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Vol. 12 #2



# The Cascade Cover

Official Publication of the  
CASCADE GROTTOS N. S. S.



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Volume 12, no. 8

Editor: Dr. William R. Halliday

August 1973

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## COMING EVENTS

- July 21-22. Dock Butte. Call Charley Anderson, 938-2074.
- July 21-22. Dead Horse Cave. Call Curt Black, 568 -2168 or -5936.
- July 28-29. Mt. Adams conditioning climb. Call Halliday, 324-7474.
- July 28-29. Mt. Baker steam caves. Call Black or Kiver, (509) 235-6448.
- July 28 or 29. Washington Monument. Call Roberts, PR8-8503.
- August 4-5. Mt. Rainier conditioning trip and/or Paradise Ice Caves.  
Call Anderson.
- August 11-19. Summit Steam Caves. Call Kiver or Anderson.
- August 15. Last day for reservations for Garibaldi trip reservations. Hmmm?
- August 20. Regular grotto meeting, Hallidays, 8 PM, 1117 36th Avenue East,  
at East Madison. Doors open at 7:55.
- August 24-26. Paradise Ice Caves. Call Anderson.
- September 1-3. Northwest Regional Meeting, Lovell, Wyoming.
- September 1-9. First Garibaldi session. Call Anderson.
- September 4-9. Canadian Rockies. Call Brown, RO3-9094.
- September 8-16. Second Garibaldi session. Call Anderson.
- September 17. Regular grotto meeting, same specifics as above.
- September 22. Big Four Ice Caves. Call Anderson.
- September 29. Paradise Ice Caves. Call Anderson.
- October 6. Paradise Ice Caves. Call Anderson.

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## MISCELLANY

Who has the keys to the locked Cave Ridge caves?

At the July meeting, Charley Anderson announced that the Paradise Ice Caves system map now includes more than 31,000 feet.

Bad recent vandalism in Ape Cave; the grotto voted to ask the USFS to stop self-guided tours there to control this. And to remove the map which encourages visiting the upper cave. 1

U91.12#8

Cascade Grotto membership list - 16 April 1973

(please send corrections promptly)

Anderson, Charles. P.O. Box 12659, Seattle, Wash. 98111. 938-2074  
Margo.

Black, Curt. 3530 Greenwood Ave., Tacoma, Wash. 98466. 564-0988  
(Summer 1973: 1705 Terrace Drive, Snohomish. 568-2168. 568-5936 )  
Brown, Robert. 7920 8th Ave. SW, Seattle, Wash. 98106. RO3-9094

Campbell, Newell. 6605 N. Apple View. Yakima, Wash.

Cebell, Wayne. Rt. 7, Box 686, Olympia, Wash. 98506.

Charleston, Jack. 19748 SE 34th, Issaquah, Wash. 98027. EX2-5918  
-6888

Coughlin, Charles. 1826 8th St. Manhattan Beach, Cal. 90266.  
Mary.

Frahm, Jerry. 12732 27th Ave. NE, Seattle, Wash.

Halliday, Wm. 1117 36th Avenue East, Seattle, Wash. 98112. EA4-7474  
Len.  
Marcia.  
Patricia  
Ross

Hronek, Clarence. 2002 St. John St., Port Moody, B.C.  
Hyde, Jack. 2906 N. 19th, Tacoma, Wash. 98406. SK2-6494.

Kiver, Eugene. Geology Dept., EWSC, Cheney, Wash. 99004.

Long, Ron. 453 McMahan Hall, Univ. of Wash. Seattle, Wash. 98195.

MacLeod, Barbara. Dept. of Archaeology, Belmopan, British Honduras.

Miller, Chris. P.O. Box 80143, Georgetown Sta., Seattle. 98108. RO2-7585.  
Nelson, Les. 9425 27th N.E., Seattle, 98115.  
Nieuwenhuis, Luurt. P.O. Box 73, College Place, Wash. 99324.

Pugh, Stanley. 2521 N. Proctor, Tacoma, Wash. 98406. SK9-6211.

Roberts, Jan. 5706 236th SW, Mountlake Terrace, Wash. 98043. PR88503.

Rockwell, Julius. 2944 Emory St., Anchorage, Alaska.

Sherk, Truman. Zoology Dept., U of W, Seattle. 98145. LA4-2136  
543-8889.

Tubbs, Don. 4034 12th NE, Seattle, Wash. 98105. ME2-7048.

Vining, Mark. 15713 SE 26th, Bellevue, Wash. 98008. SH6-3723.

Walters, Doug. 10402 Montrose Ave. SW, Tacoma, Wash. 98499. JU44699.  
Zarwell, Wm. 1040 N. 47th, Milwaukee, Wis. 53208.

## MOUNTAINEERING FIRST AID -- a book review

Dick Mitchell, caver and climber extraordinary of Seattle and Huntsville, has prepared an excellent mountaineers' first aid text, a 92-page paperback published by The Mountaineers of Seattle last November as a supplement to study of standard first aid books.

As in all books of this type, it is possible to nitpick. To this physician-reviewer, Dick seems a little overconcerned about the use of elastic roller bandages, and setting of old, recurrent shoulder dislocations. The one real problem I see, however, is underconcern with windchill and waterchill, considered in special detail in my forthcoming book (due to be available in early autumn). His considerations of psychological care of accident victims, of direction of helicopter landings and of drug abuse are particularly good and virtually all of the book can be recommended without hesitation. His method of construction of a rope stretcher, for example, looks like it may be better than commoner ones, currently recommended widely.

The first edition of the book has four blank pages. This will allow expanded future editions an opportunity to explain some of the complex diagrams, and to add important data on the effects of wet clothing. Most Northwest cavers will want a copy of this book NOW, however, since so many caving first aid problems are at least partially paralleled in the situations competently discussed by Dick in this excellent new work.

-W.R.H.

\* \* \* \*

Jack Anderson blows it again - p upfish, this time

As many readers of this fearless publication undoubtedly noted on April 27, controversial columnist Jack Anderson made a few more disbelievers with his column that day. (If you haven't read about these beautiful, friendly little inhabitants of Nevada's Devil's Hole in recent issues of the NSS News, read up on them in my books, especially page 275 of *Depths of the Earth*.) While slashing away in his usual manner at "millionaire GOP contributors", Anderson somehow managed to give the Nixon administration credit for protecting the pupfish from the machinations of such a GOP millionaire - whether he intended to do so or not.

For reasons best known to himself, however, Anderson struck a serious blow at the cause of conservation of these unique fish - describing them tragically as "200 ugly, inedible pupfish"!

And it probably reflects what Americans have come to expect of journalism that nobody seems to have expressed any surprise, much less concern.

-W.R.H.

\* \* \* \*

### Conservation notes

No recent word on HR 15606, which would establish a Cathedral Caverns National Monument in Alabama, or H.R. 7606, which would establish a El Malpais-Grants National Monument in New Mexico (the latter is the site of the Bandera and other lava tubes). HOW COME, ROB?

The Netherworld of Seattle - kind of an ad (free)

Bill Speidel's  
UNDERGROUND TOUR

What the tour is like:

It starts inside the Blue Banjo Night Club, 610 First Avenue, with a short introduction giving you background on Seattle's colorful past. A guide then takes you in a group of about 30 on a leisurely walking tour of about 5 blocks in the Pioneer Square area. The tour goes both above and below ground, and is accompanied by interesting and amusing true anecdotes about the buildings, areas you see and the people who occupied them years ago. The tour ends at the Underground Museum, approximately half a block from the Blue Banjo where your tour started. Two hours are required. And \$1 admission.

When tours are given:

Tours are available year round. Groups of 30 or more may schedule tours Monday through Saturday, preferably at 2:00, 5:00 or 7:00 PM. Individuals or groups of less than 30 will be scheduled with a larger group. Call the ticket office to find out when tours are scheduled. First, make a reservation by calling the ticket office, MU 2-4646 (24-hour information number - MU2-1511). Admission tickets will be mailed to you upon receipt of your check or money order, provided the day and time of your tour appears on the face of your check. Or pick up your tickets from the ticket office - 2nd floor, 108 S. Jackson St., 9-5, Monday through Saturday.

For groups of 30 or more, payment must be received at least two weeks in advance of the tour to confirm space. Last minute reservations may be made up to the tour date as space allows.

Cameras are permitted, and flashlights encouraged (not carbide lamps!)

(The above cribbed from handout sheets dated August 1972. What about a grotto dinner and field trip?)

\* \* \* \* \*

**BEWARE!!!**

If enacted, H.R. 6255 would amend the Upper Colorado Storage Project Act in order to remove the prohibition against constructing dams or reservoirs authorized in such Act within national parks or monuments to be stricken is this phrase: "It is the intention of Congress that no dam or reservoir constructed under the authorization of this Act shall be within any national park or monument." Besides reopening the old battle against Echo Park Dam in Dinosaur National Monument won by conservationists 20 years ago, this would abrogate the agreement to protect Rainbow Bridge from sapping of the natural cements in its abutments by fluctuation of a reservoir beneath it. Read the Sierra Club's "The Place No one Knew" - but remember 4 of us in the Salt Lake Grotto were the only ones who fought to save Glen Canyon and Rainbow Bridge. Will we be alone again?

## Recent and not-so-recent field trips

At the May meeting, Mark Vining and Charley Anderson reported a recent joint scouting trip with Clarence Hronek and Gerrit van der Laan, with some new finds about a mile and a half from Chipmunk Caves, B.C. Our glorious secretary's illegible notes mention something 130 feet deep and a large limestone valley with many sinks, not necessarily in the same area.

Also reported with a mention of new regulations on studies in the Paradise Ice Caves was a recent trip by Charley Anderson and Mark Vining - nothing special, other than poor visibility, which hardly seems unusual in May. It seems an altitude conditioning trip to Camp Muir on May 13, however, was blessed with magnificent weather,

This trip may have been recorded a coupla years ago, but yr editor can't find it: on a 930-mile combined auto and float trip in eastern Washington, Zarwell, Brown and the Coughlins checked out quite a bit of territory. They noted a new stairway and guard rail and two gates in Gardner Cave (the second gate at the lower end of the flowstone area!) but "the same cruddy lights". About a mile from the cave, they noted a good-sized resurgence, but it was coming from gravel. Perhaps more importantly, they observed but did not have time to investigate three holes in beautiful white limestone cliffs above the town of Northport. They were told that a girl had recently been scared by a bear in one of these - supposedly she was so scared, thinking that it was a sasquatch, that she broke her leg. No information on how scared the bear was.

They also recommended periodic checks on the small thicket of speleothems in Dry Falls Cave.

(This was about the time the Coughlins were ranging far and wide, out of Seattle, with Tuffy stuffed in a pack where necessary underground. At the same meeting, they mentioned doing Horsethief, Bighorn and Natural Trap on the Wyoming-Montana Border. At Lewis and Clark Cave State Park coming home, they met parties from the Missoula group and from the Nittany Grotto.

A note that has been in the files for some time suggests two places in Oregon that should be checked out by somebody with time for cave-hunting: Eagle Creek in the Wallowa Mountains, and Echols Creek in Hells Canyon. According to an unnamed informant, there are holes in limestone in both areas, mostly unchecked. One cave in the latter area said to be 150 feet long, and a small cave also at the confluence of Eagle Creek and Paddy Creek.

On March 25, 1973, Truman Sherk led a Paradise Ice Caves trip, navigating by compass in a whiteout. Some of the entrances open a month earlier had drifted shut, but the liverwort passage appeared slightly more open - a "hot spot"? The cornice cave was no longer in existence.

April Fool's Day saw a surprisingly successful Big Four trip, with all three main caves visited. The west cave superficially showed little change when studied in comparison with its appearance a month earlier but some minor changes were noted. The cave was generally drier and more snow was packed in the waterfall entrance. A stream was flowing down the main passage. The pillars were almost gone except in a small, low, dry passage found a month earlier. Moulins were dripping.

Two leads west of the west cave were checked but petered out.

The middle cave's entrance had seen massive collapse during the previous month; entry was over a huge flake pile. It, too, seemed dry. Pillars showed some deterioration since the previous visit. One large flake was noted. The cliff entrance was sealed by an avalanche.

The east cave - well, the party reported nobody was sure they ever got into it. They crawled and crawled and crawled in a low, dry passage with occasional icicles. Finally they gave up before reaching the cliff face.

\* \* \* \*

Charley Anderson reports that there will probably be a \$5 fee for jeep transportation of food and gear on the July Diamond Head trip; it's 8 miles to the glaciers (and presumably glacier caves) from the chalet. This is a different area from those previously scouted in Garibaldi Park.

\* \* \* \*

Note from Basil Hritsco, pioneer Montana caver, now living in northern California. It seems that the USFS has found some intriguing pits in the Marble Mountain Wilderness Area there. No word from the California party that was going to look into the Situation. He also enclosed an article from the Ashland (Oregon) Daily Tidings of Feb. 3, 1973, reporting on progress on the proposal for a Red Buttes Wilderness Area on the Rogue River and Klamath National Forests. Jim Nieland was mentioned prominently. Wm. Ashworth of Ashland, Ore. is heading a "Save Red Buttes Committee". "The area contains some of the most extensive karst topography - the kind of marble where caves are found - in the Pacific Northwest." It added that Jim was writing an article for the NSS News hoping for an endorsement from the NSS Board, which certainly ought to be forthcoming. Unfortunately it appears that the USFS has not recommended the area for preservation as wilderness, so it will really be an uphill fight.

\* \* \* \*

Anybody going to central Idaho? Dr. W.A. Turska has sent a couple of nice sketch maps showing the location of several caves E, NE and SE of Shoshone Ice Caves.

\* \* \* \*

Phone #- Ron Pflum - (509) 422-4620.

## OBITUARY

Charles Lyon, an extremely competent caver and climber, was killed late in April while on a geology field trip in the Grand Canyon. I don't have all the facts but he probably died of exposure after floating 25 miles when his boat overturned. He made a lot of trips to Montana with me, and at least one up to the Dock Butte karst.  
-- Newell Campbell

\* \* \*

## CAVES OF MONTANA due soon

Ralph King of the Montana Department of Mines promised me that a first draft of Caves of Montana would be in my hands by June - but don't hold your breath.  
-- Newell Campbell

\* \* \*

## French studying Mayan caves in Guatemala

The December 1972 issue of Speleologia Emiliana reports on the successes of a French expedition to Guatemala which is said to have discovered and explored 160 caves. An earlier expedition in 1968 is said to have discovered the first known Mayan wall paintings. A followup expedition is planned for 1974. Considerable Mayan artifacts were found and removed by helicopter to the national museum. Cave rooms were as large as 600 feet by 270 feet. The group was greatly concerned about the occurrence of Histoplasma in the caves, and believed that it was evident in "the first underground Mayan cemetery" - their discovery of 18 skulls and skeletons - guarded by a ceramic idol. The team was in Guatemala 12 months.

\* \* \* \*

## Recent cave book prices from a Spokane dealer

Casteret. Ten years under the earth. (Dent edition) \$18.00  
Cadoux. One thousand meters down. \$7.00.  
Coon. Seven caves. \$9.00.  
Douglas. Caves of Mystery. \$7.50.  
Jackson. Wyandotte Cave. \$7.00.  
Lovelock. Life and death underground. \$8.00.  
Mohn and Sloane. Celebrated American Caverns. \$8.75.  
Sterling. Story of caves. 5.00.  
Tazieff. Caves of adventure. 7.00.  
Jim White's story of Carlsbad Caverns. 6.00 (1941 edition)  
Knox. Underground, or life below the surface. \$55.00.

Are people really paying these prices?

\* \* \* \*

The first annual Bulletin of the International Glaciospeleological Survey is available for \$2.00 from Charley Anderson, PO Box 12659, Seattle, 98111. Well worth it. 40 pages, beautifully illustrated, heavy paper covers.  
A-6

Recent correspondence of the Mt. St. Helens  
Caves Conservation Task Force

from Rob Stitt, NSS Conservation Chairman April 8, 1973:

Glad to get your letter of 1 April. I was beginning to wonder what was happening on the Mt. St. Helens issue. I see that the time has come for action.

Apparently you are right that the Board has never taken any specific action in favor of a Mt. St. Helens National Monument - at least I can find no reference to such in the minutes. However, it has given tacit approval to the concept by approval of the Mt. St. Helens task force, the major purpose of which is a national monument. But there is no specific resolution.

I would suggest: (1) an article for the NSS News on the proposal, the formation of the Protective Association and the speleological features of the area...

(2) drafting a resolution to be submitted to the Board... Please get this to me as soon as possible..

Please note that I have in my Conservation Committee budget \$25 each for each Conservation Task Force, to be used for expenses that you can't raise money for locally. It is probable that if you make a nationwide plea for support via the News that you can raise some money.

Also, a short "Conservation Alert" slide show, similar to the one Bill Deane did for the Guads (glad to know somebody is doing SOMETHING to mobilize support for the Guadalupe - ed.), could be prepared on the caves and used to gain nationwide support, as well as locally in the Northwest.

Please send membership information of the Mt. St. Helens Protective Association.  
/s/ Rob

\* \* \* \*

Followup note on the above: at this point the task force obviously needs a secretary-treasurer, and /or someone with time to start cranking out material on the area in liaison with the MSHPA, Sierra Club, Mountaineers and others. And slides.

\* \* \* \*

Recent correspondence of the Alaskan Caves Conservation Task Force:

None. Caves apparently all snowed in. Some reports coming from George Sevrá on Adak, however. And a confusing note in followup of Clarence Hronek's recent note on Cave of Bears: I just bought a copy of Kroll's Map of Alaska and Western Canada (unfortunately of uncertain date) which seems to show that the headwaters of the Porcupine River and thus the cave are entirely in the Yukon Territory, rather than Alaska as Clarence's maps suggested.

THE GATING OF DYNAMITED CAVE - further correspondence

From Scott Long, Chairman, Oregon Grotto, April 8, 1973:

"Again, the Oregon Grotto doesn't feel a meeting of our grottos in Centralia is necessary. We would be glad to supply ideas and help if you if you wish, but the use permit is yours and we feel that, for the sake of simplicity, your grotto should handle the planning.

"In reply to your suggestion of further alternatives, the topics you mentioned are indeed possibilities. I guess the Oregon Grotto showed its bias in not mentioning the subjects themselves. We are quite unanimous in our point of view: as the major users of the cave we feel a gate bypassable with effort but without damage is the answer for this particular cave.

"Answering specifically: 1. Temporary closure. This is a strong measure, rather new to our way of thinking, and besides, this (would) violate the use permit which states that qualified cavers must be allowed entry. We wish access.

"2. Commercialization - the cave isn't so suited. There isn't a lot to see and without an extensive stair system the drops are too dangerous. The number of paying visitors probably wouldn't financially support the precautions necessary for safeguarding the cave and the visitors.

"3. Electronic surveillance system. While this can work when extensive enough, when guards are close, and when the penalties for intrusion are severe enough, it may be inappropriate for Dynamited Cave. In addition, with this cave the security and complexity of the protection system seems to inspire damage rather than prevent it.

"The Oregon Grotto is of course interested in the protection method and would like to be kept up to date. Also- do you wish to contribute ideas for gates?"

cc: USFS

Sincerely, /s/ Scott Long.

(Editor's note: it seems obvious that there are some very basic misunderstandings here and it seems very regrettable that the Oregon Grotto has rejected our repeated suggestions for a joint meeting to discuss the matter. We hope that the Speleograph will follow the lead of the Caver and publish the text of the use permit and the pertinent intergrotto correspondence so that all concerned will be as well-informed as possible. If more information is available on the deplorable episode in which trespassers over/under the old bypassable gate had to be rescued, we would be happy to publish it here, - W.R.H.)

\* \* \* \* \*

Congratulations to the Little Egypt Student Grotto. Its Fall 1972 Crawlway Courier brings word that Larry Peterson is its new chairman, and contains Part I of an article by him on Caves in Korea. We had lost touch with Larry since his return, and hope to hear more.

FURTHER PROGRESS IN BELIZE - AT A PRICE  
from a letter from Barbara MacLeod

We finally got the jeep working on April 12. The night of the 13th, four cavers from the Sligo Grotto headed by Jim McCloud arrived for a week. We went Saturday to Petroglyph and explored downstream upper levels, took off Monday on a four-day trip down Caves Branch to its disappearance (see photo in May Caver - ed.) and beyond. We mapped about half of the tributary which joins it underground from the southwest, and after later totalling up the footage, concluded that the upstream siphon in Blowout Passage, as it is called, may well be only 1/4 mile from the Blue Hole - if so, it's probably a 1/4-mile-long siphon, given the low relief in that area.

My ambition for the trip was to push beyond the siphon downstream in Caves Branch proper, having seen breakouts beyond it in aerial photos. We went downstream to the first breakout, chopped overland beyond the siphon, and promptly found another breakout which next day's reconnaissance proved to lead all the way through to the final resurgence of the river. Logan and I were covering the same ground overland with machetes when I tripped over something and sprained my ankle. Had to walk a couple of miles on it anyway, which was certainly no help, and very painful.

The others, meanwhile, had discovered a second underground tributary, twice the size of the St. Herman's-Petroglyph-Blowout Passage stream, entering from the other side of the main stream, very exciting. Needless to say, my ankle has been a source of intense frustration and disappointment, happening just then. I twiddle my thumbs while C.J., Barry and Logan go caving, and the new tributary is really going!! Some real finds already and the group returns tomorrow from a 3rd 4-day reconnaissance. I suppose I must conclude that it's a valuable lesson in patience! Unfortunately Caves Branch is a cave which will be unapproachable and in many places unexplorable in the rainy season, or a good portion thereof.

(and more details from C.J. Rushin)

Barb sprained her ankle badly 3 weeks ago while hiking near Caves Branch Cave. She's been on crutches since then and will start therapy next week, although it will be quite a while before she can really get into caves again. Some volunteer cavers and I have continued mapping work there... these caves are fascinating. Come on back again!

\* \* \* \*

Comments on Loltun Cave, Yucatan  
- also from Barb's letter

Loltun was just fantastic, and when next you find yourself in Yucatan, you definitely should see it. Got a good guide at Oxkutzcab. It is a beautiful cave apart from the wealth of artifacts, petroglyphs, etc. Has lots of fine skylight entrances with vines hanging down, and apparently several miles of passage. Lots of other caves in the area, too. Apparently Jack Grant of Portland and another caver made quite a discovery there in the '50s - a large stone head carved on the spot deep in a real labyrinth of hands and knees passages - now in the museum in Merida.

1974 may be International Cave Conservation Year  
(from a letter from Rob Stitt to Roger Smith)

Dr. William R. Halliday has informed me that 1974 will be National Cave Conservation Year in Great Britain, and has suggested that we in the United States should join you in this and thus make 1974 International Cave Conservation Year. In pursu~~it~~ of this idea I intend to make a proposal for this to the NSS Board of ~~G~~overnors in June, and hopefully follow up with a request to the IUS to declare 1974 International Cave Conservation Year, in September.

Bill was a bit brief in his description of what you plan to do - I have some ideas of my own, of course, but would like to obtain more details on your exact plans.

As I presently anticipate our plans for the year, we would not only engage in cleanup projects, etc., but would attempt to raise the conservation consciousness of our individual members, and to work with other caving organizations and conservation groups in the U.S. (as well as the world) to increase overall awareness of cave conservation. I would also anticipate an attempt to raise some money for our ~~S~~ave-the Caves Fund, which in the past has supplied the funds for our purchase of Shelta Cave and other large scale conservation projects. This could be tied in on the international level with the possibility of raising money for international projects, such as the Fingal's Cave project in which Bill is interested.

I am planning a committee to work out more details of this shortly, and would appreciate as much information as I can get about what you are planning. Thanks for your help. /s/ ~~Robert R.~~ Stitt, 12 May 1973

(Rob has circulated a mimeod memo of May 23 on the same subject to the NSS Conservation Committee, Directors, Conservation ~~F~~ask Forces and others.)

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#### Glaciospeleological art or something

The spring 1973 issue of The ~~A~~laska Journal (Vol. 3 #1) has a two-page spread of a painting by Belmore Browne showing at least two large glacier caves opening at sea. Unfortunately I think that the scene is imaginary, but the accompanying article suggests that Bradford Washburn (a close friend of the artist and a noted member of the Explorers Club) might know.

\* \* \* \* \*

#### International spelean vocabulary

In Mayan, the word for cave is "acTUN", much like the German "Achtung" without the final g. Plural is "actunAB".

In much of Mexico, "cueva" means a small cave, "gruta", a big one.

## Glaciospeleological abstract

"..the Arveiron ..issues from the Glacier desBois, through a large arch of snow. An immense cavern, cut by the hand of nature in the middle of an enormous rock of ice is the point from which this river issues, and as it emerges into the light, it is seen to flow with great impetuosity, rolling in its waves vast rocks of ice, and covered on every side with foam. The entrance to the cavern is an arch of snow more than one hundred feet in height, and above this rise pyramids of ice... Some persons have entered the cavern, but it is a rash attempt, as large fragments of ice are constantly falling from the roof. There is a story told of a young man who imprudently fired a pistol in opposition to the guides, for the purpose of observing the effect of the explosion. The concussion detached from the roof of the cavern a large block of ice, the fragments of which arrested the course of the stream. At length the accumulated waters burst through this barrier with a loud noise, sweeping along with it fragments of ice. The party had placed themselves as they thought, in security, upon a small island; but the young man, whose imprudence had occasioned the catastrophe lost his life, and his father had both of his legs broken..."

"The glaciers have their torrents and grottos both arising from the same cause. The heat of the earth is always melting the snow or ice which rests immediately upon it, and the water flowing away, often in such quantities as to inundate whole villages, leaves behind it icy caverns sometimes a hundred feet high and eighty feet wide. The interior of these grottos is exceedingly picturesque. When the torch of the explorer flashes into their recesses, the light is reflected from thousands of glass-like tablets, and given back in all the colours of the rainbow, while the pendant icicles from roof or walls glitter with diamond-like luster in the ray.

"..When a great change in the temperature of the air takes place, the caverns sometimes fall in and render the support at different parts unequal..."

--Anon. n.d. (ca. 1885). Wonderful Things, containing accurate descriptions and beautiful illustrations of the Wonders of all Nations. Vol. 2, London, Houlston and Stoneman, p. 78, 180, 181.

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### Cave moths wanted

Dr. Don R. Davis, Associate Curator of the Department of Entomology, Smithsonian Institution, Washington, D.C., 20560, needs cave moths for study. Larvae are best sent in 70% alcohol, adults pinned in boxes. A xerox copy of instructions will accompany this or a later issue of the Caver.

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### Canadian Rockies cavers

might like to review page 391 of the April 1925 National Geographic Magazine. Fine interior photo of a nice limestone cave at the head of the Castleguard River. P. 393 shows a stream cave supplying "more than half the flow of the Alexandra River" - a real torrent! A-11

## Glaciovolcanospeleological abstract

From the Seattle Times, July 7, 1972:

Climber reports change

Mount Rainier steam tunnels heating up

Tacoma- (AP) Mount Rainier, the sleeping white giant with the too-full tummy, may be feeling stomach pains. And nobody knows what that says about its century-long nap. The cramp isn't inside the dormant volcano itself, but rather in the pudding of snow and ice that sits like a 500-foot-deep custard in the circular dish of Columbia Crest, Rainier's eastern crater. At 14,410 feet, it is the highest point of the volcanic mountain.

Lee Nelson, a Tacoma fire fighter and sometime mountain climber, said he came across evidence of change last Monday. Nelson and his 15-year-old son, Brad, attempted to follow markers Nelson and a Tacoma climber, Lou Whitaker, left when exploring volcanic passageways in 1970. Nelson and Whitaker had made the first extensive exploration of the networks of steam tunnels veined beneath the surface of Columbia Crest in 1954. The 1970 exploration was a followup.

Both in 1954 and 1970, a large "amphitheater" or room-like cavern was encountered. It changed only slightly in the 16 years between explorations. But Monday, when Nelson and his son explored the earlier markers to the area they found that "the ceiling had sagged to within a foot of the floor", Nelson said. "The rocks seemed hotter, Nelson added.

Though he makes no claim to being a geologist, Nelson has climbed enough to have two theories about the changes. One theory is that due to a heavy snowfall and a change in wind patterns, the entrances to the tunnels that led to the amphitheater were plugged, causing temperatures to rise and, in, turn, melting and sagging of the roof. The other possibility he mentioned was that heat was building up inside the core of the volcano.

Mark Meier, a glaciologist with the United States Geological Survey, said increased heat within the mountain core was a possibility. However, he added there are others, including a "cooling off" of the steam tunnel system rather than a warming up.

(Editor's note: the idea that more heat would cause geothermal caves to SHRINK seems remarkably parallel to the long-discredited glaciere theory: "the hotter the summer, the greater the ice" - wholly untrue, of course.)

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### CASCADE GROTTO DUES AND SUBSCRIPTIONS

Subscriptions: \$3.00. Regular dues: \$4.50 - includes subscription to Cascade Caver and Northwest Caving. Additional family members: \$1.

## NOTE ON THE FORMATION OF LAVA TUBES

-- Russell G. Harter

A common conception of lava tube formation is generally stated something like this: the upper surface of a lava flow hardens, and the still-liquid lava below drains out, leaving a lava tube. The tubes are cylindrical, and make a network of capillaries that can permeate the entire flow.

Many lava caves in the northwestern United States are quite complex, but this is readily accounted for by the common notion. It permits one to explain all arrangements of passages. Indeed, this concept enables one to explain any lava structure - whether it is physically possible, or not. In the interest of eventually approaching some truth, we have abandoned the catch-all concept.

When lava flows across the surface of the ground, it tends to move in well defined channels. One of the first big steps in explaining the formation of lava tubes is the recognition that there are several types of lava channels, and lava tubes are roofed lava channels. As such, they are built in definite ways. Lava tubes do not happen suddenly or miraculously, and are not impossibly complex.

When lava erupts, it flows out of a large crack in the ground. The crack (rift) often trends downhill from the point of the eruption, so the lava may follow it. A current develops in the rift, making it a lava channel. The top surface of the lava chills, making a thick, mushy scum. The scum is separated from the molten lava by the accumulation of a layer of hot gas rising from the lava. The hot gas supports the crust until it cools enough to stand by itself. Now the lava may drain away, leaving a cave. Since this produced a cave in a rift, it is a rift cave. This type of lava tube cave is nearly always high and narrow - the shape of the rift. False roofs may form at low stages of flow, separating the rift into levels that are perfectly superposed, one above another. Rift caves are hollow dykes.

If a lava flow is not in a rift, the streams must build their own walls. Thin sheets of lava flow out to the sides and cool, building walls along the channel. Or, in areas of low ground slope where the lava is temporarily ponded, the stream channel continues through it. This latter case we call a true trench, and the case of the stream building its own levees we call a semitrench.

Most large lava tube caves are rift caves or semitrenches. They are able to transport hot lava for long distances, because comparatively little heat is lost from the roofed channels.

Large lava tubes feed small streams of hot lava. A single arched crust forms over the stream, making a smaller lava tube. This kind of tube is entirely above the adjacent ground surface, so we call it a surface tube. Most small lava tubes are surface tubes or a hybrid of surface tube and semitrench.

Semitrenches often flow in braided streams, much like the braided channels of a water stream. The individual channels overflow frequently, sometimes making surface tubes. In the resulting cave, the surface tube is a small lead off of a larger passage. Overflows through the roof make surface tubes on an upper level. If the overflow plugs, it will leave a cupola in the ceiling of the lower passage.

After lava tubes initially form, rock is often added or removed, changing the passage shape. The lava is added as layers of linings. Rock is removed primarily by rockfalls.

The many passage combinations, and extreme modifications, result in caves that are sometimes very complicated. They are possible to explain, however, and it is not necessary to appeal to illusion to do it.

\* \* \* \* \*

S. 72, introduced in the U.S. Senate in January, 1973, would establish a Desert Pupfish National Monument in California and Nevada, "in order to preserve and protect several species of desert pupfish, and to interpret their evolution in areas of their natural environment..." The Devil's Hole (in Nevada) and some nearby ponds containing other species of cyprinodonts would be included. No recent word on progress or lack thereof.

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