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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CRATERS OF THE MOON NATIONAL MONUMENT

SHORT HISTORY

INTRODUCTION

Craters of the Moon National Monument, being an area of about eighty square miles out of 20,000 square miles of almost impenetrable lava flows, domes, and cinder cones of the Idaho Lava Desert, was an isolated, seldom visited region until shortened transportation routes made it necessary to open this rugged area first with wagon roads followed eventually by modern highways. Thus, the Monument history can only be dealt with in terms of the area of which it is a part. Also, its area being only 1/250 of the Idaho lava outpourings but including a watershed of Pennsylvanian rocks, its geologic history must be in terms of this local section of the great Cordilleran Trough, or the Rocky Mountain Chain. Though it is the recent history which is held in awe, the past cannot be ignored.

In one sense, the Monument area and the lava desert itself affected the local human history by being a tremendous barrier to its own exploitation and settlement. Biologically, the geology has brought about great differences from the general land mass as a whole.

The ruggedness and contrasts of the Monument are its outstanding features today, though far more important, it is a natural laboratory of basaltic extrusions done in minature which makes it a convenient study ground for scientist and layman alike. Just about every known type of basaltic lava flow formation is found at Craters of the Moon National Monument including some very rare formations, if they are not unique to this area alone.

R. C. Zink
January 1955

GEOGRAPHICAL SETTING

Headquarters Location

43° 28" North Latitude

113° 34" West Longitude

Approximate boarders of:

Range 24 and 25 East

Townships 1 and 2 North

Boise Meridian.

The 48,184 acres, or about 75 square miles, of the Monument cover, for the most part, the nearly 6,000 foot low ridge of lava which lies about half way between the towns of Arco and Carey, Idaho, with a general trend of northwest - southeast direction. With the exception of the mountain watershed to the north, the land slopes away in all directions as the lava poured forth from this particular center of eruption. The Idaho Central Highway (Idaho 22), also known as US 93-A and US 20, passes through the northern extremity of the lava portion of the Monument paralleling the earlier wagon route of the Tim Goodale Oregon Trail Cutoff along the edge of the lavas. This highway is the access route to the Monument. From Arco on the east this highway joins with other routes which lead to Challis and Salmon, Idaho and into Montana; Idaho Falls and on to Yellowstone and Grand Teton National Parks; and Blackfoot to Pocatello, Idaho and Salt Lake City, Utah. Proceeding west through Carey and Shoshone, one may reach Twin Falls, Idaho, and the area south through Nevada; Boise, Idaho, and the entire northwest with side trips to the Shoshone Ice Caves, Sun Valley resort, and the Sawtooth Wilderness.

The northern area of Pennsylvanian mountains relieves the strange oneness of the lava flows, for grass and sage covered mountains with their watered canyons hold a contrasting array of flowers, shrubs, and trees. Throughout the mountains, pockets of Douglas Fir, Quaking aspens, and Cottonwoods change the sunny grass and sage slopes to shaded glens and forest types. This, of course, does not imply a lack of vegetation on the lava desert. On the contrary, one finds a wide variety of annuals, herbs, shrubs, and trees. Numerous species of animals roam the lavas, and many birds inhabit the rocks, trees, and shrubs.

The Monument has been set aside for its unique formations of basaltic lava flows, cinder cones, spatter cones, basaltic domes, and open fissures which have spewed forth liquid rock; lava tubes or caves, sinks, grotesque coils and twists of cooling rock, tree molds, and fragmentary material of various kinds hurled into the air. All this

has occurred along a series of parellel fissures in the earth's crust which has formed a chain of cinder cones of aesthetic beauty and interest, which have given rise to the name, Craters of the Moon. It is a show case of basaltic lava forms where one may observe in one small area that which would require traveling several hundred thousand miles about the world to see. Yet it is no arduous task to climb a one or two hundred foot cinder cone, walk a half to one mile trail to observe a well formed lava tube, or stop by the roadside to see a lava flow, cinder slope, or the specialized vegetation which grows in the area. Within a half day hike one may have a semi-aerial view of the Monument from the nearly 2,000 foot vantage point above the Monument in the mountains of the watershed to the north.

R.C. Zink
January, 1955

GEOLOGY

The south central sector of Idaho has been under water for the greater part of its geologic history. Since the Cryptozoic Eon of the earth's history, great inland seas have inundated the vast Rocky Mountain region from Alaska through Mexico. Sediments from the surrounding ancient high mountains, some miles out into what is now the Pacific Ocean, have poured into this great geosyncline known as the Cordillerian Trough. There were, during these hundreds of millions of years, times of emergence, but deposition, or sediment laying, occurred over ninety per cent of the time. The last of these great inundations by an arm of the sea occurred during Pennsylvanian times, about 250 million years ago. For the most part, this was a deep sea as indicated by the quantity of limestone found throughout its extent. Around its edges in the vicinity of Craters of the Moon there occurred a combination of limestone, sandstone, and shale, indicative of a shallowing deep sea. Today, one sees this rock exposed as the White Knob Mountains and the Lost River Ranges bordering the northern edge of the lava desert of Idaho.

Though subsidence had ceased on a grand scale, the area to the south received an arm of the sea which created the extensive phosphoric beds on the southern boarder of the lavas during Permian times. Following this, the area rose generally for about fifty-five million years, only to be tilted down on the eastern side which accepted the southern arm of the Sun Dance Sea from western Canada and Montana.

Emergence continued very slowly for about thirty million years or the beginning of the Laramide Revolution, about sixty million years ago. This tremendous orogeny brought about the elevation of the entire Cordillerian Trough into the ancient rocky mountains which equalled or surpassed this chain of mountains today. It was not a cataclysmic affair, but one which took around ten to twenty million years. The individual groups of mountains in the chain had roughly the same outline as they do today. Thus, opened the final stage of Geologic history, the Cenozoic Era. For still unknown reasons, the great trough was elevated and subjected to a tremendous horizontal squeezing pressure from the west. The deep layers of sediments laid down during millions of years were raised, bent, folded, twisted, cracked, over thrust on one another, and faulted with little and great offset. As the land mass was squeezed up, the forces of erosion began eating away. Rain, snow, frost, and wind began bringing material down into the basins formed by warping of the mass. The process' of leveling were under way.

By late Eocene and early Oligocene times the whole of the Rocky Mountain region was one great plane, sloping gently east and west from what was then nearly the present continental divide. Only here and there did remnants of the old mountains remain as monadnocks which stood several hundred feet to perhaps two thousand feet above the surface. In general, the plane remained around two to three thousand feet above sea level as the streams had hundreds of miles to flow

before reaching the sea. Streams sought winding courses across the plateau as a result of the low gradient. Evidence of this nearly level plane and isolated peaks seem to be visable at several points around the Mountains surrounding the Monument and Lava Plain. At the close of the quiescent Oligocene times, the Cascadian Revolution began.

Though the Eocene and Oligocene times were considered to be rather quiescent in the manner of mountain building by uplift, other forces were at work. The great load of sediments in the trough, combined with the pressures developed in the horizontal thrust of the Larimide Revolution produced tremendous internal heat in the underlying rocks. As erosion shifted the various loads, a series of volcanic eruptions began to take place along the areas weakened by folding and faulting as steam might break through rusting seams on a boiler under pressure. Outbreaks of andesites occurred in and around the John Day Basin of Oregon. Andesites and rhyolites began erupting in the Yellowstone country. These eruptions were only the dawn of the volcanic days to come. The whole area of the northwest was becoming involved in a tremendous belching of the earth's interior. Liquid magmas were squeezed into many portions of the land mass of Idaho and Montana. The cooling of these liquids produced the mineralization which has now become the mining industries of these states.

The Cascadian Revolution began slowly during the Miocene period. The renewed uplift, vertical this time for the Cordillerian region, of the central northwest and the squeezing of the coastal area apparently ruptured the weakened earth's crust such that vast quantities of liquid rock were able to escape from the interior. Floods of very liquid basalt covered the low mountains of eastern Washington, Oregon, and the northeastern corner of California with the thin layerings of the great Columbia Lava Sheet. Eruptions Occurred throughout central Idaho of a more acid type lava. In the eastern half of the broad Snake River Valley of Idaho lavas built the high mountain now known as Big Butte and the lesser peak known as East Butte of Twin Buttes. (West Butte of Twin Buttes is, contrary to some information, apparently a very small block fault upthrust probably caused by an intrusion under the lava beds which did not break through the surface).

As time moved from the Miocene period into the Pliocene period, the flows in Washington and Oregon lessened. But the focal point was only shifting. It moved into the Snake River Valley of Idaho. Here the lava flows poured forth from a series of vents throughout the two hundred mile long valley. Large lava domes built up in the valley, filling what was once the bed of the old Snake River. As the lavas filled in the northern side of the river valley, the river itself was forced southward as it worked its way around the flows. It now follows in a broad southern sweep on the lava edge till it cuts across the flows around the area between Twin Falls and Boise, Idaho.

The Cascadian Revolution was getting into full swing, now the Pleistocene period. Vulcanism began to reach its height. The Cascade Range was being built of andesite lavas, Yellowstone was again receiving new rhyolitic materials, and the Snake River Valley of Idaho was filling with basalt from one end to the other. The remainder of the world was also in the throws of erupting internal fires. At no other period in the earth's history has so much lava poured forth from the interior except, perhaps, during the early dawn of geologic history, the Cryptozoic Eons.

As the Pleistocene Period, or Ice Age, drew to a close, the general volcanic activity of Idaho slowed down. The melting of the ice fed the streams with large quantities of water which cut gorges through the fresh lavas. Along the Snake River proper, canyons and falls were developed, resulting today in such place names as Idaho Falls, American Falls, and Twin Falls. The waters dammed up by the lavas in the lava desert caused the Big Lost River to back up in the Lost River Valley about fifty miles. Similar lakes were formed on all streams north of the lava plain. The lake formed has left its mark in terraces along the mountains and a fine lake bottom soil now supporting many farms in the area. The river finally cut through the lava forming the Big Lost River Gorge below Arco, now a favorite fishing and swimming spot for the local people. The river itself, after silting in cracks in the lava along the way now extends across the lava fields to a depression which the river has filled to over fifty feet with gravel over the years. Here the spring floods produce a lake of varying size as the water sinks out of sight in the lava bed. It is estimated that these waters, as well as the other lost streams north of the lava fields, emerge as Thousand Springs just north of Buhl, Idaho, some 120 miles from the lake sink. Here the waters flood from layers in the lavas, cascading down the verticle walls of the 500 foot canyon of the Snake River. Joining the Snake at this point, they assist the river in continuing the cutting of the river bed which, having already cut through some 500 feet of lava, is still not down to the base of Pennsylavnian rock which formed the original valley.

In Recent times, the last sporatic eruptions of the Idaho lava fields seem to have occurred principally along the Great Rift Zone which cuts across the old Snake River Valley at right angles. These fissures, forming the remarkable features of Craters of the Moon, follow the general trend of the fault pattern of the entire state. It seems apparent that the heavy folding of the area during the Larimide Revolution caused the strains and fractures in the crust which gave way under internal pressures to make the fissures through which the lavas have erupted.

These last sporatic eruptions around the 'raters' of the Moon and American Falls fall into three easily observed major eruptive groups. At the Craters, the first, or oldest, were the largest, reaching well toward Arco, eastward and Carey, westward. The second

group of flows, seperated visually from the first by less soil and vegetative cover, extend nearly half the distance to Arco, and about the same toward Carey. The third, or latest eruptions, have moved only about seven miles to the east, while flowing nearly ten miles to the west, almost covering the second period of flows on the west side.

Today, much of the last group of flows look as though it has hardly cooled, though the eruptions occurred about 1,000 years ago. Several things are probably responsible for this. The climate of the region is relatively dry, about an average of 16 inches of moisture a year. High westerly winds are the dominent feature for the whole desert area the year round. This, in itself, has a great drying effect. The lavas have a glassy surface which rapidly sheds water. The water quickly finds its way down into the innumerable cracks of the contracted lava. The high porosity of the rock does hold quantities of moisture, yet this is below the surface. The cinder slopes appear dry to the sight, minutes after a summer rain shower, though they are moist several inches under the surface most any time of the year. The soils which do form actually occur about an inch beneath the surface of the cinder and in the cracks of the lava flows, all unobserved by the casual glance. However, after vegetation gains a foot hold, humus builds up and begins to work on the surface cinder and rock.

Though very good examples of the fissures can be seen by observing the cinder cone chains and the small open fissures around Broken Top and Big Cinder Butte, longer fissure displays occur i Trench Morter Flat, while the best are south beyond Echo Crater. Lava tubes accessible to the public are good examples of this ty of formation, containing the various ramafications found in lava tubes throughout the world. Ice is present in various caves and cave sections according to the winter conditions necessary for mation. The best ice formations available to the visitor (as observed by the writer) are to be found in Boy Scout Cave. Ac the best display of ice found was in an unnamed tube just beyon Beauty Cave. This tube, also a superb example of lava tubes, i present, beyond the realm of visitation for all except the arde cave explorer. (See description under Monument Exploration - N 40)

ENTRANCE TO ARCO TUNNEL?

A wide variety of lava flows and lava structures may be observed on the Loop Drive throughout the Monument. Pahoehoe lava probably reaches its best examples of fluid and ropy characteristics at the outpourings from the Great Sink on the road to Broken Top. Here, very grotesque rolls and folds of thickening lava masses have built fantastic shapes which allow the imaginative mind unlimited possibilities. Minature lava tubes, lava bubbles, and channels of finely crenulated lava abound in this area. Though excellent shows of the contrast between Pahoehoe and Aa lava is to be seen in this area, the best Aa lava is that of the North Crater flow which has

pushed its way up across the Idaho Central Highway toward the Little Cottonwood creek sink. Its raggedness and block size is not exceeded anywhere within the accessible area of the Monument.

Regardless of the mass of crater wall sections in the Devil's Orchard area, the better examples illustrating the relationship of lava flow to the crater wall section occurs on the North Crater Flow, also. Specifically, the Monoliths, so often photographed, are the prime example. These particular blocks are surrounded by the flow which carried them into position. The blocks themselves show their layered construction composed of successive cinder eruptions. Cinder cone structure can be studied closely at both North Crater vent and Big Craters vent, while spatter cone composition and structure are displayed nicely on the second and third spatter cones at the spatter cone chain immediately south of Big Craters.

Good bombs are rather scarce throughout the Loop Drive due to past removals by visitors, though some still lie visible to the observer on the slopes of Big Craters and Inferno Cone as one crosses the saddle between these two cones. Great quantities are to be found on the eastern slopes of Big Cinder Butte where one will find fantastic shapes from the usual pear shape to twisted masses and long streamers. Minature bombs the size of almonds and smaller are easily picked up from the open cinder area on the roadside by Inferno Cone as one leaves Paisley Cone and approaches Big Craters.

Basaltic glass, erroneously called obsidian, is found throughout the Monument most generally associated with or near red cinder outcroppings in craters or sections of crater walls. This material, unlike regular obsidian, is opaque in very thin sections which indicates its relatively low silica content. It occurs as both black and red material. Many small bombs of one to five inches in length have a glassy texture.

Taken as a whole, the basaltic eruptions of Craters of the Moon have a higher gas content than the earlier flows of the region. The flows themselves are masses of rock sponge. Only at rare locations in the more massive flows as in the Cave Area does one find chunks or masses of solid lava. The chain of cinder cones along the fissures attests to the gaseous nature of the material which issued forth. During their active days, the cones undoubtedly earned the name given them by observers of modern active cinder cones when they called them Fire Fountains. Imagine, if you can, a hole in the earth spouting white hot liquid rock froth several hundred feet into the air, to be followed by or contiguous with an outpouring of a river of white hot liquid rock flooding the surrounding country side in a display of natural forces far in excess of anything man has yet devised or dreamed.

The geologic story of Craters of the Moon is far from

complete. Much can be learned from continuing study of the area from every point of view. During the fall of 1954, tree ring borings were made by a representitive of the Tree-Ring Laboratory, University of Arizona. Immediate results of these borings indicated that the dwarfed Limber pines on the smooth lava just north of Big Cinder Butte were well over 1,000 years old without question. A recent preliminary report has placed the age of the Triple Twist Tree adjacent to the Devil's Sewer at 1,400 years of age. Past estimates of this latter tree were placed at 400 years. On this latter assumption, the age of the most recent lava eruption of Craters of the Moon were placed in the vicinity of 500 years, since Stearns indicated that the North Crater Flow is the third most recent of the monument. This, in itself, indicates a need for continuing research, while preliminary studies of small mammals show color variation as a result of the differences in soil colors. The flora is decidedly at vairance with the sedimentary and intrusive mountains surrounding the monument. To the observant, the lava flows and its basin will offer a continuing textbook of the processes of Nature.

Thus is the story in running brooks and sermons in stone as told at Craters of the Moon National Monument,

Robert C. Zink
January 1955
Revised
July 1956

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LEGEND

General Geology of the Snake River Basin



Snake River Basalts, Recent.



Snake River Basalts, Pleistocene and Recent.



Silicic volcanic rocks associated with Snake River Basalt, Meiocene to Pleistocene.



Columbia River Basalts, Miocene and Pliocene.



Pennsylvanian or Carboniferous sedimentary rocks including Tertiary granitic intrusions, Challis volcanics and associated rocks principally Oligocene, Miocene, and Pliocene.



Lost River Valley lake sediments, Recent. Much more Recent sedimentary material is found about Idaho, but this is the more important to the Craters area.



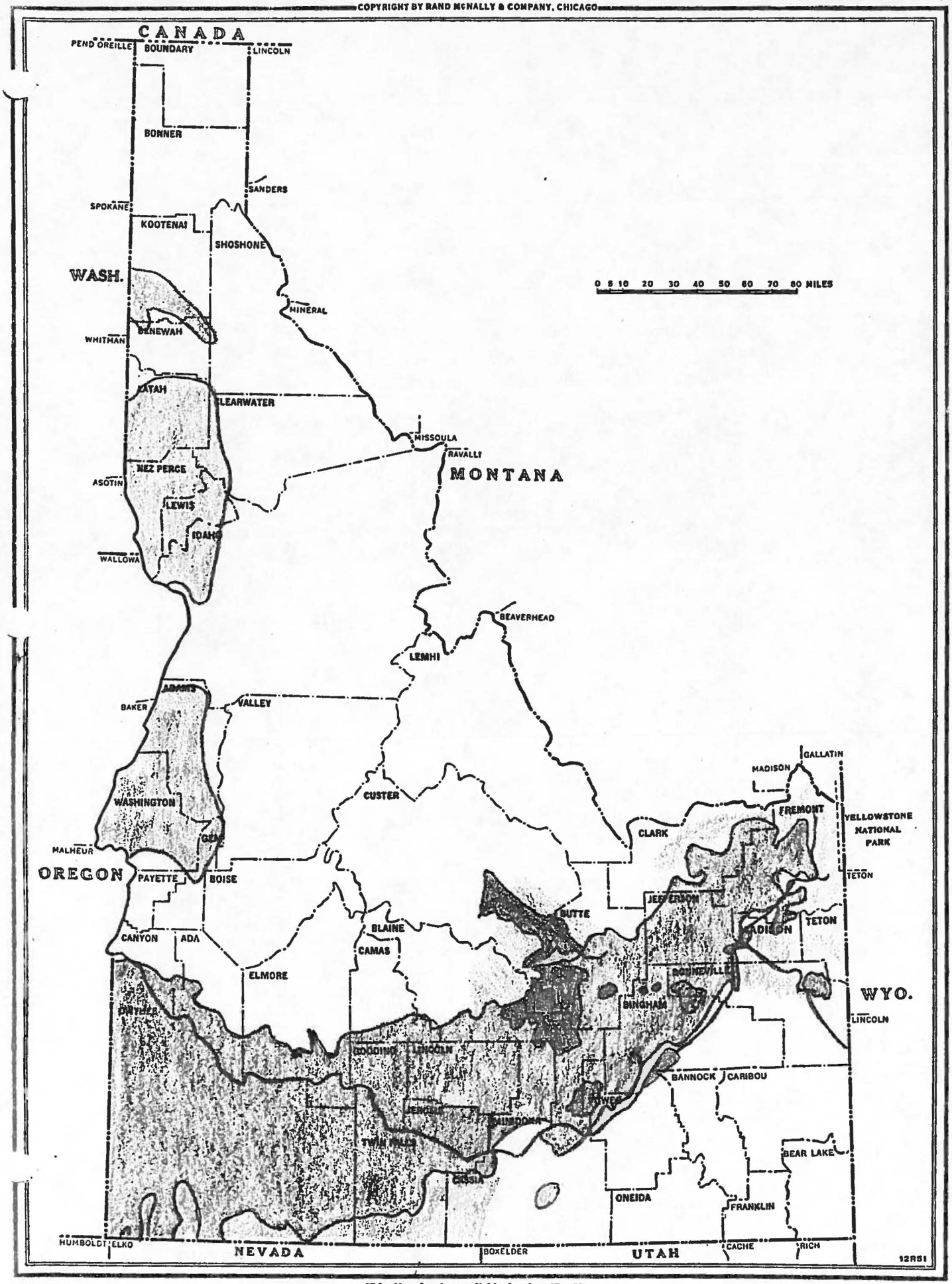
Craters of the Moon National Monument



Snake River, Big Lost River, and lakes.

Map in accordance with Geologic Map of the State of Idaho, compiled by Ross and Forrester, USGS, 1947. Drawn by R. C. Zink.

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LEGEND

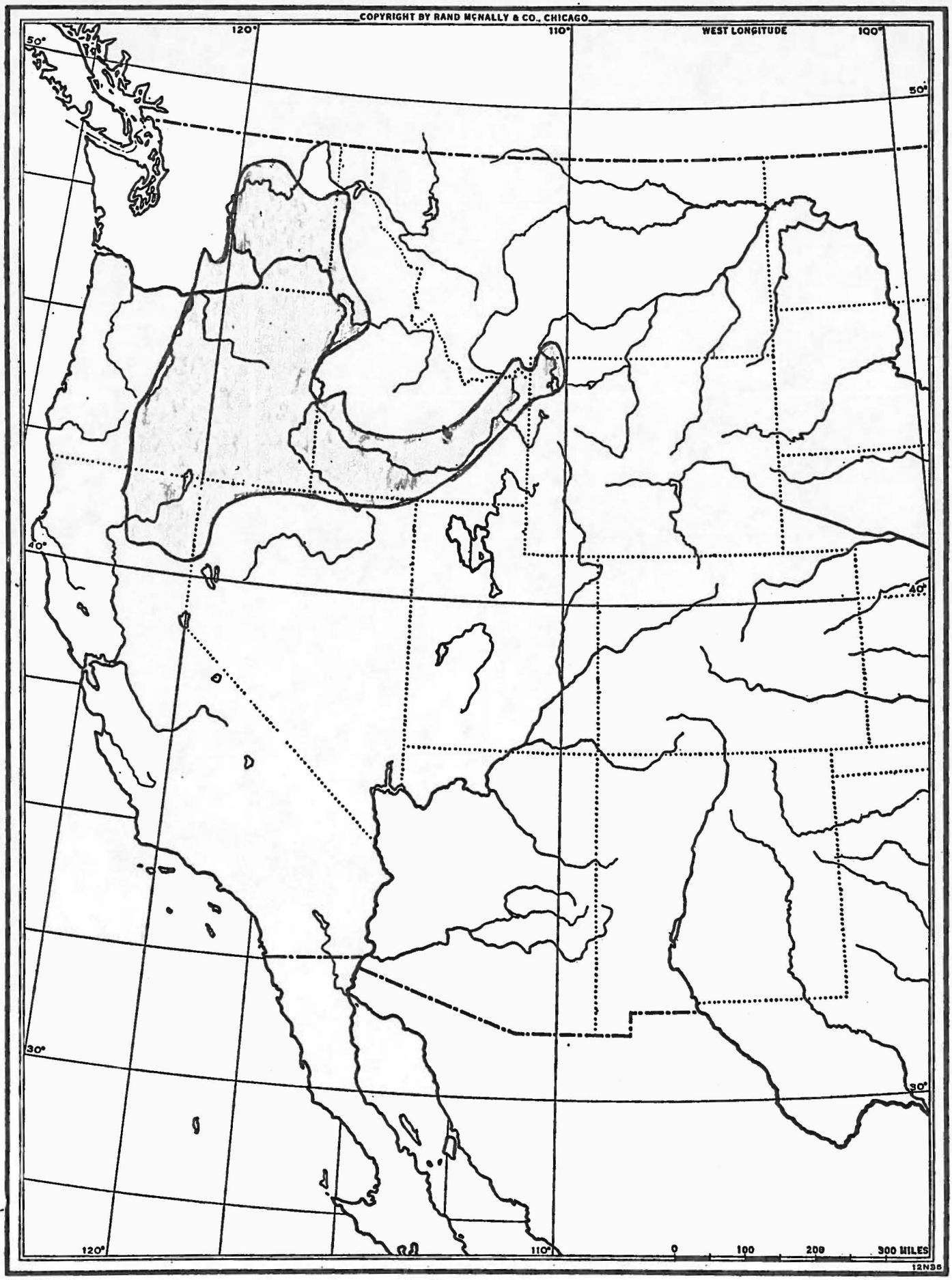
Columbian Lava Sheet

Because of the continuous nature of the lava flows from the Columbian Basin through the Snake River Valley of Idaho, some geologists call the entire area the Columbia Lava Sheet. Others destinguish between the two. This map is taken from the former group. Better source material is necessary for the two to be corectly separated.

 Columbia and Snake River Basaltic Lava flows.

 Craters of the Moon National Monument

Map in accordance with Emmons, Thiel, Stauffer, Allison; Geology, Principles and Processes, McGraw-Hill Book Company, 1939, pp. 298. Drawn by R. C. Zink


COPYRIGHT BY RAND McNALLY & CO., CHICAGO
WEST LONGITUDE
120°
110°
100°
50°
40°
30°
0
100
200
300 MILES
12N36

LEGEND

Present and Recent Past Volcanic Areas of

the World

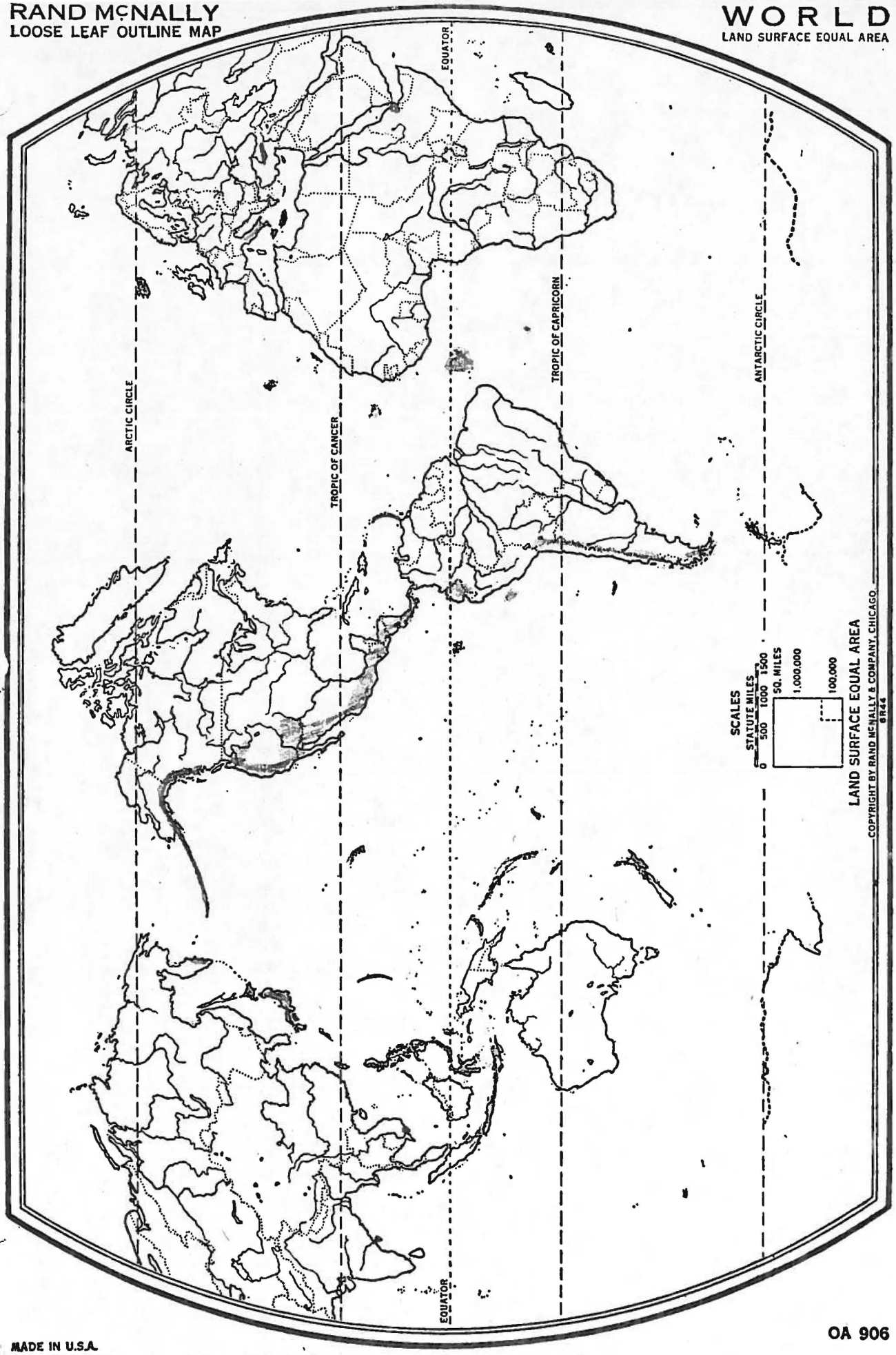
 Volcanic areas.

Map in accordance with Longwell, Knoff, and Flint, Physical Geology, John Wiley & Sons, 1950, pp. 332. Drawn by R. C. Zink.

Note: The areas are only generally defined inview of the source material.

RAND McNALLY
LOOSE LEAF OUTLINE MAP

WORLD
LAND SURFACE EQUAL AREA



MADE IN U.S.A.

OA 906

PREHISTORIC AND ABORIGINAL HISTORY

Prior to the coming of whitemen, the southern half of Idaho was occupied by the Shoshonis Indians. Their domain extended throughout Nevada, Utah, and Wyoming, with groups in California and parts of Colorado. Of all the linguistic stocks in America, the Shoshonis Indians were the largest numerically. Though the Digger Indians of California were part of this family, the Shoshonis were, on the whole, a great and brave group of men. In certain areas they became noted for their murderous and thieving outlaw bands which plagued the western travelers. Though, as all aboriginal people, they existed by survival of the fittest, the westward movement of the whitemen into their hunting grounds was the principle cause of many murderous attacks. Their home in the semi-desert country of the Great Basin and its surrounding mountains made them a nomadic group. They did not cultivate any land.

The name, Shoshonis, means "Grass Weavers," an art which they had perfected for their domestic needs. They conveyed their name to one another by a particular snake-like motion of their index finger. When encountered by the early explorers and trappers in the southern Idaho region, the whitemen took this sign to mean "Snake". As a result the Indians were given the name "Snake Indians," and the great river flowing through their land was termed the "River of the Snakes" or the "Snake River."

Within the Snake River Drainage, for the most part, the Shoshonis Indian family was divided into two groups, the Eastern Shoshonis Territory and the Western Shoshonis Territory. This latter group consisted (in Idaho) of three tribes: The Bannocks; the Turkuarikas; and the Lemhis.

The Bannock Indians roamed the southern part of the State in and south of the Lava Plain. Their usual winter home was along the Portneuf River in the vicinity south of the city of Pocatello, Idaho. Their lands lay across the Oregon Trail and the California Trail (northern route). As mining developed in the Idaho country, the trail from Salt Lake City to the Salmon River mines also traversed their domain. Like other members of their family, they felt and resisted the invasion of the whitemen. After numerous raids on parties and some settlers, with a troop of militia out of Salt Lake City, General Conner crushed the Bannock Indian Tribe forever in a winter battle. This took place January, 1863, on Battle Creek, Idaho, at which time over 300 Indian Braves were killed. The remaining Indians were placed on the Fort Hall Indian Reservation.

The Bannock name is derived from the Shoshonis words "Bamp", meaning "hair", and "Nack", signifying "a backward motion." The original expression, "Bampnack" degenerated into "Bannack", which, translated into literal English, means, "The Tribe with a tuft of hair

thrown back from the forehead". The cruption "Bannock" is incorrect. The city of Pocatello derives its name from one of the well known chiefs of the Bannack, Chief Pocatello.

The Tukuarikas Tribe, or Sheep Eaters, of the Shoshonis roamed the area of the headwaters of the Salmon River to the Boise Basin on the west. They were somewhat of an outcast tribe from the Lava Plains Indians as their rugged mountain life made greater demands on the 'survival of the fittest'. They were considered far more warlike than their brethern of the plains. Driven into the mountains, their progress in development was much less than the plains Indians who intermingled and exchanged ideas. The white settlement of this area of Idaho was greatly retarded for many years by their acts of depredation. During their final capture, they were almost entirely wiped out of existance, so fierce was their resistance. The remains of the tribe were amalgamated with the Lemhis on the reservation of that name.

The name "Sheep Eaters" was derived from the habit of the Indians who's main meat diet was the mountain sheep of the country, though it undoubtedly contained a quantity of deer, elk, bear, and possibly the mountain bison once known to the area.

The Lemhis Indians were never a distinct Tribe as such. They were mostly dissatified members of the Bannacks and Tukuarikas who loosely banded together. They roamed the intermediate sections between the two Tribes, possibly from about the Wood River to nearly the present Wyoming border along the mountain front and up the valleys.

When the Tukuarikas were captured, the round-up included most of the Lemhis families also. Chief Tendroy, the titled head of the Lemhis, became the Chief of these people on the Lemhi Reservation. With the Indians held in confinment, they intermarried more and began to develop into a distinct tribe under Chief Tendroy's rule. After 1880 the reservation was eliminated, and the Indians moved to the southern half of the Fort Hall Reservation of the Bannacks.

It is evident that groups of Indians traveled through the area of Craters of the Moon National Monument. It is as yet not certain to the writer whether these Indians were the Bannacks from the south following the game trails north across the lavas to the summer feeding grounds; or the Lemhis and Tukuarikas working south following the game during their southern winter retreats. However, their existed across the Lava Plain along the chain of cinder cones a well defined trail. The trail ran from the Minidoka area to the White Knob Mountains north of the Monument. This trail was visible to the hiker in the mid 1930's. Within the Monument this trail was no longer visable to one afoot in 1955. It may still be visible from the air.

Along this trail, well defined in years past according to Robert Limbert's account of his travels, the water holes were marked with piles of rock and sagebrush pointing in the direction of the hole, usually a short distance off the trail.

Indian Tunnel, a lava tube within the monument, derived its name from the fact that the Indians inhabited this area quite frequently. Around the entrance to this tube lie a number of piles of rock in the form of cresents. The heavy, center portion of the crescents all face toward the west, the direction from which the strong prevailing winds come. These "Teepee Circles", as they are called, were stacked against the bottom edge of the teepees to hold them up against the force of the winds. Past explorers and early visitors have found a number of Indian artifacts in this location. Today, eradic chips of stone, not basalt, can be found in the shallow cracks and depressions in this area. Occassionally, small bits of stone will show signs of having been worked by man. No Indian artifacts found in Craters of the Moon National Monument are in the possession of the Government at this time.

Within Indian Tunnel, and apparently other caves, the remains of various animals have been found. It seemed apparent that the animal remains were left by the Indians rather than the remains of trapped animals, as none of the lava tubes, except Great Owl Cavern, would be a death trap for entering animals.

For the most part, all the lava tubes contain water either as ice in the spring, or water pools as the summer comes. With easy access to the mountains from the lava tubes, an Indian encampment would be relatively safe from surprise attack while still supplied with water. Whether the Indians understood the preserving effects of the ice cold caves is unknown, yet the caves of the area which they frequented contained ice in varying amounts throughout the spring.

An important factor bringing Indians into the Monument area was the presents of glassy basalt from which they could fashion arrow and spear points. Though much of the fragmentary rock material found around the teepee circles is not basaltic glass, they apparently had a basaltic glass quarry on the south side of Big Cinder Butte, According to Stearns. From the gleanings of the Indian Tunnel area, it seems evident that the Indians also found the very small volcanic bombs glassy enough and of usable size for some of their tools.

Hunting in and around the chain of cones and the mountains to the north would net the Indian quite a selection of animals. The Rocky Mountain mule deer frequented the cindered areas. The brown bear roamed the area in and out of the volcanics in relatively large numbers. There also existed a special species of grizzly bear which inhabited the monument area proper. Elk, a mountain bison, antelope, Canadian Lynx, and coyote comprised the larger game mammals. The small animals included beaver, five kinds of rabbits, two kinds of squirrels, weasels, marmots, badgers, and mice. This wildlife would supply a wide variety of food as well as furs and bones for clothing and tools.

Another interesting use made of the Lava Plain by the Indian was what seems to be a "City of Refuge" for the women, children, and elder Indians during Indian wars, raiding expiditions, and retaliation against the whiteman. The area lies somewhere in the northwest corner of Lincoln County just south of the boundary of Craters of the Moon National Monument. The sanctuary was presumed located by Robert Limbert on one of his trips. The area was described by him as being a wide fissure adjacent to a lava tube. The area contained a good waterhole near by in the same fissure. A quantity of wood and faggots remained near blackened fireplaces around the tube mouth. George Goodhart, an early resident of Arco, Idaho, was taken to this sanctuary, blindfolded, by Shoshonis Indians upon his request in 1861. Though having given his word not to reveal the location of the area, even in general directions, he disclosed his trip to friends only after the Shoshonis Indians were confined to the Fort Hall Reservation. This location, deep in the lava plain, would be most difficult for the uninitiated to find, as well as being an excellent place to defend. The tribe or group of Shoshonis using this sanctuary is unknown to the writer.

Contrary to some published stories about the local Indians, they did not hold the lavas as an area of taboos. The evidence is too great in favor of their having frequented the area in numbers and over a long period of time. With the most recent geological information pushing the last active flow back in the vicinity of 1,000 years, little credulance can be attached to so called tales of eruptions during the fifth and sixth generation back. It is quite probable that the Indian recognized that the rock was once molten and had flowed like water in some cases. That the native Americans probably saw the volcanic activities of this area in the past cannot be put aside. But the timing of the flows must rest upon more valid information than hearsay.

As in all sections of America, the coming of the whitemen was inevidable. And so it was with the Idaho Territory. To the most difficult barrier of the volcanics, river chasms, and 10,000 to 15,000 foot mountain chains were added the hostility of the Indian. In time the volcanics yeilded to trails and roads; the rivers were bridged or ferried; and the Indian placed on Reservations, disarmed and left to his unfortunate heritage. Here, in the Lava Plain, he, among few others, found life in what many people term a place of utter desolation and shutter at any thought of its possible beauty.

Robert C. Zink
July, 1956

PRE-HISTORIC AND ABORIGINAL HISTORY

Bibilography

Brosnan, C.J., "History of the State of Idaho," Charles Scribner' & Son, 1918.

Limbert, Robert W., various articles appearing in the Arco Advertizer, newspaper, Arco, Idaho, issues from 1920 to 1925.

Anderson, Abraham C., "The Pioneer Life of George W. Goodheart and His Association with the Hudson's Bay and American Fur Company's Traders and Trappers," Caxton Printers, 1940.

Zink, Robert C., "Trips to the Southern Part of the Monument, September 1, and September 28-29, 1955." A report to the Superintendent, Craters of the Moon National Monument, Monument file N - 28

" Unrecorded notes.

LEGEND

Indians of Idaho



Region occupied by the Lower Pend O'Reiles Indians now on the Colville Reservation. Land in part claimed by the Kutenais Indians.



Region occupied by the Upper Pend O'Reilles Indians now on the Flathead (Jocko) Indian Reservation.



Lands claimed by the Coeur D'Alene Indians



Coeur D'Alene Indian Reservation created 1873, and allotted in severalty in 1905.



Land of the Nez Perce Indians as of 1855, and then reduced to less than half its size by Treaty of 1863.



Nez Perce Indian Reservation Created in 1863, and allotted in severalty in 1894.



Western Shoshoni Indian territory in 1863.



Duck Valley Indian Reservation created in 1877 for Western Shoshonis and Pahutes.



Eastern Shoshoni Indian territory in 1863.



Fort Hall Indian Reservation created in 1869, and allotted in severalty in 1898.

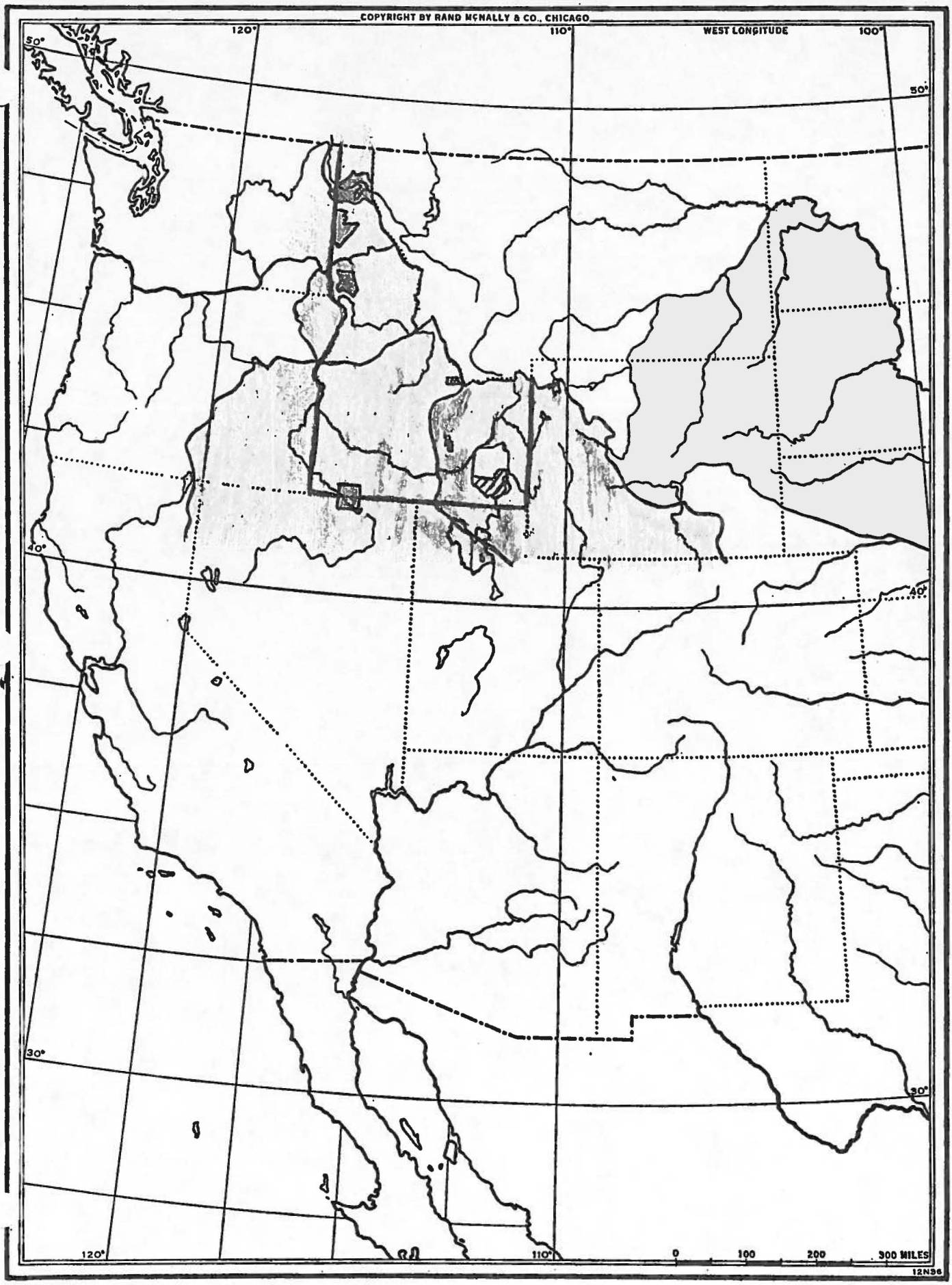


Fort Hall Reservation area reserved for the Lemhis Indians in 1880.



Fort Lemhi Reserve created in 1875, and relinquished in 1905.

Map in accordance with C.J. Brosnan, History of the State of Idaho, Charles Scribner's & Son, 1918. Drawn by R. C. Zink


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WEST LONGITUDE
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MADE IN U.S.A.

LEGEND



Area known as the Columbia River Country from about 1800 to 1820, whence the name became the Oregon Country until 1848 when the Canadian-United States international boundary was established.



Oregon Territory from 1848 to 1853



Boundary of the present State of Idaho.

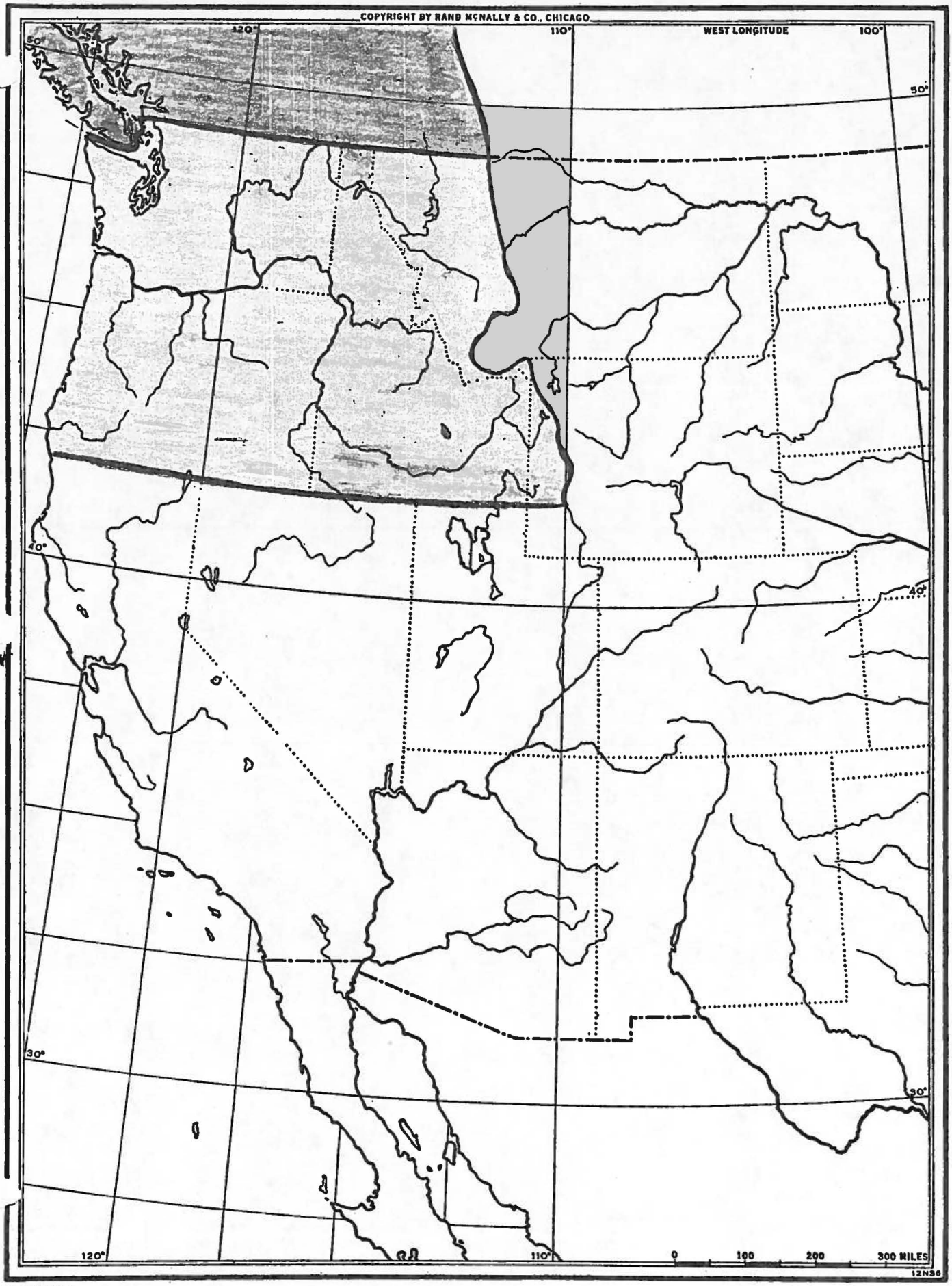


Craters of the Moon National Monument

Map in accordance with Brosnan, History of the State of Idaho, Charles Scribner's & Son, 1918, pp. 118 - 119.

Drawn by R. C. Zink

RAND McNALLY LOOSE LEAF OUTLINE MAP WESTERN U.S.



MADE IN U.S.A.

OA 53

LEGEND



Territory of Washington including part of the present State of Idaho, 1853 to 1859.



Territory of Oregon including part of the present State of Idaho, 1853 to 1859.



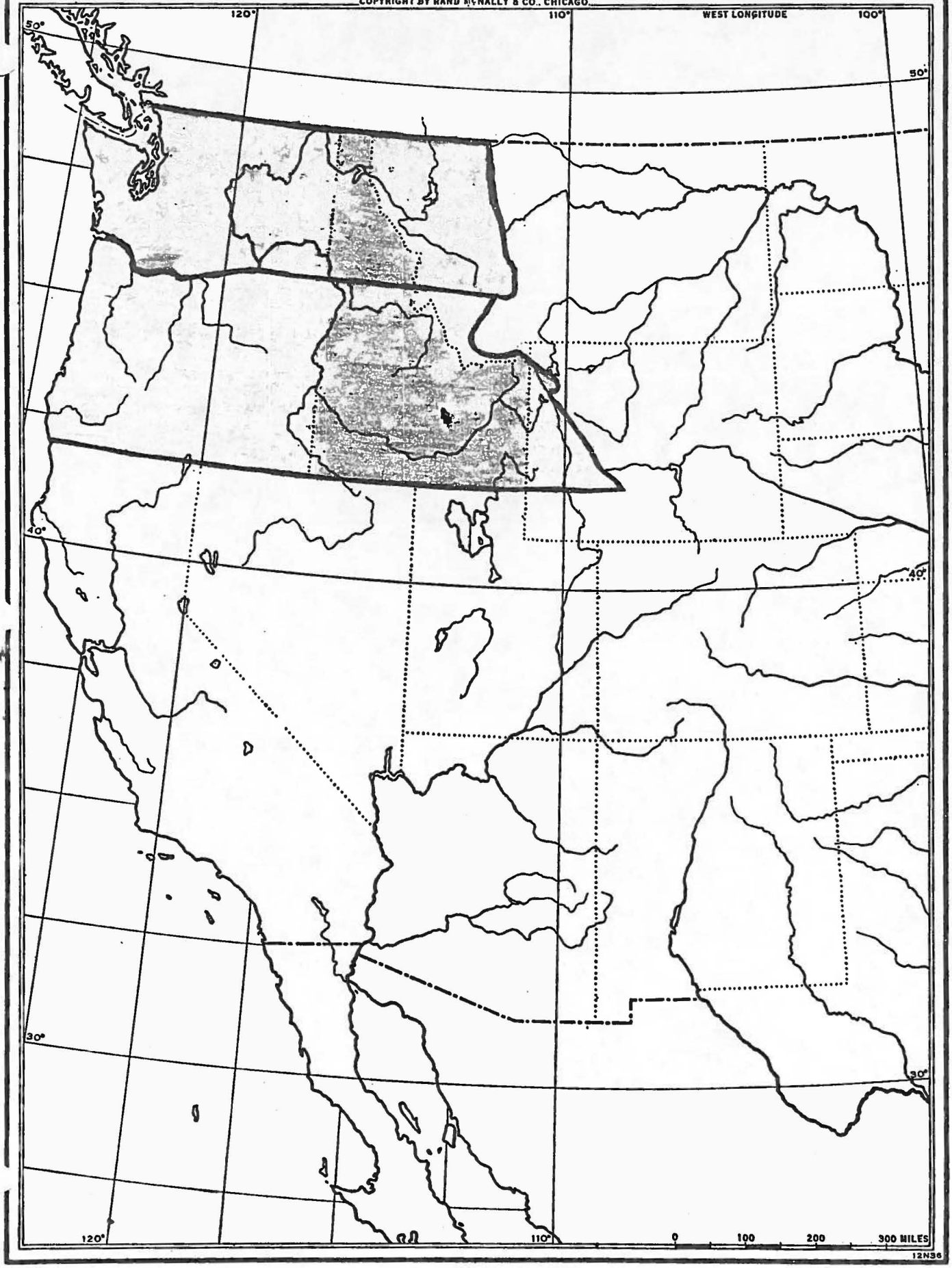
Boundary of the present State of Idaho



Craters of the Moon National Monument

Map in accordance with Brosnan, History of the State of Idaho, Charles Scribner's & Son, 1918, pp. 119.
Drawn by R. C. Zink

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LEGEND



Washington Territory including the present State of Idaho, 1859 to 1863.



State of Oregon admitted to the Union in 1859.

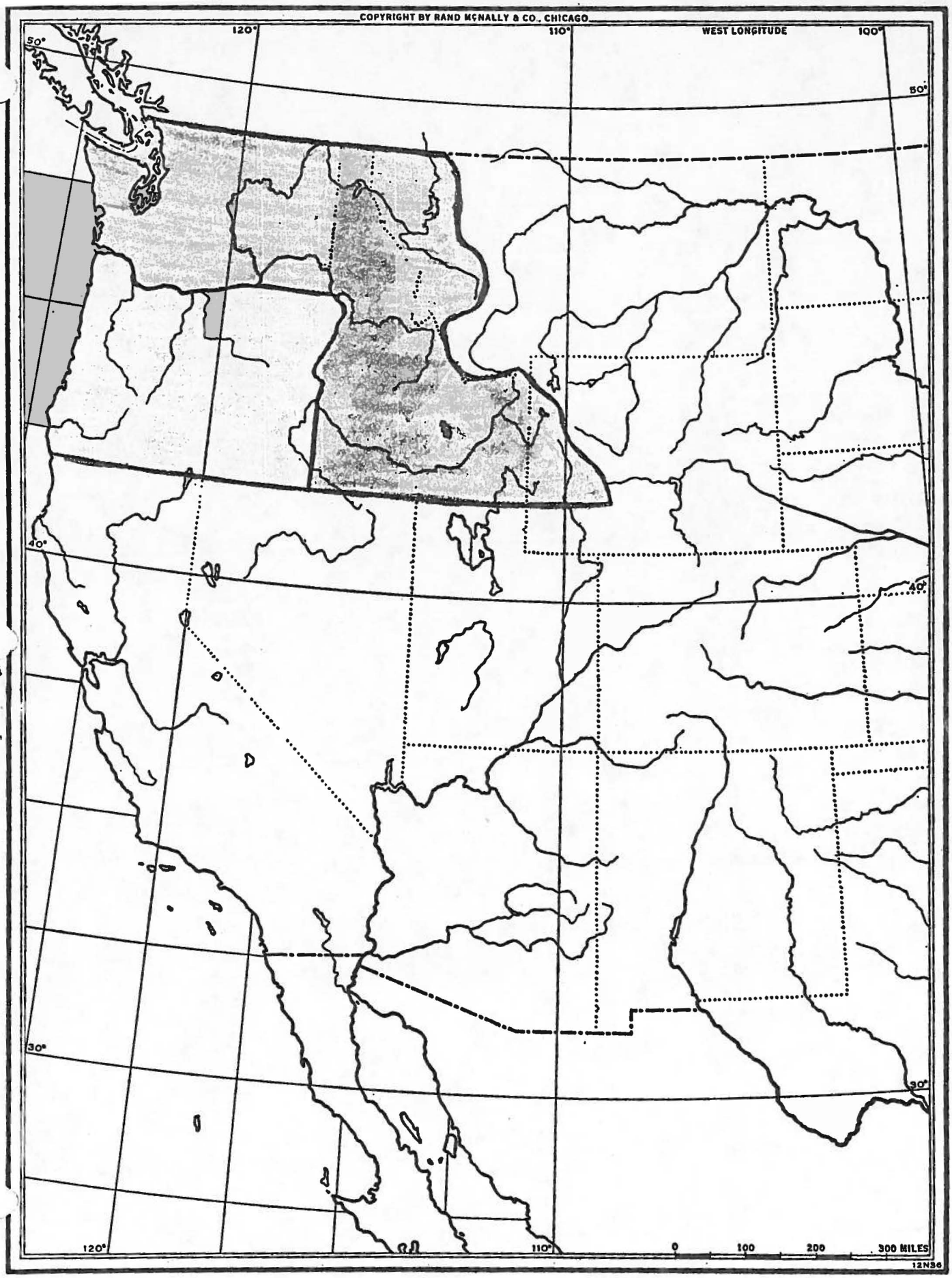


Boundary of the present State of Idaho



Craters of the Moon National Monument

Map in accordance with Brosnan, History of the State of Idaho, Charles Scribner's & Son, 1918, pp. 119.
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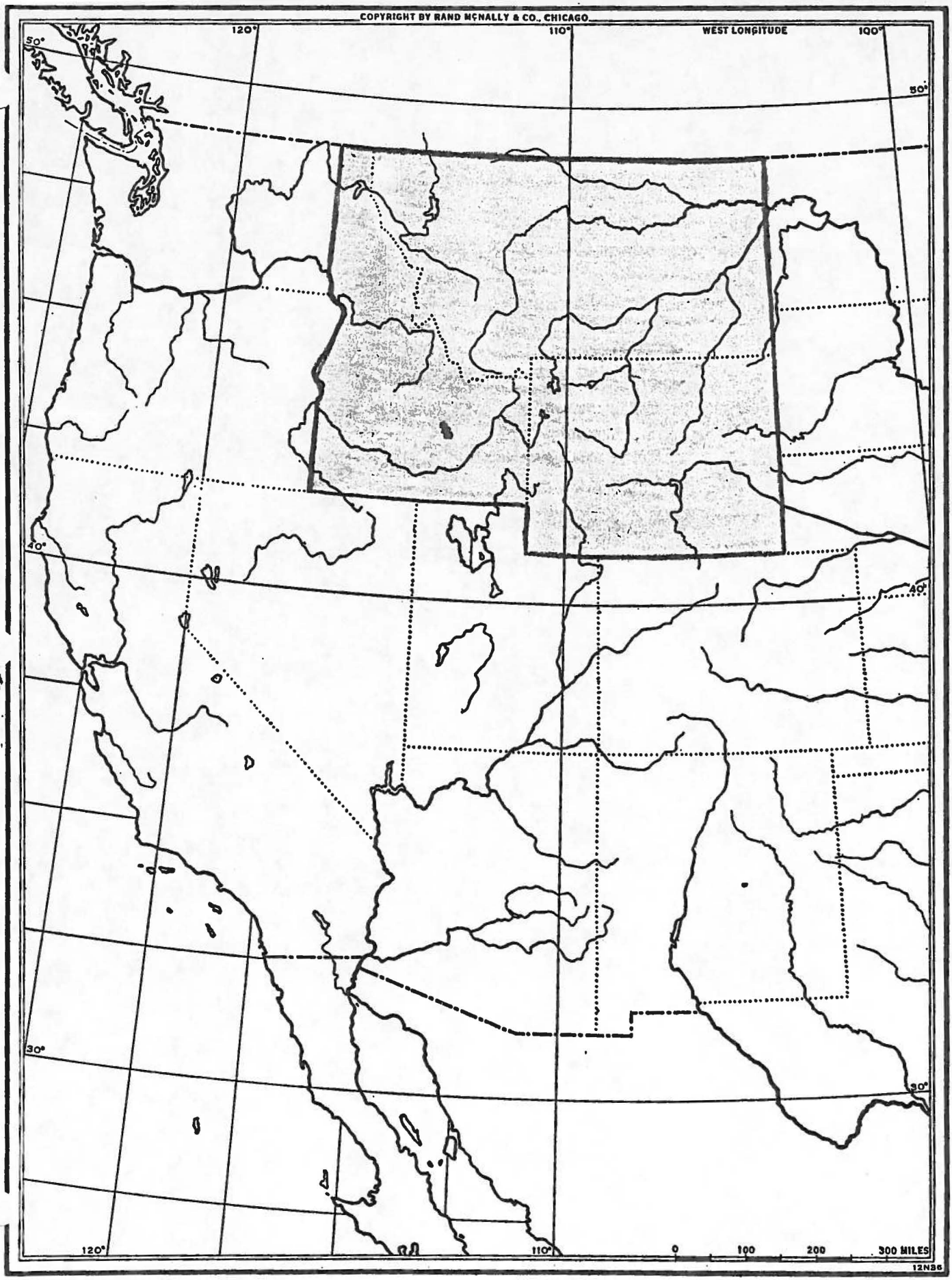
LEGEND

 Territory of Idaho which included the present states of Montana and Wyoming from March 1863 to May 1864.

 Boundary of the present State of Idaho

 Craters of the Moon National Monument

Map in accordance with Brosnan, History of the State of Idaho, Charles Scribner's & Son, 1918, pp 119.
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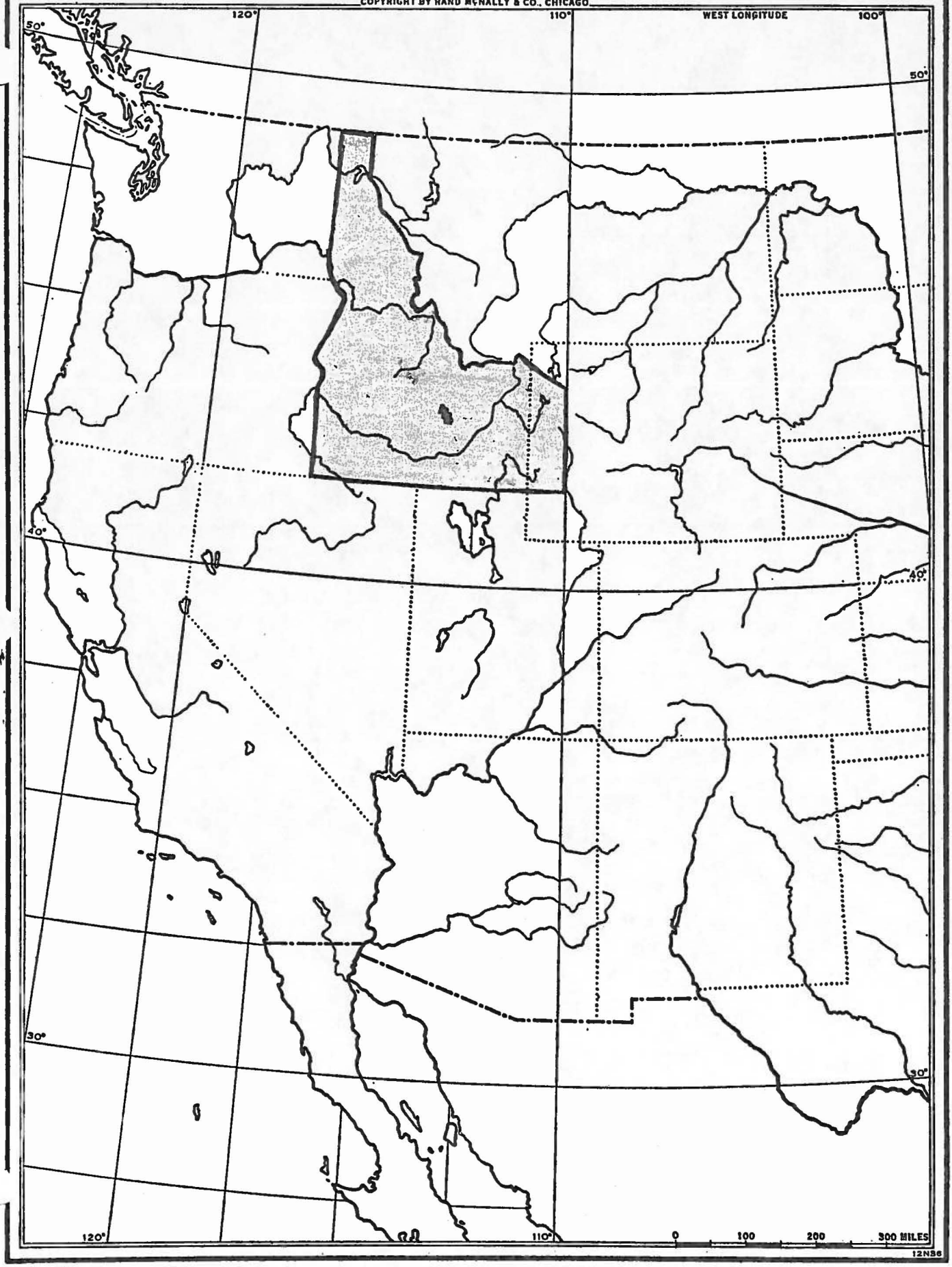
 Territory of Idaho, from May 1864 to 1868.

 Territory of Idaho from 1886 when the Territory of Wyoming was created to April 3, 1890 when the Territory was admitted to the Union as the State of Idaho.

 Craters of the Moon National Monument.

Map in accordance with Brosnan, History of the State of Idaho, Charles Scribner's & Son, 1918, pp 119.
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LEGEND

Early Trails Through Idaho

Lewis & Clark - 1804 to 1806

Lewis's return vairations - 1806

Clark's return vairations - 1806

Overland Astorians - 1811

Oregon Trail 1843 to 1857

Tim Goodale Cutoff

California Trail prior to Gold Rush

State of Idaho

Craters of the Moon National Monument

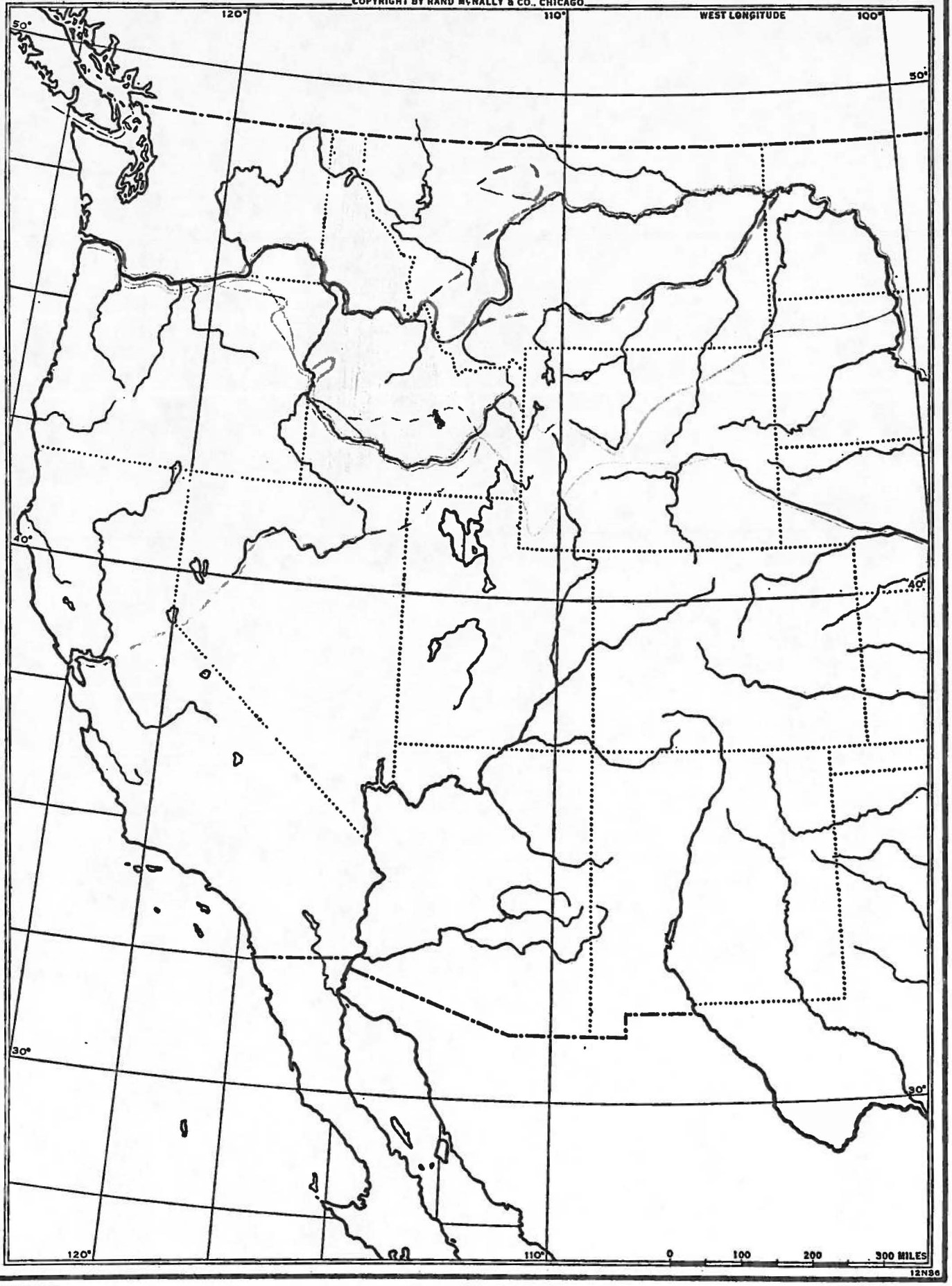
In accordance with:

Western America, Hafen & Rister; Prentice-Hall, 1949

History of the State of Idaho, Brosnan, Scribners, 1918

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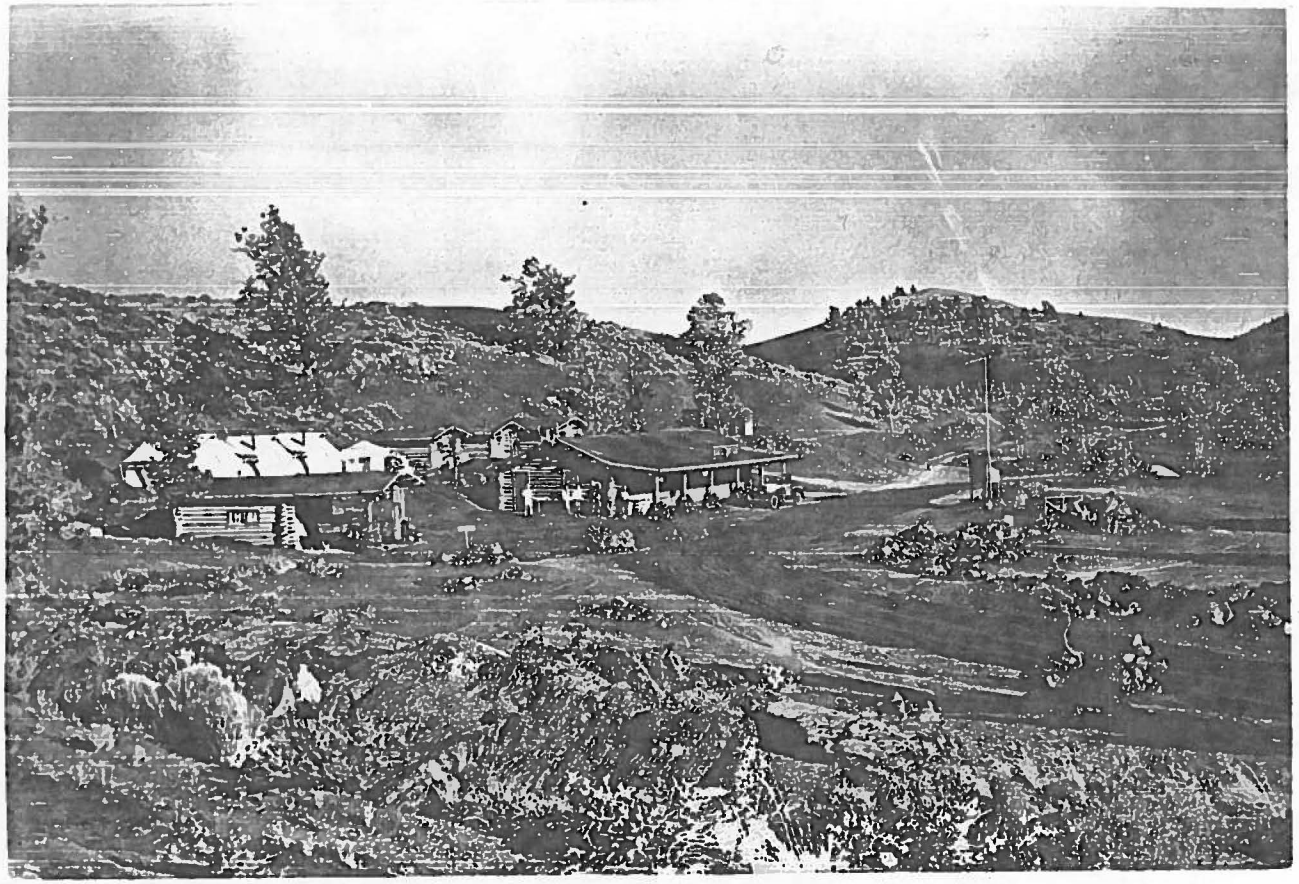
14 18-3

Headquarters at Registration Waterholes. This site was called Cinderhurst Camp, and it was the favored camping location of Custodian Paisley who built the entire camp at his own expence. This area served as Headquarters from 1924 to 1927. Photographer unknown - photo donated by Paisley-Walker family of Arco.



An early photograph of Mr. Samuel A. Paisley, Custodian with a visitor at the Cinderhurst Camp Headquarters. The photograph shows Mr. Paisley's quarters-office and the display table with lava specimens gathered from various parts of the Monument. Photographer unknown - photograph donated by Paisley-Walker family of Arco.

H 18-2



14-18-4

Crater Inn and the new location for Headquarters, probably the opening of the 1928 season following completion of the Crater Inn buildings. Relocation of headquarters was due to the drying up of the waterholes.
Photographerunknown - photo donated by Paisley-Walker family of Arco.

LOOP DRIVE AND APPROACH ROADS DEVELOPMENT

As the human history has pointed out, this area was traversed by the Indian following game. His trail was distinguishable across the lava, and may still be today in certain areas. Also the early trappers and prospectors covered sections of the Lava Plain afoot and on horseback. The development of working mines along the mountain front, the Lost River Valley, and the Wood River Valley, broadened the mountain front trail into a wagon road. This road traversed the very edge of the lavas at the base of the mountains. An alternate route from Arco to Hailey and Ketchum was a very steep and rugged road across Trail Creek and the Big Lost River. The resulting wagon track between Arco and Carey and on to Boise was a very difficult section for any traveler. This old road from Arco to Carey was some seventy miles in length; today it is forty-two miles in length.

Although a reliable reference has yet to be found to substantiate the claim, the road from Fort Hall to Arco, Carey, Bellevue, and on to Boise has been called the Tim Goodale Cutoff of the Oregon Trail. It has been recorded in newspaper articles of the Arco Advertizer that wagon parties took two nights and a day for the treck from Fort Hall to Big Butte where the first water was available high on the slope of the mountain. Another day was required to make the passage to Arco. Moving westward, a day was required to reach the settlement of Martin on Lava Creek, four miles north of the Monument. It then took another whole day for wagons to move from Martin to the Big Cottonwood Creek west of the Monument. This section, now the northern boundary access road, was known as the OxBow section, and it netted the traveler an advance of approximately four miles airline. Occasionally a visitor will stop to tell of his childhood experiences of freighting this road with wagon teams under the guidance of his father or of a wagon master.

Never, at any time, was this old road across the Monument a pleasurable, sightseeing passage. The rough lavas were not a place to spend more time than necessary as they impeded the progress of the wagon greatly. However, as the automobile became the mode of personal travel, the roads were improved mostly by the removal of rocks from the road bed and dragging to cover the ruts. Regardless of road conditions, automobiles made their way to the Craters of the Moon area in the very late 1910's and early 1920's for sight seeing purposes.

Sometime in 1922, a road was constructed from near Martin into the Craters area following the cinder cone edges. It extended approximately from Martin to the old east entrance, south of the present headquarters, across the North Crater Lava Flow to the Registration Water Holes. From here it went around Paisley Cone to the Devil's Orchard and there branched toward the Cave area and the Big Craters. The exact date the road was completed into a Loop around Inferno Cone has not been determined although it was sometime during the early 1920's. There was another spur leading to the waterholes west of the Registration Waterholes.

This road was built by citizens of Arco and Hailey who were interested in promoting the Craters area. It appears that, at this time, these public minded citizens, working under J.E. Smith of Arco, also constructed a new cutoff which swung westward around the southern side of Sunset Crater and across the heavy Aa Flow to the south side of Grassey Cone. All indications are that it then continued westward along the present route to the old road at the present entrance to the Pay Master Mine. The labor involved can be imagined when one walks the Aa flow north of North Crater and realizes that this road was constructed with sledge hammers, pry bars, shovels, old horse drawn fresnos, and wagons for hauling cinder.

For the assistance rendered by the Hailey people in constructing this six mile shortcut, the west entrance was called the Hailey Entrance. This follows closely the new development entrance. The eastern entrance from Martin was termed the Arco Entrance.

Information gathered from the Arco Advertizer indicates road maintenance throughout the entire area north of the Snake River Plain was carried on by the local citizenry seemingly in self-preservation measures. On several occasions, groups were gathered together in Sunday picnic style to remove rocks and grade the road from Blackfoot to Arco and from an old road across the lavas from Arco to Minidoka and Rupert. On these occasions, groups would come from both locations to work on the sections within their own county.

In 1923, attempts were made to obtain gasoline tax money for the improvement of these roads. However, the first record of State work appears about June 1926, when the road from Blackfoot to Arco was graded and improved. Parts of this section were graveled where gravel was accessible to the road. About that same time (1926) a southern entrance was proposed into the Craters of the Moon National Monument. This road was to run from Kimama (north of Rupert) into the Monument to join the existing road in the area. After a survey, apparently an inspection afoot, a written report was never made because such a road was considered unfeasable. The matter was dropped.

The following year, June 1927, the double entrance was abandoned. The old roads were closed and a single entrance was made along the western slope of the Headquarters cinder cone. The east entrance has never been fully eradicated and has been used during later years for the convenience of large semi-trailers and trailers of oil tankers supplying the Monument with road oil and equipment access toad to the watershed and dump. The road throughout the Monument was maintained since its establishment by a small fund provided by the National Park Service. The Custodian hired several laborers from Arco and vicinity to remove rocks, to drag the ruts, and to haul cinder for resurfacing the roadway. As has been noted by this writer, cars pulverize the cinder and the wind removes this fine material in short order. Thus, it was necessary to continually haul cinder to resurface the roadway across the flows and to keep it from entrenching itself deeply into the cinder cones. Entrenchment can be seen today on the road around

Inferno Cone from Big Craters to the Great Owl. The reason for the very large cinder pit in the Utility Area and on Inferno Cone can thus be easily understood.

May of 1928 saw the State again working on the roads. The section between Arco and Martin was straightened in a number of places reducing the mileage from 25 miles to 23 miles. In continuing the publicity of the Monument, the Arco Chamber of Commerce raised a fund to publicize the accommodations and services of the area available at Arco. This publicity was to regain the travel that the Snake River communities were drawing away from the Craters.

The construction of the Monument waterline in 1931, necessitated an access road into the Little Cotton wood watershed whereby pipe and other supplies could be hauled to the job. This road began north of the old east entrance to the Monument, along the eastern base of Sunset Crater, and up the mountain edge to join the old Arco-Martin-Carey road. In the Little Cottonwood valley proper, there probably existed a road to the Martin Mine. This road ran alternately on each side of the creek as was most feasible at the time. It crossed the creek five times in reaching a point a little above the Martin Mine. From this point on, approximately, the roadbed became the pipeline-bed also. The road was built on the west side of the canyon to the Collection Box of the System.

The amount of repair work done on this road has never been recorded. However, in the spring of 1956, an attempt was made to put it into usable condition for at least pickup travel. The introduction of heavy equipment (the Caterpiller grader and TD-18) brought the realization that the pipe was very close to the road surface in at least one location. When the resulting pipeline breaks were repaired, the remainder of the road repairs were made with pick and shovel. The fords were improved with rock bases to prevent erosion and deepening of the creek bed, and the old Aspen log bridge at the Collection Box was rebuilt with 3" by 12" stock.

During the 1954-55 mining operations of the Martin Mine, permission was granted by the Superintendent for the relocation of part of the road as it joined the old Arco-Martin-Carey road. The old grade up the south slope of the mountain was becoming badly eroded as well as always having been very steep. The new grade was located on the north slope of Sunset Crater. At the same time, a new grade was also constructed mostly within the Martin Mine property on the east side of the canyon. This new grade eliminated two of the fords.

As travel through the Monument increased, a small amount of equipment was accumulated.' Although no mention is made of the equipment, the log shed was constructed to house it and future equipment. This was begun August of 1932. Presumedly the building was completed that same season. The following year, 1933, a CW (Civil Works?) program did much to improve the Loop Drive. A number of men were hired to build rock retaining walls along the road edge so that the cinder fills would not spill across the lava sections. These men were also used to repair the rain washouts along the drive. Experience has shown that regardless of the ease with which the cinder slopes will absorb rain and snow melt, there are limits beyond which it cannot go.

When the subsurface cinder is frozen, the top cinder can be eroded as easily as any loose soil. Under heavy torrential downpours, as some of the summer thunder showers, runoff has caused heavy eroding of the road edge and trenching of the cinder slopes. Simple sink holes dug along the road at strategic points have proved of great aid in taking care of the runoffs.

In March, 1934, 3.7 miles of the Arco-Monument road were oiled. It is believed this was a dust pallative type of oil. Work was begun in January, 1938, to relocate the road from Arco to the Monument. The new road was to follow a stright line from the Soelberg Ranch westward until it met the lava fields. Here it was to swing southwestward in a general line toward Sunset Cone of the Monument across the lava flows. The old highway, via Champaign Creek and Martin, was to be turned over to the County. Access to the Martin area was made possible by a short cutoff within the Monument near the east boundary. At the same time during that year, work was done on the Monument-Carey road to shorten it by cutoffs across lava sections, bringing the distance down to the present 24 miles. With this work, the State began negotiations for right-of-way property following the road built earlier by the citizens of Arco and Hailey.

Sometime prior to 1936, consideration was given to an extension of the Monument road system. Probably during 1936, a road survey was run from Inferno Crater to Echo Crater with a spur to Crescent Butte. The survey apparently followed closely the route used by foot and horseback parties.

A geologic report on two alternate routes on the Broken Top section was compiled by Regional Geologist J. Volney Lewis. The report has subsequently been filed under N-30 "Geologic Features and Studies" for its continuing geologic value. Though two routes were proposed and staked out, a third route was used across the cone. This may have been because of the excellence of the report which brought out the loss of features which either of the first two would destroy.

Just when this road was first constructed has not been mentioned in any report. Over the years it has been improved only on that section between Inferno Cone and the parking area on Broken Top. Occasionally, the steep grade on the south slope of Broken Top has been worked so that the southern area is still accessible to Monument personnel and special geological parties.

According to the Monument geologic map, this southern extension runs to the vicinity of the Little Prairie Waterhole. This portion from Crescent Butte to the waterhole was not surveyed as part of this operation. No survey stakes are to be found, nor has the area been graded beyond Crescent Butte. Neither has the main section past Coyote Butte to Echo Crater been graded except as a result of the fire in 1949.

By this time, travel through the Monument increased to the point where it became necessary to have powered equipment to repair the road surface more often than was possible by hand labor. A Wehr self-powered grader was obtained in August, 1937. This travel increased the amount of road cinder being pulverized. The dust problem around headquarters and the camp-ground became acute. In July, 1939, the first oil was spread in the Monument. It consisted of a light dust pallative coat from the entrance through headquarters and a mile out on the Loop Drive. The campground was also given the same treatment.

During this year, 1939, the Monument-Carey road received a coat of oil. Again, it is believed to be a dust pallative coat. The winter of 1939-1940 saw the road from Arco to Carey maintained free of snow for the first time. The winter was a mild one, permanent winter snow not falling until January 2. This was undoubtedly the main governing factor in maintaining the road. From then on the precident had been set, and the highway traffic on the Idaho Central Highway increased proportionally each year with little slack in the heavy vehicles using it during the winter months.

During June of 1940, the final survey relocating the Arco-Monument road was begun. Apparently it was just a matter of filling in details on the survey completed in 1938, as construction of the highway itself began in July. Work progressed throughout the summer and fall months and began as early in the spring as was possible. In the meanwhile, this highway-to-be and the old road still in use, was designated as U.S. 93 Alternate. With this, the need for maintaining this highway all winter became a necessity. The main U.S. 93, runs from Challis to Stanley, across the 8,752 foot Galena Summit and through Ketchum, Hailey, Bellevue, and Shoshone. To the present date (1956) this highway has never been maintained during the winter because of the heavy snow on Galena Summit. There are still approximately sixty miles of this road unsurfaced. Thus, 93-A will be one of the major winter-use highways for an indefinate period. It is one of the main southern routes from western Montana, and the shorter route from eastern Idaho to the Boise area and western points.

It was not until July 18, 1941, that the Congressional Exclussion Act gave the State Highway Commission title to the right-of-way through the Monument. By this time, the road work had been completed between Soelberg's ranch and the eastern Monument boundary. There remained only the 3.9 mile interval apparently unoffically appropriated by the local citizens in 1922. With the passage of the Bill, work was pressed and the new highway opened in November although the section through the Monument was not graveled. This new route reduced the distance between the Monument and Arco from 23 miles to 20. In July of this year the monument received another dust pallative oil coat from the entrance to a distance of two and a half miles into the Loop Drive and the campground.

The following year, 1942, the highway was graveled from the west boundary to Arco and seal-coated in its entirety. Thus, an oil surfaced road ran from Carey to Arco. The highway was again seal-coated in 1944.

Little has been recorded about the signing of the area. However, in 1946 a new entrance sign was erected. This sign was log framed, three feet by seven feet. It is possible that similar signs were erected at both boundaries at the same time, though not mentioned. They were burned as firewood in 1951 when replaced by the present Highway Boundary signs.

By 1947, the Monument received a Marine surplus endloader for use in loading trucks hauling cinder. The following April, the Monument obtained a surplus Marine TD-18. This was used for road building and for snow removal during the winter. As of 1937, the Custodian became a permanent resident. Formerly he transferred to another area during the winter months. It is doubtful that the Custodian remained on the Monument proper; however, he was available for winter inspections and earlier openings.

In May of 1948, the Monument also received an M-4 Caterpiller-dozer. However, there are no records of the disposition of this piece of equipment. About the same time, the Monument also obtained a pre-fab masonite shed from Lava Beds National Monument which was erected to house the growing equipment inventory. The fall of 1949 netted the Monument a Caterpiller-gasoline road grader transferred from Pinnacles National Monument.

During August of 1949, a 200 acre fire developed on Coyote Butte. As the high wind fanned the fire, it became evident that hand tools would not stop the fire. The TD-18 was called into action and a fire break run around the eastern side of the fire. This fire break produced a road which has subsequently been used for access into the southern part of the Monument. The fire break followed closely the staked out road toward Echo Crater. From the terminis of this fire break, one can easily follow old tire tracks to the vicinity of Yellowjacket Waterhole and Echo Crater where an occassional old survey stake may yet be found. A spur leads around the west side of Echo Crater, but ends abruptly on the cone slope.

According to the records, the winter of 1949 was a rough one. Highway 93-A was closed by snow and wind drift for a period of 20 days, though open for a few hours at a time, three times during this period.

Up to this time, maintenance of the Loop Drive had consisted of patching the dust pallative oil coat, and grading the unoiled sections. In July of 1950, the Monument received its first heavier

oil coat. This was an MC-2 oil, spread on the road surface, mixed with cinder by the road grader, and laid for the traffic to pack. For a number of years, the Master Plan called for the elimination of the Loop Drive as such. It was planned to abandon the section between the Big Craters 'Y' and the entrance to the Great Owl Cavern spur. However, all the Superintendents and Custodians approved of the Loop as the best means of circulation, and it was never actually closed. Yet, as a result, this section of the road did not receive any of the 1950 oiling. Again, the campground received its share of the oil, though this was, as usual, a light dust pallative coat. The maintenance of the Loop Drive became a much easier job, as well as making the drive through the Monument a much more pleasent trip. Some time during the past years, the Monument had also received a Butaine-fired oil spreader which was used in connection with the patching operation. September, 1950, the Monument obtained two International dump trucks for road work.

During the fall of 1951, the Arco-Monument section of highway 93-A was reprocessed and received a heavier oil mat. This greatly improved the quality of the road which had been receiving more and more heavy traffic. Also in October, the new road from Arco to Idaho Falls through the Atomic Energy Commission property was opened to travel. This direct route to Idaho Falls, rather than via Blackfoot reduced the distance from 115 miles to 89 miles, making Idaho Falls the closest town of consequence for shopping. At the same time this new road reduced the distance from Idaho Falls to Boise.

As originally planned, the Loop Drive oil mat was on an average one quarter inch thick. The oil mat's greatest contribution was the reducing of the incessent dust. However, a mat this thin could not long withstand the traffic the Monument was receiving, nor the effects of frosts under the mat during the winter. The thinner spots began breaking up the first spring and increased the second. As a result, June of 1952 saw the beginning of the reprocessing work that was to be carried on in the Monument for the following years. The road mat between the entrance section and the Headquarters accidentally was made about an inch thick during the reprocessing. Though unplanned, this thick road mat has been of great value. This section has withstood abuse until 1956 without repairs except for an occassional hole dug by tire chains of snow removal equipment. Also, this heavier mat when frozen has withstood the trodding of the TD-18 during the winter. Other than the highway equipment now being used by the State, the TD-18 has been the only vehicle which could open the entrance road after a heavy snow fall or drifting. Patching continued where the bad sections were not too extensive. As the reprocessing continued, the addition of new oil to the old mat, plus new cinder, has built up the thickness of the road. However, it has not yet reached the thickness whereby it can withstand the weather and the present traffic load.

As the reprocessing and patching became a larger task, the old oil distributer could no longer handle the task. On April 21, 1953, the Monument received a new Rosco 600 gallon kerosene fired distributer. This piece of equipment could spread oil for dust pallative work and road reprocessing, as well as having a hand spray rig for patching.

Without proper personnel for mechanical maintenance, the older road equipment suffered over the years. It had finally become a task for the old catepiller grader to climb the hills of the Monument, let alone grade them at the same time. In March, 1954, the Monument received a used Army tandem wheel grader from the Regional Office. The old gasoline Caterpiller grader was sent to Pinnacles National Monument where it could be overhauled and worked with ease.

No reprocessing was accomplished in 1953 as the oil contract was not received in time for the summer work program. This oil program was coupled with the 1954 program. Several more miles were well oiled and the Monument roads greatly improved. Permission was received to accomplish maintenance on the Loop Drive section supposedly to be abandoned. Thus, the Loop Drive was virtually back on the Master Plan.

June of 1954 ushered in the sign building program so badly needed. With the availibility of electricity, it was possible now to make routed signs on the Monument. A few signs for guiding traffic around the Loop were erected that year. These were constructed entirely from materials available, mostly coming from discarded lumber of the AEC. That winter the sign program of the Master Plan was drawn up including traffic, trail, and interpretative signs. The program with its drawings and maps had verbal approval of the Regional Office. September saw the completion of a new entrance sign which measured six feet by twelve feet. This sign was made to more or less conform with the two boundary signs which were erected in 1951. These boundary signs had been constructed in the Yosemite Sign Shop and assembled on the Monument. The old entrance sign was reworked and became the sign now standing at the Highway junction in the town of Arco. It was routed and stained in accordance with the Monument sign program. The sign was donated to the Arco Chamber of Commerce for future maintenance. Since this time, the sign program has progressed as time was available. In 1955, the first map type trail signs were erected at trail heads. The first two interpretative signs were erected in the spring of 1956.

The old approach road from Blackfoot was relocated to accommodate the AEC traffic. At the same time this road, completed in May of 1955, also improved access to the Monument a great deal. It was of the same quality as the Idaho Falls cutoff, being a thirty foot mat, designated as a two lane road. The summer of 1955 saw the resurfacing of the Idaho Falls road from the southern entrance of the AEC to Idaho Falls. This is now a forty foot, two inch blacktop surface laid upon the old mat, striped as two lanes.

No oil was ordered for the Monument during the 1955 season. Sufficient oil remained for the normal patching program. The money was used for reconstruction of the road section between Inferno Cone and the Broken Top parking area and other maintenance activities. The road reconstruction work consisted of widening the entire stretch of the roadway, building up rock retaining walls on the lava flows to hold the cinder fill, and obtaining fill material from the Broken Top road section. The parking area on Broken Top was leveled considerably and the approach grade improved.

It was learned during the 1955 road patching work that the patching could be accomplished without using the oil distributor on the road itself. A rich pre-mix was made in the Utility Area and carried by the pick-up to the patching site. The richness of the pre-mix sealed itself easily with the brushed out hole while the cars packed the patch. This procedure has greatly reduced the labor in road patching throughout the Monument Loop Drive. During October, the northwest half of the campground received a coating of MC-2 oil, the second half to be done the following summer.

In late September (1955) the Permanent Ranger, Robert C. Zink and his wife, made an exploration trip into the southern reaches of the area. A pickup was used in an attempt to gain easier access than foot travel into this section. It was discovered during this trip that the old road shown on the topographic map no longer existed from Crescent Butte to the Little Prairie Waterhole. Access to this area was most difficult even for a pickup due to the many outcroppings of lava formation on what appears to be cinder and sage. By trying the proposed road area to Echo Crater a passage through the sagebrush was made to a point about a half mile beyond the saddle of the Sentinel and The Watchman following the eastern trail indicated on the topographic map of the Monument. The experience of this trip indicated that a good access road for the geologist and interested visitor could be made to this point entirely with the use of a motor grader. The desirability of this access road can be fully appreciated by the geologist, botanist, zoologist, and interested visitor when he sees the area to the south.

In the spring of 1956, the MISSION 66 program broke over Craters of the Moon National Monument. Plans call for a completely new headquarters area with entrance road. The Loop Drive is to be widened and realigned in certain sections. The surface is to receive a heavier oil matt. The campground road is to be improved and enlarged. It is also proposed that the section between Inferno Cone and the Broken Top parking area be oiled at least with a thin oil matt and extended a mile toward Great Owl Cavern. It is hoped that maintenance work can be done on the southern extension and pushed further south for, at least, accessibility in connection with exploration and research.

July, 1956, the new entrance road was begun as part of the new headquarters development.

Robert C. Zink
July, 1956

LOOP DRIVE AND APPROACH ROADS DEVELOPMENT

Chronology of Events

Pre-Historic Period

The Shoshone Indians of the Snake River Plain traversed the Monument along the chain of cones. Their trail could be seen along the ground in the early 1920's. As late as 1939, the trail was visible from the air. That section within the Monument was not visable to foot travelers in the fall of 1955.

Pre-Monument Period.

Early trappers and explorers followed along the edge of the mountains skirting the lavas, forming the beginning of the present road system. Miners, sheep, and cattle men enlarged the trail along the mountains in pursuit of their enterprises. Wagons enlarged the trail as the demands for freight into the various areas increased. Settlers of the area, and their westward moving brothers used the same routes. The Tim Goodale Cutoff (an unvarified title) became established from Fort Hall to Arco, through the Monument area to Carey, Bellevue, and Boise, for those travelers enroute to Oregon.

Early 1920's

The citizenry of Arco and Hailey work on the trail-road to aid in getting visitors to the area known as The Valley of the Moon (proposed National Monument.) In 1922, a double entrance to the area was built, and the loop drive became established by the necessity of cars remaining on the cinder slope areas in traversing the volcanic area. A short route from Martin to the Craters and on to the old road west of the Big Cottonwood Creek was built through the Craters area.

In 1923, an attempt was made to obtain gasoline tax money for the County road. None was received until 1926.

1924

Craters of the Moon National Monument was established as a part of the National Park System. A Custodian was put in charge of the area with a very small budget for maintaining the Loop road. This was accomplished by digging out rocks and dragging the road bed.

1926

June. The road from Blackfoot to Arco was graded and improved.

1926 A road was proposed to run from Kimama, near Rupert, Idaho, to the Craters, acting as a southern entrance. The proposal was abandoned after an engineering survey was made.

1927 June. The double entrance to the Monument was abandoned in favor of the present (spring, 1956) single entrance.

1928 May. The Arco to Martin road was strightened slightly and graded.

1929 During the year the roads from Blackfoot to Arco and Arco to the Monument were graveled by the State.

1930 Arco to Blackfoot road was oiled with a dust pallative coat.

1931 In connection with the construction with the Monument water system, an access road was built from about the old east entrance to the collection box of the system. This road used portions of the Martin mine road.

1932 A log equipment shed was built in the Utility Area in August to house unlisted equipment.

1933 A CW (Civilian Works?) program was begun at the Monument to improve the roads. Retaining rock walls were built, the road widened, and cinder added. The spring runoff damage of that year was also repaired.

1934 March. 3.7 miles of road was oiled out of Arco toward the Monument.

1936 An extension of the Loop Drive road was surveyed and staked out from Inferno Cone to the vicinity of Crescent Butte and to Echo Crater. This road was constructed from Inferno Cone to Crescent Butte. Only the northern section from Inferno Cone to the parking area on Broken Top has been opened to traffic. Improvements have been made on this section during the summer of 1955.

1937 August. A Wehr self powered grader was obtained for road grading.

1938 January. A survey was begun to relocate the road from Arco to Craters of the Moon. This new route would cross the lavas rather than running along the mountain edge.

1939 July. The Monument received its first road oil. This was spread from the entrance to one mile on the Loop Drive, as well as the campground. The oil was a light weight dust pallative.

1939 The Monument to Carey road received a dust pallative road oil, its first. During the winter of this year, the road was maintained free of snow for continuous traffic for the first time.

1940 June. The final survey for the realigned Arco - Monument road was begun. Work also went forward into the winter on the construction itself.

During the year this route was designated as US 93 Alternate.

1941 Title to the land in the Monument was ceded to the State for the highway on July 18, 1941. The construction was complete up to the east boundary, awaiting clearing of the title. Apparently the citizens of the area had just appropriated the land for the road in 1922, and it had not been excluded in the Act creating the Monument.

1942 During the summer, the new route, now only 20 miles long, to Arco was graveled and seal coated throughout its length. An oil mat now ran from Arco to Carey.

1944 US 93 A was seal coated from Arco to Carey.

1946 A new sign was erected at the entrance to the Monument. This possibly included two boundary signs, though not mentioned.

1947 The Monument received the TD-9 surplus Marine endloader.

1948 The Monument received the TD-18 bulldozer.
Also an M-4 Caterpiller dozer was received. Only mention is made of this piece of equipment and no records appear concerning its disposal.

1949 The Monument received a Caterpiller gasoline road grader from Pinnacles National Monument.

The construction of a fire line around the Coyote Butte fire in August produced a roadway leading in the direction of Echo Crater approximating the surveyed route of 1936.

During the winter of this year, the Highway was closed for twenty days by heavy snow.

1950 The Monument Loop Drive was oiled with MC-2, with the exception of the Big Craters to Great Owl Cavern section. The campground was also oiled.

September. Two International dump trucks received by the Monument for road work.

During the past years the Monument received a butaine fired oil distributor.

1951 Fall. The Arco to Monument section of the Highway received a heavy oil mat in a reprocessing operation.

New boundary signs were obtained from the Yosemite Sign Shop and erected.

October. The Idaho Falls-Arco new road past the AEC was opened to travel.

1952 June. Reprocessing of the Monument's first oil mat was begun. This consisted of adding oil and cinder to the old mat, increasing its thickness. In all, it was little more than one quarter inch in thickness. This work has been carried on in various sections of the Loop Drive since then, and now the matt is about one half inch thick for the most part.

1953 April. The Monument received a 600 gallon kerosene fired distributor for reprocessing and patching.

1954 The Monument received a Caterpiller diesel powered, tandem wheel grader. The old Caterpiller was returned to Pinnacles National Monument.

Reprocessing of the Monument roads continues.

June. The sign construction program for the Monument was begun. This was brought about with the advent of electrical power and the purchase of an electrical router. Traffic routing signs were made that summer, and a new entrance sign replaced the old log framed sign. This sign was made to conform with the Boundary signs erected in 1951.

During the winter a Sign Master Plan was drawn up with a total of over 150 signs as a basic start for the area. Work has progressed as time permitted.

1955 The new approach road from Blackfoot to the AEC property was opened in May.

The three Map-Trail signs were erected at the major trail heads.

Reconstruction of the Inferno Cone-Broken Top parking area road section was done. The road was widened and graded.

Patching work was accomplished with a rich pre-mix material which eliminated the need for taking the distributor on the Monument road.

Fall. Exploration of the southern area brought out the feasibility of constructing of an access road into this area with a motor

grader for exploration, scientific research, and greater enjoyment of the area.

1956 MISSION 66 breaks over the Monument. The new entrance road was begun in July. The Monument roads are to be greatly improved. More signs are erected.

Robert C. Zink
July, 1956

LOOP DRIVE AND APPROACH ROADS

Bibilography

Superintendent's Monthly Narrative Report, File A - 28 Craters of the Moon.

Roads and Equipment Files: Craters of the Moon

D - 1815 C	Master Plan, Roads and Trails
D - 30	Roads and Trails
D - 3015	Roads and Trails, Maintenance and Construction
S - 4215	Property Inventories
S - 4215 A	Monthly Property Transactions
S - 58	Motor Driven Equipment
S - 5819	Automobiles and Trucks
S - 5831	Road Equipment

Arco Advertizer, Newspaper, Arco, Idaho
Articles on pre-monument history, 1920 to 1925

MISSION 66 Prospectus, 1956, Craters of the Moon

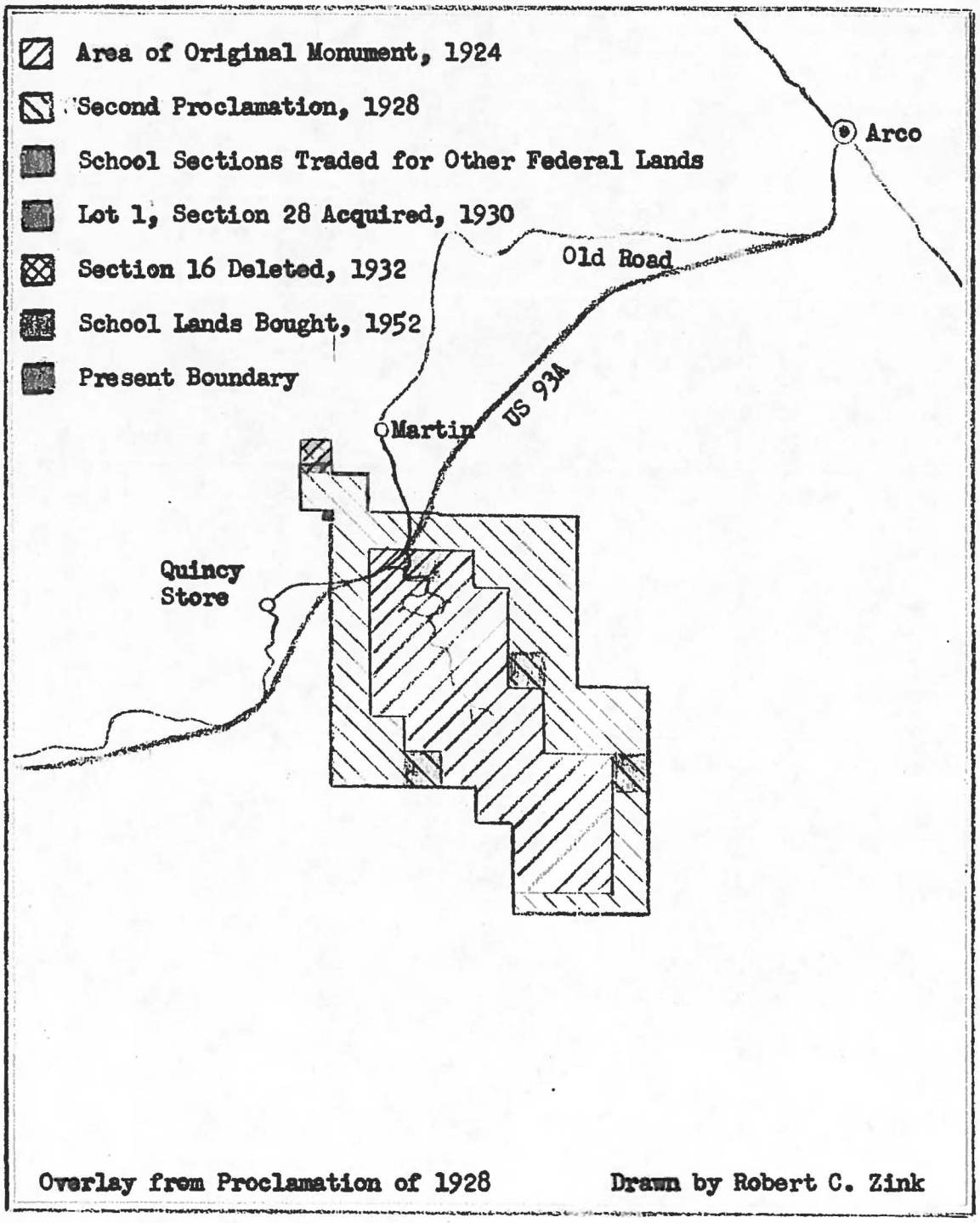
USGS Topographic Map of Craters of the Moon National Monument, reprint of 1947.

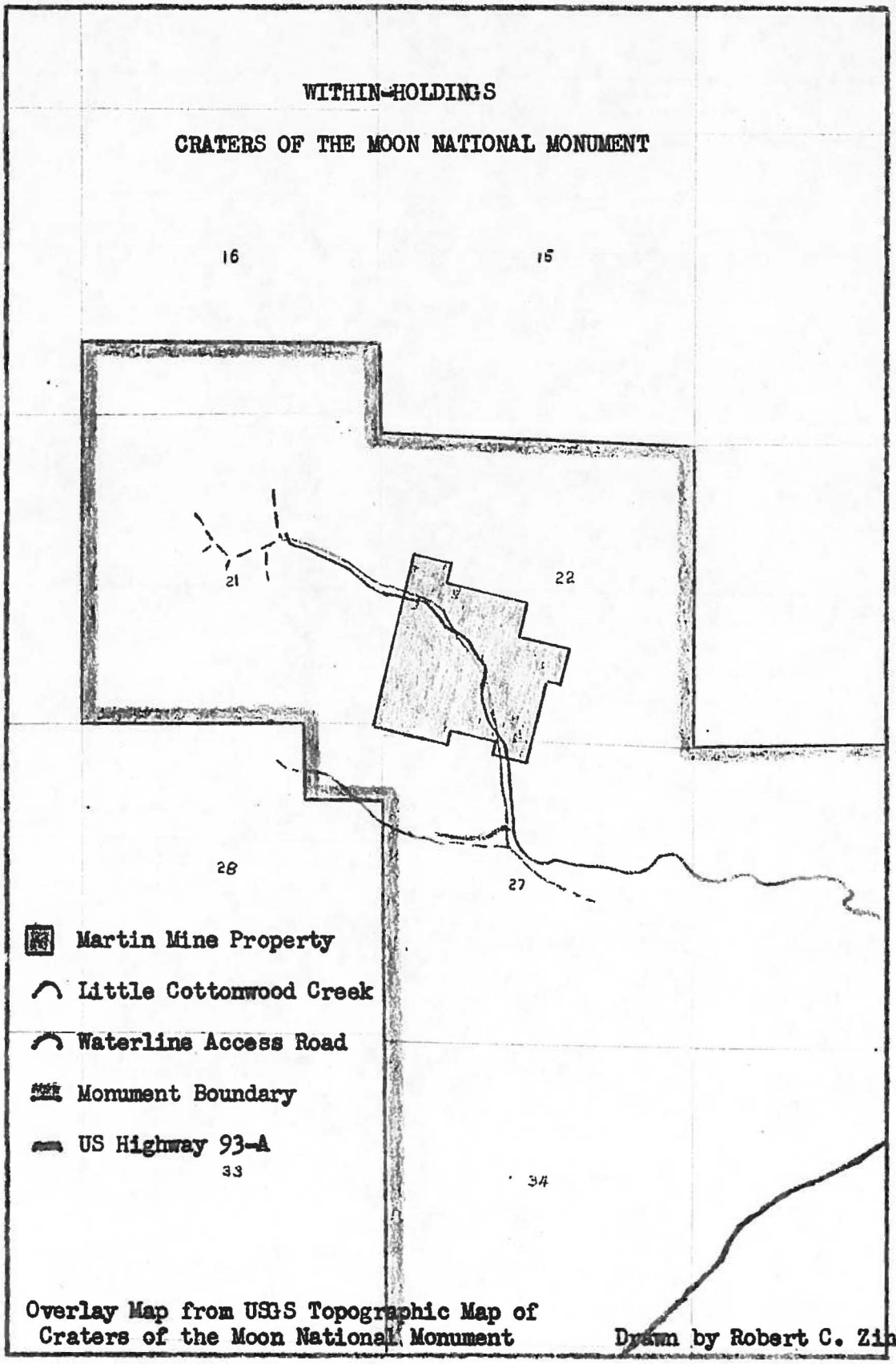
State Highway maps issued by the State of Idaho.

Zink, Robert C., "Trips to the Southern Part of the Monument, September 1, and September 28-29, 1955." A report to the Superintendent, File N-48, Craters of the Moon.

CRATERS OF THE MOON NATIONAL MONUMENT

LAND MAP





Overlay Map from USGS Topographic Map of Craters of the Moon National Monument

Drawn by Robert C. Zink

TRAILS DEVELOPMENT AND NATURAL HISTORY

Trail development through the Craters of the Moon began first with the wild game of the Lava Plain. Following them during their yearly migrations north into the mountains in spring, and south into the Plain in fall, the local Indians marked and strengthened the game trails along the easiest means of access through the area. In the same manner, water-holes along the trails were located. However, with the coming of white men to the area for sightseeing and recreational purposes, these ancient trails fell into disuse. Today, little remains of the "Old Indian Trail" which ran from north of the area to the vicinity of Minidoka and Pocatello.

Prior to the establishment of the Monument, walking and horse parties visited the Monument in surprising numbers. There are newspaper accounts of groups spending a week to a fortnight within the area visiting many spots seldom seen today. Little is known about their exact route through the Monument. As the Loop Drive developed around the northern section of the Monument, short trails were developed to the major points of interest. The time schedule for their development is not known. It has only been through the addition of points of interest to tours that any sequence can be obtained.

The interpretation of the natural history probably began in the early 1920's. Mr. Robert Limbert, a taxidermist of Boise, Idaho, visited the area on a number of occasions escorting numbers of people. One of his trips was described in an article appearing in the National Geographic Magazine of 1928.[1] This trip occurred at an earlier date (1924). The account of the trip attempts to describe some of the phenomina which the party encountered. It is thus possible to assume that Mr. Limbert described the scenes and phenomina to those of his parties and to other groups to whom he lectured on Craters of the Moon. Though in a few cases his geology was in error, Mr. Limberts writings, discussions, and talks were the first interpretations of the lava flows.

Mr. Samuel A. Paisley of Arco, Idaho, also escorted many persons through the Monument. He was as facinated by the area as Mr. Limbert, and through their efforts, the area, now the National Monument, was publicized and accepted by the National Park Service. Mr. Paisley developed a registration site in the vicinity of Registration Waterholes, where, as the Monument's first Custodian, he told people about the area. Here, he also built a rock display table to illustrate the various forms which the hot, liquid took during its extrusion from the earth's interior.
ROCK

At the time of the Proclamation creating the Monument in 1924, it is believed the Loop Drive was in existance. This would give access to such points of interest as the North Crater Lava Flow, the Devil's Sewer, the Lava Snake, the Registration Waterholes, the Devil's Orchard, the Big Craters area, and several caves in the Cave Area. A trail was known to exist to the chain of Spatter Cones, the Crystal Pit, the Big

Sink Waterhole, the Great Owl Cavern, and the Tree Molds. Another trail ran from the Cave Area parking location to Dew Drop Cave, Indian Tunnel, and possibly on out to the Natural Bridge, Spatter Cones, Needles Cave, Horseshoe Cave, Last Chance Cave, Tom Thumb Cave, and Lava River Cave. At least there is no record of discovery of this latter group subsequent to the establishment of the Monument. Carins and enamel signs exist in this area today. The southern area of the Monument was visited a great deal by early visitors. No trails are visible today though the area was well covered afoot and horseback.

Much of the original work of trail locating was carried on by Mr. Paisley as he guided parties of visitors through the Monument. It is told by his decendants that he often carried, and had visitors carry, rocks and cinder along on their walks so as to improve the trails as they went.

After a number of years of work to publicize and improve the Craters of the Moon area and three years as the Custodian, Mr. Paisley retired in the spring of 1927. Though the succeeding Custodians and Superintendents have undoubtedly enjoyed the area, the extensive excursions and personal physical labor expended has been greatly reduced over the years as a result of the increase in the number of visitors and the technical administration problems. It was on one of his excursions through the Monument with a group of seven people that Mr. Paisley discovered Indian Tunnel on October 8, 1923. The Big Sink Water-hole was described that year as being 120 feet long and 5 feet across.

Access to the various caves of the Monument were by means of crude rope and pole ladders. For unknown reasons, the next Custodian removed a pole ladder from the Ice Cave. The probable reasons are that, one, the ladder itself was unsafe; two, the increasing number of visitors would create enough warm air in the small space to melt the snow at a rather early date; and third, rocks falling from visitors above would be a hazard to those in the hole.

On September 23, 1926, Dr. Harold T. Stearns spent a number of days examining the Monument. It is believed that he was in the area on more than one ocasion, but no specific records exist. As a result of his studies, he subsequently published his report as, "The Guide to Craters of the Moon National Monument, Idaho". This publication, printed by Caxton Printers of Caldwell, Idaho, has been on sale at Crater Inn since 1928. Though the publication is in need of some revision, it remains to this date the only detailed work on the area as a whole. It has been written in such manner as to be easily read by the average visitor.

Early in July of 1927, several sharp earth tremors were felt throughout the Snake River Valley. The location of the epicenter was never recorded. However, in the next few days most of the waterholes of the Monument dried up or held so little water as to place drinking water

at a premimum. Fortunately, the men working on the construction of Crater Inn supplied the visitors with water. This situation forced the relocation of headquarters from Registration Waterholes to the present location opposite Crater Inn.

During August of 1927, a group of Boy Scouts discovered Boy Scout Cave while exploring this area. At the time of discovery, the cave contained its usual good ice floor. To this day, Boy Scout has the best display of ice accessible to the average visitor. Surprise Cave is also listed as being discovered about the same time. It is quite possible that Custodian Moore found this cave while on trips further exploring Boy Scout Cave.

The following summer, the trail to Dew Drop Cave and Indian Tunnel was improved and cindered. The trail to Great Owl Cavern was marked with large, well-built carins which may still be seen today. Access to Great Owl Cavern was gained from the Big Craters area by a trail along the chain of Spatter Cones, past the Big Sink Waterhole, and across the lava flows to the Cavern. It is believed that the Big Craters area was once a dry campground. There still exists a large enamel sign in the bottom of the Big Sink Waterhole admonishing campers not to wash their cooking pots there.

The rope ladder of Great Owl Cavern was replaced by a chain ladder early in 1929. It was not until 1934 that the ladder of Great Owl Cavern and Indian Tunnel were replaced by wooden stairs.

The wildlife of the area seems to have varied over the years. This was probably a cycle effect. Porcupines were in abundance to the point that an extermination campaign was waged for several years to preserve the small number of trees which the area contains. Deer were reported in a few numbers but seemingly far from the numbers of today. A bear was found roaming along the entrance near one of the entrances. The bear of the area had been greatly reduced in past years by the stock and sheep men as well as trappers who were pelting.

Occasionally artifacts were found by exploring parties. Quite a number of artifacts were obtained around Indian Tunnel shortly after it was discovered. There are no records as to who found them or where they are now located. In June 1929, Custodian Moore found an edged stone instrument said to be a ceremonial knife used in religious observations. The report does not state where it was found nor where it is now.

In July of 1931, Crystal Pit was explored by a group of Boy Scouts from Pittsburg, Pennsylvania. During their decent they went down 163 feet and could see no floor below them. Photographs of Crystal Pit were once sold at Crater Inn. The interior of the cave contained crystal Thenardite (sodium sulphate) with minor amounts of calcite (sodium carbonate). At this writing, Crystal Pit has not been located by the writer though several attempts have been made. It is not known when the last entry was

made, though it has been heard that entry was discouraged in the late 1930's as visitors were destroying the crystal formations.

In the interest of naturalness, it was recorded that in July, 1932 the Custodian cleaned two Spatter Cones of rock and trash. It is presumed that these were the Ice Cave and second Spatter Cone in the Big Craters Area. This particular work could be carried on every few years to great advantage, however, as the years progress, the work becomes a greater task with the visitor increase. Today, late in the season, the snow is covered by the number of rocks thrown into the hole. It is difficult for visitors to realize that the white material is snow. It seems to take the splash of a rock in the snow to convince them.

During the fall of 1933, a trail was constructed through Indian Tunnel. Little has been done to this trail over the years. It is still possible to go through the tube; however, the trail is not always easy for the uninitiated to see. It is hoped that in the future, this trail can be reworked and surfaced, and that a trail at ground level be made for the return walk.

On March 12, 1934, another earthquake was recorded. The quake was centered in Utah, but felt heavily in this area. Numerous rocks fell from cave roofs. The greatest damage was reported to have taken place in Amphitheater Cave. (In those days, the Custodian and the visitors covered a great deal more of the Monument, such that this cave was on the average tour.) April 6 of this year recorded another quake and several smaller tremors were felt throughout the month. No further damage to the area was recorded.

The first temporary ranger was assigned to the Monument in the summer season of 1935. The relatively small number of visitors made it possible for the personnel to give guided tours around the Loop Drive and on a number of walks. The assistance of a summer temporary ranger also made possible evening campfire talks. After the collecting of an entrance fee was started in 1939, these talks were discontinued.

The season of 1935 brought with it several discoveries. In July, Moonshine Cave was discovered by the labor force. A description of this cave is on file under N-48. The name was derived from the quantity of seemingly moonshine gear found therein. In September, a room off the main passage of Indian Tunnel revealed water and ice. It is possible that this room was known to the Indians who built the Teepee Circles at the entrance to Indian Tunnel. The exact location of this room was not described. The same month, Christmas fern was discovered in the vicinity of Crescent Butte. This fern is not known outside of the mountanous regions of Oregon and northern Idaho. It requires a moist site. Considering the dryness of the lavas and cinder slopes, it is a curiosity as to how it became established. The fern still grows along the rift zone south of Crescent Butte toward the Watchman, deep in the cracks where there is sufficient moisture. A search would undoubtedly reveal its presents elsewhere in the Monument.

Following his summer work, the first temporary ranger (G. Fredrick Shepard) made a hiking trip from the Monument to Minidoka. He followed the Great Rift, camping two nights along the way. Two days later he flew over the same route, making photographs from the air. There is no report of his trip in the files, nor of his photographs.

In May of 1936, a survey of the road to Echo Crater was completed. In planning this road, there was some discussion of the route to be taken over Broken Top. To settle the question, the Regional Naturalist, J. Volney Lewis, made a study of the area. The very good geologic report of the area is in the Monument File under Geology, where his discussion of the proposed routes offers a good summary of the geology of this cone. Fortunately, a third route was used, saving the formations for exhibition purposes at a later time.

In August of 1936, Era Martin, an old resident of Arco and Martin, discovered a piece of Indian pottery in the Devil's Orchard. This piece, along with several others found outside the Monument were donated to the Custodian. Their whereabouts are unknown.

During this month, increment borings were taken from trees of the Monument. The location of the trees and the data gathered has not been recorded.

The years from 1936 to 1946 reveal nothing in connection with trail work or natural history discoveries in the Monument. The first record for this period indicates that a new section of Indian Tunnel was explored in July, 1946, by the Rev. Dryer of Arco. This section lies under the Teepee Circles. The area held a large quantity of water. It is not known whether this section is the same one which was recorded under the date of September, 1935. Working with a party of boys, he records the room as being about 100 feet long, about 50 feet wide, and about 25 feet high. The entrance was very small. No publicity was given the discovery as the entrance was a loose pile of unstable rock. It was assumed that the water was held by its ice floor which would allow the pool to drain when the ice floor melted.

The heaviest snow fall in twelve years was recorded in March of 1949. Just how much snow fell was not recorded. The first mountain sheep were reported in July of this year, the first seen in 35 years. It is presumed that this sight record was made in the watershed area to the north.

During July of 1952, a Nature Trail was established on the North Crater Trail. Small informational signs were typed and placed in holders at various points along the way. The subjects included botany and geology. At the end of two years, all the informational cards had been removed from the stakes and all but four of the twelve stakes were taken. No attempt was made to re-establish the Nature Trail since more stakes were not available, no money was available to purchase more, nor were funds available to memograph sheets of information for numbered stakes.

Prior to the summer travel season, Ranger Robert Zink made an exploration trip in May, 1953 with a number of cave explorers and amature photographers from Idaho Falls. The area around Beauty Cave was selected. The Spelunkers discovered a wiggle passage from Beauty Cave to an unnamed tube just west of Beauty Cave. Also, the cave to the east of Beauty was explored for some distance. This also included a wiggle hole at the eastern end which led into a very long, excellently formed lava tube. It is considered by Ranger Zink to be the best example of a tube yet located in the Monument. At the present time it is inaccessible to the average visitor due to its small entrance and the distance from the parking area. (Report under N-48, CMNM.)

During the summer work season of 1953, the first pre-mix was laid on the trails. The Dew Drop Cave trail was selected for the first project. The trail bed was graded, raked, and covered with pre-mix hauled out in cement buggies. As the distance from the trail head increased, the work became more difficult due to the rolling nature of the terrain. The following season (1954), the Big Craters and Ice Cave trails received an oil mat as well as the Devil's Sewer trail. The Cave Area trail was extended to Indian Tunnel. The other trails of the Monument were re-graded and brushed out. No trail work was accomplished in 1955. In 1956, the trail was oiled from Dew Drop Cave to Boy Scout Cave, and all other oiled trails were repaired. The lack of oil for pre-mix stopped further work in the Cave Area this year.

While on another exploration trip in September of 1953, Ranger Zink Discovered an old cindered trail leading from Dew Drop Cave eastward to the Natural Bridge and the other points of interest in this area. Immediately east of Dew Drop Cave, the wind has removed all trace of the trail and, apparently, the trail edge rocks were kicked aside. About 100 to 150 yards further on, a good trail remains and is easily followed. Regular enameled signs mark most all the points of interest shown on the map.

Feburary of 1954 saw the beginning of a weather record for the Monument. Though a few temperatures and some snow conditions were recorded in the past, no consistant records have been found. The temperatures are recorded on a maximum-minimum thermometer, rain in a number 10 tin can, and snow is measured by averages across the roadways. Though the measurements are not taken in the approved methods, they are, at least, something specific, and will indicate trends of the climate.

Since the drying up of the waterholes in 1927, nothing has been noted about them in the records. In June of 1954, water was noted in the Registration Waterholes. At this time, the nightly temperatures were above freezing, yet the water in the holes contained ice 1/8 inch thick. Water was again present for a short time in 1955, but no water was found in the holes in 1956. In 1954, the Big Sink Waterhole was examined and found to contain no water. The dead vegetation around it indicated that no water had been present for some time. While on a

temporary assignment to Craters of the Moon in the fall of 1951, Ranger Zink and Maintenanceman Kenneth Mackenzie examined Yellowjacket Waterhole and found a small pool in late October. The same hole was only damp in September of 1955. Yet, the Little Prairie Waterhole, a short distance to the south, contained an estimated 200 gallons of water with large chunks of ice in September, 1955. Bear's Den Waterhole was dry. The Waterholes marked on the map in the vicinity of Sheep Trail Butte were also dry in September, 1955.

In September of 1954, the area was visited by Mr. Wes Furgeson of the Tree Ring Laboratory, University of Arizona. While in the area, he bored a number of trees. Among them was the Triple Twist Tree at the Devil's Sewer. Other trees included a group on the smooth flow just north of Big Cinder Butte easily seen from the Great Owl Cavern Trail. A letter from the Tree-Ring Lab in May of 1956, revealed that the Triple Twist Tree was at least 1400 years old as compaired to the estimated age for this flow of 500 years. Further work of tree ring borings is being planned for its value in obtaining some possible age to the lavas.

Other exploration trips around the Monument have relocated a very excellent granitic inclusion in the basalt. This inclusion, about 3" x 4", is located in the bottom of the North Crater on the right side of the trail as one leaves the cinder slope and walks out on the lava. Another find was the Limber Pine tree used on the cover of the Monument pamphlet. This tree is located on a lava flow, north of Big Cinder Butte, not far from the southern access road. Both items have been recorded on a topographic map placed in the back of the Master Plan book.

Two excursions into the southern part of the Monument in September of 1955, brought to light a number of interesting details of this area. The trip, taken by Ranger Zink and his wife, was probably the first time this area had been visited since Ranger Shepard passed this way. Besides revisiting sights seen by former visitors, the trip revealed the possibility of making an access road to a point about one mile below The Sentinal by use of only a road grader. Such a road would make this area accessible to the hardy hiker, explorer, and naturalist. The trip was recorded in report form and placed in the file. (N-48, CMNM.)

The spring of 1956 ushered in the MISSION 66 program for Craters of the Moon National Monument. This program will include a Museum for the area which will explain the natural history of the Monument. With this will go a road and trail interpretative program so long needed by the Service for the enjoyment of the visitors. Undoubtedly more exploration will be done, and many new natural history features will be brought out. For four years, from 1953 to 1956, Mr. William Baker, Botanist of the University of Idaho has been collecting plants of the area. He hopes to soon publish a list of plants for the area which now number 260 odd plants. Dr. Earl Larrison, Zoologist of the University of Idaho conducted rodent studies for several years prior to 1953, and he plans

to renew this work as well as make a general mammal collecting for the area in 1957. Both of these University men hope to publish works in cooperation with the Monument which will be of the popular type for visitors. Natural History research at Craters of the Moon is greatly lacking, and an open field to anyone interested.

Robert C. Zink
August, 1956

TRAIL AND NATURAL HISTORY DEVELOPMENT

Chronology of Events

Pre-Historic Period

Wild game made the original trails over the Lava Plains during their yearly migrations. The Shoshonis Indians followed them and marked the trails and waterholes. Early explorers and visitors traversed some of these trails afoot and horseback while visiting the area.

As visitation increased, a Loop Drive was developed and short foot trails were made to points of interest. Several of these point of interest trails were in use at the time the Monument Proclamation was issued. Trail work was accomplished by those interested in promoting the area, and the willingness of some visitors as they were taken around the Monument.

Interpretation of the lava area was begun by Robert Limbert through writing and speaking about the area which was to become Craters of the Moon National Monument. Mr. Samuel Paisley also escorted many persons about the Monument and told them what he knew, both before and after he became Custodian of the area.

1924 - May. Craters of the Moon was proclamed a National Monument by order of the President of the United States. Guiding of visiting parties was carried on by the Custodian and a small amount of trail work was accomplished by the Custodian and willing visitors.

1926 - September. Dr. Harold T. Stearns, vulcanologist visited and studied the Monument and later published "The Guide to Craters of the Moon National Monument, Idaho".

1927 - July. Custodian Moore removed the pole ladder to Ice Cave.

July. The waterholes in use by Monument personnel and visitors dried up following an earthquake felt throughout the Snake River valley and in Yellowstone National Park.

August. Boy Scout Cave was discovered by a group of Boy Scouts from Twin Falls. The cave floor was covered with ice, which has been its usual condition in the past years, offering the visitor the best available ice formations in the Monument. Surprise Cave is also listed as being discovered this month. Custodian Moore probably made the discovery while on trips further exploring Boy Scout Cave.

1928 - June. A trail was constructed and cindered to Dew Drop Cave. Another trail was marked by tall carins from the end of the Spatter Cones chain, past Big Sink Waterhole to Great Owl Cavern.

July. The trail was extended from Dew Drop Cave to Indian Tunnel.

1929 - May. The rope ladder in Great Owl Cavern was replaced by a chain ladder.

The deer were reported as being seen singly or in pairs which is far from the numbers noted today.

June. A black bear was seen just outside the entrance to the Monument. The particular entrance was not indicated.

June. Custodian Moore found an edged stone instrument said to be a cermonial knife used in religious observations. No location was given.

June. Cinderhurst Camp Waterhole (Registration Waterholes?) were dry. Big Waterhole (Big Sink Waterhole?) was reported as having a good supply.

1931 - July. Crystal Pit was explored by a group of Boy Scouts from Pittsburg, Pennsylvania. They decended 163 feet and saw no bottom. — it's only 83 feet deep

1932 - July. Two spatter cones (presumed to be the first two of the Big Craters Area chain) were cleaned of rocks and tourist trash.

1933 - August. Deer and porcupines were reported on the increase.

November. Birds were reported as scarce.

December. The trail was completed through Indian Tunnel and the trail from Dew Drop to Indian Tunnel re-marked with rock along the edge.

1934 - March. An earthquake was reported on March 12 which was centered in Utah. Several caves had rocks fall from their roofs. The greatest damage was reported as having occurred in Amphitheater cave.

April. Bear signs were seen eight miles south of Headquarters.

April. Another earthquake was felt in this area with tremors occurring during the month.

October. Wooden stairs were made to replace the rope and chain ladders of Indian Tunnel and Great Owl Cavern.

1935 - July. The hiring of the first temporary ranger (G. Fredrick Shepard) made it possible to give a few evening campfire talks to visitors.

July. Moonshine Cave was discovered by the labor crew while working on trails. Location: Section 11, Township 2N, Range 24E. A description of this cave is filed under N-48, CMNM.

September. A room was discovered off the main tube of Indian Tunnel which contained a good supply of water and ice. The exact location of this room is not given.

September. Christmas Fern was discovered in the vicinity of Crescent Butte.

October. The first temporary ranger (Shepard) made a walking trip along the line of cones and fissures from the Monument to Minidoka. The trip took two days. He flew over the same area two days later. He left no report or photographs of the trip.

1936 - May. A road survey was made from Inferno Cone to Echo Crater. The geologic report of the controversal routes over Broken Top has been filed under Geology for its continuing value.

August. A piece of Indian pottery was found in the Devil's Orchard by Era Martin of Arco. The piece was given to the Monument along with several other pieces found outside the area. Their present location is unknown.

August. Increment borings were taken of some trees of the Monument. There are no records of the findings of these borings.

1946 - July. A new section of Indian Tunnel was discovered by the Rev. Dryer of Arco and a party of boys. This room, described as being 100 feet long, 25 feet high, and 50 feet wide, contained a large water supply. The room is located just under the Teepee Circles. No publicity was given to the discovery as the entrance was composed of a loose pile of unsafe rock. It was believed that the water was held in by an ice dam in the floor. It is not known whether this room is the same one referred to under the date of September, 1935.

1949 - March. The heaviest snow fall in 12 years was recorded this month.

July. Mountain sheep were seen in the vicinity. (Presumably in the watershed area.) These were the first sheep seen in 35 years.

1950 - Fall. Yellow Jacket Waterhole contained a small pool of water.

1952 - July. A Nature Trail was established on the North Crater Trail. After two years, all the informational cards and all but four of the twelve stakes were taken by visitors.

September. Mr. George Neurburg, geologist with the USGS, made a study of the basaltic glass and formations of the hill just southwest of headquarters. A geologic map was received upon completion, however, the report is yet to be published. (See file N-22, CMNM)

1953 - May. Ranger Robert Zink and a party of Spelunkers and amateur photographers explored the eastern caves of the cave area. A passage was discovered between Beauty Cave and the unnamed cave west of Beauty Cave. The large tube east of Beauty Cave was also explored for some distance. (See file N-48, CMNM.)

Summer. The first pre-mix was laid on the Monument trails. The work began with the trail to Dew Drop.

September. Ranger Zink discovered an old cindered trail leading southeast from Dew Drop Cave which leads to the series of caves, spatter cones, and natural bridge listed on the topographic map. No mention was recorded of their construction in the past. Enameled signs mark most of the features.

1954 - February. Weather records for the Monument began early in this month. No record exists of weather data can be found, though conditions are mentioned sporatically in the Monthly Narrative Report.

June. Water was observed in the Registration Waterholes for the first time since 1951.

July. Big Sink contained no water and appeared to have been dry for a number of years.

Summer Season. Premix trail surfacing was continued from Dew Drop Cave to Indian Tunnel, around the Big Craters Area, and on the Devil's Sewer Trail.

September. Mr. Wes Furguson took tree ring borings of the Triple Twist tree at the Devil's Sewer and several trees north of Big Cinder Butte. A report was received in May, 1956, that the Triple Twist tree was 1,400 years old. An enlarged report is in the process of being published.

1955 - September. The southern part of the Monument was explored by

Ranger Zink and his wife. Yellowjacket Waterhole was only damp. Bear's Den Waterhole was dry. Little Prairie Waterhole contained about 200 gallons of water with large chunks of ice. A large tree mold was found along the Rift lava between the Little Prairie Waterhole and The Sentinel. The waterholes of Sheep Trail Butte were dry.

1956 - May. The first interpretative signs were erected in the Monument. The two completed were for the Devil's Sewer and the Devil's Orchard.

June. Mr. William Baker, Botanist of the University of Idaho completed his fourth summer collecting in the area. His check list has reached 260 plants. He intends to publish a pamphlet on the plants of the area. Dr. Earl Larrison, Zoologist of the University of Idaho returned after an absents of four summers to renew his mammal studies. He has been prevailed upon to write about the birds and mammals of the area.

Summer Season. Pre-mix was laid from Dew Drop Cave to Boy Scout Cave, and the Big Craters Area Trails and the Devil's Sewer Trail were repaired. The North Crater Trail and Great Owl Cavern - Tree Mold Trails were raked, graded, and brushed.

Trail and Natural History Development

Bibilography

Roads and Trails Maintenance and Construction, File D-3015-A, Craters of the Moon.

Superintendent's Monthly Narrative Report, File A-28, Craters of the Moon

Master Plans, General, File D-1815-A, Craters of the Moon.

Mammals, File N-1427, Craters of the Moon.

Plant Life, File N-18, Craters of the Moon.

General Research, File N-22, Craters of the Moon.

Geologic Features and Studies, File N-30, Craters of the Moon.

Weather Studies and Reports, File N-4215, Craters of the Moon.

Nature Trail Activities and Exhibits, File N-44, Craters of the Moon.

Monument Exploration and Discovery, File N-48, Craters of the Moon.

Zink, Robert C., Unpublished notes and unrecorded information.

WATER DEVELOPMENT

Of all the factors governing the movements of man about the surface of the earth and his establishment of settlements upon that land, water is, perhaps, the most important. Its presents allows his residence upon tracts of unfertile land whereupon he may survive; while its lack has denied him use of some more fertile soils. Over the centuries man's ingenuity to conduct water to unwatered lands and to bring water to the surface has modified this factor's controlling hold. To some extent this is true of the continued accessibility of Craters of the Moon National Monument to the interested visitors who make this area one of their stopping spots while seeing America.

The pre-monument history of the area shows that the chain of cinder cones along the Great Rift Zone had been the haunts of the Indians of the region. They traversed the Lava Desert from the vicinity of the Minidoka country around Rupert and Burley, Idaho, to the White Knob Mountains in search of game. If one were to travel this old trail, now becoming faint from lack of use, one would find the reported side trails marked with cairns and sage brush pointers which lead to water holes and caves along the way. Here, first game and then the Redmen found the pockets of water created by rain and snow. There is nothing consistant in their location, and indeed, they exist only through the grace of nature. The basaltic lava of this region exudes from the interior of the earth at a temperature of 2,000 degrees Fahrenheit and flows across mile after mile of the old Snake River Valley. As is natural with any material heated to such a temperature, expansion and contraction will reach a high degree. Thus, as the lava cooled, contraction cracks formed throughout the mass, As the flows built up, an interlacing of cracks developed. Streams and even rivers from the mountains dissappear into the lava mass only to emerge over one hundred miles away on the banks of the Snake River. Again, the lavas welling up in this area were, for the most part, highly gaseous, giving them a sponge-like texture. The remarkable thing is that any water holes exist on the lavas at all.

The existance of water holes can be attributed to possibly three causes. One, it is possible that cooling lava did form some water-tight pockets; two, wind blown dust and fine cinder over periods of time will and did seal off cracks in the flows sufficiently to form water holding basins; and three, the freezing of winter snow melt will creat ice dams in the lava cracks well down below the surface such that it is very late in the season before the surface water becomes warm enough to melt out the dams. This latter type of pocket is particularly possible since none of the known water holes has a large surface area, and considerable water lies back under the shelter of quantities of broken lava chunks. The water is protected from the warming rays of the sun while the evaporation of surface water keeps the interspaces between the rocks cool aided by the high insulating quality of the rock itself.

Thus, it was that water from such holes was first used by visitors to Craters of the Moon. The area was long known for its ice cold, pure, refreshing water. Little has been recorded of the actual use of this water and the specific water holes used. It is believed, however, that Cinderhurst Camp, the original headquarters was located near the Registration Water Hole on the Lopp Drive. The area was probably selected for its proximity to water. Several old enamel signs still exist, one still in place at the Big Sink Water Hole, which request the visitor not to wash his camp pots in the water.

Two factors controlled the use of these water holes. One, the number of visitors drawing from their reserve and its replentishment by nature; and two, the nature of its water-tight bottom and the natural factors which did or did not disturb its holding power. Apparently, the water holes in use during the early days of the Monument were used such that there was never any shortage. As best can be determined at this time, several water holes were in use. Probably the major use occurred at the Registration Water Hole. There is another hole marked on the map about a half mile west beyond the Registration Water Hole on an old wagon or automobile road which leads on to Silent Cone crater. It may also be noted that the old Indian trail alsp passes this water hole. To the eastward about a mile and a quarter from the present headquarters is to be found the Doves Water Hole. By following the old east entrance road, this water hole is only a short walking distance from the road. The next close water hole is located just beyond the chain of Spatter Cones in the Big Sink and called by the same name. Because of this water source, it is possible that camping was permitted in the vicinity of Big Craters. From the water markes around the edges, it is the largest of the holes in the northern area of the Monument.

However, early in the season of 1927 the water holes dried up. According to the Narrative Report an earthquake was felt at various points throughout the Snake River Valley in July. Though no connection was claimed between the two events, it is entirely possible that this quake disturbed the bottom materials of the water holes. A slight shake could easily dislodge some cinder or soil material and break the water-tight seal. Also a slight shake could crack the ice bottoms and allow the water to run out. Thus weakened, the flood of water would quickly destroy the work of a long period of time which it took to build the dams of silt or ice. Water has been observed in the Registration Water Holes only during the early summer season of 1953 and 1954. None has been observed in the Big Sink Water Hole. Water still persists in the lava tubes but seems to be of the ice dam nature as they are usually dry late in the summer.

The loss of its water supply required a drastic change in the management of the Monument. At the time of this 'accident', Crater Inn was under construction. The men doing the work were

were required to bring in barrells of water for their own use, which they hauled from Martin, some four miles away. They gave freely of this water to the camping visitors as a good will gesture. Naturally, the majority of visitors were going to camp near their water supply purely for convenience sake. This lead to the establishment of the permanent campground opposite Crater Inn. The lack of water at Cinderhurst caused the moving of Monument Headquarters almost immediately to its present location also, opposite Crater Inn.

It had been apparent for some time that the water supply of the water holes would be insufficient to supply the continual increase of visitors. Also, it was a problem to keep the water holes free from contamination, for many visitors were unacustom to dry camping. They had uncontrolable desires to wash their camping gear in the pools of water with no consideration for those who must draw their drinking water from the same source. Because of these factors, a survey had already been started to locate a larger and more reliable water supply which could be piped into the area for controlled use. The Little Cottonwood Springs, immediately north of the area, had been known since the first travelers crossed the Craters. Its year round flow became a thing of common knowledge. The survey was made to determin the quantity of flow during the dry season. This investigation was conducted throughout the summer of 1927. When it was determined that the Little Cottonwood Springs could supply the Monument, an immediate request was made for withdrawal of that land enclosing the water shed of the springs for the protection of that water supply in favor of the Monument. This was granted under the Antiquities Act which also set aside the Monument itself. The Proclamation was signed by Calvin Coolidge on July 23, 1928. Incidentally, this withdrawl also included more area of the lava desert to include other features along the Great Rift.

With the water shed within the protecting boundary of the Monument, work was begun to develope the springs. They were rocked up and cemented over with protective covers to eliminate the seepage of surface runoff. This was accomplished during the fall of 1928. The springs were then left to settle down to a steady flow. The survey of the pipeline proper was not begun until July of 1930 and was completed in August of the same year. No mention of the water supply used in the meanwhile is made, but it is assumed that Crater Inn continued supplying water to the Custodian and campers alike since a water hauling service has not been mentioned as a Government service.

Before the ground was thawed out the following year, the digging of the pipe line began. The work was started about the latter part of April, 1931, beginning at Monument Headquarters where it was that the cinder could be dug more easily than the frozen material up the canyon where snow still persisted. The entire line was dug and laid by May 28, yet a delay in the delivery of the 5,000 gallon water storage tank held up completion of the system. However, water was conducted to the campground, Inn, and Headquarters without use of the

tank on this date. The tank subsequently arrived and was installed about 120 feet above the roadway on Sunset Crater. This was completed on June 28, 1931. (One letter records this date as July 28, though this is believed to be a typographical error in view of other reports)

The water system consisted of four developed springs out of the six included in the original survey. These springs are all located in Section 22, township 2 North, Range 24 East, of the Boise Meridian. They are all connected by one inch galvanized pipe to a concrete collection box within the same section. From there a coated, cast iron, two inch, universal joint pipe leads along the access road down the canyon to the eastern slope of Sunset Crater and along its flank to the 5,000 gallon storage tank above the Monument Headquarters. From the tank, two inch galvanized pipe leads down the slope to a line running behind Crater Inn and in front of the tourist cabins toward the Utility Area. Two inch pipe also leads over to the campground restrooms and another to the Superintendent's residance. It is unknown as to how much of the campground water system was laid at this time, though it is spoken of as meager. However, by several years later some ten three-quarter inch hydrants were established throughout the lower campground area.

Upon inspection of the water system by the Public Health Service in the summer of 1933, it was recommended that the individual springs be fenced to keep stock (particularly horses) from disrupting the ground around the springs in their attempts to get water. Since the Monument was closed to grazing by virtue of the extension of its boundaries for this vary purpose, it is unknown what the stock was doing in this area. However, fencing of the springs was begun November of 1938 and completed the following June of 1939. The project was accomplished with cyclone type steel posts set in concrete with corner braces. Oddly enough, single strand, unbarbed wire was strung according to the specifications. Upon inspection by the writer in 1950, the fences were completely down at all springs. Whether this destruction was due to domestic stock or deer seeking water is unknown. But it is known that deer will break down such a fence as easily as larger animals. The presures exerted on the wire fencing were so great as to actually bend the posts and in some cases bend even the corner braced posts. Recommendation has again been made by the Public Health Service to fence the springs and a PCP has been drawn up with the same former specifications!

In April of 1948 Spring Number 4 was offically abandoned upon recommendation by the Public Health Service. Actually, this spring had been shut off for over three years. This decision was made since this particular spring is located in the bottom of a draw where it receives considerable surface runoff over the enclosure during the spring runoff. The water was considered unsafe for this reason. Abandonment of this spring has in no way affected the water usage for the Monument as there is a continual overflow from the storage tank.

For better fire protection of the Monument, it was considered advisable to extend the two inch water main from the Temporary Ranger Cabin area through to the Utility Area in the vicinity of the Log Shop, replacing the three-quarter inch line in place. This was done in May of 1953. In June of the same year a straight line extension of three-quarter inch pipe was made in the campground which extends the water facilities further west to care for the increasing use of the campground.

With the acquisition of two house trailers for Temporary Ranger quarters in the spring of 1954, the three-quarter water line was reorientated in the vicinity of the Ranger Cabins. A one inch line was installed from the main to supply one trailer equipt with an automatic flushing system instead of a valve or box. The old line was removed. At this time, preparations were made for changing the location of the supply system to the Permanent Ranger Residance. One inch pipe was then installed in the early fall, shortening this run and making it possible to completely isolate the trailers for winter draining of their systems. Any system must be drained for over wintering unless an outlet at the extreme end is kept running to avoid freezing.

With the exception of the plan and profile maps on the location of the original water system installation, all water pipe laid around Headquarters was unmapped. November of 1954 saw the completion of a map of the water system in the Headquarters area as determined by standpipes and control boxes. At the same time a sketch was made of the Ranger housing area.

Over the years since the completion of the pipeline, there have been occassional breaks in the main line. As far as can be determined, these breaks have all been defects in the pipe itself which have come to light after the pipe was laid. As recorded in the Narrative Report, the first few of these breaks were repaired by digging up several lengths of the pipe, uncoupling the joints, removing the bad section, and having the break welded by the local blacksmith in Arco. This was both a laborous and time consuming job. One break recently repaired was found to have been an old hole which had been wrapped with some rubber type sheeting and bound with small iron wire. When the wire finally rusted through, the pressure in the pipe pushed the sheeting away. Within the past few years (since 1952) these breaks have been repaired by the use of steel clamps made locally, and sealed with inner tube rubber and roofing tar. The work is simple, easy, and quick.

Though the water shed came within the protection of the Monument with the extension of the boundaries in 1928, the subject of the land concerned was not a settled matter. Within the area withdrawn for watershed protection lay two parcels of land owned by private parties for grazing use. In addition, there were a number of mining claims filed and recorded. The process of clearing up this

matter covered several years and considerable legal work on the part of the Service, Land Office, Bureau of Land Management, and the individual parties concerned. The appended map shows the location and amount of land held, and its relationship to the water system.

KILPATRICK LAND

On October 10, 1930, after completion of the pipeline survey, right-of-way easement over the Kilpatrick land was obtained for the fee of $1.00. The Kilpatrick land was grazing property held by the Kilpatrick Brothers of Beatrice, Nebraska. In general, it was felt better to obtain complete control of the land within the watershed for protection of the water supply. This resulted in negotiations for the land. The Kilpatrick Brothers were willing to exchange the lands within the Monument for lands of equal value outside the Monument. Several appraisals were made by various parties for the Government and the Kilpatrick Brothers. For some reason the land within the Monument was set at $10.00 per acre, where surrounding lands were at a value of $1.50 to $2.00 depending on the water supply. The $1.50 value was placed on the lands in the Copper Basin area which the Kilpatrick Brothers selected. However, the trade was based on a two-for-one exchange rather than a monetary value exchange. Though this discrepancy was noted in the General Land Office, that Office was willing to let the transaction take place on that basis. "An Act Authorizing Exchange of Land With Owners of Private Holdings Within Craters of the Moon National Monument," was passed and signed on February 15, 1933 by President Herbert Hoover; and this land within the Monument was again Government property. The easement had not been necessary.

ARTHUR LAND

At the same time the Kilpatrick Brothers were being approached, the matter was also taken up with Edward J. Arthur for the same reason. During the process of obtaining the right-of-way, it developed that the Estate of Edward Arthur (Apparently Edward Arthur had died recently) would just as soon sell the land to the Government for $10000 per acre. $800 was set aside by the Park Service for the 80 acres involved and the purchase negoatiations began. Shortly it became apparent that the Arthur Estate could not give clear title to the land for easement or purchase. During the three years which followed, these facts came to light and had to be cleared before sale could take place.

A Mr. John B. Arthur, father of the Arthur Brothers, patented the $NW\frac{1}{4}$ of the $SE\frac{1}{4}$ of Section 27 on May 29, 1918. The Northern Pacific Railway Company had obtained a patent on the $SE\frac{1}{4}$ of the $NW\frac{1}{4}$ of Section 27 on November 28, 1916. Then on September 24, 1924, John B. Arthur conveyed both plots of ground to his son, Edward J. Arthur, by a quit claim deed. There is no record of any transfer of the land owned by the Railroad to John Arthur. However, in 1926, both claims were assessed by Butte County for taxes in the name of the Arthur Brothers. The tax, apparently, went unpaid. On December 23, 1930, Edward Arthur obtained a morgage against this property from a Mr. John W. Sneed of Caldwell, Idaho, a livestock dealer. In the meanwhile, the Park Service

was going ahead withits pipeline and the water rights were filed upon by the Government for beneficial use. On January 1 of 1931, the taxes became delinquent. On January 5, 1931, David F. and Ellen Coon bought the Arthur lands from Butte County for the consideration of $71.00, the amount of the back taxes, and they were granted title by fee simple. This was recorded June 20, 1932. It was about this time that negotiations were in the process for the Government's purchase of the land. When it was realized that the Coon's owned the property, Mr. Sneed offered them $400.00 for it whence he would then sell it to the Government for $800.00 to obtain his investment from the morgage with no profit, if not at a loss. The Arthur Estate attempted to fight the Coon's claim to the land, and it went to Court. At the same time the Arthur Estate tried to up the sale price to four times and then two times the $800.00 for what they said was water value. However, it must be noted that the Government's water development, which had already been installed, was not on any of the Arthur property, nor was any such development intended. This fact was brought out and, after the Court decision, this matter was dropped. On August 17, 1933, the Court held in favor of David and Ellen Coon, and a clear title to the 80 acres was granted to them. An appeal was talked about by the Arthur Estate but was never made. Because of all the delays and infered misstreatment through Mr. Sneed, the Coon's sold direct to the Government for $10.00 per acre, or the whole $800.00 for the 80 acres.

The Monument, in June, 1938, completed proving up on the beneficial use of the springs and on May, 1939, was granted water rights permit No. 16711 with prior rights back to July 21, 1927.

During a search of the records in the Regional Offices of the Park Service in 1944, it was discovered that the original easements were entirely unnecessary in the first place. It seems that the laws under which these lands were patented reserved for the Government all easement rights for Governmental use. These laws covered all lands patented after 1890 and ~~those~~ lying west of the 100th meredian.

At the time this land exchange and purchase was in progress, thought was given to the purchase of the one valid mining claim, that of the nine plots of the Martin Mine. All other mining claims were discovered to be null and void due to a lack of assesment work required by law. The price of $4,000 for the nine claims was considered too high and time was thought to be a factor to bring it down, or that the claims would be abandoned. This,however, has not proved to be the case. Apparently, no easement rights were considered necessary for crossing this property, and according to the findings in 1944, such easements are not necessary. It was also discovered that no easement was obtained for crossing the Idaho Central Highway. At the time of laying the pipeline, this was not necessary as the Government owned the property. When the strip of land for the highway was ceded ~~back~~ to the State no provision was made and no allowance has been made since. With the proposed new, larger water main from a new and larger storage tank for

the proposed new Headquarters, Public Use Building and Crater Inn, some thought will have to be given to this matter.

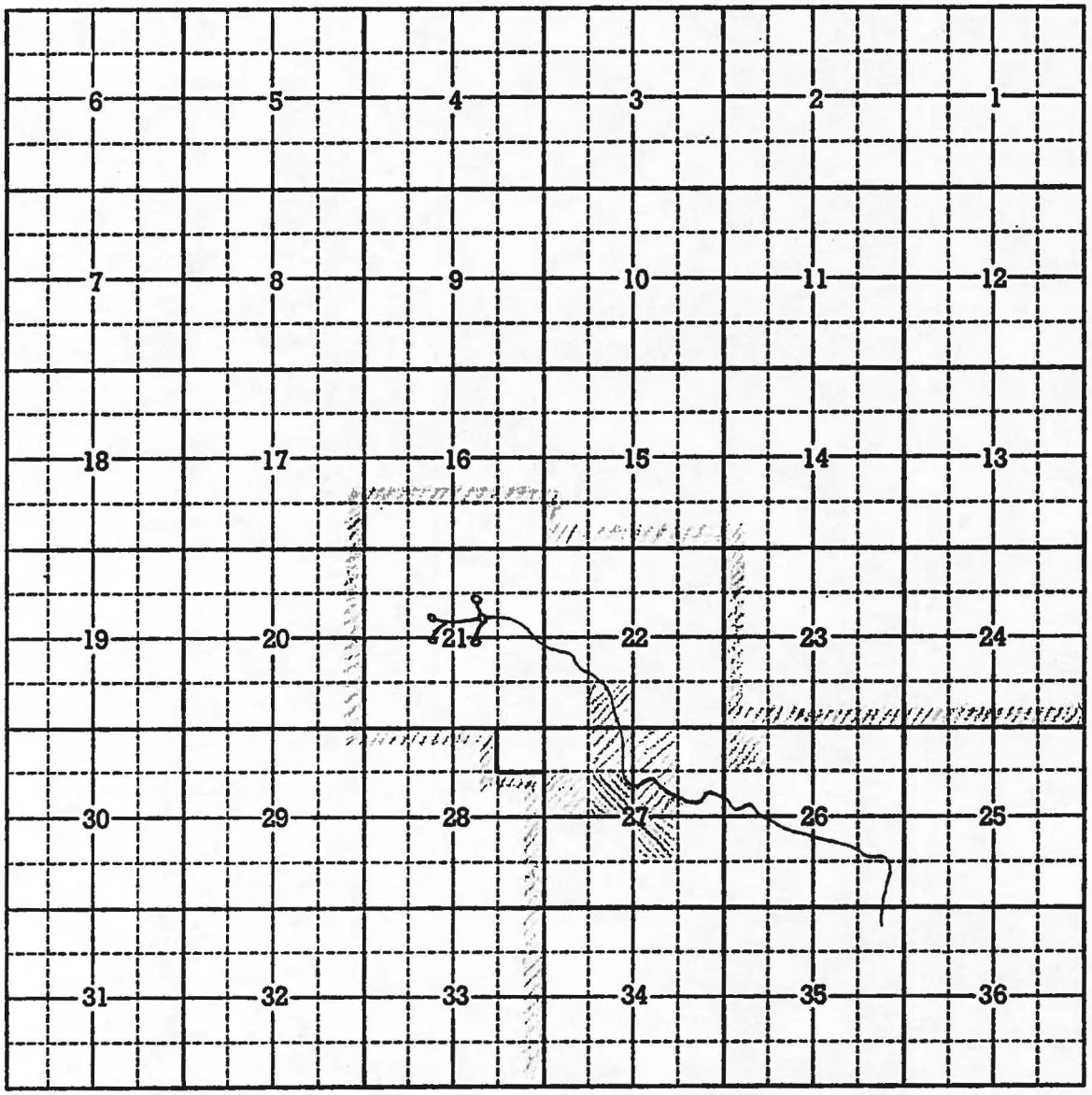
Robert C. Zink
April 1955

UEU Printed and for sale by Syms-York Company, Boise

SCALE: 1 INCH = 1 MILE

TOWNSHIP 2 North RANGE 24 East

Boise Meridian



Arthur Bros.

Kilpatrick Bros.

Present Boundary

WATER DEVELOPMENT

Chronology of Events

Pre-historic Period
Indians used natural water holes in the lava formations along their trails across the lavas. Streams north of the lavas used also.

Exploration and Development of Idaho
Natural water holes found and used by parties of whitemen in crossing the lava desert from Fort Hall to Arco area. Water sources along the northern edge of the lavas used by east-west travelers and wagon parties.

Exploration of the Monument Area
Again, the water holes along the Great Rift supplied some parties with water, though many parties did not know of their existance nor could all the water holes be relied upon throughout the year.

1924 - Creation of the Monument
Cinderhurst, the first Monument Headquarters, is believed to have been located adjacent to the Registration Water Hole. Other water holes were used throughout the northern area.

1927 - June; Survey of Cottonwood Springs for a Water Supply
Owing to the limited supply available in the water holes and the ease of contanimation by the increasing number of visitors, a survey of the Little Cottonwood Springs was begun for a possible water supply.

1927 - July; Earthquakes in Snake River Valley Drain Water Holes
Though no direct connection was claimed, the water holes at the Monument dried up immediately after several shocks were felt throughout the Snake River Valley.

1927 - July; Moving of Headquarters to Present Site
With the drying up of the water holes, Monument Headquarters and most campers moved to the present locations as water was being supplied to all by the builders of Crater Inn, which was then under construction.

1927 - August; Little Cottonwood Survey Completed.

1928 - July; Extension of Boundary to Include Watershed
President Calvin Cooledge signed the Bill for extension of the boundaries of the Monument to include the watershed and other volcanic features of the lava desert.

1928 - September; Development of Little Cottonwood Springs
Work was done to develop four springs on the east fork of the Little Cottonwood Creek. Completed that fall.

1930 - July; Survey of the Pipeline
After the springs were observed to have sufficient flow, the actual pipeline survey was begun and completed that August.

1930 - Summer; Water Rights Filed Upon by Government

1930 - October; Waterline Right-of-Way Proceedings Begun
By October 10, right-of-way had been secured from the Kilpatrick Brothers. Negotiations began for trading land by exchange so the Monument could control the land use. Arthur Brothers land right-of-way held up due to lack of clear title. Also the Government decided to buy their land for $10.00/acre.

1931 - January; Arthur Land Bought For Delinquent Taxes
While negotiations were in progress for right-of-way and outright purchase, the land was sold by Butte County for back taxes to Mr. and Mrs. David Coon, while a morgage was held by Mr. John Sneed on the land against the Arthur Estate.

1931 - April; Pipeline Being Laid
Construction of the pipeline began early in April and was completed May 28, with the 5,000 gallon tank being installed by June 28. A meager amount of line laid around Headquarters.

1932 - May; First Break Recorded in Water Main
This first break was discovered and welded after several lengths of pipe were dug up and taken to the local blacksmith in Arco.

1933 - February; Bill Passed to Exchange Lands
President Herbert Hoover signed the Bill authorizing the exchange of other Federal lands outside the Monument for the Kilpatrick lands within the Monument.

1933 - Summer; Public Health Service Recommends Fencing Springs
During one of their periodical visits, the Public Health Service recommended the fencing of the springs for their protection from stray live stock and deer.

1933 - August; Court Gives Clear Title to Coon For Arthur Land
After a court battle, Mr. Coon received a clear title for fee simple to the Arthur land. Mr. Coon then sold the land direct to the Government for $800.

1938 - June; Monument Proves Up On Beneficial Water Use
The Monument obtains water rights to Little Cottonwood water through beneficial use development.

1938 - November; Fencing Of Springs Begun
The fencing project recommended in 1933 was finally begun. The posts were set in concrete but left uncompleted due to a lack of fence wire.

1939 - May; Monument Given Water Rights Permit No. 16711

1939 - June; Fencing Project Completed
Fence wire was obtained and the job completed. However, non-barbed wire was used which proved unsatisfactory.

1944 - May; Regional Office Discovers Easements Unnecessary
During some land research, the Regional Office discovered that the water line easements were unnecessary due to the laws under which the land was patented. Land patented after 1890 and lying west of the 100th meridian was done so with easements rights reserved for the Federal Government for Governmental use.

1948 - April; Spring No. 4 Officially Abandoned
Spring No. 4 was officially abandoned by recommendation of the Public Health Service due to its location in the bottom of a draw which receives considerable spring runoff. This spring had actually been abandoned for over three years.

1952 - July; Pipeline Breaks Repaired With Clamps
Locally made steel clamps were used for the first time in repairing pipeline breaks, being sealed with inner tube rubber and roofing tar.

1953 - May; Two Inch Water Main Extended
The two inch water main was extended from the vicinity of the Ranger Cabins to the log shop for better fire protection.

1953 - June; Campground Waterline Extended
A straight line extension of the campground water system was laid westward from the old circut to accommodate more campers.

1954 - June; Trailer Water System Laid
With the acquisition of two house trailers for quarters, the water system was remodled to care for the situation with one inch pipe. In the fall new line was laid to the Ranger Residance so that the Temporary Cabin area could be shut off for the winter.

1954 - November; Headquarters Water System Mapped.

WATER DEVELOPMENT

Bibliography

Superintendent's Monthly Narrative Report, A-28

Water System, Final Construction Report, D-5039, Excess File

Land Acquisition and Disposal File, L-1415

Land Records File, L-1423

Water Rights File, L-54

Profile and Plan Maps of Water System

Indian and Whiteman History

Article by Robert W. Limbert, Idaho Statesman Newspaper, Boise, Idaho, April 10, 1921

ELECTRIC POWER DEVELOPMENT

There is little in the early records of the monument to indicate conditions of life during this period. One can only surmise as to the type of existance. Though electric power has long been desired by monument personnel, it is, actually, a recent improvement.

It must be assumed that the early Superintendents (Custodians) lived in tents and used either kerosene or gasoline lanterns, or, perhaps, even candles for light. It is known that gasoline lanterns were purchased for the convenience of the water line construction crew during their stay at the monument. The lanterns then became available for monument personnel upon its completion. However, only two of these lanterns could be counted in 1951. There were, until 1954, a couple of large screw-eyes in the ceiling of the Superintendent's house for the purpose of hanging these lanterns. They were removed during a repainting project that year.

In 1943 consideration was given to the construction of a hydro-electric plant, using the water of the Little Cottonwoo d Creek. The idea seems to have been originated in the Regional Office, then under the direction of Major Tomlinson, and the Custodian, Mr. McCarty, when the Director paid a visit to the area. After consideration by the engineers of the Regional Office, Messrs. Crowley, Waterhouse, and Dunn, the project was dropped. The calculations of these men determined that the maximum power development from the flow could be only 1.2 kw. This would necessitate construction of a new high pressure waterline of at least three inch pipe. The domestic water supply would then have to come from the tail-race of the generator which is not considered good practice. Retention of the present water system plus another pipe for the electric plant would reduce the amount of power which could be generated. Once power was installed, increasing uses would be found for it and the output would soon be exceeded, especially with expected growth. Also, the cost of such a system would exceed that of a diesel generating plant which was suggested as an alternative. The introduction of commercial power was considered too, but the distance and lack of other local consummers made the project impossible at this time.

During the spring of 1945 notation was made of a gasoline generator to be shipped from Mendocino Woodlands, California to the monument. There is no mention of this generator being installed. Yet, by 1949 the monument was equipt with two gasoline generators. Both were of the 3 kw size, though one was AC and the other DC. The two plants were used units and continually required repairs. One was hardly out of the repair shops (off the monument) till the other was in. At times, both units were out of commission, and the Superintendent had to resort to

gasoline lanterns again. In the fall of 1950 the extremely crude protection for the generators was replaced by the lean-to shelter on the west side of the Superintendent's household storeroom. This lean-to housed both generators at one time, which the former shelter did not. The power distribution system ran from the 'generator room' to the Superintendent's house, to the office, to the temporary rangers cabins (the two boarded up tent frames by the housetrailers). One pole was used between the office and the ranger cabins.

The generators were crank started which often gave one quite a workout in the evening, their only period of use. They could be shut off at retiring time by a push button magneto short circuit system at the Superintendent's house. From about the spring of 1951 to the installation of commercial power, the continual breakdown of these generators and the expence of their upkeep forced the Superintendent to rely on gasoline lanterns exclusively. (Cooking and water heating was accomplished by bottle gas. The restrooms had an automatic gas water heater principally for the convenience of the temporary resident personnel thougn it was also used by the campers.) With the arrival of commercial power, both generators were sold by public bid after being advertized in Government surplus lists in the spring of 1953.

When Superintendent Houston took over the monument in the fall of 1949, he immediately experienced the described difficulties with the generators. As commercial power had by that time been extended to the Solelburg Ranch west of Arco, the extension of the line was again brought up. The proposed diesel generating plant installation and operation was shown to be much more costly than any power line construction. In January, 1950, the first of many conferences were held with the Lost River Electric Co-op. It was determined at that time there would be four or five consumers on the REA line extension. They were Mr. Walter Jensen of Champagne Creek, Mr. Thomas Martin at Martin on Lava Creek, possibly Mr. O. T. Jones one and a half miles west of Martin, Craters Inn, and the Government. As it finally worked out, power was supplied to all but Mr. Jones, since the latter did not live on his property near Lava Creek.

The two principal obsticles which had to be overcome were the small number of consumers for the length of line, and the working out of an equitable payment which would be sufficient to cover the REA loan inview of the few consumers. The major stumbling block was the inability of the Government to assume part of the construction costs. The final arrangements were that the Park Service would guarantee a higher monthly minimum rate for 15 years. It was also finally decided that Craters Inn would be dropped as a member of the Co-op and would use part of

the power supplied to the monument. This was determined the best since the concessioner was in the area only during the summer season.

Authorization for concluding the contract was required by the Washington Offices of both the Park Service and the REA because of the small number of consumers. Finally, by May, 1952, the contract was completed. It called for a $40 minimum charge to the Government, and a 15 year period after which the rate schedule could be reconsidered. The power company was provided with right-of-way from the boundary to the transformer pole without fee in accordance with an inter-Governmental Agency agreement. This Special Use Permit would be in force for the 15 year period of the contract and would have to be renewed at that time.

Construction of the power line itself began on June 9, 1952, and required all summer to complete. This was due mostly to the lack of labor and previous committments of the Utah Power and Light Company who installed the line and supplied the power. Roughly 75 of the post holes required blasting on the lava sections. The line parallels the highway from the Sollberg Ranch to where the highway turns southwest, whence the line continues to the foothills and on to the Jensen Ranch. From there it follows the foothills to Martin, and thence across the foothill spurs to the monument. About 18 miles of line were installed. The Utah Power and Light obtained the contract to install the monument distribution system and erected the poles while their equipment was on the monument. Only partial wiring of the buildings was necessary due to the previouse installations. The Stewart Electric Company of Arco wired the new ranger residance and the two shop buildings as well as the restrooms. This had been accomplished before the completion of the power line.

The allottment for the power installation was sufficient to provide two new electric ranges, two refrigerators, three water heaters and two power tools thought of first importance to the monument. These latter items were a skill-type hand saw and a large hand drill. The household waterheaters were 30 gallon capacity while the third was of 50 gallon capacity for the restrooms. The electric equipment replaced butane equipment in the Superintendent's house and the restrooms and the wood cooking range used up to this time in the larger of the tent frame cabins. (Money from this allottment was sufficient to later extend the two inch water main from the meter pole to the log shop, with pipe left over, and construct the Checking Station from AEC new and used materials.)

The power system was energized on September 30, 1952, and a new era of enlightment began for the monument.

Craters Inn was made an integral part of the monument distribution system. They are charged a pro-rata share of costs for all power they use. Their remittance is applied to the cost of the power furnished to the monument. During their closed season, the Inn has no minimum charge.

With the acquisition and installation of the two house-trailers for temporary rangers, an additional distribution system was made from power supplied the old temporary cabin since converted to a sign shop. This installation was made by monument personnel.

During the winter period it was found that the Government did not fully use the $40 minimum value of power. This brought up the advisability of using electric power for heating the office space. This was successfully accomplished with the obtaining of a 220 volt space heater, fan type, from the AEC. Not only was nearly full value obtained from the minimum electrical charge, but an oil fuel saving was realized. The 500 gallon tank supplying the office was moved to the ranger residance and automatic electrical thermostatic unites installed on both residances. This was accomplished during the fall of 1953.

Since the availibility of electrical power at the monument, life in general and particularly during the winter period has been made considerably more tolerable. It has made possible the use of many electrical appliances in the homes, routing equipment for typical Park Service signs heretofore sadly lacking, and most of all a battery charger for aiding in operation of the bulldozer required for clearing heavy snowfall and drifts. Its usefulness can only be understood by those who have lived without it for a period of time knowing all the while what it has done for them in the past.

Robert C. Zink
February 1956

ELECTRIC POWER DEVELOPMENT

Chronology of Events

1924 Establishment of the monument. Gasoline, kerosene, lanterns or candles used for light.

1931 Gasoline lanterns from Water Line Development become available for monument use.

1937 Year round tour of duty established for the Superintendent.

1943 Consideration given to the construction of a hydro-electric plant on the Little Cottonwood. Plan abandoned due to a lack of water for power. Alternate plan of diesel plant considered.

1945 A 3 KW gasoline generator was to be shipped to the monument.

1949 By this date two 3 KW gasoline plants were in use at the monument. One was AC the other DC!

1950 Diesel plant was shown to be too costly. January of this year conferences began on negotiations for commercial REA power.

1950 During the fall of the year a gererator lean-to was built to house both generators.

1951 Spring of this year saw virtual abandonment of the gasoline generators due to continual breakdowns. The Superintendent returned to gasoline lanterns for lighting.

1952 In May a commercial power contract was signed between the Government and the Lost River Electric Co-op.

1952 Construction of the line began in June.

1952 The power line construction was completed, monument electrification accomplished, and the line energized.

ELECTRICAL POWER DEVELOPMENT

Bibliography

Superintendent's Monthly Narrative Report, A-28

Electrical System, File D-5015

Personal knowledge of the Contract negotiations, construction work, and subsequent uses of power.

TELEPHONE SYSTEM

At the request of the Mountain States Telephone and Telegraph Company a Special Use Permit was issued in June, 1929, for right-of-way to cross the northern end of the monument. This multi-line connects eastern Idaho with western Idaho by a shorter route than the lines along the Snake River. With the proximity of such a line, telephone service was installed at Craters Inn that fall. By virtue of it being a public use phone, Craters Inn enjoys very nominal service charges. The 20 year Special Use Permit required the annual payment of $10.00 fee. In this manner, the Government was able to transact business with charges for its specific calls only.

Upon the establishment of a year round tour of duty at the monument in 1937, the telephone was installed in the Superintendent's residance during the winter period.

In 1949, the 20 year Special Use Permit came up for renewal. The negotiations were started by Superintendent McCarty. However, it fell to the relieving Superintendent Houston to conclude them. Difficulties over unrecorded and unpaid permit fees. During the process of obtaining fees for 1949, 1950, and 1951, it became obvious that the Government should have a private phone for the conducting of business rather than the public affair as available in the Inn.

By October of 1951 a yearly contract which needed no renewal formalities was concluded which gave the Government long distance service and a private phone in the office. This service called for a monthly minimum charge of $10. Later, an additional phone was installed in the Superintendent's residance for odd hour and personal service. This extension added $1.90 service charge to the minimum. A second extension has been considered for the permanent ranger residance for such times as he is acting superintendent in the absents of the superintendent.

The phone system consists of a hand powered magneto call system with battery bell boosters. French style phone is used. The exchange is Arco, Idaho.

Robert C. Zink
February 1956

TELEPHONE SYSTEM

Chronology of Events

1924 Monument established.

1929 A Special Use Permit was granted to the Mountain States Telephone and Telegraph for lines to cross the northern part of the monument. Service was also established in the new Craters Inn.

1937 Year round tour of duty was established for the Superintendent, and the phone was transfered to the Superintendent's residance during the off seasons.

1949 The 20 year contract was renewed.

1951 A phone was placed in the Park Service office. Later an extension was placed in the Superintendent's residance for the convenience of the Government.

TELEPHONE SYSTEM DEVELOPMENT

Bibilography

Superintendent's Monthly Narrative Report, File A-28

Telephone System, File D-5027

CONCESSION DEVELOPMENT

The story of Crater Inn has been one of a long struggle for survival. As noted elsewhere in the history, travel to the Craters of the Moon has only become appreciable since World War II. Though there has always been a need for food and lodging, souvenirs and automobile service, the volume demand has been slow in growing. Early expiditions into the Craters, conducted by Robert Limbert and others, were self sufficient from necessity as there were no roads and no trails. Gradually roads became established as visitor after visitor drove around to see the points of interest most commonly talked about. Following in each others tracks was a necessity as the loose cinder acted like so much loose sand. Getting stuck was not uncommon.

It was not until three years after the establishment of the monument and about seven years after concerted efforts to bring people to the Craters began that a Concession Permit was granted and buildings erected. It was in May of 1927, that Jo G. Martin and John R. Wright, two local men of Arco, secured a permit for five years and began construction of the Inn, gas station, and the first three of the cabins. Nothing is mentioned about who selected the site, but it eventually formed the center of the headquarters area shortly thereafter. The site chosen was on the Hailey Entrance, just a short distance from its juncture with the Arco Entrance. This location had no water hole as did the Custodian's site at Cinderhurst Camp. Thus, Martin and Wright hauled water in a 300 gallon tank to the Inn site, probably from Martin five miles north. The structures were of Douglas fir logs, possibly obtained from the Little Cottonwood watershed area (then outside the monument on public grazing land) and Lava Creek west of Martin. Some concrete was used for foundations using cinder for gravel. The fireplace was made of lava stone and smoked most of the time.

This was the fateful summer of 1927. Earthquake shocks were felt throughout the Snake River Valley. In some cases almost immediately and in others more slowly, the water holes began to dry up. Where, heretofore, campers were allowed to setup anywhere in the monument (usually as near to a waterhole as they could get), the campers began congregating in the vicinity of the Inn then under construction. Martin and Wright, it seems, were supplying free water to all the visitors. Just when the Custodian was forced to abandon his position at Cinderhurst Camp has not been recorded. However, within a year at least, he probably had established himself on or near the promentory now occupied by the Superintendent's residence (as of 1956).

Regardless of the goodwill established as a result of supplying free water for four years (until the completion of the water system), the Inn was a deficit operation. At one time the revenue was so low that for two years the Permit Fee could not be paid. The reoccuring deficit was made up by farming and other work done by Martin and Wright. This had a demoralizing affect upon the Concessioners to

the point that just after a new five year Permit was granted in 1953, the Custodian recommended that the Permit be revoked due to lack of service to the public. However, this never came to pass as service was improved somewhat, probably after a conference with the Concessioners. Nevertheless, accommodations were always of a very primative nature. To this day the cabins remain non-modern with a water pail and wash basin though the main waterline runs immediately in front of the cabins. Showers have been available to overnight visitors since the construction of the campground restrooms in 1934. In 1937, new floors were placed in the three cabins, and new roofing given to all buildings. A coat of stain to the buildings has been mentioned as greatly improving the appearance of the rough logs.

A third Concession Permit for the term of three years was granted to Martin and Wright January 1, 1938. However, for this season they elected to lease the operation to one Gene Perry of Kaycee, Wyoming. Farming and other business was pressing so they could recoup their financial losses on the Inn operation. The lease called for an advance payment of $75 per month from May 15 through September 15. The success of this venture is not recorded though it was a deficit operation as before. The lease was held for only the one season as Martin and Wright were negotiating for the sale of their Crater Inn holdings.

Sale of the Inn occurred on January 26, 1939, and the Permit transfered by April of that year to Peter Rorwick of Arco. Under the terms of the sale, the Inn and buildings sold for $3,000. At the outset, Mrs Marie Rorwick made decided improvements in the Inn and service. A new floor was laid in the Inn, booths and tables were added, and better furniture and linens placed in the cabins. Some question arose over the transfer of the Permit to Mr. Rorwick as he was an employee of the Government at Yellowstone National Park. But since Mrs. Rorwick did the actual operating, the transfer was granted. A renewal of the Permit in 1941 was issued in her favor rather than in her husband's name. It was suggested and recommended that a twenty year Permit be granted, however, only another five year Permit was issued. Rather than the former 4% gross revenue fee, a flat $100 was established plus 25% of the net profit after the 6% net worth was deducted.

In the spring of 1940, Mrs Rorwick had four additional cabins added to the existing three. By fall two were mentioned in the Custodian's Narrative as having been completed. No mention is made of the second two. During the fall of 1941, the Idaho State Highway crew, then working on the realinement of the road through the Craters, rented the entire establishment for their men at $100 per month until the crew was releassed due to inclement weather. The crew again took over the Inn and its facilities in the spring till such time as the monument opened for the regular travel season.

The operation of Crater Inn continued to be a deficit problem. With the Second World War in progress, visitation dropped to a low equaling the first year the monument was established. As a result, Mrs Rorwick did not open the Inn for the 1943, 1944, and 1945 seasons, and she contemplated letting the Permit laps. However, she obtained a bidder on the facilities, and the National Park Service renewed the Permit regardless for continuity for one year. Thus, the Inn was prepared for reopening in 1946 while Mrs. Rorwick negotiated with Mr. Samuel Clark for the sale.

On May 22, 1946, the sale was completed with Mr. Samuel T. Clark and Mr. Ren L. Greene of Idaho Falls and Dubois, Idaho. Due to the reticent nature of Mr. Greene, he proposed that Clark buy him out so he could return to mining in the Dubois area. This occurred shortly after the Inn opened and before the Permit was transfered. Permission was granted, and Mr. Clark became the sole owner of Crater Inn. As the one year extension of the Permit expired, Mr. Clark requested a five year permit. It was recommended by the Custodian, but only a two year one was granted by the Washington Office. This Permit then expired on December 31, 1948. Operations continued through this period without agreement on a new permit. As a result, another one year extension was granted. By December 9, 1949 agreement was reached, and a five year permit issued backdated to January 1, 1949 through December 31, 1953. The difficulty arose over Special Condition #19 which stipulated that the National Park Service could discontinue rental of the cabins at any time. It was explained that this clause would not act as a burden on the Concessioner, but meant that such service would be discontinued if thought advisable when the proposed new development was completed. In the meanwhile, Mr. Clark placed the Inn facilities up for sale because of his own ill health. His asking price of $20,000 was considered too high in view of the declaired value of the buildings and depreciation. The Region suggested a fair price of $7,500 which Clark met. Nevertheless, there were no bidders until the fall of 1951.

As it developed, Mr. Clark sold his Inn Holdings to Mr. Casey E. Barthelmess of Miles City, Montana for the sum of $6,000, plus $300 for stock on hand, and $25 for insurance in force. It was planned that Mr. Barthelmess' sister and brother-in-law, Mr. and Mrs. Victor L. Smith, would be the resident managers of the Inn. With the sale of the facilities October 25, 1951, transfer of the Permit was concluded August 7, 1952, Rather than actual transfer of the Permit, a new one was issued for five years plus, backdated to the time of the purchase and running through December 31, 1956. Both the Barthelmess' and Smith's arrived early in May of 1952 to begin the planned renovations. Electrical wiring was installed for the commercial power which was to be run in that summer. The cabins, Inn, and gas station were again stained with diesel oil and orcher, and a small modifications made in the kitchen. A wider line of souvenirs were obtained, and less emphasis was placed on meals and lodging. This latter was due to the fact that the cabins were non-modern and would have only slight appeal in this day of delux motels. Modernization of the cabins was not considered a good investment with the

Special Condition #19 and the hope of new headquarters development in the near future. Yet, many visitors inquire about overnight accommodations, but they drive on after learning that they are non-modern or inspecting the cabins.

The Inn was opened by the Smith's for Opening Day in May of 1952, though they offically opened June 1 of that year. For the first time since the Inn was erected, it began to show a profit. It is doubtfull that this is entirely due to the management given by the Smith's over their former owners. That year the travel figures climbed from 58,00 to 85,000 visitors. This is the greatest single increase in visitation during any one year since the establishment of the monument. It was also, naturally, a new high in visitor attendance. Before 1946 visitation hardly exceeded 20,000 per year. In view of the services provided by the Inn during this whole period, it is quite evident that it would be a risky venture. National Park visitors have become accustom to a wide variety of services from both the National Park Service and the Concessioners. With the lack of development of this area, there was little to detur the visitor for more than a drive around the seven mile loop road with short excurssions to points of interest inadequately marked by guidance or informative signs.

The proposed new developments and the good prospects that it may soon be realized will mark a new ~~xxx~~ era for Craters of the Moon National Monument as one of the National Park Service areas and the Concessioner who serves its visitors.

Robert C. Zink
February 1956

CONCESSION DEVELOPMENT

Chronology of Events

1927 May. Jo G. Martin and John R. Wright began construction of Crater Inn, gas station and three cabins. The Permit, signed June 3, effective January 1, 1927 was for five years.

September. Construction nearing completion. Water hauled to monument in 300 gallon tank for use by construction crew and supplied free to visitors. Water was supplied free for the next three years also till water system was completed.

October. All buildings completed, which included the Inn, gas station and three cabins.

1933 January 1. New five year Permit issued.

September. Custodian recommended revokation of Permit due to lack of service to public. Not carried out.

1937 Spring. New floors put in the three cabins, roofs refinished, and exteriors stained.

1938 January 1. New three year Permit issued.

April. Martin and Wright lease operation of Inn and facilities to Gene Perry of Wyoming.

1939 January 26. Martin and Wright sold Inn and facilities to Peter Rorwick. Permit transfered in April.

Spring. Mrs. Rorwick made decided improvement in service at the Inn. New floor laid in the Inn, booths and tables added.

1940 May. Four new cabins were begun. Completion of two were noted in Narrative by November, other two not listed.

1943-1945 Mrs. Rorwick did not open Crater Inn due to lack of travel during War years.

1946 January 1. One year extension issued on Permit.

May 22. Mrs. Rorwick sold Inn facilities to Samuel T. Clark.

1947 January 1. Two year Permit issued to Clark.

1949 January 1. One year extension issued on 1947 Permit.

1949 December 9. Five year Permit issued to Clark backdated to January 1, 1949.

1951 October 25. Crater Inn sold to Casey E. Barthelmess.

1952 Spring. Mr. and Mrs. Victor L. Smith take over management of Crater Inn for Mr. Barthelmess.

July 10. Concession Permit issued to Barthelmess for five years, backdated to date of purchase to run through December 31, 1956.

Fall. For the first time the Inn operation showed a net profit and has done so since. To date the travel has about doubled since 1946 when it was 58,000 visitors. The travel has reduced the risk of this venture.

CONCESSION DEVELOPMENT

Bibilography

Superintendent's Monthly Narrative Report, File A - 28

Concession File:

C - 26 Concession Reports

C - 38 Concession Contracts and Permits

C - 3815 Applications for Permits

C - 3817 Miscellaneous Correspondence

Smith and Barthelmess

T.S. Clark

Peter and Marie Rorwick

John R. Wright (and Martin)



H18-1

Mr. Samuel A. Paisley, first Custodian of
Craters of the Moon National Monument
Photographer unknown - photo donated by Paisley-Walker
family of Arco.

Samual A. Paisley

First Custodian

Craters of the Moon National Monument

Birthplace: Mouth of Wilson, Virginia
Date: 1855 (Day and month not given)

Federal Service Record:

None.

Craters of the Moon National Monument
Custodian, no grade 6/1/1925 to 7/1/1927

Mr. Paisley's appointment was recommended by Congressman Addison T. Smith and the Arco Chamber of Commerce. The appointment was made without grade at the salary of $12.00 per year. This was refused until permission was granted Mr. Paisley to charge for guide service. Mr. Paisley was granted a raise in salary to $240 per year effective June 1, 1926.



Second Custodian

Birthplace: Mulford, Texas
Date: August 16, 1868

Federal Employment:

Lemhi National Forest

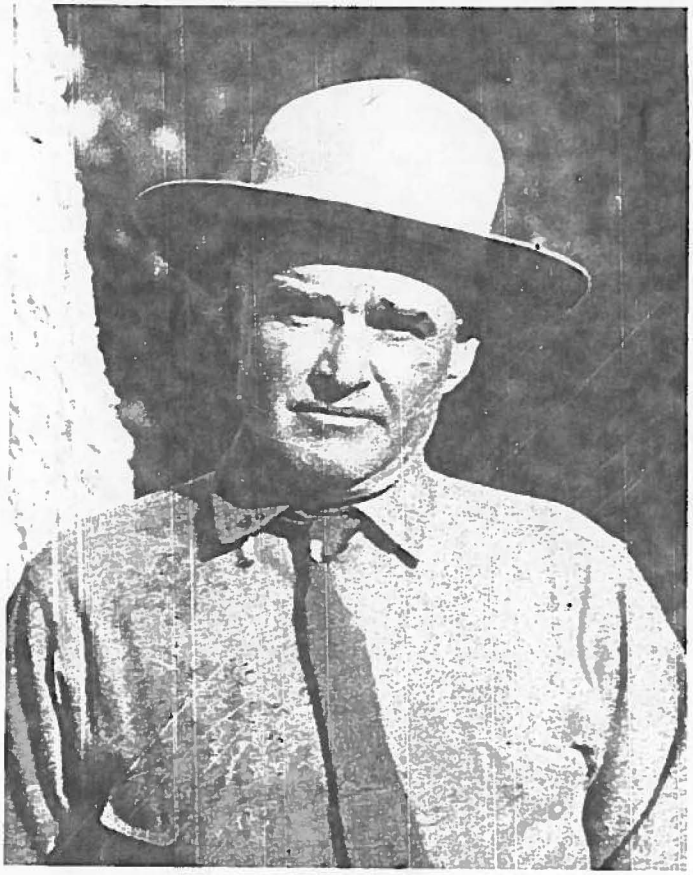
Forest Guard	4/1/1907	to 5/10/1970
Forest Guard	5/6/1912	to 10/15/1912

Craters of the Moon National Monument

Custodian, salary $360 pa	7/1/1927	
Promoted to grade 7 CU	7/1/1928	- $1200 pa
Promoted to grade 7 CU	7/1/1930	- $1680 pa
Promoted to grade 8 CU	12/1/1930	- $1680 pa
Submitted resignation	3/12/1931	

Died May 30, 1931 before resignation accepted.

Photocopy from Washington Personnel File.



Burton (Bob) C. Lacombe

Third Superintendent

Birthplace:
Date:

National Park Service Record:

Yellowstone National Park

Ranger	1916
First Class Ranger	9/1/1918
Buffalo Keeper	1918
Chief Buffalo Keeper	1920

Craters of the Moon National Monument

Custodian	5/20/1931 to 11/1/1933

Retired. Moved to Spokane, Washington. Died, Spokane, Washington, January 30, 1947.

Photo supplied by Yellowstone National Park. Taken at Mammoth Hot Springs, 1923.



Albert T. Bicknell

Fourth Custodian

Birthplace: Kirb Knob, Jackson County, Kentucky
Date: October 21, 1890

National Park Service Record:

Yellowstone National Park
- Park Ranger, WAE — 10/3/1920 to 6/17/1921
- District Park Ranger — 9/20/1921 to 10/31/1933

Craters of the Moon National Monument
- Custodian — 11/1/1933 to 12/20/1936

Transfered to Superintendent, Casa Grande National Monument.

Photograph furnished by Mr. Bicknell, Oct. 9, 1956.



Guy E. McCarty

Fifth Superintendent

Birthplace:
Date:

National Park Service Record:

Yellowstone National Park

Park Ranger Grade 6	9/24/1925 to 5/1/1937

Craters of the Moon National Monument

Custodian Grade 6	5/?/1937
Designated Superintendent	1/5/1949
Transferred	10/ /1949

Transferred to Coulee Dam National Recreation Area
as Supervisory Park Ranger 10/ /1949

Photo supplied by Mr. McCarty



Aubrey F. Houston

Sixth Superintendent

Birthplace: Salesville (now Gallatin Gateway) Montana
Date: May 25, 1903

National Park Service Record:

Mt. Rainier National Park	
Park Ranger, FCS-7	6/20/1931 to 9/10/1931
Park Ranger, FCS-7	7/ 1/1932 to 9/ 5/1932
Mount McKinley National Park	
Park Ranger, 9 CU	8/ 1/1934 to 12/1/1938
Sequoia National Park	
Park Ranger, FCS-8	12/1/1938 to 4/28/1939

Aubrey F. Houston, Superintendent, Cont'.

Death Valley National Monument		
Park Ranger, FCS-8	4/28/1939 to	11/4/1942
Military Furlough	11/4/1942 to	10/11/1945
Death Valley National Monument		
Park Ranger, CPC-7	10/11/1945 to	10/2/1949
Craters of the Moon National Monument		
Superintendent, CAF-6	10/2/1949	
Reclassified to GS-6	10/30/1949	
Promoted to grade GS-7	12/24/1950	
Transfered		7/1/1953

Transfered to position of Chief Ranger, Mammoth Cave National Park, Kentucky, grade GS-8.

Photograph furnished by Vaughn Studio, Arco, Idaho.



Everett W. Bright

Seventh Superintendent

Birthplace: Chickasha (Indian Territory) Oklahoma
Date: July 30, 1900

National Park Service Record:

7th Regional Office, Oklahoma City, Oklahoma	
Clerk - Grade 7	5/24/1934 to 3/1/1935
Clerk - Grade 8	3/2/1935 to 12/1/1936
3rd Regional Office, Santa Fe, New Mexico	
Clerk - Grade 8	12/1/1936 to 10/25/1940
Military Furlough	10/26/1940 to 4/6/1945
Tuzigoot National Monument	
Custodian, CAF-5	4/7/1945 to 2/8/1946
Grand Quivira National Monument	
Custodian, CAF-6	2/9/1946 to 10/5/1947

Everett W. Bright, Superintendent, Cont'.

Tuzigoot National Monument	
Custodian, CAF-6	10/6/1947
Reclassified, Superintendent	11/5/1948
Superintendent, GS-6	10/30/1949 to 6/23/1950
Canyon de Chelly National Monument	
Superintendent, GS-7	6/24/1950 to 9/2/1953
Craters of the Moon National Monument	
Superintendent, GS-8	9/3/1953
Promoted to GS-9	6/8/1955

Negative No. H 18 - 3



Robert C. Zink
First Permanent Park Ranger

Birthplace: Rahway, New Jersey

Date: October 11, 1918

National Park Service Record:

Crater Lake National Park Ranger-Naturalist	7/1/56 to 10/1/56
Grand Teton National Park Ranger-Naturalist	6/10/49 to 10/20/49 6/12/50 to 9/17/50
Craters of the Moon National Monument Seasonal Park Ranger	9/18/50 to 11/15/50
Yosemite National Park Labor	2/28/51 to 5/7/51

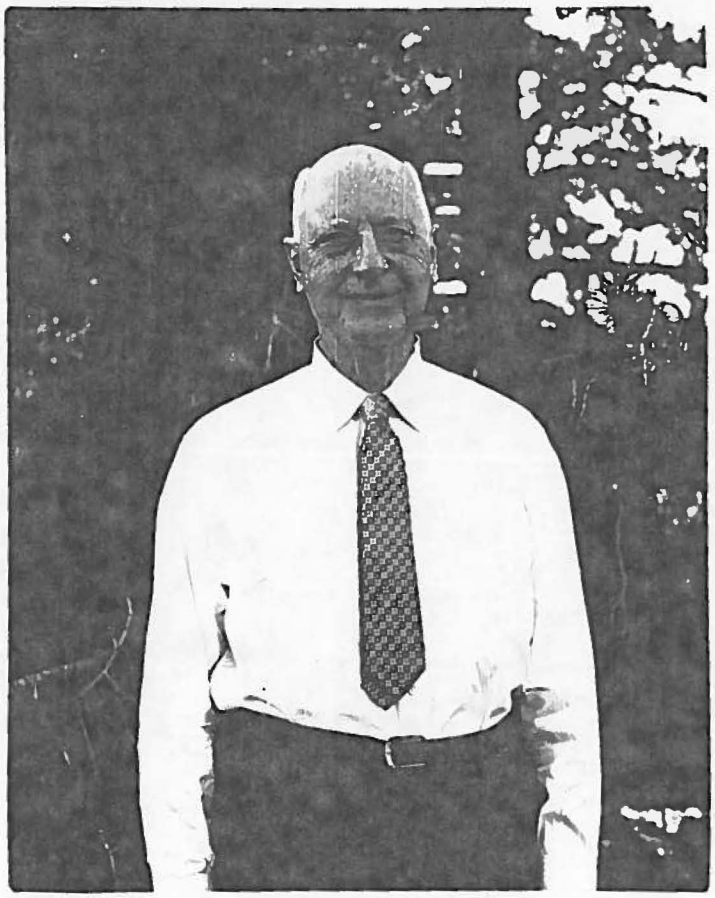
Robert C. Zink, First Permanent Park Ranger, Cont'.

Grand Canyon National Park
Park Ranger, GS-5 — 5/22/51 to 6/16/51

Mesa Verde National Park
Park Ranger GS-5 — 6/17/51 to 6/11/52

Craters of the Moon National Monument
Park Ranger GS-5 — 6/12/52
Park Ranger GS-6 — 6/15/54
Supervisory Park Ranger GS-7 (and Naturalist) 7/8/56

Negative No. H 18 - 4



Hugh T. Higginbotham
Clerk

Birthplace: Fresno, California

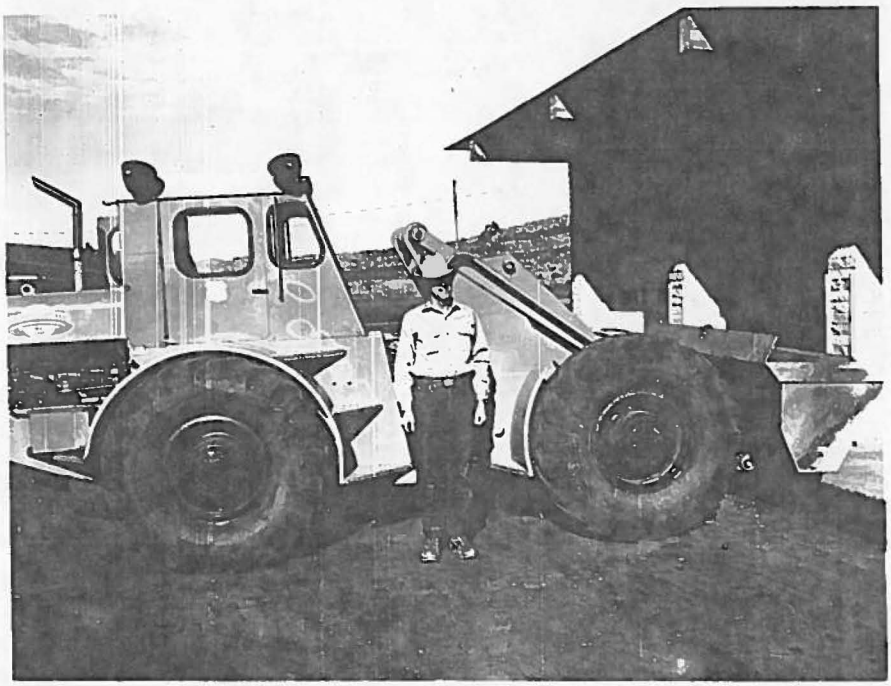
Date: August 8, 1891

National Park Service Record:

Craters of the Moon National Monument
Clerk GS-4

May 13, 1957

Negative No. H 18 - 6

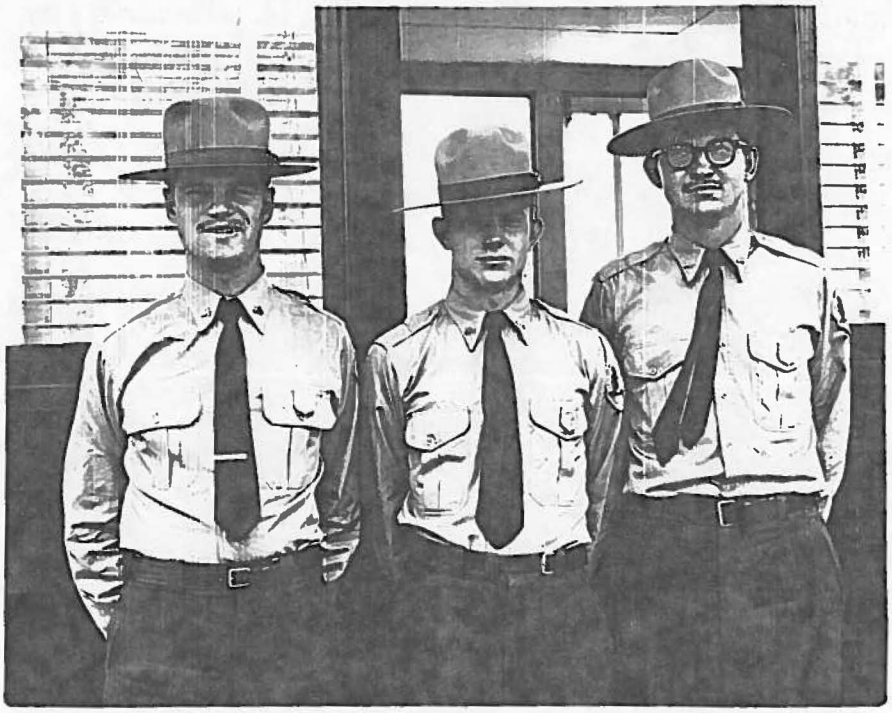


James A. Sipe
Maintenanceman

Birthplace: Midvale, Idaho
Date: July 9, 1915

National Park Service Record:

Truck Driver (LD)	$1.65	5-15-53 to 9-12-53
Laborer	1.75	4-19-54 to 10-22-54
Truck Driver (LD)	2.00	4-26-55 to 11-30-55
Operator, General	2.44	12-29-55 to 1-4-56
Operator, General	2.44	4-16-56 to 11-16-56
Operator, General	2.50	4-22-57 to 12-29-57
Maintenanceman	2.44	12-30-57 to 1-28-57
Maintenanceman (TAPER)	2.25	1-29-58 to 3-21-59
Maintenanceman	2.43	3/22/59 to 6/27-59
Maintenanceman (Career-Conditional)	2.43	6-28-59 to present



Seasonal Park Rangers, 1957 season

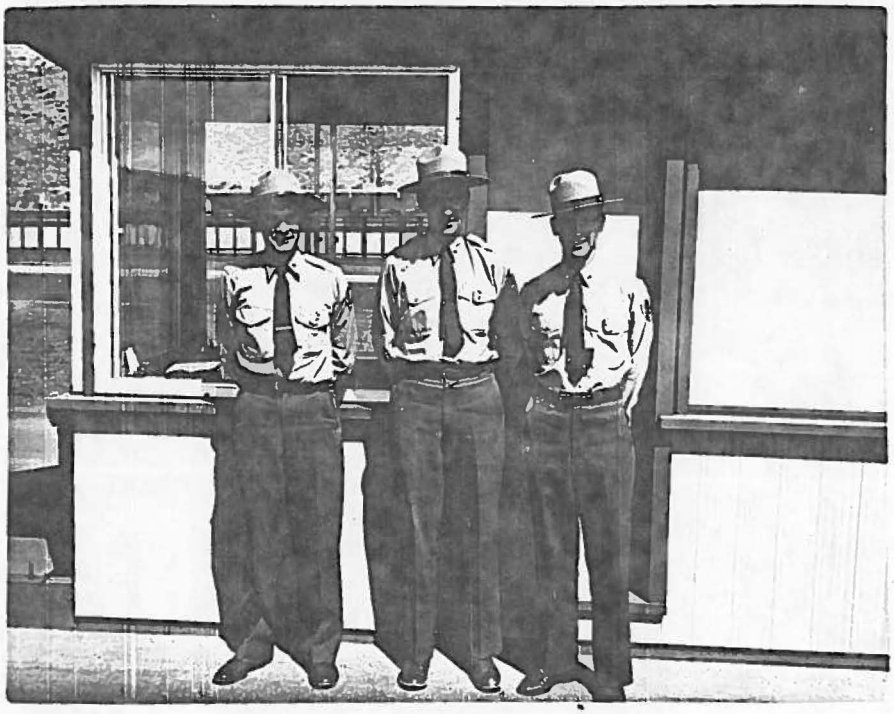
Left to right:

James R. Alfsen, Santa Monica, California

James J. O'Connor, Denison, Iowa

Robert W. Mashek, Calmar, Iowa

Negative No. H 18 - 5



Seasonal Park Rangers, 1958 Season

Left to Right:

Peter G. Sanchez, Salt Lake City, Utah

Rodney Romney, Arco, Idaho

Ronald A. Erickson, Berkeley, California

Negative No. H 18-7

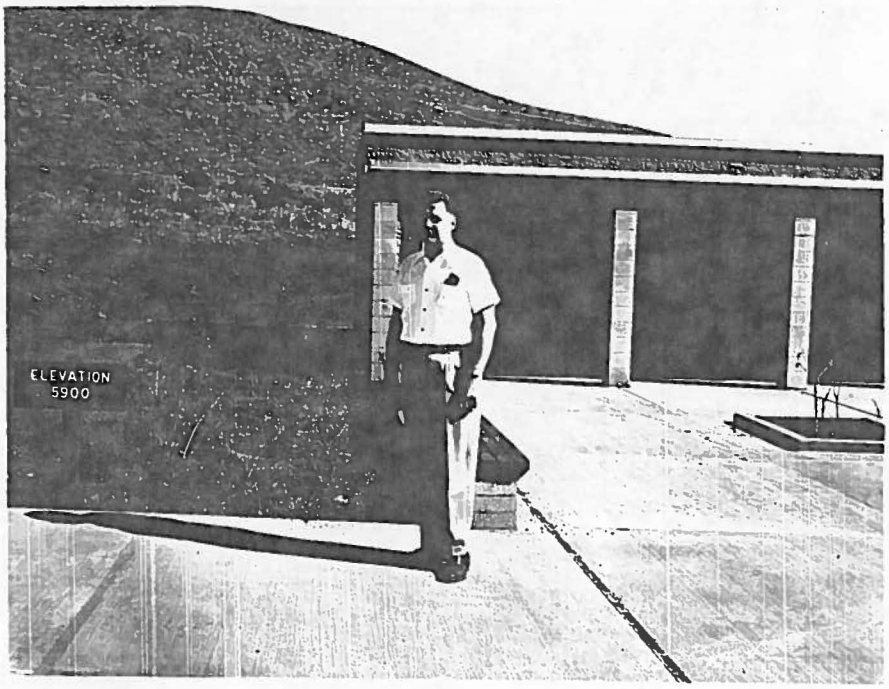


Lester F. McClanahan
Supervisory Park Ranger

Birthplace: Lawrence, Kansas
Date: February 10, 1927

National Park Service Record:

Laborer, Leadman	Lassen Volcanic NP		6/18-46 - 10/18/46
Fire Control Aid, SP-3	"		6/23/47 - 9/12/47
Fire Control Aid, SP-4	"		6/21/48 - 9/19/48
Fire Control Aid, IGS-4	Sequoia-Kings Canyon		6/ 2/52 - 9/ 4/52
Park Ranger, GS-4	"		6/15/53 - 10/31/53
" " "	"		3/15/54 - 11/20/54
" " GS-5	Coulee Dam, Wash.		3/25/55 - 7/ 5/56
" " GS-6	Mt. Rainier N.P.		7/ 5/56 - 12/15/57
" " GS-7	Craters of the Moon NM		12/15/57 -



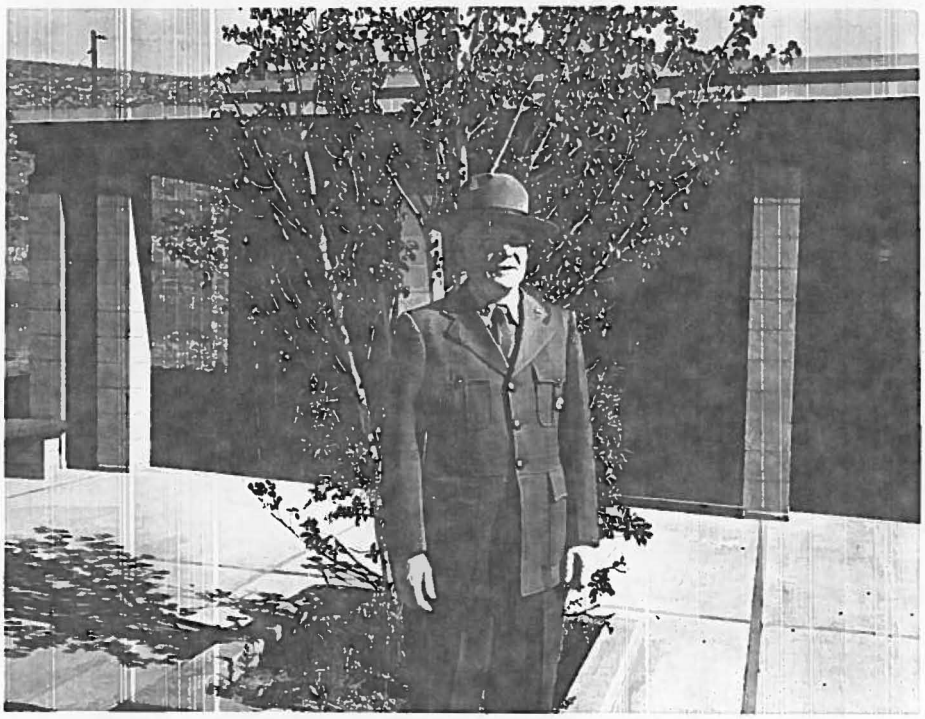
Stanley M. Tesdahl

Administrative Assistant

Birthplace: Spokane, Washington
Date: June 18, 1922

National Park Service Record:

Craters of the Moon National Monument
Administrative Assistant, GS-5 6-3-58 to 4-18-59



Floyd A. Henderson

Eighth Superintendent

Birthplace: Woodruff, Utah
Date: May 4, 1908

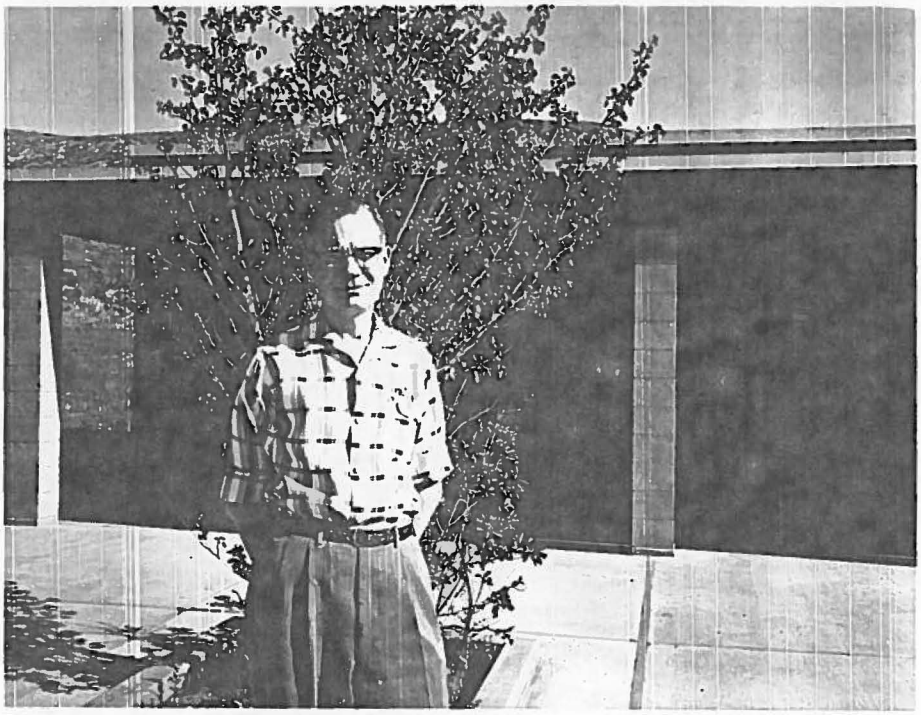
National Park Service Record:

Yellowstone National Park Big Hole National Monument	
Park Ranger (Seasonal), FCS-7	6-1-38 to 6-30-39
Yellowstone National Park	
Sr. Forestry Foreman, FCS-9	7-1-39 to 10-7-39
Glacier National Park	
Park Ranger, FCS-8	10-9-39 to 2-19-42
District Park Ranger, FCS-9	2-19-42 to 12-10-42
Military Service	
Fire Officer (1st. Lt.) USA, Europe	10-13-43 to 8-1-44
Forestry Officer (1st. Lt.) "	8-1-44 to 12-10-45

Floyd A. Henderson, Superintendent, cont'd.

Glacier National Park District Park Ranger, GS-7	12-10-45 to 9-25-51
Isle Royal National Park Chief Park Ranger, GS-9	9-25-51 to 2-9-55
Hawaii National Park Chief Park Ranger, GS-10	2-9-55 to 7-20-58
Craters of the Moon National Monument Superintendent, GS-9	7-20-58 to present

Negative No. H 18-8



Harold F. Johnson

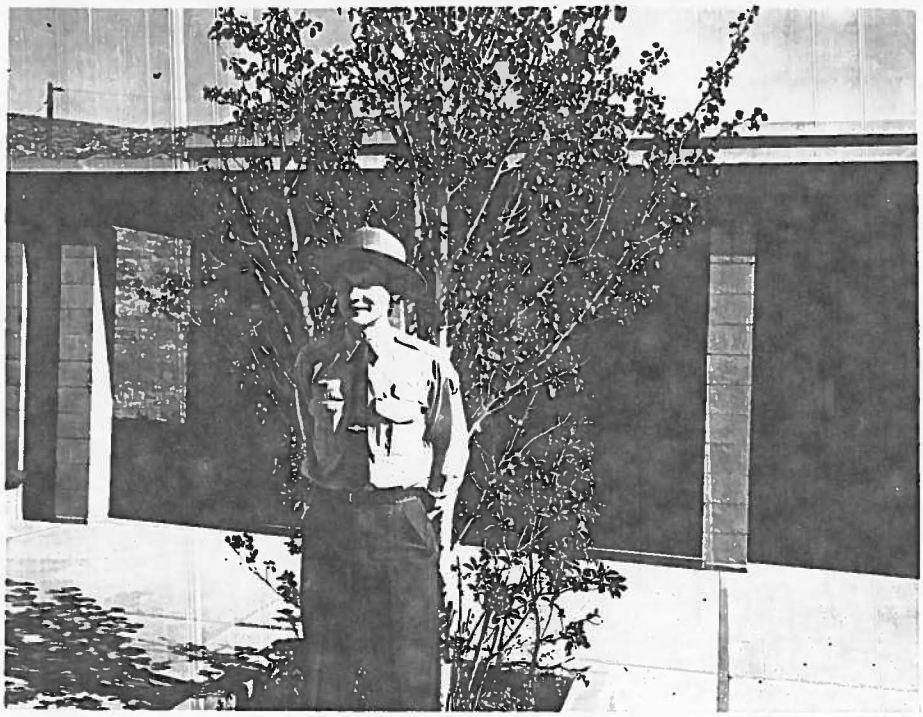
Administrative Assistant

Birthplace:
Date: February 2, 1913

National Park Service Record:

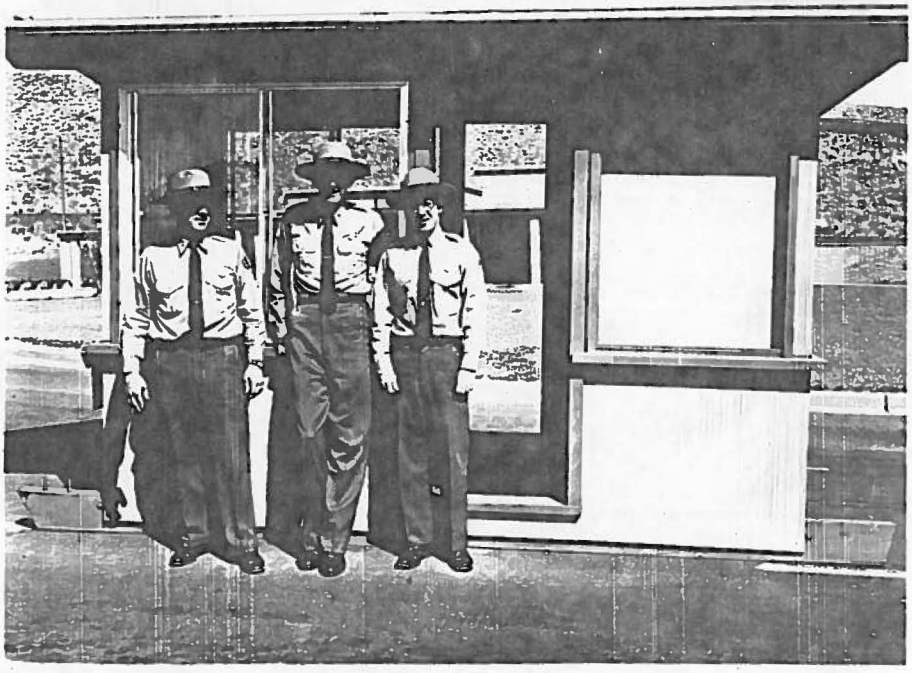
Craters of the Moon National Monument
Administrative Assistant, GS-5 6-1-59 to present

Negative No. H 18-9



Peter G. Sanchez

Ranger-Naturalist
1959 Season



Seasonal Park Rangers, 1959 Season

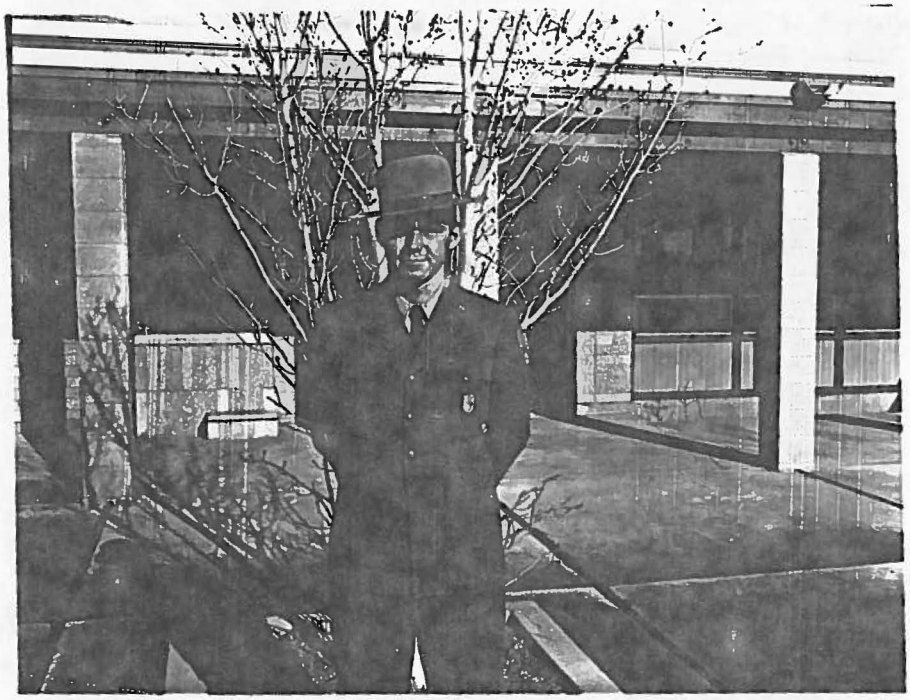
Left to Right:

Robert O. Eldredge, Pocatello, Idaho

Ralph D. Henderson, Arco, Idaho

Norman M. Littrell, Douglas, Arizona

Negative No. H 18-11



David C. Ochsner

Park Naturalist

Birthplace: Cleveland, Ohio
Date: August 21, 1929

National Park Service Record:

Yosemite National Park
Ranger-Naturalist, GS-4 5-20-56 to 10-14-56

Death Valley National Monument
Ranger-Naturalist, GS-4 10-29-56 to 2-28-57

Mesa Verde National Park
Park Ranger, GS-5 3-6-57 to 1-26-58

Olympic National Park
Park Naturalist (Trainee) GS-5 1-26-58 to 12-29-58
Asst. Park Naturalist, GS-7 12-30-58 to 10-11-59

Craters of the Moon National Monument
Park Naturalist, GS-7 10-12-59 to



Seasonal Park Rangers, 1960 Season

Left to Right:

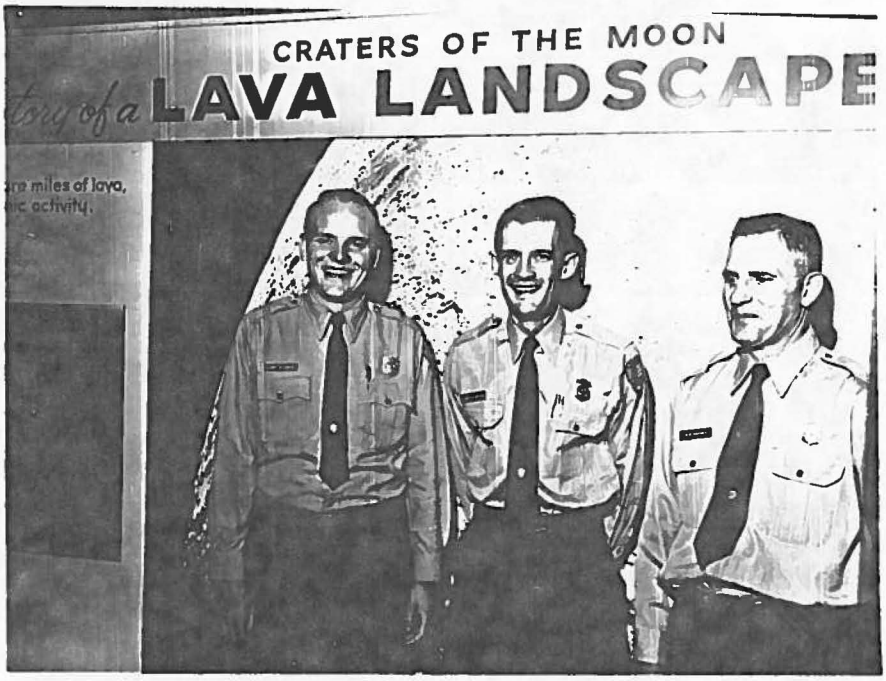
Kenneth W. Babcock, Arco, Idaho

Kenneth C. Brownlee, Nampa, Idaho

William B. Whitney, Homestead, Florida

Robert O. Eldredge, Pocatello, Idaho

Negative No. 474



Seasonal Park Rangers, 1961 Season

Left to Right:

Larry K. Harvey, Twin Falls, Idaho

Kenneth W. Babcock, Arco, Idaho

William B. Whitney, Homestead, Florida

Negative No. 813



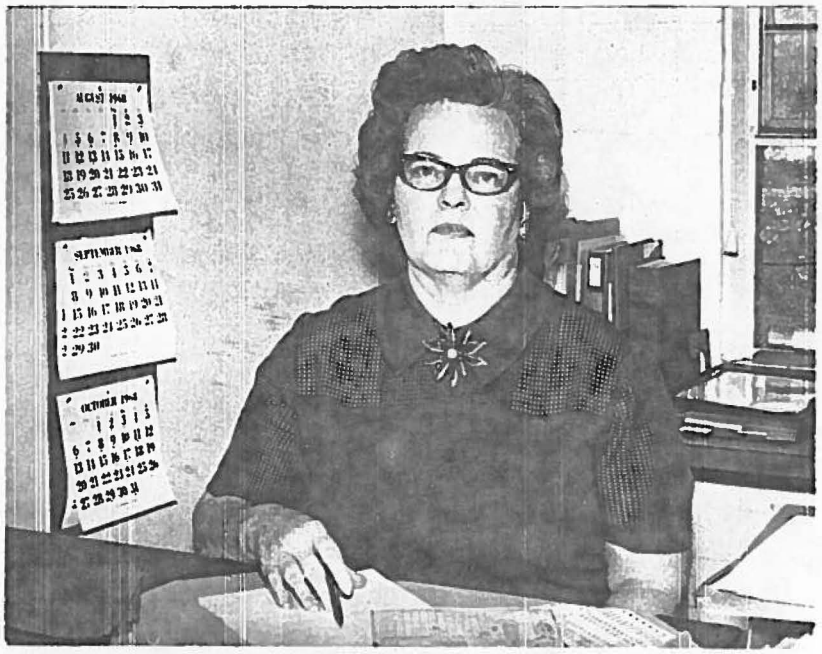
SEASONAL NATURALIST STAFF, 1961

Left to right:

Peter G. Sanchez

Donald E. Hoffmaster

Negative No. 842



Mildred Standlee
Administrative Officer

Birthplace: Northfolk, Virginia
Date: February 10, 1922

National Park Service Record:

Cabrillo National Monument Clerk Typist - GS-3	1962
Mount McKinley Clerk Steno - GS-4&5	1963-1965
Craters of the Moon Administrative Clerk - GS-5 Administrative Officer - GS-7	1965-1968



Floyd Standlee
Foreman 1, Laborer

Birthplace: Lindsay, California
Date: January 22, 1918

National Park Service Record:

Craters of the Moon 1966-1968
Laborer W/B
Foreman 1, Laborer W/S



PAUL FRITZ
12th Superintendent

Birthplace: Yonkers, New York
Date: June 7, 1929

National Park Service Record:

Yellowstone National Park Fire Control Aid - GS-4	Summer 1951 Mt. Sheridan Fire Lookout
Yellowstone National Park Fire Control Aid - GS-4	Summer 1952 Pre-Suppression Crew Leader
Yellowstone National Park Trail Crew Foreman	Summer 1953 and 1954

Military Service:

U.S.A.F. Target Intelligence Officer (Strategic Air Command) Capt. 1954-1957

U.S. Forest Service Record:

Sawtooth, Salmon, Challis, Humboldt N.F. Landscape Architect, GS-5	1958-1959
Bridger N.F., Wyoming Landscape Architect GS-7	1959-1960
Salmon, Challis, Sawtooth N.F. Landscape Architect GS-9	1960-1961

National Park Service Record: (con't)

Flaming Gorge NRA Project, Utah-Wyoming Park Landscape Architect, GS-11	1961-1963
Crater Lake, Lassen Volcanic, Lava Beds Park Landscape Architect, GS-11	1963-1965
Canyonlands, Arches, Natural Bridges Park Landscape Architect, GS-11	1965-1966
Craters of the Moon Superintendent, GS-12	Sept. 1966 - May ~~1970~~ 1974
Craters of the Moon Superintendent/Idaho State Coordinator, GS-13	May 1970 - 1974 1974 - 1977



DENNIS L. CARTER
Supervisory Park Naturalist

Birthplace: Fort Dodge, Iowa
Date: August 16, 1934

National Park Service Record:

Jewel Cave National Monument, S.D. Seasonal Ranger-Naturalist - GS-4	Summer 1958
Zion National Park, Utah Seasonal Ranger-Naturalist - GS-4	Summer 1962
Zion National Park, Utah Park Naturalist - GS-7	1963-1964
Arches National Monument, Utah Park Naturalist - GS-7	1964-1967
Craters of the Moon, Idaho Supervisory Park Naturalist - GS-9	1967- 1970



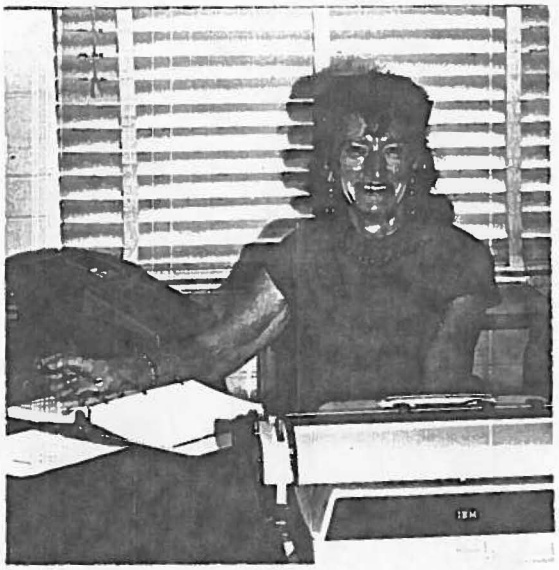
FEES

Robert J. Ferris
Supervisory Park Ranger

Birthplace: New York City, New York
Date: July 6, 1916

National Park Service Record:

Platt National Park	1958-1962
Park Ranger GS - 5 Park Ranger GS - 7	
Arches National Monument	1962-1967
Supervisory Park Ranger GS - 7	
Craters of the Moon	1967-1970
Supervisory Park Ranger GS - 9	
Craters of the Moon Chief, I. & R. M., GS-9	1970-1978



Agnes Barre Smith
Administrative Assistant

Birthplace: Orange, Texas
Date: March 14, 1912

National Park Service Record:

Mount Rainier National Park	1956-1960
Time-Leave-Payroll Clerk Typist - GS-4	
Time-Leave-Payroll Clerk - GS-5	1960-1961
Yosemite National Park	
Time-Leave-Payroll Supervisor - GS-5	1961-1962
Time-Leave-Payroll Supervisor - GS-6	1962-1964
Western Regional Office, San Francisco, Calif.	1964-1969
Accounting Technician - GS-6	
Craters of the Moon	
Administrative Clerk - GS-5	1969-1970



William T. Cunningham
Foreman 1, Laborer

Birthplace: Globe Arizona
Date : March 13, 1939

National Park Service Record:

Grand Canyon National Park	
Laborer W/B	1962-1963
Foreman 1, Laborer W/S	1964-1965
Lehman Caves National Monument	1965-1968
Maintenance Man W/B	
Craters of the Moon	1968-1970
Foreman 1, Laborer W/S	



Jean C. Jensen
Receptionist

Birthplace: St. Anthony, Idaho
Date: October 26, 1946

Natural History Association Record:

Craters of the Moon
Receptionist 1966-1969



1970



Seasonal Naturalists, 1969 Season

Left to Right:

Karl A. Urban, Kimberly, Idaho
Birthdate: June 6, 1943

Seasonal Naturalist GS-4	1966
Mistletoe Research Project	1967
Seasonal Naturalist GS-5	1968-1969

Lynne A. Johnson, Leadore, Idaho
Birthdate: July 28, 1946 — 1967-1969

Seasonal Naturalist GS-4

Aaron Gallup, Wilton, California
Birthdate: May 19, 1945 — 1968-1969

Seasonal Naturalist GS-4



Merilyn Tibbitts

Merilyn Tibbitts, Arco, Idaho
Birthdate: April 28, 1951
Student Assistant GS-3
1970



Elaine Johnson

Elaine Johnson, Rexberg, Idaho
Birthdate: January 27, 1950
Seasonal Naturalist GS-4
1970



M'rka Beyer, Middlebury, Vermont

M'ryka Beyer, Middlebury, Vermont
Birthdate: October 9, 1950
Seasonal Naturalist GS-4
1970



Left to Right:

Dennis L. Carter, Naturalist

Elaine Johnson, Seasonal

M'ryka Beyer, Seasonal

Karl Urban, Seasonal

Park Naturalist & Seasonals
1970

Left to Right:

M'ryka Beyer, Seasonal

Merilyn Tibbitts, Seasonal

Elaine Johnson, Seasonal



1970 Seasonals



Bob Randall

Bob Randall, Springfield, Missouri
Birthdate: December 24, 1947
Seasonal Ranger GS-4
1970



Andy Anderson

Maurice (Andy) Anderson, Blackfoot, Idaho
Birthdate: October 28, 1942
Seasonal Ranger GS-4
1970



Buck Rose

Buck Rose, Chico, California
Birthdate: August 19, 1944
Seasonal Ranger GS-4
1970



Ronald Tunnell



Steven Linderer



James Snowden



Alan Jensen

Seansonal Rangers, 1969 Season

Ronald Tunnell, Fort Collins, Colorado
Birthdate: May 11, 1947
Seasonal Ranger GS-4 1969

Steven Linderer, Clinton, Oklahoma
Birthdate: October 21, 1946
Seasonal Ranger GS-4 1969

James Snowden, Chico, Calofornia
Birthdate: April 30, 1939
Seasonal Ranger GS-4 1969

Alan Jensen, Moore, Idaho
Birthdate: March 18, 1945
Seasonal Laborer 1963 & 1967
Seasonal Ranger GS-4 1968
Seasonal Ranger GS-5 1969



Left to Right:

Dennis L. Carter, Park Naturalist

Lynne A. Johnson, Seasonal

Karl A. Urban, Seasonal

Aaron A. Gallup, Seasonal

Park Naturalist & Seasonals
1968 & 1969



Left to Right:

Jean C. Jensen, Seasonal

Aaron A. Gallup, Seasonal

Lynne A. Johnson, Seasonal

Karl A. Urban, Seasonal

1968 & 1969 Seasonals



CHARLES KENDRICK GADD
Management Assistant

Birthplace: Detroit, Michigan
Date: November 1, 1944

National Park Service Record:

Yosemite National Park Student Trainee (ADM) GS-3	6/15/64 - 9/17/64
Western Region Student Trainee (ADM) GS-4	6/14/65 - 9/15/65
Yosemite National Park Student Trainee (ADM) GS-5	6/20/66 - 9/8/66
Fort Vancouver N.H.S. Administrative Officer GS-5	6/23/67 - 3/10/68
Fort Vancouver N.H.S. Administrative Officer GS-7	3/10/68 - 6/27/70
Craters of the Moon N.M. Management Assistant GS-9	6/28/70 -



Preston (LaMar) Shakespeare
Maintenance Foreman

Birthplace: Tropic, Utah
Date: April 28, 1936

National Park Service Record:

Bryce Canyon National Park, Utah Laborer - Roads & Trails	1951 - 1955
Grand Canyon National Park & Monument Tree Climber	Spring 57 - 6-59
Bryce Canyon National Park, Utah Laborer	5/60 - 9/60
Bryce Canyon National Park, Utah Laborer	4/61 - 9/61
Bryce Canyon National Park, Utah Laborer	4/63 - 8/66

National Park Service Record Continued:

Western Tree Crew Foreman	8/66 - 1/69
Arches National Monument, Utah Maintenance Worker	1/69 - 11/70
Craters of the Moon National Monument Maintenance Foreman	11/70 - 3/75



KATHLEEN JOHNSON
Information-Receptionist

Birthplace: Idaho Falls, Idaho
Date: March 26, 1952

Craters of the Moon National Monument
Information-Receptionist

5/17/71 - 9 - 72

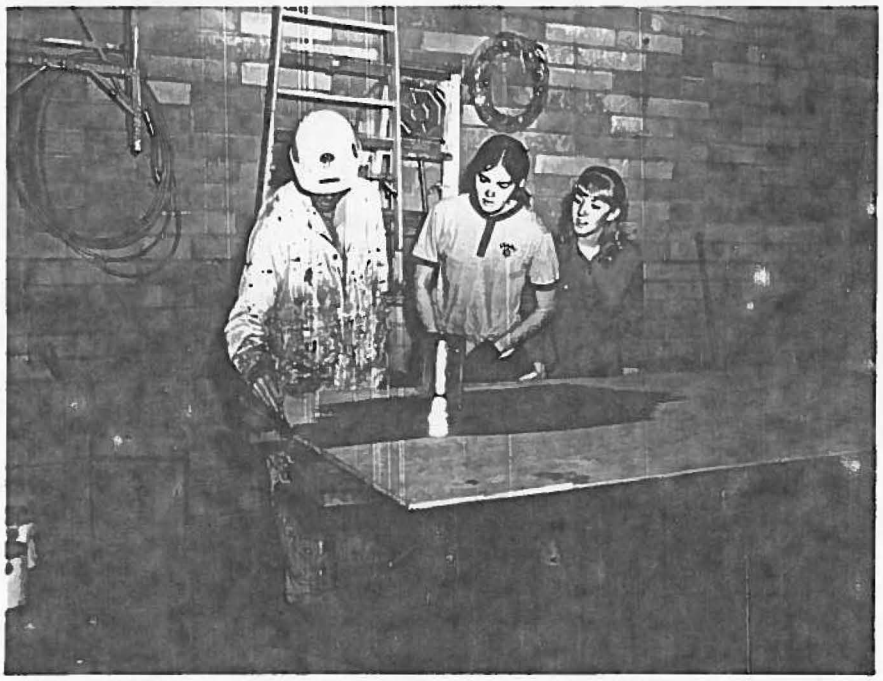


BEVERLY FARMER
Clerk-Typist

Birthplace: Arco, Idaho
Date: October 26, 1927

Craters of the Moon National Monument
Clerk-Typist

3/18/68



Left to right:

Paul Kirkland
Maintenance

Elaine Johnson
Naturalist

Merilyn Tibbitts
Naturalist

1971 Seasonals



MARCIA BARNES
Typist

Birthplace: Moscow, Idaho
Date: January 29, 1951

Craters of the Moon National Monument
Typist

5/11/71 -

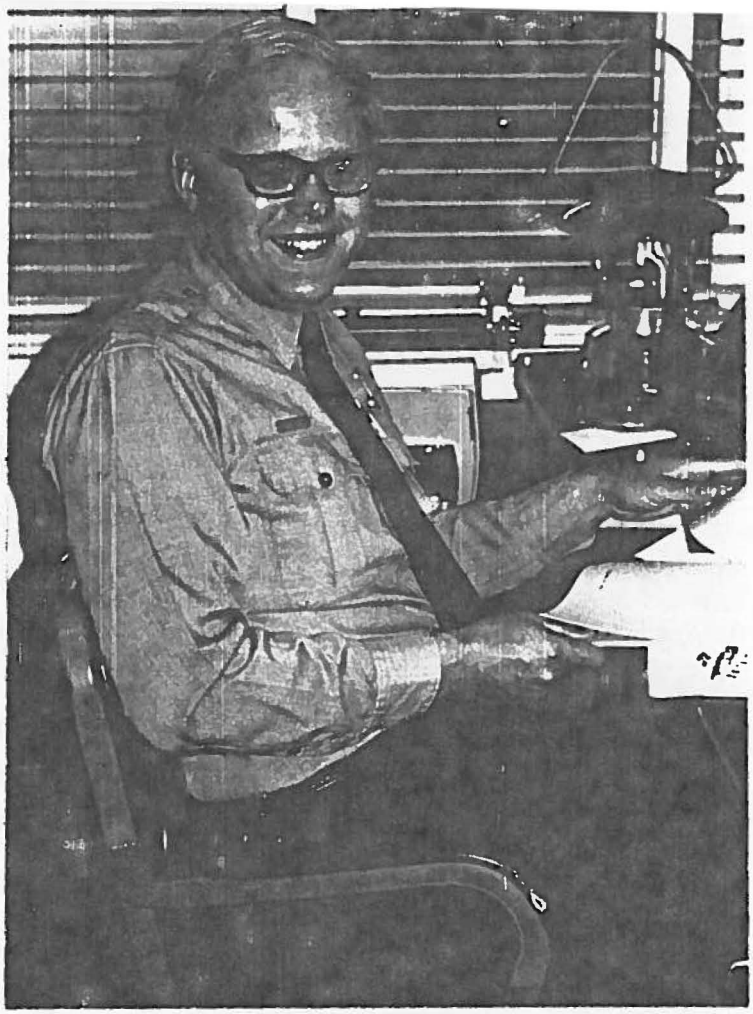


G. ARTHUR STEPHENS
Park Ranger

Birthplace: Omaha, Nebraska
Date: July 10, 1930

National Park Service Record:

Rocky Mountain National Park	
Road Crew	Summer 1956
Ranger-Naturalist	Summer 1959
Arches National Monument	
Park Ranger	Summer 1960
Black Canyon of the Gunnison N. M.	
Park Ranger	Summer 1961
Canyonlands National Park	
Park Ranger	Summer 1965
Craters of the Moon N. M.	
Park Ranger	Summer 1971



David M. Schmute
Park Interpreter

Birthplace: Hot Springs, South Dakota
Date: August 9, 1937

Wind Cave National Park Seasonal Park Naturalist	1960, 1962-1965
Lehman Caves National Monument	1965-1966
Coulee Dam National Recreation Area	June 1966 - January 1971
Craters of the Moon NM	January 1971 - 7[illegible]

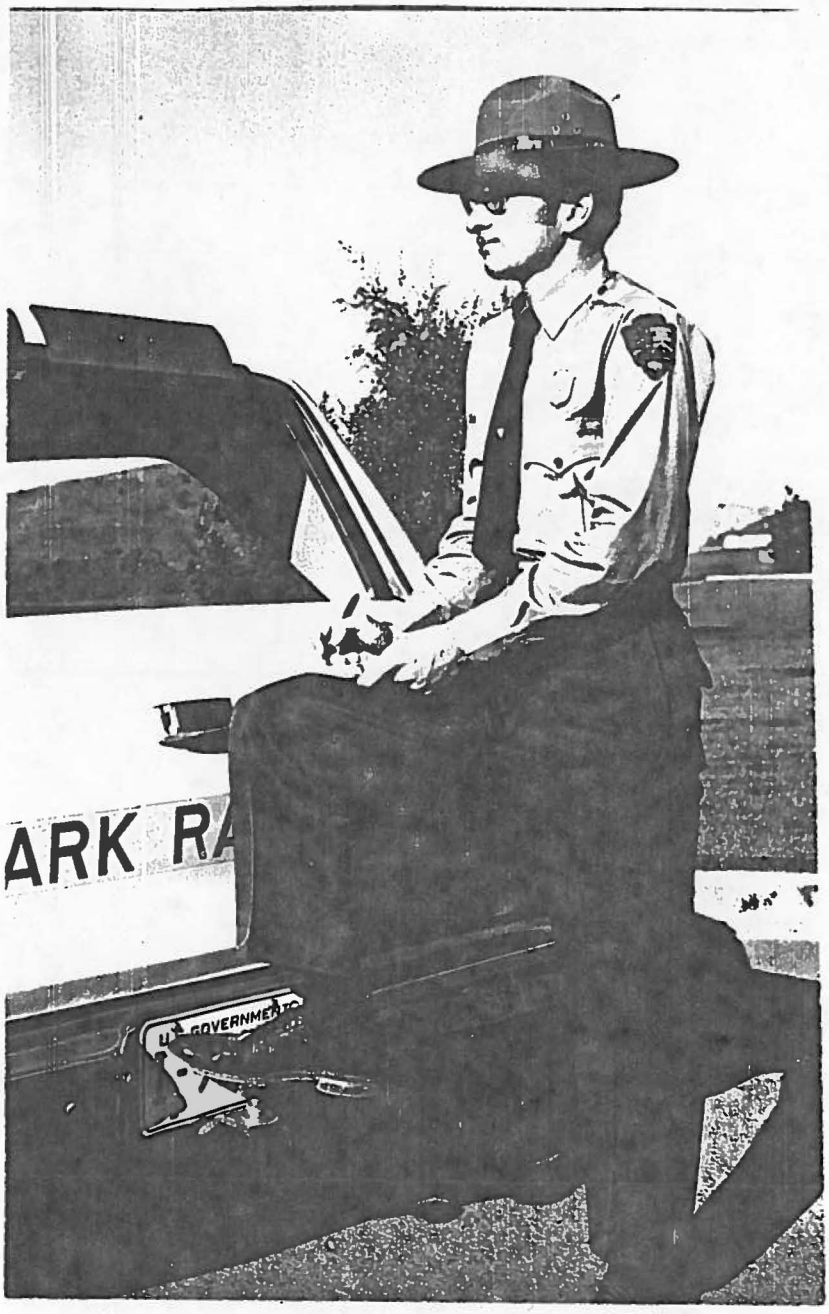


CLIFF CHETWIN
Park Ranger

Liverpool, New York
Birthdate: February 28, 1950

Craters of the Moon National Monument
Park Ranger

6/2/71

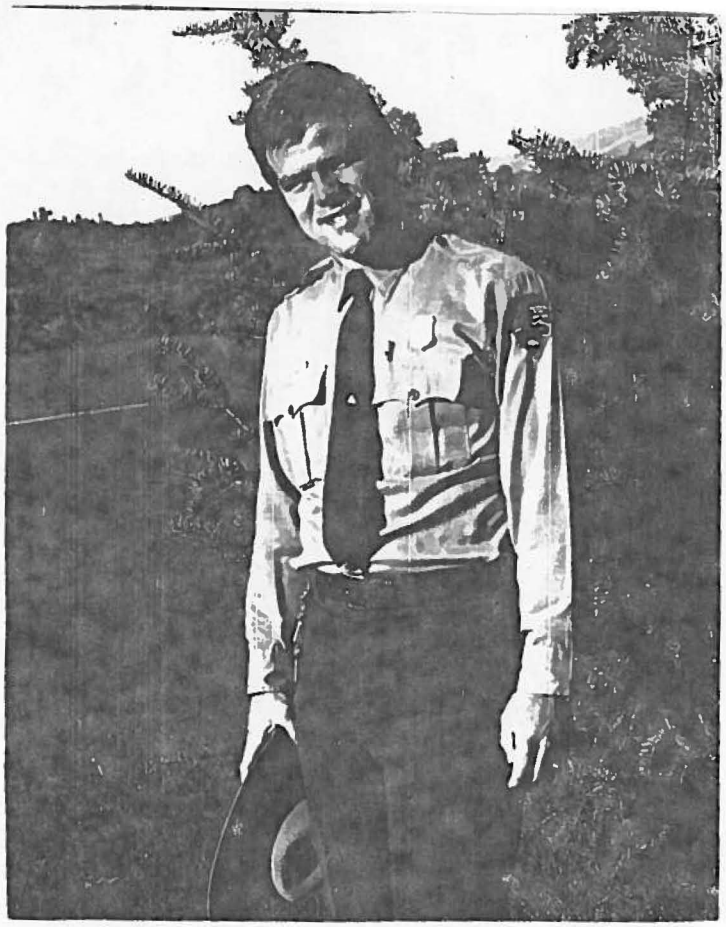


BRUCE GREENSPAN
Park Ranger

Birthplace: Marshall, Minnesota
Date: July 9, 1948

Craters of the Moon National Monument
Park Ranger

5/15/71



Robert A. Wilcox
Park Ranger

Oxon Hill, Maryland
Birthdate: August 12, 1948

National Park Service Record:

Craters of the Moon National Monument	6/71 - 9/71
	6-72 - 9-72
	4-73 - 1-74



Dr. Fred M. Bullard
Volcanologist
University of Texas

Study and dating of lava flows 1969-71



1971 NATURALIST STAFF

Dalvei Schnute Elaine Johnson Karl Urban Merilyn Tibbits

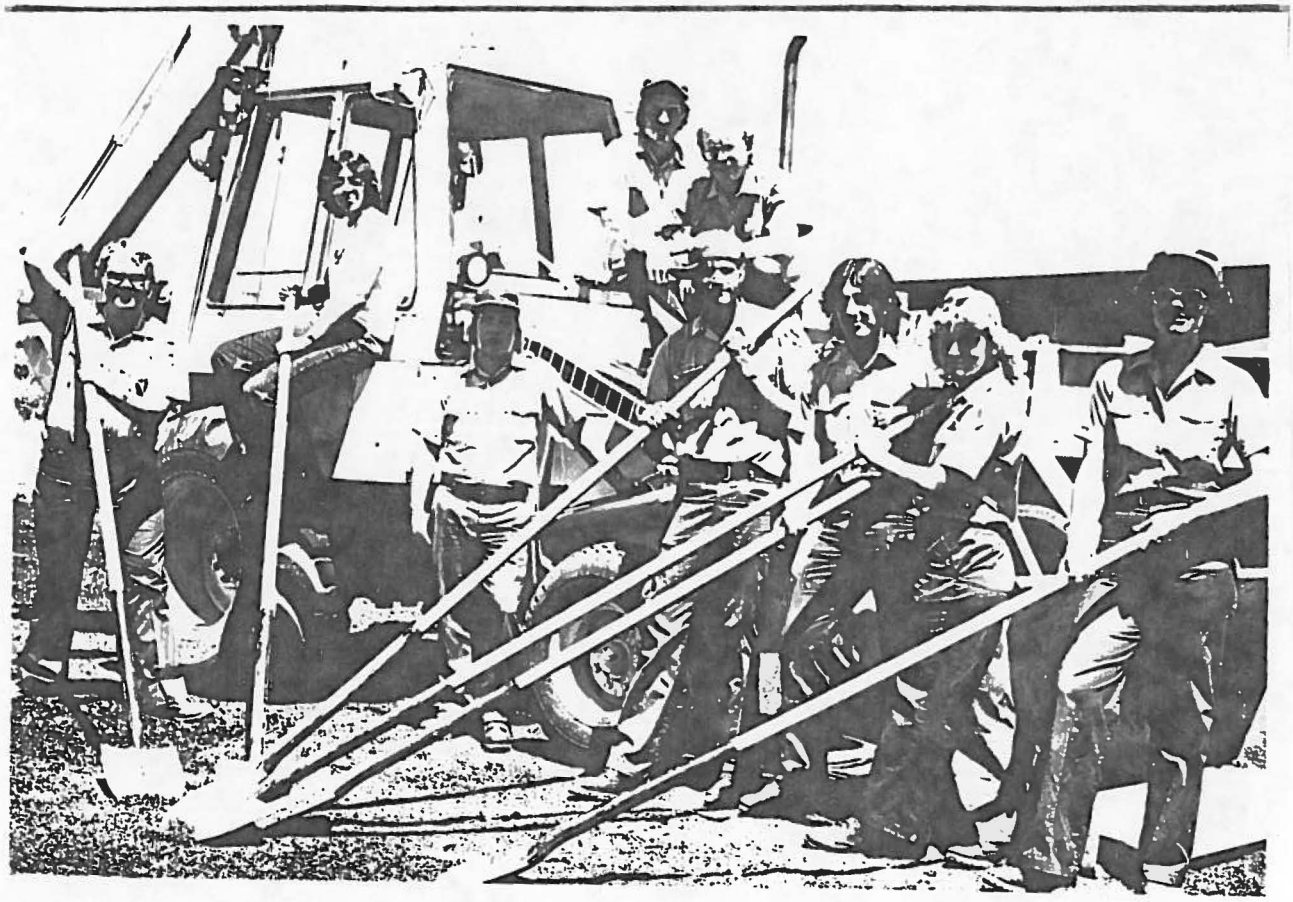


David R. Clark
Park Interpreter

Birthplace: Cleveland, Ohio
Date: February 11, 1948

National Park Service Record:

Fire Control Aid - Prescott Nat'l Forest (USFS) - 1966-1968
Park Ranger - Glacier National Park - 1970-1971
United States Navy - 1971-1975
Supervisory Park Ranger - Cedar Breaks Nat'l Monument - 1975-1978
Park Interpreter - Craters of the Moon Nat'l Monument - 1978-



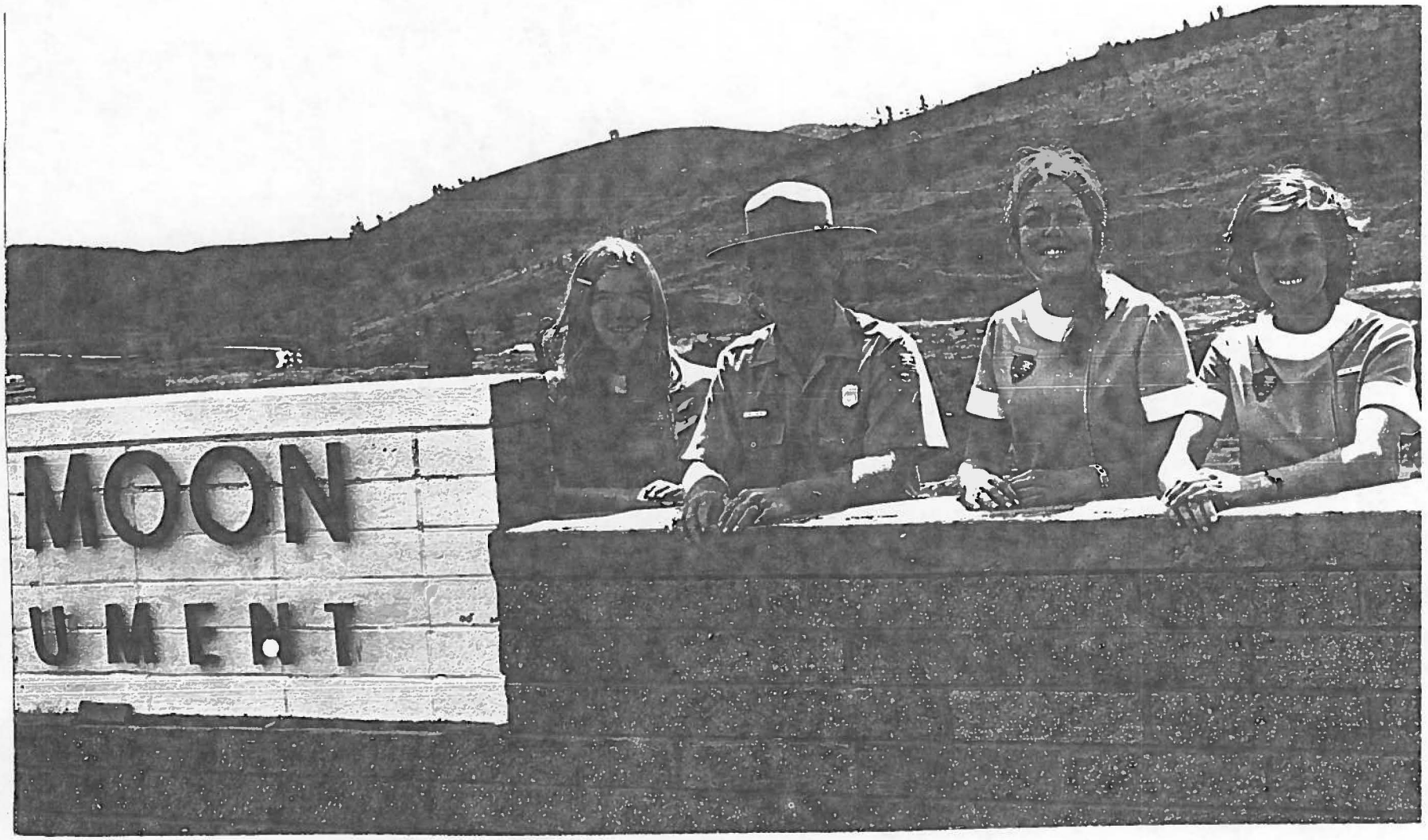
Maintenance Crew - Summer 1980

Left to right:

1. Wade Gerber
2. Diana Barr (CETA Position)
3. Don Durbin (Permanent Maint. Worker)
4. James (Butch) Harrison (Maintenance Foreman)
5. Pete Roth
6. Glenn Merrill
7. Steve Adams
8. Susan Hewitt
9. Debby Beck

SEASONAL NATURALIST- 1972

Elaine Womack Alan Stanford Rita Herzel Pat Wilcox





Seasonal Interpreters - Summer, 1980

Left to right:

1. David Targan
2. Paul Henderson
3. Elizabeth Andrews
4. David Clark (Park Interpreter)
5. Mark Herberger