

SCENES AND EXPERIENCES AMONG THE VOLCANIC REGIONS OF CENTRAL IDAHO.

BY

R.W.LIMBERT.

The term, "Lava Beds of Idaho" in the west has always signified a region of the great west to be shunned by travelers even the most venturesome. It has always been thought of as a land, barren of vegetation, destitute of water, void of animal ~~XXXX~~ life, and lacking in scenic interest. As such it is little wonder it has never been explored. In reality it is almost the opposite. Its vegetation is mostly hidden in pockets but when found consists of pines, sedars, junipers, sage brush, etc. Its water is hidden deep in tanks or holes at the bottom of large blow outs and only found by following old Indian or mountain sheep trails or by watching the flight of birds as they drop into these places to quench their thirst. The animal life is composed principally of migrant birds, rock rabbits, wood chucks, and black and grizzly bears.

Its scenic interest is of such that it surpasses and stands in a class by itself as unique wonderful and impressive as the Yellowstone Park and The Grand Canyon of Arizona. A glance at any map of Idaho will show you in its central part and lying between Arco and Carey and north of Minidoka a vast region labeled as desert or rolling plateau. It takes in the greater portions or parts of Lincoln, Minidoka, Blaine, Powers, Bingham, and Butte counties and is hundreds of miles in extent. Altho almost totally unknown it is destined some day to be one of the tourist

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Its scenic interest is such that it surpasses and stands in a class by itself as unique, wonderful and impressive as the Yellowstone Park and The Grand Canyon of Arizona. A glance at any map of Idaho will show you in its central part and lying between Arco and Carey and north of Minidoka a vast region labeled as desert or rolling plateau. It takes in the greater portions or parts of Lincoln, Minidoka, Blaine, Powers, Bingham, and Butte counties and is hundreds of miles in extent. Altho almost totally unknown it is destined some day to be one of the tourist

points of America and as interesting as the lava flows of Chaville, Vesuvius, Mauna Loa, and Kilauea for the reason that it poured forth from far more numerous vents. The district consists of some sixty three volcanic craters, lava and cinder cones, all at present extinct or dormant. The largest and most conspicuous is some six hundred feet high and about the middle of a belt of craters two or three miles wide and some thirty miles long, caused apparently by a huge fissure in the earth the probable result of an ancient earthquake. The craters or cones are close together on the northern and western end, on the south they are miles apart.

That a region of this size and peculiar scenic wonders could have laid practically unknown and unexplored in the very middle of the great Northwest is both strange and unaccountable. For several years I had listened to stories told by fur trappers who had ranged on its borders, of the strange and peculiar things they had seen. Some seemed beyond belief. I had made two trips into the northern end covering practically the same locality as the Geological Survey under Russel in 1901. My first was a hiking and camping trip with Ad Samtel (the well known wrestler), Dr. Dresser, and Albert Jones. The second with Wes Watson and Era Martin (ranchers living about four miles from the northern edge). The peculiar things found on this trip led me to take another across the region in the belief that even more interesting phenomena be encountered. The morning of May 2, 1920 found W.L. Cole and myself both of Boise Idaho leaving Minidoka and packing on our backs bedding, aluminum cookout fit, 5X7 camera, and tripod, binoculars, and supplies sufficient for two weeks, making a total pack each of fifty five pounds. We also took an Air-

dale Terrier with us for camp dog which was a mistake as after three days travel his feet were worn raw and bleeding. Some places it was necessary to carry him or sit and wait while he picked his way across. North of monidoka for about twenty five miles we crossed a rolling lava plateau after which was the comparatively later flows of lava. Inquiry had failed to find trace of anybody that had ever attempted the trip altho a number were corresponded with who like myself had been a few miles in around the edge. Of the things to be found in the interior not a word could be learned. So far as known we are the first white persons to cross from north to south.

For three days our travel was over the uninteresting broken up lava surface known as AA flow (a term derived from the Hawaiian natives who apply it to a similar surface found in their islands). It was the hardest kind of going, each rock seeming on a balance and ready to turn the instant it was trod upon. Our water on this part of our trip was snow and ice which we found in crevices and melted. The fourth day out we sighted an Indian monument in an open flat and twenty feet from it found a hole about two feet in diameter that opened downward like an immense cistern and was full of clear water. About ten feet to the ~~WEST~~ west of this was a lava crack down which we could see some fifteen feet before it angled off. We wondered that it had not drained the tank. After drinking our fill we made the discovery that the water was full of millions of little wrigglers that looked like a small shrimp and bright red in color. Each was three sixteenths of an inch long. However the water was good and one cannot afford to be sentimental in the desert. We located this

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water hole by compass bearings on the peaks noted on the map. It is N 23 W on Sugar Loaf and N 35 on Red Top and is the only permanent water in this vicinity which can be depended on the year around.

The Butte which we called Sugar Loaf as suggested from its appearance, had its lower slopes covered with wild onions which we crushed as we walked across giving out an odor more pleasant to tell about than it was to experience. The slopes were torn up by bear digging after the roots and rolling rocks for ants. From the top of Sugar Loaf we picked up an old Indian trail appearing like a light streak winding thru the lavas. Think of the years of travel necessary to make this show on solid rock. When the sun was directly overhead it could be seen to the best advantage but otherwise was difficult to follow. Some miles to the north is the butte marked "Big Dome" and a few hundred yards north of it was a crater some hundred yards in diameter and about two hundred feet deep. We camped in the bottom of this crater that night and the experience was certainly worth the climb up and down. Imagine yourself in some gigantic funnel of bright red and black, weird in its reflections of the camp fire, showing successive rings of red and black with stars above. A peculiar feature of the bottoms of the craters is that they seemed to act as a sort of sounding board for the notes of the birds migrating northward far overhead. Their faint calls were gathered and intensified until the bird seemed but a few feet away. From near here we built a signal fire that was seen by people watching for it some thirty miles distant.

About half a mile east of Big Dome was an immense crater ring that looked

as if the top of the mountain had collapsed and fallen back down the volcanic throat. From the center jutted up crags of bright red lava and burnt cinders. In some places the lava was black appearing as if smoked in a fire. The crag had a magnetic attraction for the compass needle and the compass could not be depended upon when near them. About a quarter mile to the northwest of this was a large fissure that we called the "Royal Gorge". The floor was some hundred or more feet in width and mostly cinders. The walls of lava a bright almost a vermillion red when in the sunlight. Near the center were several extinct lava geysers, one of which was some twenty five feet in diameter and built up of lava like the geyser formations of Yellowstone Park. In the center of this was the throat about five feet wide and eighteen feet deep, the sides had fallen in and choked it up.

Fifteen feet south of this was a hollow cone built up about four or five feet. One side had fallen in exposing the throat which went down some twenty five feet and then angled off, we could not tell how far. Fifty feet to the north was another cone about four feet high and two and a half feet in diameter at the base. This had a six inch hole in one side which opened up as it went down. How deep we could not tell as it had drifted full of snow. Near here we found a pile of rocks with a piece of charred sage brush in it pointing to another water hole that will probably hold water thru the summer.

Working our way on thru the fissure for about a quarter of a mile we found it opened up onto a flat and about six hundred yards to the north was

another crater similar to the one just passed. As we sat on the east side of its rim we saw below us a hundred or more large lava blisters or bubbles. In many the tops had fallen in disclosing rooms from eight to ten feet across and as high as six or seven feet. The shells of these bubbles were of an average thickness of from six to eight inches. Their color was a greyish brown.

At all places of interest I set up the compass and triangulated on the more prominent buttes shown on the map. Sometimes it was necessary to move the location several hundred feet as the needle was attracted to the rocky points. In one place the north end of the needle swung completely around and pointed within 7° of due south, a sight on the pole star showed a magnetic declination of 22° for this region. Estimating distance was also very difficult owing to the lack of any objects of known size to use as a scale. We most always found ~~any~~ points to be about once and a half as far in an air line as we thought.

West of the crater beside Bubble Basin we saw channels winding thru the lava flat just as a meandering brook might cross a level meadow. Examination showed them to be lava gutters. Here the plastic lava had flowed down grade assuming all the shapes of a mountain stream. It was in waves, rolls, twists, and levels. As we stood on the edge and looked down we remarked what a wonderful sight it must have been when glowing red. Traveling northwest from here about a mile we came to another Indian marker of a pile of rocks. It had a smaller pile at the base and in a line with it and about twenty feet distant at the base of a cliff was the entrance to a cave that opened up into a room or tunnel about eighteen

feet wide by twelve feet high. From the ceiling hung clusters of immense ice stalactites sometimes reaching stalagmites of the same material below. The floor was covered with ice so clear that when I first reached it I dipped down for a drink. Lighting our lone candle we worked our way in about fifty yards until it narrowed down to about two feet wide and a foot and a half high. After about ten feet of this it opened again into a drop off that blocked our further progress. The bearings of this point are as follows, Big Dome 29 E and N 51 W on the east dome of the high cinder cone north of Big Dome. When leaving we restored the old Indian marker which had partly fallen down.

North of this point we found a high cinder cone whose sides were terraced with old mountain sheep trails. They stood out so prominent from a distance that we called it "Sheep Trail Mt." In climbing to its top to triangulate our position we found it had a double crater or rather a crater within a crater evidently caused by two large explosions at different times. The sides of the crater were banded with rings of green and yellow. This was the first and only sulphur deposit found on the trip. On the very top of the cone we noticed fresh bear signs where a grizzly had sat for some time looking at the land below. About two hundred yards north from the base of this was another large crater about three hundred yards wide and a hundred and fifty or two hundred feet deep. For three fourths of its circumference the sides were perpendicular the balance being a cinder and ash slope. About a hundred yards northwest of the north rim of this crater we found a blow-out cone with a throat about ten feet wide and fifteen feet long that went down about thirty feet and branched off. While Cole was adjusting the straps of his pack I found a narrow crack

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in the side of the throat and climbed down being followed shortly by Cole. Here the snow had drifted into the passage some fifteen or twenty feet. Several pictures were taken, in one the camera was placed on its back and pointed upwards showing the throat and rim above. The north wall had a sort of lava oven built up that was about ten feet high and hollow, looking very much like an inverted wasp nest, the sides being about eight inches thick.

Fifteen feet north of the oven was the rim of another crater blow-out about a hundred feet across and about a hundred and fifty feet deep. Fifty yards from the edge of this were a series of small blow-out craters (nine in number). Were I gifted with the art of word painting I might in some small way make you see and feel the wonderful coloring of these craters. Imagine yourself standing in some vast amphitheatre whose towering walls were a riot of yellow, green, orange, brown, and black with brick red and vermillion predominating. Imagine all this and a silence so deep and intense that filled you with awe. You might say you were stricken dumb with the immensity of the things about you. I noticed that at places like these we had very little to say to each other. It was little wonder the Indians feared and shunned this region. After leaving here our trail lay along a series of cinder cones for about seven miles each with a depression in its top. Examination from a distance with the binoculars showed no unusual features worth the climb and when carrying fifty five pounds over this kind of country one does not make climbs for the mere pleasure of it. The trouble with us was as our food supply decreased we increased our load with oddly formed pieces of lava rock and the last

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day found our load nearly as heavy as when we started. The night we reached the point marked Echo Crater Coles feet had become so blistered as to be almost unendurable. The dog also was in a terrible shape and it was pitiful to watch him as he hobbled after us. We planned to camp here for several days while I worked out from here alone. When morning came the cords in Cole's had swollen and were so stiff he could not bend them. It was then decided that he should stay in camp and bathe his foot while I made it on thru to where Martin and Watson were waiting to come back with us from the north end. That day I made the round trip of about twenty eight miles getting back at dark. I carried only a gun camera and canteen.

It was on this trip I had rather an odd experience. In passing thru a Pahoe-hoe flow I noticed a hole about fifteen or twenty feet wide and about ten or twelve feet deep, evidently caused by the caving in of the roof of some underground passage. Happening to look down I noticed the remains of a mountain sheep skeleton with the horns in a good state of preservation. Carelessly I laid down my gun camera and canteen and jumped down, alighting on some wind blown cinders which happened to be at one end. After looking the horns over I started to climb out and found that the nearest I could reach towards the lacked about four feet, to be frank I had some very queer thoughts, chief of which was would anybody ever find me or would I like the sheep lay there for years. The most careful examination showed no place that would afford a hand hold, sitting on one of the rocks that littered the floor I rested and communed with myself. After a time by rolling and lifting some of these rocks into a pile at one end I soon had a mound from which I could reach the rim and draw myself up. You maybe sure that after this I will be careful of what kind of a place

I jump into. Echo Crater as we called it is one of the most beautiful craters in this region. It is about seven hundred feet deep from the top of the peak to the bottom of the crater and is one of the few craters that has timber on its sides and bottom. It also has the same vivid and intense coloring as the craters previously described and in addition the dark green of the pines and cedars. It was an ideal camping place, our camp being in the shade of the west wall after 2.30 P.M. One of the most peculiar effects was the acoustics. One morning just at daylight I was awakened by the loud calls of the birds, I lay trying to place them and finally got up to locate the source, finding a robin singing from one of the pines at the foot of the west wall. We afterwards took turns in singing and yodeling from that side to hear the echos break the voices up and fade away. The east side produced no echo.

About a quarter of a mile east of Echo Crater is the Ice Cave I found in the trip of the year before. Happening to look down in one of the numerous sinks with which this region abounds I saw a black opening which had the appearance of a cave, climbing down one side of the pit which was about a hundred feet long and thirty feet deep we were surprised at the rush of cold air from the entrance, the cause was immediately apparent. It was an ice cave and one of the finest examples I believe in existence. The floor was a conglomerated mass of huge lava blocks. These and the walls were incrustated with about two inches of ice as clear as glass, thru which the structure of the rock could easily be seen. From here we struck matches and were surprised to see hanging from the ceiling huge ice stalactites or icicles some four to eight inches in diameter at the base and from three to eight feet long. In places

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especially where there was a ridge in the ceiling they were in clusters as close they could form. In spots I noticed ice stalagmites building up to meet the stalactites from above. About forty five feet from the entrance the tunnel narrowed down and inclined downward at an angle of fifteen degrees. Breaking off the tips of some of the icicles I threw them down and could them skidding and sliding on the ice for some distance. It was not advisable to venture out on this ice incline for a slip might have projected us we knew not where.

During the month of August 1919 on my second trip into this region I visited this ice cave and found it full of ice on the bottom but without the icicles or incrustations on the wall. At the south end of the pit of the ice cave was found another ice cave which had about three feet of water over the strata of ice. This also went off into another cave of dimensions of which I have no idea. The above entrance was covered with snow when I was in the first time. Another thing that excited my curiosity was the number of mourning doves flying over us. Knowing their nature I wondered at their abundance and the apparent lack of water set us to thinking and I followed their course with the binoculars just as a bee hunter would line bees to a bee tree and was suprised to see them drop down in a blow out. Following them up we found a pool of water some five feet in diameter. It was an extremely hot afternoon in the middle of August and the heat on the sides of the blow-out was terrific. The rocky sides seemed to burn the hand. We were wet with perspiration as we reached the bottom and dipping up a cupful of water we got the surprise of our lives and one which you may not believe yet it was true. The water was icy

cold.

so cold in fact that it hurt our teeth and we set it down on the hot rocks to warm up. It can only be accounted for by the fact that it may have been seepage water from another ice cave.

By lining the flight of doves four other water holes were located all as icy cold as the first. One was covered with an inch coat of drowned hornets that had chilled and fallen in. The water underneath was pure and sweet. We were thirsty enough to try anything and called it "Yellow Jacket Water Hole". The bearing of Yellow Jacket Water Hole is Echo Crater S 15 W one fourth mile.

On the north rim of the big sink or cave-in containing Yellow Jacket Water Hole and about fifty feet from the edge is the remains of a perfect lava geyser built up about five feet high with a spiral hole in the top which forks after it is down about fifteen feet. The sink containing the Yellow Jacket Hole was about four hundred yards wide and a hundred and fifty feet deep. We called it the ~~"Big"~~ "Big Devil" and just north of it was a series of six smaller sinks or blowouts, we called the row "The Seven Devils". One of these also had a water hole.

The morning after we had explored this section there was a fog so thick that a person could see but a hundred and fifty yards in any direction. We started out in hopes that it would lift, after about an hour of aimless travel we decided to go back to camp, Watson happened to be in the lead and we naturally followed him. I finally ask him where he was going and when he said 'camp' Cole and I undertook to show him where he was wrong. The fog by this time was so dense that seventy five was about as far as could see and the sun was absolutely invisible. Watson in turn laughed

at us so we referred to our compass and the north end pointed in the direction we thought south. I thought it another case of magnetic attraction but no matter how dull the day if you lay your knife blade on edge on the back of your watch or a piece of paper there will be a faint shadow, turn slowly around until you loose the shadow and in that direction is the sun. Point the hour hand of your watch there and half way between that point and the mark 12 for the noon hour is due south or near enough for practical purposes. It checked our compass, we had to admit we were wrong. Watson had got his bearings from some rocks he had passed before. I was the first time in my life I was ever lost.

About a half mile northwest of the northern end of the Seven Devils we came on a large cinder flat, in all about a mile long and about a half mile wide. Here occurred another of the strange features this land has to offer. In general these flats were barren and packed so hard that an automobile might have driven across at any place. When first sighted we noticed a series of light brown dots extending in lines crisscrossing the flats, when we got to them we were surprised to see they were old bear tracks into which the wind had carried a species of plant seed that had taken root and exactly filled the track. It was a small greyish colored plant with the leaves not over one eighth inch in diameter, the total height was about one and a half inches, hardly enough in some places to show above the level of the track. Specimens I brought back have been identified as *Eriogonum fasciculatum*, a pigmy variety of buckwheat. Think of tracking grizzly bear that had crossed here possibly hundreds of years before. In a few places wild rye grass had taken root and was

crowding the smaller plant out. We called this place "Bear Track Flat". Adjoining Bear Track Flat on the north was a similar flat having features all its own which consisted of blow holes or fumeroles to the number of about a hundred and twenty five. These had at some time spewed out lava thru four to twenty inch throats, in many instances they looked like old tree stumps three to seven feet high. All had holes in the top and a peculiar thing noticed was that the opening was spiraled or twisted like the riflings in a gun barrel. We found one with two openings about five inches apart and each about four inches in diameter. Another was found that had forked about half way from its base. These branches had broken off and lay on the cinders in appearance like a piece of twisted spiral pipe. All the openings except three were plugged with chunks of rock dropped in probably by Indians as the old trail passed along the cinder flat about a hundred yards distant. Several were found in which the opening angled off at a forty five degree slope and of unknown depths. They reminded us of a number of trench mortars so we gave this the name of Trench "Mortar Flat".

From our camp in Echo Crater we made an excursion some nine miles out into a lava flow some twenty miles wide extending to the east. It is mostly of the Pahoehoe surface, a name derived from the Hawaiians and used to distinguish the smooth ropy flow from the rough broken up ice jam formation of the AA flow. In places it was a series of ridge after ridge, fold upon fold, with crevasses and cracks, again it would be huge folds and waves appearing as if some one had folded and crumpled up a heavy blanket.

One place was found having the appearance of a number of huge ship's

hawser neatly piled, another had a long sinewy twist of lava tied in a knot as neat as any sailor could make. How the ends could have twisted around and came thru the loop is a mystery. I found a small specimen of this kind and carried it out with me as it was so unusual. One flow had spread out until it looked like an automobile speedway except that it was broken by narrow cracks caused by cooling. One day we crossed a stretch that tinkled with a hollow sound, happening to notice that the surface was cracked and loose in large sheets we turned several pieces over and found the bottom covered with a jagged mass of nail like projections all pointing the direction of the flow (a picture is inclosed). Many of the points were needle sharp. Several times a section was found that was as if a number of long canvas tubes the size of a flour sack had been filled and then loosely woven and tangled in and out. An end disappearing in one place only to bob up from under another roll ten or fifteen feet further on. Generally these places were comparatively small only a few hundred feet in diameter.

In one place we found the plastic lava had taken a circular flowing motion while hardening just as if it had been a large whirl pool some hundred yards across. Watson built a row of monuments from here back to the caves described further on. About four miles from Echo Crater we came to a large black hole, climbing down we found a lava stalactite cave each stalactite from two to seven inches long and covered with green moss. We went in about seventy five feet. One hundred fifty yards from this we found a second moss cave extending to the east, we went into this one about a hundred and fifty feet. One hundred yards east from this we found another cave. In the dust around the entrance were fresh bear tracks, as we started I ask Cole if there was any word he wanted sent to his folks. What he

told me would not appear well in print so I will not mention it. About twenty feet in the cave forked or branched, one going west the other northwest. We went in each of these about a hundred feet until they narrowed making it necessary to crawl. About a hundred yards from the entrance of this cave and at the base of a cliff facing south Watson found the entrance to another cave leading northwest. It also contained bear tracks. One hundred yards east of the Bear caves we came onto a natural bridge of lava arching a point where two cliffs of lava narrowed down. It had about a fifty foot span, from the floor to the roof of the arch above was fifteen or eighteen feet. Its width was about seventy five feet. There was a pine tree growing under the east entrance. One of the party bumped his head on the roof near the edge so we laughingly called this "The Bridge of Tears".

Two hundred yards east of the Bridge of Tears we came to the entrance to what we afterwards decided to call "Amphitheatre Cave". Climbing down we found ourselves on the east side of a room some forty feet wide, sixty feet long and twenty feet high at its highest point. The roof was a dome, as we sat on the north side facing us on the south was a perfect stage. The floor was double, the lower section being about eight feet lower than the top of the floor above which was fifteen feet wide. It was almost exactly as a modern theatre is built, on the right hand side of the stage a large rock jutted up which imagination might call one of the wings. At the top of the dome the roof had caved in leaving a circular skylight six inches in diameter. Back of the stage and starting on a level with the lower floor the tunnel led away to the southeast. We walked and

crawled somewhere between a quarter and a half a mile. Judging distance when part of the way is on all fours and by candle light is hard to do. Finally it closed down until the roof was only about one and a half to three feet high and fifteen feet wide. Leaving Watson and Cole here Martin and I crawled on about two hundred yards further until we came to a place we called "Fat Man's Misery". Martin weighs about a hundred and twenty five pounds and made it easily, I mad it too, but in all pictures taken after that I faced the camera. About fifty five feet from here it opened up again and a hundred feet further closed down owing to a cave in of the roof. We could see thru but could go no further without rolling rock which owing to the scaly appearance of the roof was not advisable. The roof thruout this cave was covered with stalactites and the floor with jagged drippings from above. Crawling was a painful operation. The coloring in these caves was red, brown and black with splashes of white. The bearing of this group of caves is Big Cinder Butte N 67 W Echo Crater N 79 W Split Mt. S 41 W.

While going east from these caves Martin and I happened to leave the others to climb to a low mound or volcanic lacolith in the flow. From here to our suprise we sighted a lake about a half a mile long and to the south of it what appeared to be a grove of willows and cottonwoods. Turning the binoculars on it heightened the effect and we decided to walk to another small point some mile and a half further where we could look down into the basin. When we got there we sat for a few moments examining it, still apparently some three miles off when suddenly lake, trees, and all floated off and disappeared in the distance. We had been the victims of a mirage. About a mile northwest of Trench Mortar Flat lies the highest of the cinder

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cones in this region. As it stands today it is about half its original size before the explosion blew out its top and southwest side. The climb to the top of this point known as Big Cinder Butte was thru a conglomer-
~~XXXXX~~ation of lava bombs and panwakes where still plastic lava had fallen and flattened out. Near the top the cinders are broken by a number of jagged crags of red lava, the north and east sides of the butte are timbered with pines and quaking aspen. From the top we looked south over the country we had traversed tracing our course thru the maze of lava and cinder cones. On all sides were crater rings showing we had examined but few of the many. Have you and a companion ever climbed to a point where you could sit and look by the hour straining your eyes until they ached, trying to penetrate the haze of distance? Such a place was this. We took turn in focusing the binoculars on the different features spread below for our inspection. Very little was said except to call attention to something we did not want the other to over look. We yielded to the influence of silence. Below us we counted six distinct lava flows each comparatively fresh.

Northward were a number of sputter cones and the shadowy outlines of craters deeper and larger than any passed and a course was planned to them that missed a large part of the rough broken up flow laying between. A short time was spent in taking compass bearings and notes to check the location of the triangulation points passed. About two miles northwest of Big Cinder Butte we came to a row of seven lava sputter cones caused by molten lava being thrown out of a vent until it had built up to a height of sixty feet. The southern one was first climbed and imagine

finding a hole fifteen feet in diameter and bottomless so far as we could judge. It went down some forty feet where it narrowed slightly after which it opened up giving the crater the shape of an hour. Large rocks rolled in were never heard to hit bottom. We called it the "Bottomless Pit". The compass bearing is Big Cinder Butte S 52 E one mile.

Northwest a hundred and fifty feet from the pit is another cone with a caved in pit in the top. About a hundred and fifty yards north of this is ~~another~~ another volcanic throat about thirty feet in diameter and sixty feet deep. It was full of snow and ice but appeared to branch off and continue downward. From the sides hung large pendent clots of lava in shape like double ended pears. In many the ends had curved upwards as they had fallen giving the appearance of buffalo horns. A short way from this was the entrance to the narrow tunnel of another cave that appeared to go south. There were seven lava cones in this row, three of which were in perfect state of preservation. In climbing a high ridge to the north in order to get a photograph showing them all I received another surprised as we topped the ridge, for below were three of the largest craters in the belt. At their southern edge is a small crater about a hundred and fifty yards in diameter, its northern rim is the southern edge of the largest crater of all. This is about a fourth of a mile across and between nine hundred and a thousand feet deep. Its north and eastern sides are a perpendicular cliff of a bright red lava, the balance being a steep cinder slope. The rim was almost a perfect circle. On my first trip to this place Albert Jones volunteered to climb to the bottom to serve as a scale to compare heights by. To my surprise he was

invisible on the ground glass of the camera and could only be found in the finished print with aid of a magnifying glass. In pictures of a place like this the camera does not lie but it does not tell all of the truth for in its results the color and gigantic scale of things are missing. The north rim of this crater is a knife edge, the other slope of which is the side of another crater almost as wide and deep. A peculiarity of this is that there two explosions which caused it to form a double depression in the bottom. The northern one contains a small lake. In the Spring of 1919 it was about a hundred feet in diameter this year (1920) it had diminished in size to about forty feet. We called it "Crater Lake" and is I believe, the only competitor for this honor that Crater Lake Oregon has in the United States.

Northwest of Crater Lake about a hundred yards is the rim of another crater of like size and general description as the two preceding. There was no beauty here but an impressive grandeur, a scene of devastative and explosive forces of nature that only seeing could make one believe and understand. As we climbed around the crater walls we amused ourselves by rolling rocks down, watching them bounce and bound sometimes a hundred feet in the air. As they reached the talus slopes below they reminded us of rabbits running and I could not resist shooting at them. Once we united our strength and rolled a huge rock over the cliff watching it fall downwards until it reached the slope below where it rolled, gradually getting smaller leaving a cloud of dust in its wake. Stretching southwest from here for a distance of about eleven miles is perhaps one of the most remarkable lava flows in the world. It had the sameropy twisted

formation

folds of heavy cloth of the previously described Pahoehoe flow. Its color was a deep cobalt blue, close examination showed that this color was due to some combination of chemicals in the lava which had come to the surface in cooling and gave it the blue color with generally a high gloss, seeming as if the flow had been given a coat of blue varnish. The color was bright in patches and the whole had a blueish tinge. The surface was netted and veined with small cracks giving the appearance of the scales of some prehistoric reptile.

Ira Russell of Gov. Geological Survey called it the "Blue Dragon Flow". It merits the name as in many places the flow had burst thru a crevice of an older flow and the ropey twist of blue lava had spread out in branches which together with its scaled surface needed but little stretch of imagination to see the claws and legs of a dragon. It is the play of light at sunset across here that charms the spectator. Stand on one of the buttes and watch the light play on the Blue Dragon Flow and it becomes a twisted wavy sea of color. Stand on its edge in the moonlight and its glazed surface has a silvery sheen. With changing conditions of light and air it changes also seeming to do so while you stand and watch. It is a place of color and silence, the latter broken only by the wail of the coyotee and chirp of the rock cony. About a mile to the north of Crater Lake we found an immense cinder cone, the west side of which had breached away leaving the floor of the crater exactly as it appeared when it had stopped its eruption of lava. Here were bubbles, rolls folds and twists appearing as if a magnified frying pan of thick gravy furiously boiling had instantly frozen. A better comparison on minute scale would be hard to suggest. We sat on the southern edge of the rim for perhaps half an

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hour before we climbed down. This flow had broke out and flowed northwest for several hundred yards and then dammed up and broken thru a low place in the cinder ridge and flowed east. Here the channel was about three hundred yards wide and the flowing lava had assumed all the shapes and twists of a rapid ^{on a} mountain stream ~~which~~ suddenly congealed. When the eruption took place the molten lava had undermined the volcanic sides which had fallen in and floated off on top of the flow as might sticks and sawdust on the surface of running water. Around the bases of the larger floating pieces of volcanic tuff there was a depression in the lava where the mass had pressed it down as occurs when a greased stick is floated in water. Some of these moats were from four to ten feet deep and ten to thirty feet across.

About one and a half miles out on the flow were hundreds of these crater wall fragments, some about eighty feet high. Viewed from a distance they resemble the pueblo ruins of southwestern United States. One was about sixty feet high and not over twenty feet in diameter at its base. From a distance it resembled a silo, how it could have remained upright as it drifted along is a mystery. Many more were observed that resembled chimneys ten to twenty feet high, another was noticed that was almost a perfect teapot in shape.

About two miles southwest of Big Cinder Butte is a flow with similar formations. Along the north side of the Ruined Pueblo flow are fourteen mounds composed of rock and sage brush which the Indians have built. They are from four to ten feet long, about four feet wide and lay in a general

direction of north and south. What they are I do not know as we had no means of digging into them and I hope this locality can be placed under Government protection before they are destroyed by vandals. Another feature which adds a color or romance are three well worn Indian trails coming into this belt from the north. The plainest is one that goes in about six miles west of Martin near the sinks of a lost stream known as Little Cottonwood. It is quite distinct for about eleven miles and then fades away, yet we found traces of it all the way across. It is sparingly marked with small rock piles and pieces of sage brush with a rock laid across. A few flint or obsidian arrow points are to be found along it. Where these trails go and why no one knows.

Northward for about a mile from the Ruined Pueblo flow are a few more low cinder cones similar to those we had passed. A feature along the west side of this volcanic belt which is a puzzle are a number of dead charred trees, these trees are growing in a cinder flat absolutely barren of vegetation of any kind which could carry fire from one to the other. I found charred sage brush around a lava blowhole near The Seven Devils and a piece of brush was picked up near this spot that had a clot of lava 'frozen' around it. In appearance the flows appear as if they had happened but yesterday, in reality the latest probably occurred about a hundred and fifty possibly two hundred years ago. I would not be surprised if the eruptions ~~XXXXXXXXXXXXXXX~~ of spattered lava around some of the small sputter cones occurred contemporary to the eruption of Buffalo Hump in Idaho County Idaho, which happened up to and including 1866 during which time it erupted lava and columns of smoke. Geologically

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speaking the formation of this region is as the passing second in the history of the world. The belt has a wonderful scenic charm, it is different from anything you will find in our national parks. Comparison is impossible because we have little available to compare it with. Russel in the geologic report of this region Bulletin #199 page 105 and Bulletin 217 estimates that the age of the youngest of the flows he examined was not to exceed a hundred and fifty years.

As a lava deposit it surpasses anything of its kind in the world. The total area of the six young flows is about three hundred square miles, while the lava flow reaching above and below this point along the Snake River plains reach the stounding total of approximately twenty seven thousand square miles. In the history of the world many volcanoes have been regarded as extinct that have afterwards erupted and blown their tops off. I might mention Mt. Peelee (1902). Krakatoa (1883), Asama (1783), Mauna Loa (1808), Vesuvius (79), soufriere (1812), Bandaisan (1888) Katmai (1912).and numerous others. Many of these had been regarded as extinct for ages. Mt. Epomeo of Ischia Japan was classified as extinct for seventeen hundred years and then exploded. An extinct volcano might be likened to an old rusty gun, it may be loaded and we little know what the merrow may bring forth.

As a scenic region it ranks second to none of its kind and class and for strange and fantastic formations in nature is unsurpassed. For a three to seven day trip it has few equals. California, Colorado, Arizona, Utah, New Mexico, Arkansas and Kentucky each have one to four National and

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State Parks or Monuments. Idaho has a future here that for scenic or scientific interest, in my estimation, far surpasses any except the Yellowstone, Grand Canyon and The Yosemite. The Lincoln Highway passes within a mile of the northern end and thousands of tourists have yearly motored along its very ~~edge~~ edge without realizing what they were missing. A road can be built in along its eastern side at a very little expense, in fact we took a car to within a mile of Big Cinder Butte and a wagon to Echo Crater but the last was an experience I would not care to repeat under present conditions. The cinders for the finest of road ballast and construction of such a road would be reduced to a minimum. Some day this region is bound to become a tourist resort and I believe would now, to a certain extent, were its wonders generally known and available.