

LAVA CAVES OF
CRATERS OF THE MOON NATIONAL MONUMENT
ARCO, IDAHO

Crystal Pit Spatter Cone Cave

The main purpose of this visit on June 7 was to photograph the unique mineralization occurring in the cave. The reader may remember the description of the cave from the August 1961 Spelunking issue. This account describes well the extensive occurrences of mirabilite (Na_2SO_4) and gypsum and gypsum coated lava stalactites and the considerable amounts of jarosite from the cave. The 1961 exploration was the first for about 30 years, and this year's exploration was the next most recent one. I was accompanied by the Monument Chief Naturalist, Mr. Frank Hamby, who had an eager desire to learn more of the monument.

I would here like to say I give full support to Mr. Hamby's idea of placing a gate at the entrance of the cone to prevent unauthorized entry by persons not appreciative of the outstanding uniqueness of the marvelous mineralization in this cave. The 85 foot entrance drop will not deter many of the rockhounds vandalizing the caves of the west for specimens for sale in rock shops, if the contents of the cave should be made known through hearsay or publication. No one has fallen yet, but a gate at the surface would prevent the danger of persons climbing on the spatter cones from falling into the pit. The effort to gate the pit would be no more than that used in placing the gate at the entrance of the Arco Tunnel Lava Tube to protect its scientific importance.

Arco Tunnel Lava Tube

On June 8 little else was done in the 4 hours spent here other than observing the beautiful ice formations and photographing the bulbous lava stalactites in the east central section of the cave. It was here that a white deposit was observed on the cave wall and is similar in its spine and globule formation to organic coral. This is not a decomposed lava as was thought by earlier explorers of the cave. And the hardness of the material is greater than the other decomposed basalts in the area. The lava tube white coating is probably opal. Swartzlow in 1937 described coralloidal opal occurring in lava tubes in Lava Beds National Monument, California, in the Jan-Feb. issue of the Journal of Geology on pages 101 to 108. Opal has not yet been recorded from Craters of the Moon and this observation may well be the first. The Arco tunnel opal is similar

to that described by Swartzlow in that it occurs on the cave walls in small spicules and rounded masses looking greatly like limestone cave coral. The opal covers large patches of the cave walls and ceiling. Many of these lava masses have dropped to the floor indicating at least some of the opal deposition occurred in the past. Many of the small sodastraw diameter lava stalactites are covered and tipped with the opal and may be currently precipitating opal from capillary waters. All of the wall and ceiling occurrences of the opal are moist if not completely saturated with water.

Absolute identification has not yet been made of the material to see if it is opal. Chemical testing must be made of a specimen, and I plan to visit the type locality of lava tube opal at Lava Beds for visual comparison of the opal there.

Indian Tunnel Lava Tube

This is one of the largest in the Monument and is heavily visited by tourists. A trail leads through it for its length of 826 feet, and due to the 5 breakdown skylights no light is necessary for exploration. It is approximately 23 feet high and 50 feet wide. Breakdown is prevalent throughout the cave. The hardened lava flow is visible on the cave floor and several side tunnels go from the main one at heights from the tube floor. South of the 3rd breakdown entrance is a deposit of mirabilite or thenardite on the east cave wall. The mineral identification depends upon the amount of water of hydration loss from the substance.

Great Cxi. Cavern Lava Tube

The cave is probably not 480 feet long as said by the entrance sign, but certainly the 40 feet high and 50 feet wide, one of the largest diameter lava tubes existing. A peculiar pressure ridge exists in the center of the cave floor and follows the passage for most of its length. A fair amount of ice existed in the cave end when visited on June 10. The cave ends near a spatter cone on the surface lava flow.

Undescribed Spatter Cone Interiors

Snow Cone, SE $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec 2, T 1 N., R 24 E.

This one was described by Stearns in an unpublished manuscript on the Monument as the ice cave. It is the first of a series of 11 spatter cones and is the lowest in cone height. The depth is still the described 35 feet, but this is from cone rim to ultimate bottom. To the top of the talus pile which has undoubtedly resulted from heavy tourism, the depth is closer to 20 feet. The small cave extending to the north is not the 20 feet in length as Stearns says

but only about 8 feet. His long red stalactites and short red stalagmites are no longer in existence. On June 10 the snow pile was about 10 feet deep. No snow was present this time last year. The accompanying section map shows this cone. Mirabilite is at the North heading of the cave.

In the mostly destroyed spatter cone or lava dome to the west thenardite occurs as a white powder in the red cinders.

#1 Spatter Cone, SW₁⁴, SW₂⁴, SE₁⁴, Sec. 2, T 1 N., R 24 E.

This cone is directly east of the snow cone. Stearns describes this one in his unpublished manuscript as "very symmetrical form and a sharp rim surrounded an irregular funnel-shaped crater about 30 feet in diameter and 50 to 60 feet deep. About 10 feet below the rim it is constricted to a narrow opening a few feet in diameter." Russell in 1902 in U.S. Geol. Survey, Bulletin 199, describes his descent into the hole and tells of its expansion giving the pit an hour glass section. At the bottom were supposedly two 15 foot wide openings to lava tubes.

The map shows the current condition of the pit which varies much from its earlier description. One of the tubes is no longer than 10 feet and is in the south wall above the floor. The other is at the lowest section of the pit going east down a breakdown slope. The floor of this lowest section had about one foot of ice on it and some frost on the ceiling. No stalactites of note are present. No constriction of the cone is present and it has no hour glass section. Observations at the bottom tend to indicate that breakdown has not altered the cave since 1902 and that description was erroneous.

The other cones in the chain are all collapsed in their throats, until crystal pit is reached, the seventh in the series. 500 feet to the south of crystal pit is the west facing inner shell of a collapsed cone to the south of two 30 foot diameter sinks. Some small caves here contain heavy wall crusts of gypsum. There are no large individual crystals, however.

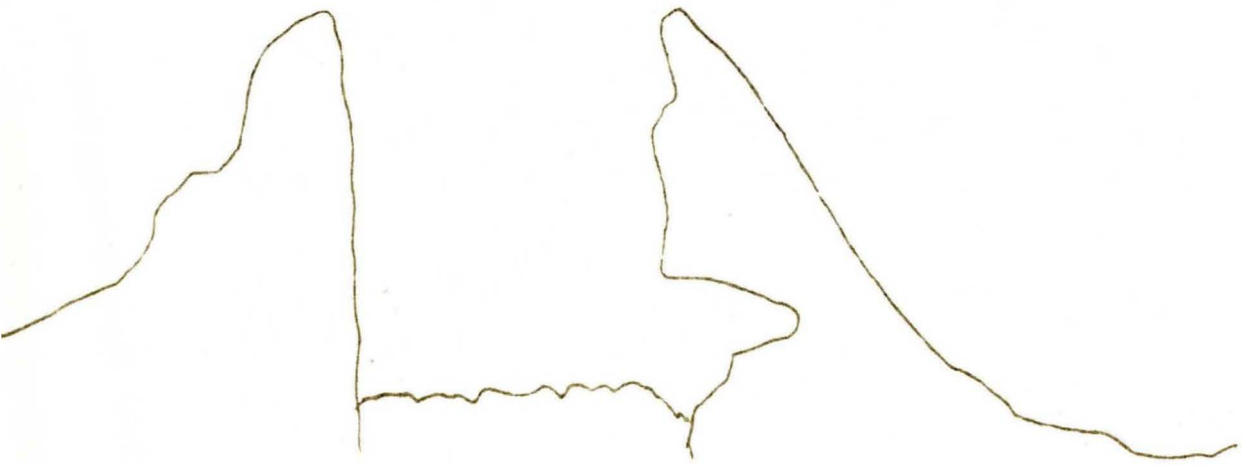
#2 Spatter Cone, SW₂⁴, NW₂⁴, NW₁⁴, Sec. 12, T 1 N., R 24 E.

550 feet to the south of Crystal Pit on the south side of a low mound is a very low spatter cone whose rim rises above the lava a little more than four feet. The cone throat has a diameter to five feet and is uniform to the bottom 20 feet lower. To the SE runs a small four feet high and 13 feet long. At the base of the cone throat and extending to the surface, gypsum coats the walls up to one inch thick but with no well formed large crystals. Much of this gypsum has moss growing on it. See section map.

There are other spatter cones in the Monument worthy of exploration. The most promising area is Vermillion Chasma, in the south end of the Monument and reached after a 4 hour hike. This region is reported to have many cones with craters of about 5 feet and depths from 30 to 70 feet. At the base of one of these cone throats could lie another Crystal Pit complete with similar resplendent mineralization.

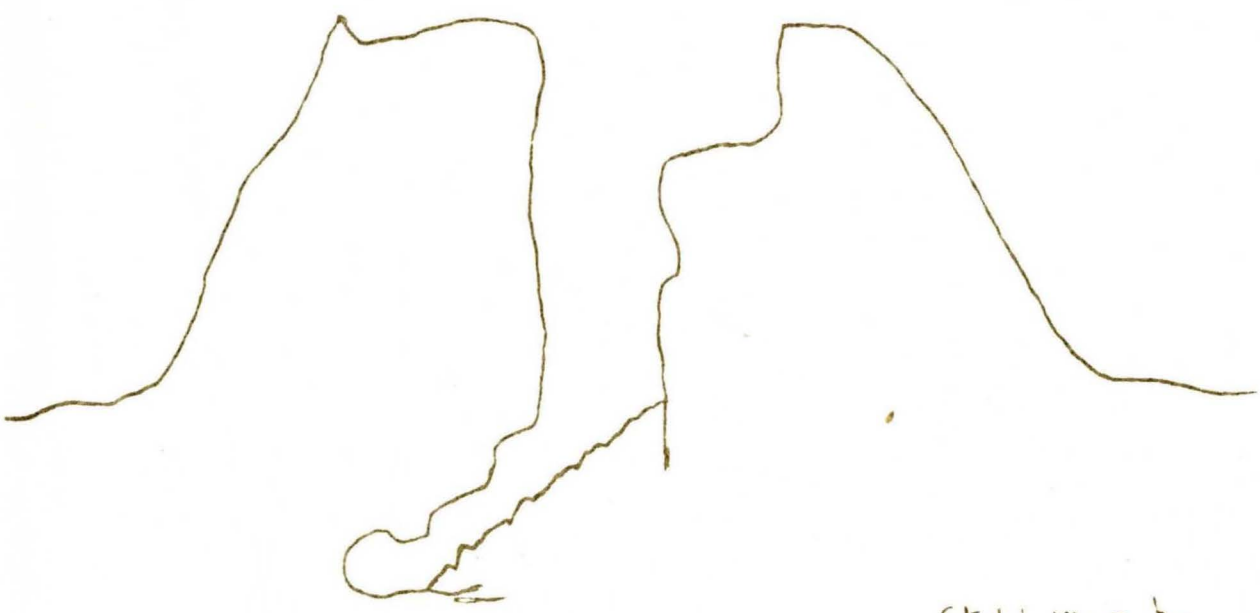
About 10 miles NW of Aberdeen, Idaho, is another site with enterable spatter cones at an area called Pillar Butte. This area, too, should be explored. Some of the shallow caves are vandalized, but complete exploration of this extension of the Craters of the Moon rift zone may be rewarding.

#1 Catter Cone SEC. SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 2, T1W
R2+E



N ————— S
section

————— 20 feet —————
Scale

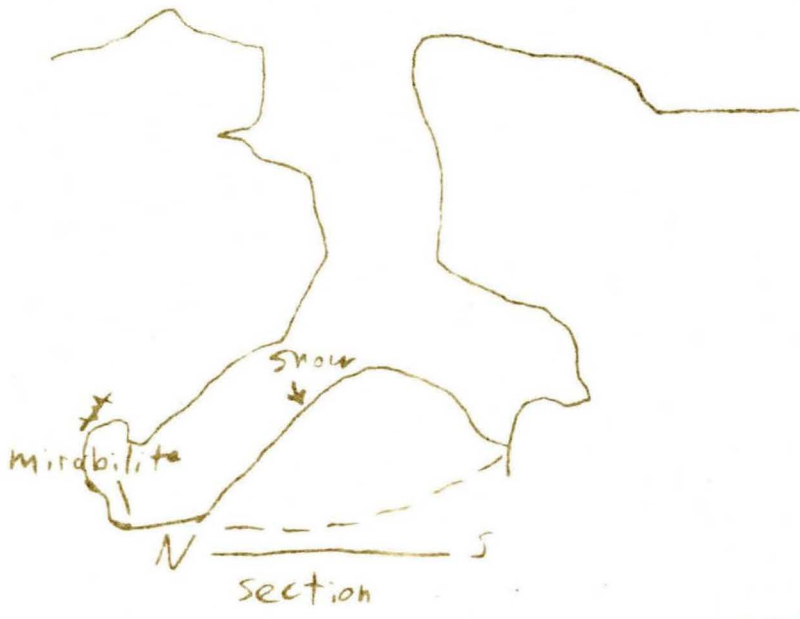


E ————— W
section

Sketch map by
S. Peck, June 1962

Snow Cone SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ (sec 2 T14N R24E

Idaho

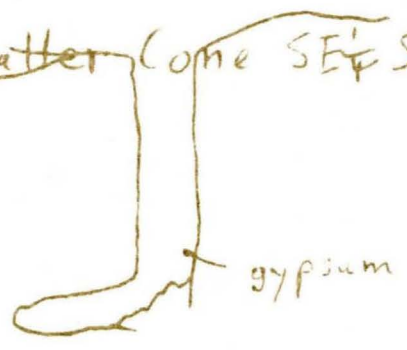


20 feet
scale

2

~~Spatter~~ Cone SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 2 T14N R24E

Idaho



SE ——— NW
section

sketch map by
S. Peck June 1962