

105° 12' 23", depending, with all the other longitudes along this portion of the line, upon a subsequent occultation of September 13, 1843, to which they are referred by the chronometer.

Its distance from Kansas Landing, by the road we travelled (which, it will be remembered, was very winding along the Lower Kansas River), was seven hundred and fifty miles. The rate of the chronometer, determined by observations at this place for the interval of our absence, during this month, was 33.72", which you will hereafter see did not sensibly change during the ensuing month, and remained nearly constant during the remainder of our journey across the continent. This was the rate used in referring to St. Vrain's Fort, the longitude between that place and the mouth of the *Fontaine-qui-bouit*.

Our various barometrical observations, which are better worthy of confidence than the isolated determination of 1842, give, for the elevation of the fort above the sea, four thousand nine hundred and thirty feet. The barometer here used was also a better one, and less liable to derangement.

At the end of two days, which was allowed to my animals for necessary repose, all the arrangements had been completed, and on the afternoon of the 26th we resumed our respective routes. Some little trouble was experienced in crossing the Platte, the waters of which were still kept up by rains and melting snow; and, having travelled only about four miles, we encamped in the evening on Thompson's Creek, where we were very much disturbed by mosquitoes.

The following days we continued our march westward over comparative plains, and, fording the *Câche-à-la-Poudre* on the morning of the 28th, entered the Black Hills, and nooned on this stream in the mountains beyond them. Passing over a fine large bottom in the afternoon, we reached a place where the river was shut up in the hills; and, ascending a ravine, made a laborious and very difficult passage around by a gap, striking the river again about dusk. A little labor, however, would remove this difficulty, and render the road to this point a very excellent one. The evening closed in dark, with rain, and the mountains looked gloomy.

July 29th.—Leaving our encampment about seven in the morning, we travelled until three in the afternoon along the river, which, for this distance of about six miles, runs directly through a spur of the main mountains.

We were compelled by the nature of the ground to cross the river eight or nine times at difficult, deep, and rocky fords, the stream running with great force, swollen by the rains—a true mountain torrent, only forty or fifty feet wide. It was a mountain valley of the narrowest kind—almost a chasm; and the scenery very wild and beautiful.

Towering mountains rose round about; their sides sometimes dark with forests of pine, and sometimes with lofty precipices, washed by the river;

while below, as if they indemnified themselves in luxuriance for the scanty space, the green river bottom was covered with a wilderness of flowers, their tall spikes sometimes rising above our heads as we rode among them. A profusion of blossoms on a white flowering vine (*Clematis lasiantha*), which was abundant along the river, contrasted handsomely with the green foliage of the trees. The mountain appeared to be composed of a greenish gray and red granite, which in some places appeared to be in a state of decomposition, making a red soil.

The stream was wooded with cotton-wood, box-elder, and cherry, with currant and service-berry bushes. After a somewhat laborious day, during which it had rained incessantly, we encamped near the end of the pass at the mouth of a small creek, in sight of the great Laramie Plains.

It continued to rain heavily, and at evening the mountains were hid in mists; but there was no lack of wood, and the large fires we made to dry our clothes were very comfortable; and at night the hunters came in with a fine deer. Rough and difficult as we found the pass to-day, an excellent road may be made with a little labor. Elevation of the camp five thousand five hundred and forty feet, and distance from St. Vrain's Fort fifty-six miles.

July 30th.—The day was bright again; the thermometer at sunrise 52° ; and leaving our encampment at eight o'clock, in about half a mile we crossed the *Câche-à-la-Poudre* River for the last time; and, entering a smoother country, we travelled along a kind of *vallon*, bounded on the right by red buttes and precipices, while to the left a high rolling country extended to a range of the Black Hills, beyond which rose the great mountains around Long's Peak.

By the great quantity of snow visible among them, it had probably snowed heavily there the previous day, while it had rained on us in the valley.

We halted at noon on a small branch; and in the afternoon travelled over a high country, gradually ascending toward a range of *buttes*, or high hills covered with pines, which forms the dividing ridge between the waters we had left and those of Laramie River.

Late in the evening we encamped at a spring of cold water, near the summit of the ridge, having increased our elevation to seven thousand five hundred and twenty feet. During the day we had travelled twenty-four miles. By some indifferent observations our latitude is $41^{\circ} 02' 19''$. A species of *hedecome* was characteristic along the whole day's route.

Emerging from the mountains, we entered a region of bright, fair weather. In my experience in this country I was forcibly impressed with the different character of the climate on opposite sides of the Rocky Mountain range. The vast prairie plain on the east is like the ocean; the rain

and clouds from the constantly evaporating snow of the mountains rushing down into the heated air of the plains, on which you will have occasion to remark the frequent storms of rain we encountered during our journey.

July 31st.—The morning was clear; temperature 48° . A fine rolling road, among piny and grassy hills, brought us this morning into a large trail where an Indian village had recently passed. The weather was pleasant and cool; we were disturbed by neither mosquitoes nor flies; and the country was certainly extremely beautiful.

The slopes and broad ravines were absolutely covered with fields of flowers of the most exquisitely beautiful colors. Among those which had not hitherto made their appearance, and which here were characteristic, was a new *delphinium*, of a green and lustrous metallic-blue color, mingled with compact fields of several bright-colored varieties of *astragalus*, which were crowded together in splendid profusion. This trail conducted us through a remarkable defile to a little timbered creek, up which we wound our way, passing by a singular and massive wall of dark-red granite.

The formation of the country is a red feldspathic granite, overlying a decomposing mass of the same rock, forming the soil of all this region, which everywhere is red and gravelly, and appears to be of a great floral fertility.

As we emerged on a small tributary of the Laramie River, coming in sight of its principal stream, the flora became perfectly magnificent; and we congratulated ourselves, as we rode along our pleasant road, that we had substituted this for the uninteresting country between Laramie Hills and the Sweet Water Valley. We had no meat for supper last night, or breakfast this morning, and were glad to see Carson come in at noon with a good antelope.

A meridian observation of the sun placed us in latitude $41^{\circ} 04' 06''$. In the evening we encamped on the Laramie River, which is here very thinly timbered with scattered groups of cotton-wood at considerable intervals. From our camp we are able to distinguish the gorges in which are the sources of *Câche-à-la-Poudre* and Laramie Rivers; and the Medicine Bow Mountain, toward the point of which we are directing our course this afternoon, has been in sight the greater part of the day.

By observation the latitude was $41^{\circ} 15' 02''$, and longitude $106^{\circ} 16' 54''$. The same beautiful flora continued till about four in the afternoon, when it suddenly disappeared with the red soil, which became sandy and of a whitish-gray color. The evening was tolerably clear; temperature at sunset 64° . The day's journey was thirty miles.

August 1st.—The morning was calm and clear, with sunrise temperature at 42° . We travelled to-day over a plain, or open rolling country, at the foot of the Medicine Bow Mountain; the soil in the morning being

sandy, with fragments of rock abundant; and in the afternoon, when we approached closer to the mountain, so stony that we made but little way.

The beautiful plants of yesterday reappeared occasionally; flax in bloom occurred during the morning, and esparcette in luxuriant abundance was a characteristic of the stony ground in the afternoon. The camp was roused into a little excitement by a chase after a buffalo bull, and an encounter with a war-party of Sioux and Cheyenne Indians about thirty strong. Hares and antelope were seen during the day, and one of the latter was killed. The Laramie Peak was in sight this afternoon. The evening was clear, with scattered clouds: temperature 62°. The day's journey was twenty-six miles.

August 2d.—Temperature at sunrise 52°, and scenery and weather made our road to-day delightful. The neighboring mountain is thickly studded with pines, intermingled with the brighter foliage of aspens, and occasional spots like lawns between the patches of snow among the pines, and here and there on the heights. Our route below lay over a comparative plain covered with the same brilliant vegetation, and the day was clear and pleasantly cool.

During the morning we crossed many streams, clear and rocky, and broad grassy valleys, of a strong black soil washed down from the mountains and producing excellent pasturage. These were timbered with the red willow and long-leaved cotton-wood, mingled with aspen, as we approached the mountain more nearly toward noon. *Esparcette* was a characteristic, and flax occurred frequently in bloom. We halted at noon on the most western fork of Laramie River—a handsome stream about sixty-feet wide and two feet deep, with clear water and a swift current over a bed composed entirely of bowlders or roll-stones. There was a large open bottom here, on which were many lodge-poles lying about; and in the edge of the surrounding timber were three strong forts that appeared to have been recently occupied.

At this place I became first acquainted with the *yampah* (*Anethum graveolens*), which I found our Snake woman engaged in digging in the low-timbered bottom of the creek. Among the Indians along the Rocky Mountains, and more particularly among the Shoshonee or Snake Indians, in whose territory it is very abundant, this is considered the best among the roots used for food. To us it was an interesting plant—a little link between the savage and civilized life. Here, among the Indians, its root is a common article of food, which they take pleasure in offering to strangers; while with us, in a considerable portion of America and Europe, the seeds are used to flavor soup. It grows more abundantly and in greater luxuriance on one of the neighboring tributaries of the Colorado than in any other part of this region; and on that stream, to which the Snakes are



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accustomed to resort every year to procure a supply of their favorite plant, they have bestowed the name of *Yampah* River. Among the trappers it is generally known as Little Snake River; but in this and other instances where it illustrated the history of the people inhabiting the country, I have preferred to retain on the map the aboriginal name.

By a meridional observation the latitude is $41^{\circ} 45' 59''$.

In the afternoon we took our way directly across the spurs from the point of the mountain, where we had several ridges to cross; and, although the road was not rendered bad by the nature of the ground, it was made extremely rough by the stiff, tough bushes of *Artemisia tridentata*,* in this country commonly called sage.

This shrub now began to make its appearance in compact fields; and we were about to quit for a long time this country of excellent pasturage and brilliant flowers.

Ten or twelve buffalo bulls were seen during the afternoon; and we were surprised by the appearance of a large red ox. We gathered around him as if he had been an old acquaintance, with all our domestic feelings as much awakened as if we had come in sight of an old farm-house. He had probably made his escape from some party of emigrants on Green River; and, with a vivid remembrance of some old green field, he was pursuing the straightest course for the frontier that the country admitted. We carried him along with us as a prize; and when it was found in the morning that he had wandered off, I would not let him be pursued, for I would rather have gone through a starving time of three entire days than let him be killed after he had successfully run the gauntlet so far among the Indians.

I have been told by Mr. Bent's people of an ox, born and raised at St. Vrain's Fort, which made his escape from them at Elm Grove, near the frontier, having come in that year with the wagons. They were on their way out, and saw occasionally places where he had eaten and lain down to rest; but did not see him for about seven hundred miles, when they overtook him on the road, travelling along to the fort, having unaccountably escaped Indians and every other mischance.

We encamped at evening on the principal fork of Medicine Bow River, near to an isolated mountain called the Medicine *Butte*, which appeared to be about eighteen hundred feet above the plain, from which it rises abruptly, and was still white, nearly to its base, with a great quantity of snow. The streams were timbered with the long-leaved cotton-wood and red willow; and during the afternoon a species of onion was very abundant.

* The greater portion of our subsequent journey was through a region where this shrub constituted the tree of the country; and as it will often be mentioned in occasional descriptions, the word *artemisia* only will be used, without the specific name.

I obtained here an immersion of the first satellite of Jupiter, which, corresponding very nearly with the chronometer, placed us in longitude $106^{\circ} 47' 25''$. The latitude, by observation, was $41^{\circ} 37' 16''$; elevation above the sea seven thousand eight hundred feet, and distance from St. Vrain's Fort one hundred and forty-seven miles.

August 3d.—There was a white frost last night; the morning is clear and cool. We were early on the road, having breakfasted before sunrise, and in a few miles' travel entered the pass of the Medicine *Butte*, through which led a broad trail which had been recently travelled by a very large party. Immediately in the pass the road was broken by ravines, and we were obliged to clear a way through groves of aspens, which generally made their appearance when we reached elevated regions. According to the barometer this was eight thousand three hundred feet; and while we were detained in opening a road, I obtained a meridional observation of the sun, which gave $41^{\circ} 35' 48''$ for the latitude of the pass. The Medicine *Butte* is isolated by a small tributary of the North Fork of the Platte, but the mountains approach each other very nearly, the stream running at their feet. On the south they are smooth, with occasional streaks of pine; but the *butte* itself is ragged, with escarpments of red feldspathic granite, and dark with pines; the snow reaching from the summit to within a few hundred feet of the trail.

The granite here was more compact and durable than that in the formation which we had passed through a few days before to the eastward of Laramie. Continuing our way over a plain on the west side of the pass, where the road was terribly rough with artemisia, we made our evening encampment on the creek, where it took a northern direction, unfavorable to the course we were pursuing.

Bands of buffalo were discovered as we came down upon the plain; and Carson brought into the camp a cow which had the fat on the fleece two inches thick. Even in this country of rich pasturage and abundant game it is rare that the hunter chances upon a finer animal. Our voyage had already been long, but this was the first good buffalo meat we had obtained. We travelled to-day twenty-six miles.

August 4th.—The morning was clear and calm; and, leaving the creek, we travelled toward the North Fork of the Platte, over a plain which was rendered rough and broken by ravines. With the exception of some thin grasses the sandy soil here was occupied almost exclusively by artemisia, with its usual turpentine odor. We had expected to meet with some difficulty in crossing the river, but happened to strike it where there was a very excellent ford, and halted at noon on the left bank, two hundred miles from St. Vrain's Fort.

The hunters brought in pack-animals loaded with fine meat. Accord-

ing to our imperfect knowledge of the country there should have been a small affluent to this stream a few miles higher up; and in the afternoon we continued our way among the river hills, in the expectation of encamping upon it in the evening. The ground proved to be so exceedingly difficult, broken up into hills, terminating in escarpments and broad ravines five or six hundred feet deep, with sides so precipitous that we could scarcely find a place to descend, that, toward sunset, I turned directly in toward the river, and, after nightfall, entered a sort of ravine. We were obliged to feel our way and clear a road in the darkness, the surface being much broken, and the progress of the carriages being greatly obstructed by the artemisia, which had a luxuriant growth of four to six feet in height.

We had scrambled along this gully for several hours, during which we had knocked off the carriage-lamps, broken a thermometer and several small articles, when, fearing to lose something of more importance, I halted for the night at ten o'clock. Our animals were turned down toward the river, that they might pick up what little grass they could find; and after a little search some water was found in a small ravine, and improved by digging.

We lighted up the ravine with fires of artemisia, and about midnight sat down to a supper which we were hungry enough to find delightful, although the buffalo meat was crusted with sand and the coffee was bitter with the wormwood taste of the artemisia leaves.

A successful day's hunt had kept our hunters occupied until late, and they slept out, but rejoined us at daybreak, when, finding ourselves only about a mile from the river, we followed the ravine down, and camped in a cotton-wood grove on a beautiful grassy bottom, where our animals indemnified themselves for the scanty fare of the past night. It was quite a pretty and pleasant place; a narrow strip of prairie about five hundred yards long terminated at the ravine where we entered by high precipitous hills closing in upon the river, and at the upper end by a ridge of low, rolling hills.

In the precipitous bluffs were displayed a succession of strata containing fossil vegetable remains and several beds of coal. In some of the beds the coal did not appear to be perfectly mineralized; and in some of the seams it was compact and remarkably lustrous. In these latter places there were, also, thin layers of a very fine white salts, in powder.

As we had a large supply of meat in the camp, which it was necessary to dry, and the surrounding country appeared to be well stocked with buffalo, which it was probable, after a day or two, we would not see again until our return to the Mississippi waters, I determined to make here a provision of dried meat, which would be necessary for our subsistence in