below the mouth of *Rivière Boisée*; and on our arrival we were received with an agreeable hospitality by Mr. Payette, an officer of the Hudson

Bay Company, in charge of the fort; all of whose garrison consisted in a Canadian *engagé*.

Here the road recrosses the river, which is broad and deep; but, with our good boat, aided by two canoes which were found at the place, the camp was very soon transferred to the left bank. Here we found ourselves again surrounded by the sage; *artemisia tridentata*, and the different shrubs which during our voyage had always made their appearance abundantly on saline soils, being here the prevailing and almost the only plants. Among them the surface was covered with the usual saline efflorescences, which here consist almost entirely of carbonate of soda, with a small portion of chloride of sodium.

Mr. Payette had made but slight attempts at cultivation, his efforts being limited to raising a few vegetables, in which he succeeded tolerably well; the post being principally supported by salmon. He was very hospitable and kind to us, and we made a sensible impression upon all his comestibles; but our principal inroad was into the dairy, which was abundantly supplied, stock appearing to thrive extremely well; and we had an unusual luxury in a present of fresh butter, which was, however, by no means equal to that of Fort Hall—probably from some accidental cause. During the day we remained here there were considerable numbers of miserable half-naked Indians around the fort, who had arrived from the neighboring mountains. During the summer, the only subsistence of these people is derived from the salmon, of which they are not provident enough to lay up a sufficient store for the winter, during which many of them die from absolute starvation.

Many little accounts and scattered histories, together with an acquaintance which I gradually acquired of their modes of life, had left the aboriginal inhabitants of this vast region pictured in my mind as a race of people whose great and constant occupation was the means of procuring a subsistence; and though want of space and other reasons will prevent me from detailing the many incidents which made these things familiar to me, this great feature among the characteristics of the country will gradually be forced upon the mind of the reader.

Pointing to a group of Indians who had just arrived from the mountains on the left side of the valley, and who were regarding our usual appliances of civilization with an air of bewildered curiosity, Mr. Payette informed me that, every year since his arrival at this post, he had unsuccessfully endeavored to induce these people to lay up a store of salmon for their winter provision. While the summer weather and the salmon lasted, they lived contentedly and happily, scattered along the different streams where the fish were to be found; and as soon as the winter snows began to fall, little smokes would be seen rising among the mountains, where they would be

found in miserable groups, starving out the winter; and sometimes, according to the general belief, reduced to the horror of cannibalism—the strong, of course, preying on the weak. Certain it is they are driven to any extremity for food, and eat every insect, and every creeping thing, however loathsome and repulsive. Snails, lizards, ants—all are devoured with the readiness and greediness of mere animals.

In common with all the other Indians we had encountered since reaching the Pacific waters, these people use the Shoshonee or Snake language, which, as will be remarked in the course of the narrative, is the universal language over a very extensive region.

On the evening of the 10th I obtained, with the usual observations, a very excellent emersion of the first satellite, agreeing very nearly with the chronometer. From these observations the longitude of the fort is $116^{\circ} 47' 00''$, latitude $43^{\circ} 49' 22''$, and elevation above the sea two thousand one hundred feet.

Sitting by the fire on the river-bank, and waiting for the immersion of the satellite, which did not take place until after midnight, we heard the monotonous song of the Indians, with which they accompany a certain game of which they are very fond. Of the poetry we could not judge, but the music was miserable.

October 11th.—The morning was clear, with a light breeze from the east, and a temperature at sunrise of 33° . A part of a bullock purchased at the fort, together with the boat to assist him in crossing, was left here for Mr. Fitzpatrick, and at eleven o'clock we resumed our journey; and directly leaving the river, and crossing the *artemisia* plain, in several ascents we reached the foot of a ridge where the road entered a dry, sandy hollow, up which it continued to the head; and, crossing a dividing ridge, entered a similar one.

We met here two poor emigrants (Irishmen) who had lost their horses two days since—probably stolen by the Indians—and were returning to the fort in hopes to hear something of them there. They had recently had nothing to eat; and I halted to unpack an animal, and gave them meat for their dinner. In this hollow the *artemisia* is partially displaced on the hill-sides by grass; and descending it, about sunset we reached the *Rivière aux Malheurs* (the unfortunate or unlucky river), a considerable stream, with an average breadth of fifty feet and, at this time, eighteen inches' depth of water.

The bottom lands were generally one and a half mile broad, covered principally with long dry grass; and we had difficulty to find sufficient good grass for the camp. With the exception of a bad place of a few hundred yards long, which occurred in rounding a point of hill to reach the ford of the river, the road during the day had been very good.

October 12th.—The morning was clear and calm, and the thermometer at sunrise 23° . My attention was attracted by a smoke on the right side of the river, a little below the ford, where I found on the low bank, near the water, a considerable number of hot springs, in which the temperature of the water was 193° . The ground, which was too hot for the naked foot, was covered above and below the springs with an incrustation of common salt, very white and good, and fine-grained.

Leading for five miles up a broad dry branch of the Malheurs River, the road entered a sandy hollow where the surface was rendered firm by the admixture of other rock, being good and level until arriving near the head of the ravine, where it became a little rocky, and we met with a number of sharp ascents over an undulating surface. Crossing here a dividing ridge, it became an excellent road of gradual descent down a very marked hollow; in which, after ten miles, willows began to appear in the dry bed of a head of the *Rivière aux Bouleaux* (Birch River); and descending seven miles we found, at its junction with another branch, a little water, not very good or abundant, but sufficient in case of necessity for a camp.

Crossing Birch River we continued for about four miles across a point of hill, the country on the left being entirely mountainous, with no level spot to be seen; whence we descended to Snake River—here a fine-looking stream, with a large body of water and a smooth current, although we hear the roar and see below us the commencement of rapids where it enters among the hills. It forms here a deep bay, with a low sand-island in the midst; and its course among the mountains is agreeably exchanged for the black volcanic rock. The weather during the day had been very bright and extremely hot; but, as usual, so soon as the sun went down, it was necessary to put on overcoats.

I obtained this evening an observation of an emersion of the first satellite, and our observations place this encampment in latitude $44^{\circ} 17' 36''$, and longitude $116^{\circ} 56' 45''$, which is the mean of the results from the satellite and chronometer; the elevation above the sea, one thousand eight hundred and eighty feet. At this encampment the grass is scanty and poor.

October 13th.—The morning was bright, with the temperature at sunrise 28° . The horses had strayed off during the night, probably in search of grass; and, after a considerable delay, we had succeeded in finding all but two, when, about nine o'clock, we heard the sound of an Indian song and drum approaching; and, shortly after, three Cayuse Indians appeared in sight, bringing with them the two animals. They belonged to a party which had been on a buffalo-hunt in the neighborhood of the Rocky Mountains, and were hurrying home in advance. We presented them with some tobacco and other things, with which they appeared well satisfied, and, moderating their pace, travelled in company with us.

We were now about to leave the valley of the great southern branch of the Columbia River, to which the absence of timber and the scarcity of water give the appearance of a desert, to enter a mountainous region where the soil is good and in which the face of the country is covered with nutritious grasses and dense forest—land embracing many varieties of trees peculiar to the country, and on which the timber exhibits a luxuriance of growth unknown to the eastern part of the continent and to Europe.

This mountainous region connects itself in the southward and westward with the elevated country belonging to the Cascade or California range; and, as will be remarked in the course of the narrative, forms the eastern limit of the fertile and timbered lands along the desert and mountainous region included within the Great Basin—a term which I apply to the intermediate region between the Rocky Mountains and the next range, containing many lakes, with their own system of rivers and creeks (of which the Great Salt Lake is the principal), and which have no connection with the ocean or the great rivers which flow into it. This Great Basin is yet to be adequately explored.

And here, on quitting the banks of a sterile river to enter on arable mountains, the remark may be made that, on this western slope of our continent, the usual order of distribution of good and bad soil is often reversed—the river and creek bottoms being often sterile and darkened with the gloomy and barren artemisia; while the mountain is often fertile and covered with rich grass, pleasant to the eye and good for flocks and herds.

Leaving entirely the Snake River, which is said henceforth to pursue its course through cañons, amidst rocky and impracticable mountains where there is no possibility of travelling with animals, we ascended a long and somewhat steep hill; and, crossing the dividing ridge, came down into the Valley of *Burnt River*, which here looks like a hole among the hills. The average breadth of the stream here is thirty feet; it is well fringed with the usual small trees; and the soil in the bottoms is good, with better grass than we had lately been accustomed to see.

We now travelled through a very mountainous country; the stream running rather in a ravine than a valley, and the road is decidedly bad and dangerous for single wagons, frequently crossing the stream where the water is sometimes deep; all the day the animals were fatigued in climbing up and descending a succession of steep ascents, to avoid the precipitous hill-sides; and the common trail, which leads along the mountain-side at places where the river strikes the base, is sometimes bad even for a horseman.

The mountains along this day's journey were composed, near the river, of a slaty calcareous rock in a metamorphic condition. It appears originally to have been a slaty sedimentary limestone, but its present condition indi-