

The Cascade Caver

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ssh! actually a pseudonym for

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GROTTO CHAIRMAN STITT DISCOVERS LUNAR LAVA TRENCH 7 1/16 MILES LONG
in the September 14 BOEING NEWS

Crater's Flow Patterns Support Meteor Theory

Flow patterns characteristic of hardened fluid material have been located on the floor of the moon's Tycho Crater by the peeping cameras of Lunar Orbiter 5. They support the scientific theory that the big crater was formed when a huge meteor crashed into the visible side of the moon.

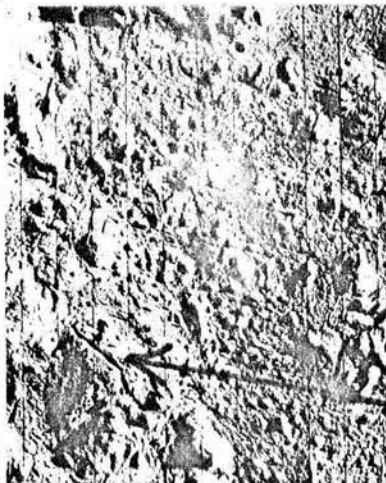
Scientists believe much of the fluid material, ejected when the three-miles-deep crater was formed, may have resulted from the intense heat generated by the meteor's impact. They also suggest that the dark halo has resulted from the manner in which pulverized ejected material was deposited.

• Volcanic Material?

Some scientists believe the lake-like areas with flat surfaces in the dark halo may be volcanic material brought up from beneath the moon's surface along fractures induced by the impact. They say these volcanic substances may have flooded into scattered low areas outside the crater.

All these features resemble the pseudo-volcanic rocks found in large craters in central and northern Quebec, which scientists believe were formed by meteors striking the Earth. The Canadian craters were explored after they were recognized only a few years ago by scientists examining aerial photographs of the area.

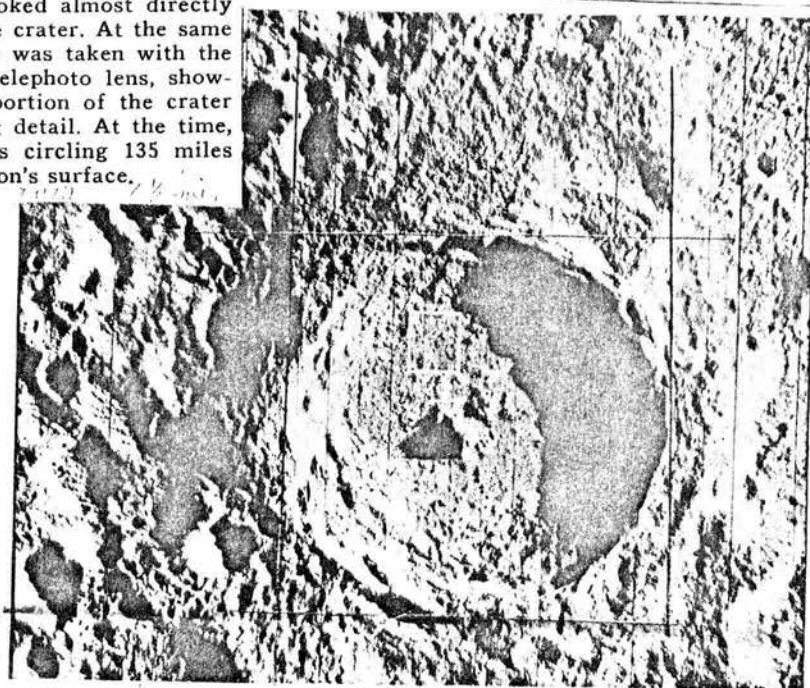
Considered the moon's most



spectacular surface feature by many observers, Tycho is 56 miles in diameter. Rays extending more than 1,000 miles from the crater show the distances to which fluid material and particles were hurled when the big meteor hit the moon.

Orbiter 5 peeked into the crater Aug. 15, and the camera's wide-angle lens looked almost directly down into the crater. At the same time, a photo was taken with the spacecraft's telephoto lens, showing a small portion of the crater floor in great detail. At the time, Orbiter 5 was circling 135 miles above the moon's surface.

UNCOLLAPSED



Above is Lunar Orbiter 5's wide-angle-lens photo of Tycho Crater on moon. Below is telephoto-lens picture of crater's floor.

REMEMBER

Next meeting is Monday,
October 16th, 8 P.M.
Dr. Halliday's home
1117 - 36th Avenue East
Seattle

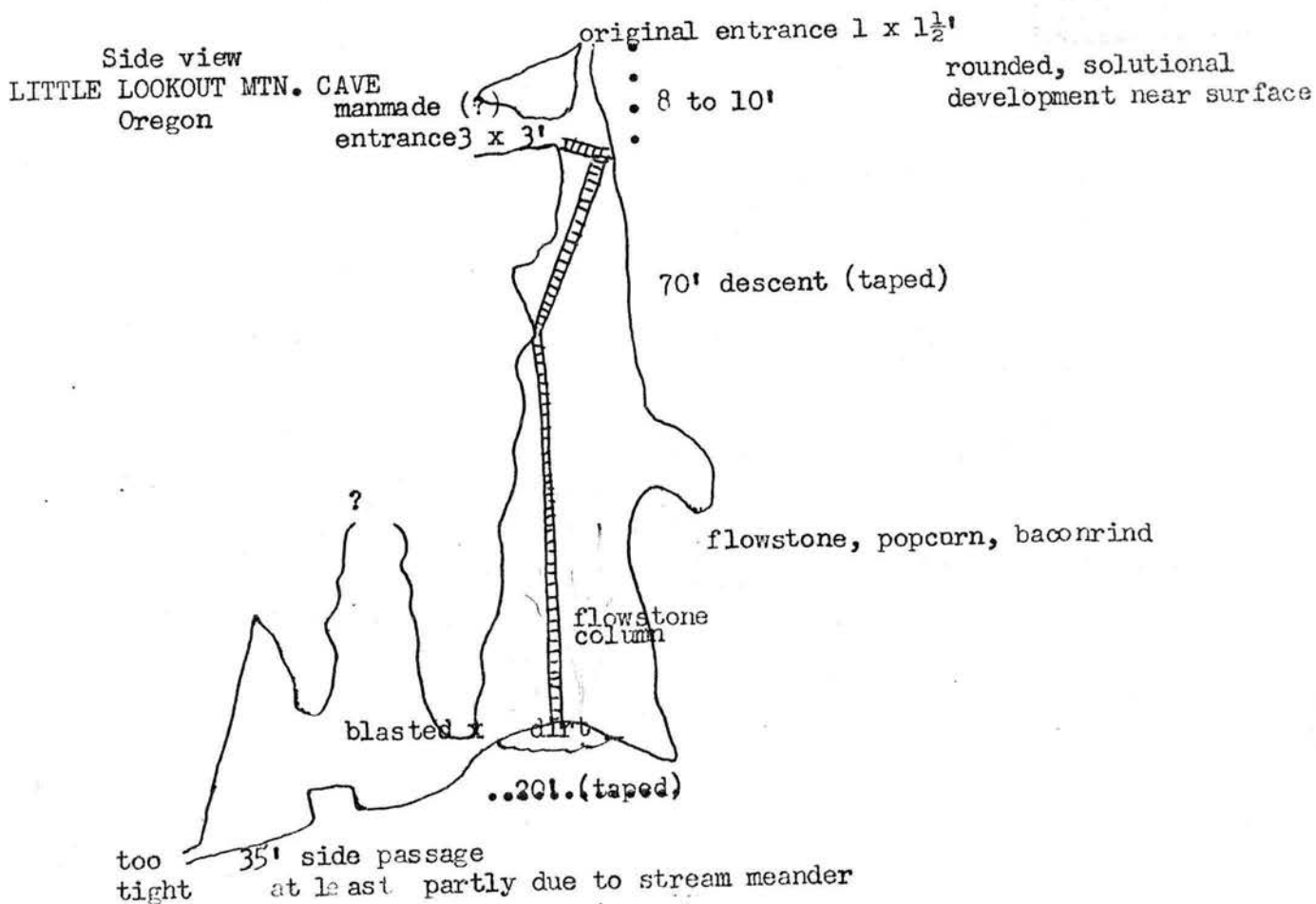
Little Lookout Mountain Cave. Ore.
 (A letter from Steve Knutson, Oregon Grotto)

In August, 1965 I finally made connections with our "guide" at Durkee, Oregon who wanted to take us to Little Lookout Mountain Cave. Thus Don Housley and I left Portland Saturday morning and arrived at Durkee late the same afternoon. Next morning Lemuel Smelcer, our guide, took us up the mountain and pointed out the cave; we hiked about 1/2 mile to the general vicinity and found the entrance, but description of the location is very difficult.

The cave is mostly vertical and is in limestone. Solutional origin is certain and flowstone formations cover nearly all the walls. The cave was claimed in 1961 by two couples and a third man who named it "Crystal Cave" and built ladders to gain access to the bottom of the shaft. Apparently they had ideas about commercialization and must have hoped the side passage they could see into but not get into would open up into big cave. Certainly the entrance shaft is impressive. The final blow to their dreams must have come when the opening was enlarged enough and the passage found to be short. At any rate they left for the last time two years ago and never returned (according to our guide who was very old and had not been down the cave).

The side passage tends toward the stream gully a few hundred feet below the entrance. I found a snake at the bottom of the shaft, and lots of bugs. The entrance itself is near the top of a small ridge. The cave walls and formations were live near the bottom of the shaft and in the side passage. Color was white to dirty brown and generally a very pretty light brown. The ladders were made from 2 x 4s and were quite stout. (FAMOUS LAST WORDS! USE A BELAY !!! - WRH)

On the way home we went up the Burnt River Canyon west of Durkee and saw many interesting limestone outcrops; some possible entrances (or spots of moss).



BODY HEAT AND WEATHER

By Dorothy Martin Mason

Potomac Appalachian Trail Club

Late in the fall of 1966 a boat capsized in one of the Great Lakes, and all hands aboard but one were lost. The country was shocked, but no one was surprised. It is an accepted fact that a person cannot survive in water of 38 to 48 degrees longer than 4 hours.

However, we are continually being shocked and surprised by deaths from exposure on comparatively low mountains in above freezing weather. Scientific explanation for such deaths appeared in the June 1960 issue of *Appalachia* in an article by Marlin B. Kreider entitled "Death From Cold."

Mr. Kreider, a physiologist working with the Army, has studied the effect of various environmental stresses on the human body. His article is "must" reading for those who take the Leadership Training Course with the Appalachian Mountain Club. Its contents should be known by all who hike frequently in all kinds of weather. A condensation of the article follows.

The author in summarizing his research on death from cold says, "The ability of man to live in the cold depends on his ability to decrease the rate of heat loss from his body. . . . When heat is lost faster than it can be produced, body temperature must drop. This may occur at temperatures considerably above freezing and will depend largely on the amount of insulation and wind involved."

By body temperature the author means the "core" temperature, which is normally about 99 degrees. It must be kept in mind that the temperature of the hands and feet may be 70 degrees while the body's temperature remains at 99 degrees. If the extremities get much colder, however, the core temperature will drop.

The body can tolerate only a slight drop in core temperature without noticeable physiological and functional deterioration, the author emphasizes. Below a temperature of 86 degrees the person loses psychological contact with the world around him and does not act rationally. Below 80 degrees many body functions cease, and death is imminent.

Core heat must be preserved. To preserve it one must know how it is lost. Losses come from—

1. Transference of heat from exposed skin to objects such as walls, rocks, or

even the sky. Much less heat is radiated from parts of the body covered by blankets or clothing.

2. Direct contact with colder objects such as a stone, glass, or metal objects.

3. The rising of warm air from the skin and the moving in of cooler air. Wind causes more rapid cooling because it moves in faster and more constantly. Strenuous exercise causes more air circulation and greater loss of heat than it generates.

4. Evaporation of sweat or water from the skin or clothing. This evaporation often takes place when the hiker is resting and when he needs heat the most. The author notes that wet clothing also loses its insulating quality. In a preliminary study he found that of 12 deaths from exposure in the wilderness the clothing in every instance had been water soaked.

There they are—the four causes for loss of body heat. Who hasn't experienced one or all of them to some extent?

This, of course, leads to a discussion of how heat can be maintained. It boils down to proper clothing and moderate exercise.

For instance, at 60 degrees with no wind a person can survive in shorts by shivering or performing light chores such as carrying wood. If he sits still, however, he needs to wear the equivalent of a suit and a light coat. At 40 degrees with no wind he can survive in shorts with violent shivering but only for a short time because violent shivering causes fatigue. He can survive in shorts if he walks at a medium pace. However, if he is inactive, he should wear heavy wool clothing and the equivalent of an overcoat.

At 40 degrees with a five-mile-an-hour wind the picture is completely different. A person cannot survive in shorts even with violent exercise. (Remember, it creates circulation of cold air over the body.) He must have on heavy woolen clothing and an overcoat if walking at a medium pace. If resting, he needs heavy woolen clothing, an overcoat, and a blanket.

Heat loss is increased three- or four-fold by wind.

The conclusions are quite evident. Be prepared for temperature changes at all times of the year except possibly during the summer in the Southern Appalachians. Carry a sweater, a windbreaker, and slacks to cover the legs if you hike in shorts. Don't forget extra socks in case feet get wet and gloves for the hands. Make your own study of how much clothing you need to keep body temperature constant under all conditions you may encounter.

Pick your shelter carefully, remembering how body heat is lost through contact with cold objects and from wind and simple air circulation. Keep dry.

A body in which core heat has dropped to as low as 82 degrees can be rewarmed, but rewarmed does not mean very successful. Thus we must conclude with the adage "an ounce of prevention is worth a pound of cure."

And the Cascades are less forgiving than the Appalachians - J.R.H.

Over 300 pages. Cloth. was \$5. While they last only.....\$3.68

The Caveman Within Us. By Wm. J. Fielding. In the eighteen chapters of this comprehensive book, touching upon every phase of personality, will be found the most complete and helpful presentation of this important subject now available. It is a virtual encyclopedia of information about the human organism. A careful perusal of this profoundly interesting work will be a revelation to the reader, and cannot fail to bring far-reaching results and astounding benefits in improved mental and physical health and increased efficiency. This book is an invaluable guide to Self-Understanding, opening the doors to Self-Mastery and Self-Expression. Why not let it be the means of liberating and utilizing latent powers? Cloth. While they last only.....\$3.15

(from an old publisher's ad headed:
Only a Few Sex Books Left

HELP STAMP OUT the Bureau of Reclamation!

Other newsletters please copy slogan cribbed from THE WRETCHED MESS NEWS (West Yellowstone, Mont.) Vol. 4 #3 page 1 - and the Seattle Times Mag. Sec. Jan. 29, 1967, p. 10!

La Jolla Marine Geology Laboratory
U. S. Geological Survey
La Jolla, California 92037

September 6, 1967

To : William R. Halliday

From: George W. Moore

I studied the cimolite sample from Lookout Cave, Washington, and found it and the red flowstone and tan coating from Hellhole Cave, Washington, to be the same mineral. Although the material has such fine crystals as to seem nearly amorphous, all the specimens show rounded x-ray diffraction peaks at d spacings of about 11.0, 3.30, and 2.30. The refractive index is 1.51. This mineral may well be the same as type cimolite, but no modern studies have been done on the type material. Without the previous identification, I probably would have called it endellite. I may study the samples further, but for the present the name you have been using is equally good.

The pebble coating from Red Cave, Washington, is goethite.

After grinding the specimen of basalt from Dynamited Cave, Washington, I could not separate the black coating from minerals with similar properties from within the specimen. The black coating is probably a manganese mineral, but I have no new laboratory information to verify the opinion. The tan coating, despite its apparent hardness when dry, is a mixture of clay minerals.

Dear George,

We checked back with the Division of Mines and Geology which pointed out that the cimolite specimen is amorphous and your endellite specimen microcrystalline, so either we have two different minerals occurring in the same patch of red flowstone or the enlargement of the entrances of Lookout Cave and the resultant dessication of the short entrance passage has led to a mineralogical change. Why don't you come study it in situ?

I have mounted the pseudoscorpion which you sent from Pillar of Fire Cave, and have compared it with the description of Microcreagris columbiana Chamberlin. Your animal is similar and I tentatively conclude that it is a specimen of M. columbiana. However, I may be wrong, since this specimen is a female and the only other specimen known is the holotype, a male. The differences between the two may, therefore, be intraspecific (as I think now), or may turn out to be of specific value, when more specimens become known.

W.B. Muchmore
Associate Professor of Biology

THE UNIVERSITY OF ROCHESTER

FROM OUT OF THE PAST

...5 years past, to be precise, comes a batch of material from our first editor, Tom Hatchett. Unprinted maps, trip reports, a couple of articles (one still usable) and a huge pile of misc. Here's a sample:

(data on possible cave entrance on north side of Glacier Peak)

6 mile marker on Milk Creek trail just beyond; $1\frac{1}{2}$ -2 miles S of east fork.

On left hand side of trail going south (up Glacier Peak); 15 feet off (above) trail. Cold blast of air on left side of face!

Joint in rock, jagged entrance, about 6 feet in diameter.

* * *

Many thanks, Tom. You can come home now!

We'll run the rest as space permits.

Vulcanospeleological abstract - by Bill Halliday

Mercer, D.C. 1966. Icelandic caves. The Speleologist (Great Britain), 2(9):11, Oct-Nov.

"We were surprised at how common such lava-tunnels were in Iceland, and at how little attention has been paid to them. We heard reports of them from all over Iceland and as far as we could ascertain most of them had never been fully explored, surveyed or investigated in any detail."

The author and his party went to Iceland for climbing and hot springing, if that is the proper term for a British potholer out of his pothole, but "we found ourselves irrevocably drawn to all sorts of attractive-looking holes in the ground". Actually they visited two on the flank of the Lambahraun shield-volcano which sound unusual:

"The sides of the volcano sloped gently up to the central crater and consisted of a chaotic mass of ropy lava cones and solidified flows. These cones gave the appearance of blisters which had burst upwards under the pressure of contained gasses (rather like hot steam under a thin skin of porridge), and it was these blisters which frequently contained caves. Many of these small basalt domes were ruptured at the top or at the sides presumably when the lava cooled and contracted, and entrance could be gained through these rifts into frequently large bellshaped chambers, sometimes with circular-sectioned tunnels leading off. The domed roofs of these chambers were often covered with masses of small, irregular, straw-like lava stalactites."

Not at all profound, this article is important in recording "quite long lava tunnels (in)...the south, near Hveragerdi" and on the slopes of Mt. Hekla and the region of Mount Myvatn in addition to the well-known Surtshellir and Stefamshellir.

Vulcanospeleological non-abstracts

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- Cucuzza Silvestri S. (1957) 1958. Preliminary report on the mapping of the volcanic regions of the Bronte-Adrano Sone near Mt. Etna. (In Italian). *Boll. del Serv. Geol. d'Italia*, P. 24, plate 7.
- Tazieff, H. 1958. The caves and sinks of the lava of Mt. Etna. *Speleo-club de Paris*, V. 6, p.6. (In French).
- Balatka, B. 1958. Pseudokarstic features in the volcanic mountains of Societ Armenia. *Ceskoslovensky Kras*, II: 212-213, Prague. (In Czech).
- Antonow, B.A. 1958. Caves in quaternary lava of Terter, Adzerbaijan. (In Russian). *Priroda*, 12:113, Moscow.
- Loucek, D. 1958. Nanarita Lava Cave, El Salvador. (In Czech). (Reprint of Grebe, 1956). *Ceskoslovensky Kras*, Praha, II:220.

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