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SODA SPRING

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Located in a region explored by early fur traders (Robert Stuart in 1812 and Donald Mackenzie in 1819), Soda Springs became a well-known attraction to bands of trappers operating the Bear River country. When he wrote up the Adventures of Captain Bonneville, Washington Irving reported a fur hunters' celebration there, November 10, 1833, and Bonneville's impressions of the springs:

An area of about half a mile square presents a level surface of white clay or fuller's earth, perfectly spotless, resembling a great slab of Parian marble, or a sheet of dazzling snow. The effect is strikingly beautiful at all times; in summer, when it is surrounded with verdure, or in autumn, when it contrasts its bright immaculate surface with the withered herbage. Seen at a distant eminence, it then shines like a mirror, set in the brown landscape. Around this plain are clustered numerous springs of various sizes and temperatures. One of them, of scalding heat, boils furiously and incessantly, rising to the height of two or three feet. In another place there is an aperture in the earth from which rushes a column of steam that forms a perpetual cloud.

The ground for some distance around sounds hollow, and startles the solitary trapper, as he hears the tramp of his horse giving the sound of a muffled drum. He pictures to himself a mysterious gulf below, a place of hidden fires and gazes around him with awe and uneasiness.

The most noted curiosity, however, of this singular region is the Bear Springs, of which trappers give wonderful accounts. They are said to turn aside from their route through the country to drink of its waters, with as much eagerness as the Arab seeks some famous well of the desert. Captain Bonneville describes it as having the taste of beer. His men drank it with avidity, and in copious draughts. It did not appear to him to possess any medicinal properties, or to produce any peculiar effects. The Indians, however, refuse to taste it, and endeavor to persuade the white men from doing so.

We have heard this is also called the Soda Spring, and described it as containing iron and sulphur. It probably possesses some of the properties of the Ballston water.

Missionaries and emigrants traveling west on the California and Oregon Trails found Soda Springs one of the truly impressive attractions seen along the entire route. Many described the

springs in considerable detail. A representative sample of these descriptions, some of which rate Soda Springs as the outstanding feature of the entire trip, indicates the interest that most early travelers expressed in the strange phenomena they encountered there.

John K. Townsend, July 8, 1834:

Our encampment on the 8th, was near what are called the "White-clay pits," still on Bear river. The soil is soft chalk, white and tenacious; and in the vicinity are several springs of strong supercarbonated water, which bubble up with all the activity of artificial fountains. The taste was very agreeable and refreshing, resembling Saratoga water, but not so saline. The whole plain to the hills, is covered with little mounds formed of calcareous sinter, depressions on their summits, from which once issued streams of water. The extent of these eruptions, at some former period, must have been very great. At about half a mile distant, is an eruptive thermal spring of the temperature of 90, and near this is an opening in the earth from which a stream of gas issues without water.

Jason Lee, July 9, 1834:

A few yards from our camp is a curious spring called the Soda Spring. There are several places where it boils up within a few rods and though large quantities are thrown up it does not run off upon the surface but finds its way to the river underground where you can see it bubbling up in various places. The boiling in one place resembles very much the rapid boiling of water in a large chaldron the agitation being fully as great.

The water is evidently impregnated with gas it has an acid taste is rather pleasant and resembles very much the soda made from powders. There is another half a mile distant still more curious and astonishing. It [is] so warm that the thermometer stands at 90 in it. From an aperture in the rock or incrustation formed by the precipitation of particles from the water a large quantity is thrown several feet below into the River. It alternately spurts for a few seconds with considerable noise and flows more gently for the same length of time. A few feet distant is a hole of an inch in diameter where the atmosphere strongly impregnated with sulphur issues in a manner that strongly resembles respiration and with such force as to be heard several rods and is quite warm. A man on whom I can depend who visited the spring before I did said when the hole was stopped there was a crackling underneath resembling the report of a gun.

The pressure was so great that I think I did not succeed in entirely preventing the escape of the air though I put a wet tuft of grass upon it and forced it in with my foot, but observed while the grass was closely pressed into the hole that the waters spurted with more force and more constancy and when my foot was removed the grass was instantly raised.

These waters have evidently flowed out in many different places where large quantities of very curious rock has been formed by its precipitations upon moss grass &c. One place I noticed very particularly. The rock at the base is several yards in diameter and rises in a circular form to the height of say 5 ft. and is about that distance across the top the incrustation is a few inches thick at the top and the hollow is filled nearly up with earth. I have no doubt and am persuaded that no person who visits it can have doubt but that water once boiled from this chaldron but has long since found some other place for discharging itself.

Narcissa Prentiss Whitman, July 30, 1836:

Went today ten miles off our route with Husband Mr. McLeod & a few others, to visit Soda Springs. Was much delighted with the view of the wonders of Nature we saw there. The first object of curiosity we came to were several white mounds on the top of which were small springs of soda. These mounds were covered with a crustation made from the evaporation of the water which is continually running in small quantities from these springs. The next object we saw was a little singular. It consisted of an opening like a crater about three feet in diameter, by the side of a small stream. On some rocks a little below in the opening were dead flies & birds in abundance which had approached so near the crater, as to be choked with the gas which it constantly emits. On putting the face down, the breath is stopped instantly. & a low rumbling noise like the roaring of fire is heard beneath. Having satisfied our curiosity here we passed through a grove of juniper & pitch pine trees, & a small distance from them came to a large spring of soda water. Clear as crystal, effervescing continually. It appeared at great depth.

At a considerable distance below the surface, there were two white substances, in appearance like lumps of Soda in a concrete state. We took with us some soda & Acid to try the effect of a mixture & found that it effervesced with both, but the effervescence was greater with the Acid, than with the Soda. Drunk freely of the water, found it very pleasant. There were five or six other springs near Bear River which we did not visit, in consequence of losing sight of part of our company & being obliged to hasten back. The ground in every direction was covered with lava. Gathered several fine specimens. We desired more time to visit other curiosities there but was unable to, for camp was moving from continually. Rode in all thirty miles, & found them encamped under a bluff covered with black basalt.

Sarah White Smith, July 24, 1838:

Travelled about 22 miles along the bank of Bear river & are encamped at Soda Springs. This is indeed a curiosity. The water tastes like soda especially artificially prepared. The water is bubbling & foaming like boiling water. I drank of it. It

produced a little sickness. We find it excellent for making bread, no preparation of the water is necessary, take it from the fountain & the bread is as light as any prepared with yeast. Seen much lava. A rainy day.

Asahel Munger, July 16, 1838:

We found the waters a luxury indeed, as good soda as I ever drank boiling up out of the earth. There are several of these springs--all that we saw are sunk down a little below the surface of the earth. The mother spring of all we saw is said to be 10 or 12 feet across, and no bottom has ever yet been found. The water there is much stronger than at the springs we saw, these springs, which are called the Pots, boil up from the outlet of the mother spring which passes along under ground and runs into the river. The water is clear and has a smart taste like small beer, though it has more of the string to it than any beer I ever drank. I drank freely of it. It had a very good effect. Below these springs is another curiosity, on the bank of bear river is a small hole in the rock about 6 or 7 inches in diameter nearly round running down on an angle of 45 degrees back from the river, out of which there is boiling or rather foaming water about blood warm. This is thrown out at intervals of about 4 or 5 seconds--it would seem to be gasping for breath drawing in wind which makes a gurgling noise when passing in, then out comes the water in a half steam form, as though mixed with gas and pressed out with tremendous force. There is another similar, though not one fourth as large, and emits but little water. This is called by mountain men--the steam engine. The whole surface of the earth about this place, and the soda springs, and finally all over this region presents every proof of having been a volcano, and lava covers the whole surface of the earth. The rocks all about have been evidently in a melted state. I took specimens of 4 different kinds some harder than others. There is a bed of white clay, about as white as common white earthen[ware]. This is used by the Indians in all parts of the mountains for whitening skins &c.

Thomas Jefferson Farnham, August 31, 1839:

The Soda Springs, called by the fur traders Beer Springs, are the most remarkable objects of the kind within my knowledge.

They are situated on the north-west side of the river, a few rods below a grove of shrub cedars, and about two hundred yards from the shore. There are six groups of them; or in other words, there are six small hollows sunken about two feet below the ground around, of circular form, seven or eight feet in diameter, in which are a number of immense cauldrons. These pools are usually clear, with a gravelley bottom. In some of them, however, grow bogs or hassocks of coarse grass, among which are many little wells, where the water bubbled so merrily that I was tempted to drink at one of them. But as I proceeded to do so,

the suffocating properties of the gas instantly drove me from my purpose. After this rebuff, however, I made another attempt at a more open fountain, and drank with little difficulty. The waters appeared to be more highly impregnated with soda and acid than those of Saratoga; were extremely pleasant to the taste, and fumed from the stomach like the soda water of the shops. Some of them threw off at least four gallons of gas a second. And although they cast up large masses of water continually, for which there appeared no outlet, yet at different times of observation I could perceive no increase or diminution of the quantity visible. There are five or six other springs in the bank of the river just below, the waters of which resemble those I have described. One of them discharges about forty gallons a minute.

One fourth of a mile down stream from the Soda Spring, is what is called "The Steamboat Spring." The orifice from which it casts its water is in the face of a perpendicular rock on the brink of the stream, which seems to have been formed by the depositions of the fountain. It is eight inches in diameter. Six feet from this, and on the horizontal plane of the rock, is another orifice in the cavern below. On approaching the spring, a deep gurgling, hissing sound is heard underground. It appears to be produced by the generating of gas in a cavernous receiver.

This, when the chamber is filled, bursts through another cavern filled with water, which it thrusts frothing and foaming into the stream. In passing the smaller orifice, the pent gas escapes with very much the same sound as steam makes in the escape-pipe of a steamboat. Hence the name. The periods of discharge are very irregular. At times, they occur once in two, at others, once in three, four or five minutes. The force of its action also is subject to great variation. Those who have been there, often say that its noise has been heard to echo far among the hills. When I visited it I could not hear it at the distance of two hundred yards. There is also said to be a difference at different times in the temperature of the water. When I examined it, it was little above blood heat. Others have seen it much higher.

The most remarkable phenomenon connected with these springs, remains yet to be noticed. The whole river, from the Steamboat spring to the Soda Springs, (a distance of more than a fourth of a mile), is a sheet of springs, thousands in number, which bursting through two feet of superincumbent running water, throw their foaming jets, some six inches, and some less, above the surface. The water is much the same in its constituent qualities, as that of the Soda Springs.

There are in the immediate vicinity of the Steamboat Spring, and on the opposite side of the river numerous rocks with orifices in their centres, and other evidences of having been formed by intermittent springs that have long ago ceased to act.

The scenery around these wonderful fountains, is very wild.

To the east north-east, opens up the upper valley of Great Bear River, walled in on their side by dark primitive mountains, beetling over the vale, and towering on the sky. To the south south-west sweeps away the lower valley.--On either side of it rise lofty mountain of naked rocks, the wild sublimity of which contrasts strikingly with the sweet beauty of the stream and vale below.

James John, August 10, 1841:

He noticed 100 or so springs, "which are constantly bubbling and throwing off gass. Some sprout water to a considerable distance and roar like a steamboat."

Pierre Jean De Smet, August 14, 1841:

Some places on the Bear river exhibit great natural curiosities. A square plain of a few acres in extent presents an even surface of fuller's earth of pure whiteness, like that of marble, and resembling a field covered with dazzling snow. Situated near this plain are a great many springs, differing in size and temperature. Several of them have a slight taste of soda, and the temperature of these, is cold. The others are of a milk warm temperature, and must be wholesome; perhaps they are not inferior to the celebrated waters of the Spa, or of the lime springs in Belgium. I am inclined to believe so, though I am not firm in the opinion; at all events, they are surrounded by the mountains over which our wagons found it so difficult to pass. I therefore invite neither sick nor sound to test them. In the same locality there is a hole in the ground, out of which air and water escape alternately. The earth for some distance around resounds like an immense vault, and is apt to frighten the solitary traveller as he passes along.

Rufus B. Sage, November 8, 1842:

The valley of Bear river affords a number of springs strongly impregnated with various mineral properties, which cannot fail to excite the curiosity and interest of the traveller. They are found upon the left [right] bank of the stream a short distance below a small affluent from the north. Two of them are situated in a small grove of cedars, within a short distance of each other.

In passing their vicinity the attention of the traveller is at once arrested by the hissing noise they emit; and on approaching to ascertain the cause, he finds two circular-shaped openings in the surface, several feet in diameter, and filled with transparent fluid in a state of incessant effervescence, caused by the action of subterranean gases. The water of the one he finds on tasting to be excellent natural soda, and that of the other, slightly acid and beer-like;--the draught will prove delicious and somewhat stimulating, but, if repeated too freely, it is said to produce a kind of giddiness like intoxication.

These singular natural curiosities are known among the trappers as the Beer and Soda springs, names not altogether inappropriate.

A few hundred yards below these, is another remarkable curiosity, called the Steamboat spring. This discharges a column of mineral water from a rock-formed orifice, accompanied with subterraneous sounds like those produced by a high-pressure steamboat. Besides the above-described, there are a number of others in this vicinity of equally mineral character, as well as several hot springs, varying in temperature from blood to that of extreme boiling heat.

William T. Newbry, August 24, 1843:

We reached the Sody Springs. These springs bile up & dont run off. Appeares to go a way as fast as it biles. The water tast[e]s like sody after it is done buyling. There is ten springs: six large ones & 4 smawl ones. There is allso a hot spring. The water is as warm as dish water. It builes & fomes like a builing pot. It loocks like it had melte[d] & mad[e] a hole throo a rock. It builes some times 3 feet high & then goes down eve[e]n with the rock. The water is strong sulpher. There is a nauther place a bout as long as six qu[ar]ter hole that the hot steem pores out of & roars like a belles [bellows].

John C. Fremont, August 25, 1843:

we . . . made our encampment in a grove of cedar immediately at the Beer springs, which, on account of the effervescing gas and acid taste, have received their name from the voyageurs and trappers of the country, who, in the midst of their rude and hard lives, are fond of finding some fancied resemblance to the luxuries they rarely have the fortune to enjoy.

Although somewhat disappointed in the expectations which various descriptions had led me to form of unusual beauty of situation and scenery, I found it altogether a place of very great interest; and a traveller for the first time in a volcanic region remains in a constant excitement, and at every step is arrested by something remarkable and new. There is a confusion of interesting objects gathered together in a small space. Around the place of encampment the Beer springs were numerous; but, as far as we could ascertain, were entirely confined to that locality in the bottom. In the bed of the river, in front, for a space of several hundred yards, they were very abundant; the effervescing gas rising up and agitating the water in countless bubbling columns. In the vicinity round about were numerous springs of an entirely different equally marked mineral character.

In a rather picturesque spot, about 1,300 yards below our encampment, and immediately on the river bank, is the most remarkable spring of the place. In an opening on the rock, a white column of scattered water is thrown up, in form like a jet-d'eau, to a variable height of about three feet, and, though it is maintained in a constant supply, its greatest height is

attained only at regular intervals, according to the action of the force below. It is accompanied by a subterranean noise, which, together with the motion of the water, makes very much the impression of a steamboat in motion; and, without knowing that it had been already previously so called, we gave to it the name of the Steamboat spring. The rock through which it is forced is slightly raised in a convex manner, and gathered at the opening into an urn-mouthed form, and is evidently formed by continued deposition from the water, and colored bright red by oxide of iron It is a hot spring, and the water has a pungent and disagreeable metallic taste, leaving a burning effect on the tongue. Within perhaps two yards of the jet-d'eau is a small hole of about an inch in diameter, through which, at regular intervals, escapes a blast of hot air with a light wreath of smoke, accompanied by a regular noise. This hole had been noticed by Doctor Wislizenus, a gentleman who several years since passed by this place, and who remarked, with very nice observation, that smelling the gas which issued from the orifice produced a sensation of giddiness and nausea. Mr. Preuss and myself repeated the observation, and were so well satisfied with its correctness, that we did not find it pleasant to continue the experiment, as the sensation of giddiness which it produced was certainly strong and decided. A huge emigrant wagon, with a large and diversified family, had overtaken us and halted to noon at our encampment; and, while we were sitting at the spring, a band of boys and girls, with two or three young men, came up, one of whom I asked to stoop down and smell the gas, desirous to satisfy myself further of its effects. But his natural caution had been awakened by the singular and suspicious features of the place, he declined my proposal decidedly, and with a few indistinct remarks about the devil, whom he seemed to consider the genius loci. The ceaseless motion, and the play of the fountain, the red rock, and green trees near, make this a picturesque spot.

A short distance above the spring, and near the foot of the same spur, is a very remarkable yellow-colored rock, sort and friable, consisting principally of carbonate of lime and oxide of iron, of regular structure, which is probably a fossil coral. The rocky bank along the shore between the Steamboat spring and our encampment, along which is dispersed the water from the hills, is composed entirely of strata of a calcareous tufa, with the remains of moss and reed-like grasses, which is probably the formation of springs. The Beer or Soda springs, which have given name to this locality, are agreeable, but less highly flavored than the Boiling springs at the foot of Pikes' peak, which are of the same character. They are very numerous, and half hidden by tufts of grass, which we amused ourselves in removing and searching about for more highly impregnated springs. They are some of them deep and of various sizes--sometimes several yards in diameter, and kept in constant motion by columns of escaping

gas

In the afternoon I wandered about among the cedars, which occupy the greater part of the bottom towards the mountains. The soil here has a dry and calcined appearance; in some places, the open grounds are covered with saline efflorescences, and there are a number of regularly shaped and very remarkable hills which are formed of a succession of convex strata that have been deposited by the waters of extinct springs, the orifices of which are found on their summits, some of them having the form of funnel-shaped cones. Others of these remarkably shaped hills are of a red-colored earth, entirely bare, and composed principally of carbonate of lime, with oxide of iron, formed in the same manner. Walking near one of them, on the summit of which the springs were dry, my attention was attracted by an underground noise, around which I circled repeatedly, until I found the spot from beneath which it came; and, removing the red earth, discovered a hidden spring, which was boiling up from below, with the same disagreeable metallic taste as the Steamboat spring. Continuing up the bottom, and crossing the little stream which has been already mentioned, I visited several remarkable red and white hills, which had attracted my attention from the road in the morning. These are immediately upon the stream, and like those already mentioned, are formed by the deposition of successive strata from the springs. On their summits, the orifices through which the waters had been discharged were so large that they resembled miniature craters, being some of them several feet in diameter, circular, and regularly formed as if by art. At a former time, when these dried-up fountains were all in motion, they must have made a beautiful display on a grand scale; and nearly all this basin appears to me to have been formed under their action, and should be called the place of fountains. At the foot of one of these hills, or rather on its side near the base, are several of these small limestone columns, about one foot in diameter at the base, and tapering upwards to a height of the little obelisks. In some, the water only boils up, no longer overflowing, and has here the same taste as at the Steamboat spring. The observer will remark a gradual subsidence in the water, which formerly supplied the fountains, as on all the summits of the hills the springs are now dry, and are found only low down upon their sides, or on the surrounding plain.

Overton Johnson and William H. Winter, September 7, 1843:

We reached the Soda Springs. They are on the East side of Bear River, and are scattered over a level space, about equal, in extent, to one square mile; with a slight inclination to the River, and elevated above it some fifteen feet. A large portion of this level space is covered with a stunted growth of Pine and Cedar. The earth is of various colors. In some places it is almost perfectly white, and in others, quite red, etc. Above, below, and on the opposite side of the River, the valley is rich,

and covered with fine grass. The Mountains, on the and East are barren; but on the West, they are covered with Pine. Springs are deep pots in the earth, from one to fifteen feet across, and generally without an outlet. The water appears to be originally fresh, and seems to rise to a common level in all the springs; and in these pools, which have been probably made by strong jet as the rising jets of the rising gas, it becomes highly charged.

A slightly hissing sound, is occasioned by the escapement of the gas. The water in many of the springs, where the surface exposed is small, is cool, very pleasant, and has a fine, pure and lively acid.

About half a mile below, and immediately on the bank of the River, there is a Spring where the water, (which is several feet in the air, from the centre of a small conical rock, which it has formed about it. A few feet from where the water escapes, there is a hole in the rock, connected with the channel through which the water passes, which inhales and exhales the air, like an animal breathing. There are numbers of dried-up fountains, similar to this, back from the River, hollow truncated cones, from three to thirty feet in diameter. Several Springs rise in the bed of the River, the water of which is quite warm. Every thing here has the appearance of recent and powerful volcanic action, and doubtless the causes still exist, at no very great distance.

John Boardman, September 7, 1843:

At noon in a cedar grove, came to famous Soda Spring. The water boils up in numerous places, and has no visible outlet. The water much superior to that manufactured in the States; it is very pleasant and I took my fill. The stones show volcanic action has taken place; resemble pumice stones, except heavier. The country for miles is full of fissures, very deep, where the rock are rent and thrown in many shapes. Forty rods from the Soda Spring, immediately on the Bear River, is a hot spring; it rumbles, roars, and gushes up water, much like in appearance, the puff of a high pressure steamboat. The water tastes much of copper.

Theodore Talbot, September 9, 1843:

At the head of the third valley through which we passed today are situated the "Soda Springs". They lie on the right side of the valley and are scattered over a whitish plain of some extent. We first came to a large white mound composed of successive plates or laminae, deposited one upon another. This, as well as several smaller ones had ceased to play. The principal syphon spring through which the water was flowing was a cone, about five feet diameter at its base, and resting upon the white clay plain, its height was four feet, and the water bubbled out of an aperture at the apex, not more than an inch in diameter. The water was strongly impregnated with carbonic acid

gas, cold, and of similar properties to our common soda water. We took long draughts of these refreshing waters. We passed many ponds in which the water sparkled and bubbled at a great rate. These ponds are deep and clear, but have no outlet. Their sides and bottoms are lined with white slime.

Farther along, near the river bank is a curious basin, ten feet in diameter, evidently formed by the deposits from a spring which once played in its centre. Lower down the slope of the bank is a cone, now dry, and still lower on the immediate brink of the river is the "Steam-boat Spring." Here the water bursts out of a hole six or eight inches diameter, at intervals of half a second, and is thrown up, occasionally to the height of ten feet. The water is very warm, its deposits of red dish color. Around this spring are several holes, to which if the ear be applied, a sound is heard exactly resembling that of a high pressure steam engine in full operation. There are numberless other springs and ponds which are very curious, but I had not time to examine them. The ground every where echoes to the tread in a manner truly startling.

Jesse Harritt, July 25, 1845:

Made a march of eighteen miles down the river to the Soda Springs and encamped; plenty of grass and cedar wood. It would be in vain for me to try to describe all the singularities in the character of this place; the first object of note that struck our sight was two small mounds rising on the level plain about 40 feet high, composed of a kind of white lava, on the top of which are several springs of soda that are perpetually boiling and spouting; some are cold, while others are lukewarm although all are strongly impregnated with soda. The next was seen in a low bottom, a small basin about ten feet in diameter with its margin thickly set with fine grass, while in its center a strong boil of soda gushed forth, boiling up and sinking back. The water in this was very cold and a reddish nature, with a thick sediment around it, bearing an exact appearance of Spanish brown. A few paces further we found another, still larger, affording the best of cold, clear soda, although a little impregnated with copperas.

In looking further we found a number of these springs. About one-half mile further down the river, on an elevated spot of ground, we found one still more singular--a hole in a solid rock about 20 inches in diameter, out of which ebullitions like the warm soda--spouting the water at different ebullitions like the escape pipe of a steamboat, from four to five feet high. Excellent fresh-water springs are found within a few rods of those, as strongly impregnated with soda.

Joel Palmer, August 4, 1845:

We reached the Soda springs, having traveled about eight miles. The first view we had was of two or three white hillocks

or mounds, standing up at different points to the right of the road, and near a grove of cedar and pine timber. One of them is about ten rods long at the base, and three or four rods in width; its elevation is probably twenty-five or thirty feet from the plain in which it is situated. The side of these mounds continually increases, as the water oozes out at different points, and produces a crust which becomes quite hard. The rocks, for miles around, are of the soda formation. Upon these mounds the water is warm. In a small bottom, immediately before reaching the first of these mounds, and about two hundred yards above the road, is a hole about eight feet in diameter; in this is a pool of water, strongly impregnated with soda. I had no means of ascertaining the depth, but believe it to be considerable; at one edge of it the water was boiling and sparkling; it would sometimes swell four inches above the surface. This pool, and others contiguous, afford excellent drinking water; it was cool, and, when sweetened, would compare favourably with any soda water. Just below the mound, and near the grove, is a rapid stream of water, coursing over a rocky bottom, formed by soda. At the crossing of this creek, and below the road, is a morass; and immediately on the bank of the rivulet, is a crevice in the rock, from which a small stream of water issues; this was the best to drink of any I found. After crossing the creek, the distance to the springs generally resorted to is about three-fourths of a mile; they boil up in every direction. Several mounds have been formed, of ten feet in height. The water has found some other passage, and left them to moulder away. The center or middle of these are concave. The surface of the earth here is some twelve or fifteen feet above the level of the river, the bank of which is of rock, of the soda formation. A grove of cedar and pine timber extends from the river back to the mountain, a distance of two and a half or three miles; the space between the road and the river is covered with grass; but between it and the mountain it is barren of vegetation of any kind. The soda has left a sediment, which is now crumbled and loose, with an occasional mound of ten or twelve feet elevation, but no water running. The river here is about one hundred yards in width, and about eighteen inches in depth, running very rapidly. The soda water is bubbling up in every direction, and sometimes rises six inches above the surface of the river. This bubbling extends for near half a mile. A stream comes in from the north at the western edge of the springs, tumbles over the rocks, and finally into the river. Near where one branch of this falls over the rock (it has several passages where the road crosses it) it is a circular basin in the rock, being two feet in diameter at the top, but larger below. It was covered with grass; and, in walking along, I barely avoided stepping into it; whilst at its edge the purling or gurgling of the water, as it boils up, apprized me of its vicinity. The surface of the water is about three feet below the top of the rock. The

water is cool, much more so than the water of the springs, and is remarkably clear.

Three hundred yards below the crossing of this branch, and immediately on the bank of the river, is the Steamboat Spring. The water has formed a small cone of about one and a half feet in height, and three feet in diameter, at the base. A hole of six inches in diameter at the top, allows the water to discharge itself. It swells out at intervals of eight or ten seconds, and sometimes flows four or five feet in disjointed fragments. It is lukewarm, and has a milky appearance; but when taken in a vessel becomes as transparent as crystal. It produces a sound similar to the puffing of a steamboat, but not quite as deep. It can frequently be heard at the distance of a quarter of a mile. About six feet from this is a small fissure in the rock, which is called the escape-pipe or gas-pipe. It makes a hissing noise, corresponding with the belching of the spring. The gas emitted from this fissure is so strong that it would suffocate a person, holding his head near the ground. To the rear of this, across the road, are mounds fifty or sixty feet in height; these were entirely dry. Up this creek is very good grazing for cattle, but there are found some marshy places contiguous. The bottom upon the opposite side of the river is four or five miles in width, and covered with a good coat of grass. The soil looks good; and if the seasons are not too short, would produce well. The mountain upon the south side is covered with heavy pine timber; on the north side but little timber was observed; what little was noticed consisted principally of scrubby cedars. Antelope found in abundance. The water, in many of the springs, is sufficiently strong to raise bread, equally as well as saleratus or yeast. Were it not for their remote situation, these springs would be much resorted to, especially during the summer months. The country is mountainous, and its altitude so great, that the air is always cool, and consequently must be healthy.

Companies wishing to remain for a length of time at the springs, would pursue a proper course in driving their cattle over the river, as good grazing can thereby be had.

Samuel Hancock, 1845:

These soda springs are well worthy a notice, possessing all the properties of pure soda water; one of them particularly attracted our attention and admiration, the water gushing out in foam about six times a minute, through a rock which has been formed by the action of the water; this rock is quite uniform in shape and the aperture through which the soda water flows is round and perhaps three inches in diameter, giving the jet an imposing appearance as it gushes at intervals, falling gracefully back into its natural fountain in sparkling streams then wasting itself in every direction around. We used this water in making our bread and found it answered all the purposes of yeast, so we carried a quantity away as a substitute for it.

Lansford W. Hastings guide, 1846:

In this valley, are found the soda springs, the "steam-boat springs," and numerous other wonderous objects, which are well calculated to attract the attention of the curious, and admirer of nature. The soda springs are situated about one hundred miles west of the dividing ridge of the Rocky mountains, and about fifty miles east of Fort Hall, within twenty rods of Bear river, on its north side, and near latitude 42 north. They are in the midst of a beautiful grove of small cedars, and surrounded by rich valleys and plains, high, rolling hills, and volcanic vales and mountains. Upon approaching within their vicinity, you are struck at once, with the extraordinary appearance which they present, as well as the hissing noises which they produce, occasioned by the perpetual effervescence of their bubbling, noisy waters. There are six of these, which are from five to ten feet in diameter; the waters of which are from two to three feet below the surface of the earth. Their waters are perfectly clear, and very delicious to the taste, and in all respects, like the water obtained at our common soda fountains in civilized life. When dipping the water from the springs, the effervescence is still going on in your cup, until you place it to your lips, when, if you can withstand its suffocating fumes, you have a most delicious draught. In the vicinity of these springs, there are also, several other soda springs, which, however, are much less important, than those just described. Near them also, are several very singular conical elevations about five or six feet in height, in the apex of each of which, is an aperture, of about six inches in diameter, from which the water gushes out, and running down the sides of these cones, it leaves upon them a sediment, which is thrown up by the water, and which has, no doubt, in the process of time, produced these extra ordinary conical formations which now much more resemble the work of art, than that of nature. These singular evolutions of water and sediment, are produced by the escape of great quantities of gas, generated by the evolving waters in the subterraneous caverns below. The ceaseless commotion of the waters, in those vast reservoirs, produce a constant rumbling and gurgling sound, which is distinctly heard a distance of several rods from the springs, and the emission of gas, produces a kind of puffing, and blowing sound, which is also heard for several rods. About one hundred rods below these springs, is the "steam boat spring," as it is called, which discharges water and gas in the same manner, as those just described, but in much greater quantities, and with a report quite similar to that produced by the emission of steam from the escape pipe of a steam-boat, hence the name "steam-boat spring." These evolutions of water and gas, are from the face of a vast rock, and are frequently heard a hundred rods. In the immediate vicinity of the soda springs are innumerable other springs, the waters of which, are highly impregnated with soda and sulphur; and north, and in fact, in every direction from

them, and whole country wears a striking and volcanic appearance, especially, at the north, where the entire earth, seems to have been burnt out, leaving scarcely any thing, but masses of burnt rock and lava. Numerous hot springs are also found, in the immediate vicinity of these springs, which produce water from blood heat, to the boiling point, in many of which, meat is cooked perfectly done, in less than four minutes. The whole surrounding country here, affords ample evidence of former, vast, and numerous volcanic eruptions. This valley, and especially that portion of it, in the immediate vicinity of these springs, is really a very extraordinary section of country, and is destined, beyond any kind of doubt, to become immensely important and valuable; because of its peculiarly favorable locality, its extra ordinary, wonderful, and delightful scenery; and perhaps, the medicinal properties of its inexhaustible mineral waters.

John M. Shively's guide, 1846:

5 miles brings you to Bear river; keep down Bear river 94 miles to the Soda Springs, (1221 miles,) where you must stop a day or two and enjoy the luxury of those exhilarating Springs. There are in the vicinity a great many of these springs; the best of all of them you will find at the foot of the mountain, one mile and a half from the camping ground on the river; it is situated one hundred yards from a lone cedar tree at the foot of the mountain. It is cool, resuscitating, and exceedingly delicious.

Daniel Toole, August 2, 1846:

The curiosities that are to be seen upon the plains, are enough to compensate me for all my trouble. The soda springs are a curiosity indeed, the water of these springs tastes a good deal like soda, and boils up like soda when the acid is mixed; just below these soda springs is a boiling spring, which comes up through a hole in a rock; it makes a noise like it was boiling, and can be heard a quarter of a mile off. The water foams like suds, and is a like above milk warm.

William J. J. Scott, August 14, 1846:

The Sody Spring is aquite acuriosity thare is great many of them Just boiling rite up out of the groung take alittle sugar and desolve it in alittle water and then dip up acup full and drink it before it looses its fass it is frristrate I drank ahal of galon of it you will see several Spring Sprinting up out ove the river

Elizabeth Dixon Smith, August 22, 1847:

Saw some of nature's curious works. Here are mounds of perhaps 40 feet in diameter and 10 feet high, composed of a shelly stone. In the middle of the mounds stands a--I know not what to call it--it looks like a stamp about three feet high. It

has a hole in the top full of water boiling and running over all the time. It's this water that makes the mounds. The water is blood warm and has a little of the soda taste. A mile or so from here are the famous Soda Springs. They are not so good as has been represented. Only one or two of our company liked it. It tastes like weak vinegar with a little saleratus in it. They are generally ten or twelve feet across and resemble hog wallows more than springs; though I saw one that was clear. About two hundred yards below the Soda Springs is a boiling spring. It boils and foams and runs over 30 barrels in a day. It boils up out of a stone. The hole is about as large as a large dinner pot. Every few minutes the water will bounce up three or four feet high. The water is slightly warm.

James A. Prichard, June 22, 1849:

We pushed on till 10 A. M. when we reached what is called the Soda or Beer Springs. These are so called on account of the acid taste and effervescing gasses contained in these waters. It is a place of very great interest. The water is clear and sparkling, and in many places thrown several feet in the air. The water is constantly boiling up with a kind [of] hissing noise. There are a great number of the springs bursting out of the ground but the principal one is near the river and comes out at the edge of the water near the lower part of the grove. The Springs are situated in a fine seeder [Cedar] Grove with a stony foundation. The Steam Boat Springs are about $\frac{1}{2}$ mile below, the water of it are a little warmer than the others and escapes out of the ground through a crevis or aperture [aperture] in the stone about the size of a mans head. The effervescing gasses, being somewhat confined beneath the ledges of stone, presents this puffing appearance in its efforts to escape.

Wakeman Bryarly, July 11, 1849:

Twelve miles brought us again to the river, & to the well-reknowned "Soda Springs,"--by some called "Beer Springs." We arrived here at day break and corralled. The teams that we had been with for several days, expressed very great surprise, in passing all this morning, to find us before them & snugly & pleasantly layed up in this delightful spot.

The whole surface of the earth for miles around shows the effect of an immense [volcano] or many volcanoes. Along this, as we named it, "Lava Spring Valley," the earth is covered with charred irruptive stones. In many places the earth is bursted up as with an irruption very lately. In other places the rock & earth are completely split open, & you can look as deep down as the eye can penetrate. Down many of them you can distinctly hear running water, all showing that some day [a] "long time ago" there was at least a great commotion in these parts. I cannot attempt to account for the many different freaks, irregularities, & the remains of departed times that we saw at this place. I

will only tell it to you, & you can form your own opinions. The whole valley, however, is the most interesting spot of earth that I ever beheld. Here is a grand field for the geologist, minerologist, naturalist, & any other kind of "ist" that you can conceive. The road crosses here a little creek which empties, 200 yds. from the crossing, into Bear River. Immediately at its crossing we found two springs both of which were Soda. They arose at the edge of the water. Upon looking farther, we found a great number of them along the banks, and also, from the bed of the creek & river, you could distinctly see the little springs shooting up.

A little farther, some 200 yds., you find one covering a quarter of an acre. This is called "The Boiling Springs." It boils up from crevices in the rocks in a thousand different places, making the surface foam & hiss, as boiling water. At the lower part of the spring, the water descended to be saturated & filled with this water, & it is bursting out from every crevice & hole that you can find. The greatest curiosity of all, however, is what has been named "The Steamboat Spring." This is situated upon the edge of the river, half a mile from the first spring. Out of a solid rock, with a hole 1 foot in diameter, gushes forth the water, foaming, whizzing, sizzling, blowing, splashing & spraying. It throws it up from two to three feet high. There is a little intermission of a few seconds every now & then, which makes it resemble more "The Palaces of the Deep." A few feet from this large one are two smaller ones, which are phizzing away all the time and somewhat resemble the scape-pipe of a Steamer. This large one has also a suction power. Some one around reached a cup into it, when it was immediately drawn from his hand into the hole. He, however, delved down for it, & found it the length of his arm in, & required a considerable jerk to get it out.

This lava water is pleasant to drink, & when mixed with an acid, effervesces prittily. It has been analyzed by many, but I do not now remember all of its constituent parts. The most, however, from the deposit around, is Carbonate of Lime. Fifty yds. from the Steamboat Spring, just upon the side of the river, was two springs, one foot and a half apart, one of which was a beautiful clear spring which was very good water; the other was perfectly red & was copperish. There is an other spring somewhere in this vicinity, which is told me of by our guide, which is certainly the most remarkable one yet. He says that some years since, having lost his cattle, he went out to hunt them, when becoming thirsty he started to look for water. Having found a little trickling in a ravine he followed it up to quite a large spring, which, upon approaching, he was surprised to find himself suddenly almost suffocated. He stopped a moment and then proceeded a few steps farther, when he thought he certainly would fall if he took another. He immediately stepped back some paces, where he could look for the cause of this singular phenomenon and, when in looking more closely at the spring, he was

astonished to see, around its edge, numbers of dead birds, rabbits, frogs &c. He did not approach nearer, having attempted it several times & found it would certainly take his breath.

Elisha Douglass Perkins, August 8, 1849:

About 3 this PM we arrived at the famous Bear & Steamboat Springs & real curiosities they are. The water came up in little basins effervescing exactly like carbonized water when exposed to the air & gurgled over the edge leaving a sediment wherever it ran of a red iron rust color. Its taste was to me unpleasant being that of soda water without any syrup or flavoring, slightly acid, also a very distinct metallic taste, & a foetid old swamp like flavor combined. It was very clear & pure temperature quite warm. The St Bt Spring is one of the same character, but the water is projected up through a hole in the solid rock of an elliptical form about 8 in. in diameter--in gusts like throwing pails of water in the air, & comes up all in a foam with excess of carbonic acid gas. The water is thrown up from one to two feet & occasionally recedes down its tunnel 1 foot or more only to reappear with renewed force. Those springs are all within a few yards of the River & a few feet above its surface. The appearance of the country in the immediate vicinity is decidedly volcanic. Two distinct craters exist within 50 yards of the springs [and] are some 5 feet in diameter & perfectly round, the other about 12 feet do & more irregular & layers of lava deposited on the edges of both. At the bottom some 6 or 8 feet were currant bushes growing in the decayed stems & loose earth. I picked up numerous specimen[s] of fused metal sulphates &c also petrifications & lava, while I can get much the limited weight of my packs will not admit of my carrying home with me.

J. Goldsborough Bruff, August 17, 1849:

He explained that steamboat springs got its name because it sounded like a steamboat paddle in water; "The water was very fine, only needed lemon syrup, to render it perfect soda water."

Orange Gaylord, July 2, 1850:

Traveled two miles, which brought us to the Soda spring. About half a mile to the right of the road are two mounds from 20 to 25 feet in height, of a sulphur cast, with several boiling springs on the sides and top. Some of them are about blood heat and some not quite so warm, of a sulphur and acid taste. On the top of one of these mounds there is a small mound about three feet high and about the same in diameter, in which there is a sink that will hold about two quarts of water, which is about full of water that boils and foams as though there was fire under it, yet it does not appear to run over. It has the same flavor as that of the other springs a little to the right of mounds. There are several other springs close by a little creek of cold water, one of which is about three feet in diameter and as round

as a barrel; the water is two feet below the surface of the earth. The water boils and foams all around the edges, just as if there was a hot fire beneath it, and so strong with acid that, if a person holds his head a little below the surface of the ground, they cannot draw more than one-half of a breath in the natural way of breathing.

A little further up the creek there are two other springs, the water of which is a bright vermillion red. They foam and boil the same as the other springs. There happened to be an Indian there. He told us that they used it for painting themselves.

At the ford of the creek below is the Soda spring. Between the Soda spring and the steamboat spring there was another company of traders. The Steamboat spring is one-half mile from the Soda spring. It is about six feet from the edge of the water on the bank of Bear River. This spring comes up out of a rock, the hole through which the water is forced being about six inches in diameter. The water gushes out of a hole similar to the escaping of steam from a steam pipe and sounds something like the noise of a water wheel. The water, when forced from the spring, is thrown up perpendicularly two feet high and from that to five feet. The water flew in my face several times while standing by and looking on. I threw several large stones in the hole, but it did not seem to make any difference in the leaping of the water. It foams and has taste of sodawater and is warm.

Velina A. Williams, August 8, 1850:

After about seven miles travel reached Soda Springs. These are considered the greatest curiosity on the route. They are scattered over about 40 acres of ground, and unlike most of the springs, boil up from the level ground. The water contains a gas and has quite an acid taste, and when exposed to the sun and air it passes but a short distance before it forms a crust or solid of scarlet hue, so that the constant boiling of any of these springs will form a rock to the height of its source. Some are from 15 to 20 feet high and from 10 to 20 feet in diameter. The water has ceased to run from a number of them and bursts out in a different place. The Shoshone Indians have a village near.

Robert Robe, July 9, 1851:

Came in the evening to the soda springs the upper ones have deposited a considerable quantity of rock from increments contained in the water. The water boils up in the center, and is of a mineral weakish unpleasant taste. The nether springs are quite palatable the water here does not seem to boil up but the gas seems to boil up through it by which it is impregnated with carbonic acid. Last of all comes the Steamboat Spring the water whereof is warm and spouts up 2 or 3 feet. A remark was here made by several "Hell is not more than a mile from this place."

P. V. Crawford, July 13, 1853:

This morning, several miles over tolerably hilly roads brought us to the far-famed Lodge [Lager] Springs on Bear river.

Here nature seems to have put forth her best efforts. The high surrounding mountains, the summits of which are studded with snow; the beautiful groves of timber that stud the slopes, the rich swords of grass that carpet the valley, the beautiful streams that course the valley, with the novel looking soda mounds with the bubbling springs, all combined to make this one of the most lovely spots on the earth. It entirely baffles description. Here we lay the balance of this day, contemplating the grandeur. We had a nice refreshing shower of rain this day, the first drop we had felt for eight weeks.

John T. Kerns, July 22, 1852:

Drove sixteen miles. Eight miles brought us to the Soda Springs, the greatest natural curiosity I ever saw. There are several of them situated in a cove flat or valley between Bear river and the mountains. Some of them are four feet in diameter and about six feet deep, shaped like wells, and the water is continually in boiling motion and gives off a vapor so strong that no person could live five minutes with their heads below the top of the ground in these holes. We had some sport getting the boys to put their heads down and see how quick they would take them up. We tasted the water, which is of the same as soda water after it has ceased boiling. One spring, about half a mile below (coming up out of a round hole in the rock) is called the Steamboat spring from its ebbing and flowing motion like the exhaust of a steampipe. The many motions of the water in these springs are caused by soda coming in contact with the alkali, which is abundant here, and water continually uniting them. Yet they are a curiosity that will attract the scientific for years.

E. W. Conyers, July 22, 1852:

These springs are indeed a great curiosity--hollow cones nearly three feet in diameter and four feet high are formed by the mineral water. At times these cones will be filled with water and strongly impregnated with soda; in a short time the water in the cones will disappear, leaving nothing but a reddish-colored sediment in the bottom of the cone. There are over twenty of these cones in this vicinity. A number of them are extinct. Fremont in his works gives a splendid description of these springs. On the right-hand side of the road is a small grove of timber and near the edge of this grove is located a clear, cold spring of water. It has no taste whatever of soda. All the other springs are strongly impregnated with soda. Many of the emigrants relish the taste of this sodawater and drink freely of it, but I cannot endure it. After remaining here for about thirty minutes we came on one mile to a point of land jutting out into the Bear River, where, a short distance from the trail on the right-hand bank of Bear River, is the famous

Steamboat Spring, which can be seen from the road. This spring is also strongly impregnated with soda, and, in fact, the Bear River itself is strongly impregnated with soda at this place. The water from this spring is emitted through an oblong crevice in a large, flat rock of basalt for water can be seen in the crevice, and within a few minutes more the water begins to flow again, continually gaining in force and finally emitting the water with great force to the height of about four feet and making a noise resembling Steam escaping from an exhaust pipe--hence called Steamboat Spring. One of our company, R. L. Doyle, made a wager that he could stop the flow of water from this spring by sitting on the crevice. He waited until the water began to recede, then took off his pants and seated himself on the crevice. In this position he waited for the flow. He did not have to wait very long for the flow. It came gradually at first, but increased in force every moment. Doyle soon began bobbing up and down at a fearful rate. At this stage of the fun several of the boys took hold of Doyle and tried to hold him on the crevice, but in this they failed, for the more weight they added to Doyle the more power the spring seemed to have, and Doyle kept bobbing up and down like a cork. Finally Doyle cried out: "Boys, there is no use trying to hold the devil down. It can't be did, for the more weight you put on the more the devil churns me. I am now pounded into a beef-steak."

Cecilia Emily McAllen Adams, August 16, 1852:

Encamped tonight at Soda Springs. These consist of springs of water of an alkaline taste bubbling up through the rock and forming mounds of the mineral from two to twenty feet high, and with bases of proportionate size, and sufficient gas coming up to keep them constantly boiling like a pot, and the opening at the top resembling a large kettle. Some are very cold and others less so. The water, sweetened and mixed with acid, makes a beautiful effervescing draught. We saw some ten or twelve scattered over a surface of less than one-half mile square; in some places it boils up in the bed of the river. Made eighteen miles.

Henry Allyn, July 13, 1853:

We leave the river for 17 miles though frequently in sight. The river winds along on the breaks or declivity of the mountains toward the river and join it without leaving any flat or bottom land. We came to the Soda Springs about 1 P. M. and visited them about an hour. There are two large mounds from 15 to 20 feet high, made of incrustations, formed from the peculiar properties of the water, of a white chalky substance. On these mounds in many places, the water belches up as though forced by a gas, which is contained in bubbles, which on reaching the surface bursts and the vapour, if inhaled, has the same effect on the olfactory nerves as ignited sulphur. There are but few of these

issues that run over and they soon sink and leave a sediment of which the mounds is formed. There are many of these mounds, the incrustations of which are of different colors, some red, yellow and grey, of the same color as the water which belches up. When the water reaches the surface, it forms a crater or basin, and the gas which forces it up escapes by the bursting of the bubbles and keeps the surface of the water in motion like the boiling of a pot. The water is warm, but of different temperatures, in different places. We unharnessed and baited the mules a little below the two principal mounds, on the banks of Sugar Creek where there was good grazing.

David or John Dinwiddie, July 15, 1853:

About eight miles over good roads brought us to the far famed Soda Springs, they are a curiosity worthy of the travellers notice, there are several large mounds made by the water encrusting and forming a substance similar to rock (at the spring is a blacksmith shop), there is a number of places where the water has ceased to flow, others boil to top but does not run out, others are some two feet below the surface of the rock. The best spring for use is off to the right, about sixty rods from the road on the bank of a creek, it boils like a pot furiously, but does not rise to the top by about two feet, it is pretty good soda water. Some of them are clear water, others are a red colour, flowing within a few feet of each other. After leaving the springs we crossed a very pretty creek of clear looking water, but said in some of the guides to be poisonous water, here is a large cedar grove in the bottom of the creek and river. After crossing the creek we passed several trading establishments and a blacksmith shop, after passing some eighty rods is a great boiling soda spring a few feet from the edge of the water in Bear river. In a few rods we crossed [a] small creek having a very rapid current, and some falls. Off to the left on a point projecting into the river is the famous Steamboat Spring so named from its resemblance to the escape pipe of a steam engine, discharging water in jets, this spring seems to be decreasing in volume; a few years ago, it is said to throw a column of water to the height of five or six feet, now it does not exceed two feet, near it is an aperture in the rock through which escapes a column of gas.

Celinda K. Hines, July 25, 1853:

We had a number of sloughs to cross and about 11 o'clock we arrived at the far-famed Soda Springs. The first one we visited was clear and the water equalled the best soda water. It was very strong. It boiled up out of the solid rock--as they all do--and in its ebullitions resembles the slaking of lime. Placing the face near the surface, the vapor has the same effect which the inhaling of hartshorn produces. Two other springs were near which resemble the other except in the color of the water,

which is of another color. Two hills of soda are near. We camped for noon two miles ahead near the Steamboat Springs. We passed one spring on the bank of the river. Steamboat Spring is so called from the noise of its ebullitions resembling that of a steamboat pipe--as some fancy. This one is very clear and boils up about a foot above the surface. It is strong with soda. Near this is another small one, the waters of which do not at present run over the surface, consequently it is dirty. It is said to resemble a steamboat whistle. These springs are near the river. They all come out of a basin of solid rock, which the water flows over is of a copperas color. Many rocks around are of a deep yellow color. In the afternoon we passed the Basin Spring. Soda water bubbles up into a natural reservoir of stone, which is a great curiosity.