



# THE CASCADE CAVER

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CASCADE GROTTO N. S. S.



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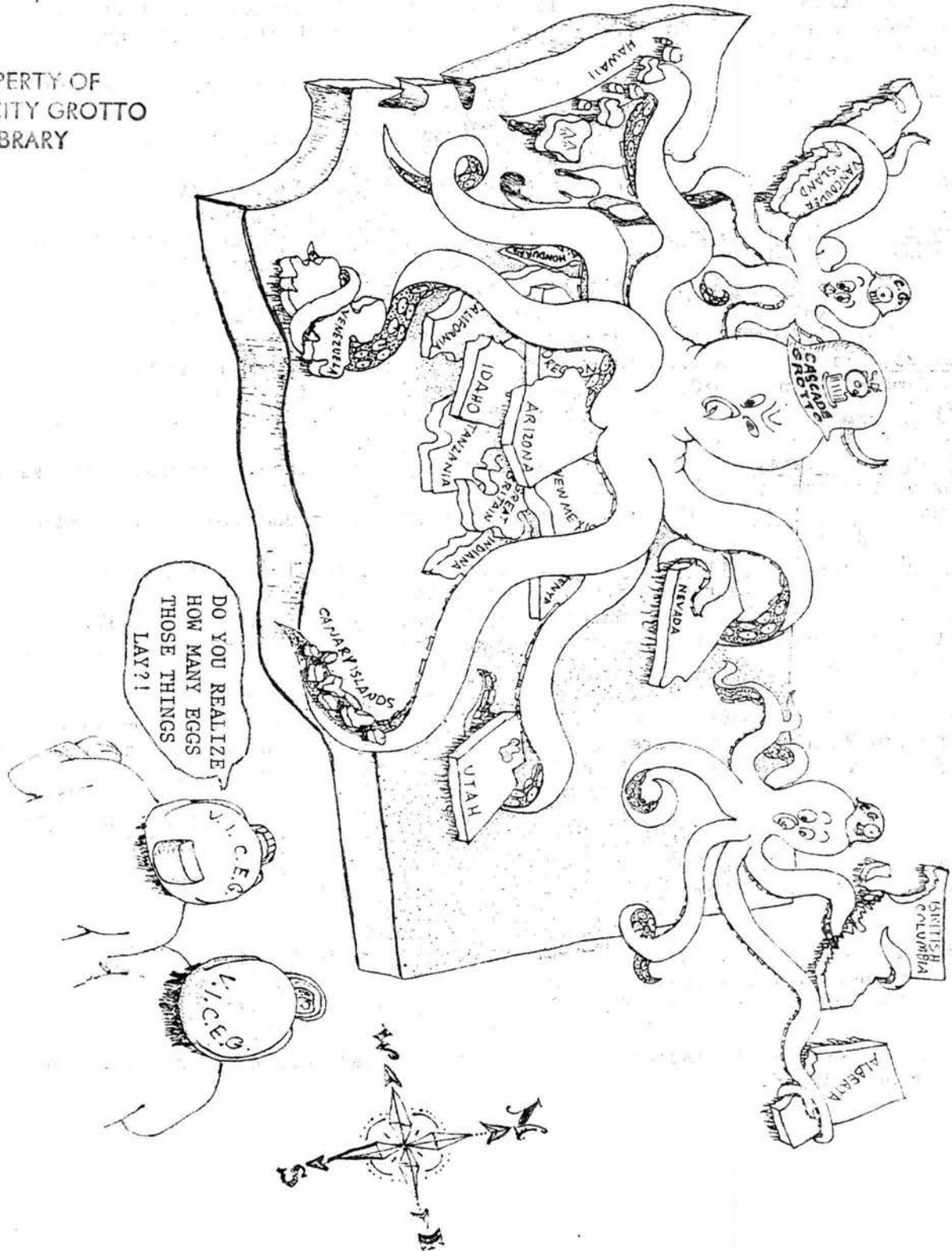
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May, 1980

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THE CASCADE CAVER is published ten times per year by the Cascade Grotto of the National Speleological Society. Subscription rate is \$6.00 for one year's issues. Full Grotto dues are \$7.50, and family memberships (not including subscription) \$1.50. All payments should be made to Grotto treasurer Craig Hansen, Rt. 3 Box 118, Cheney WA 99004.

C O M I N G   E V E N T S

Trip Coordinator:  
Geary Sanders 763-0361

July 2, Wed. Evening hike to Don's Cave. Issaquah Alps Trails Club. Meet at 6:30 PM in the Issaquah Park and Ride lot.

July 4-6, Independence Day Weekend. Official trip to Windy Creek Cave, if snow conditions allow. For details contact trip coordinator Geary Sanders, 763-0361. ALTERNATE: trip to Gardner Cave area, northeastern Washington. Contact Alan Lundberg, 365-7255.

Also: Mt. Baker expedition. For details contact Roger Matthews, 522-0801, or Geary Sanders, or Bill Halliday, 324-7474.

July 12, Saturday. Woodcutting trip near Bob Brown's place between Elbe and Eatonville, Pierce County. Help out the Grotto and stop feeling guilty! Lots of fun available (I mean besides woodcutting). See separate info. flyer.

July 13, Sunday. Paradise Glacier Cave trip for woodcutters.

July 14-16, Monday-Wednesday. Biological field trips in Washington with noted Eastern cave biologist John Holsinger. Contact Rod Crawford, 543-9853.

July 15, Tuesday. Regular monthly meeting at the Hallidays', 1117 36th Ave. E., Seattle (at the corner of E. Madison), 8:00 PM, doors open at 7:55. Program: NSS slide show on Reeds Cave, South Dakota.

July 25, Friday. Eastern Washington Unit Meeting at the Kennedy Library, EWU Campus, Cheney, 8:00 PM. Program: Reeds Cave slide show.

July 28-August 1. NSS Convention at White Bear Lake, Minnesota. See notice elsewhere in this issue.

August 19, Tuesday. Regular meeting, same time and place. Program: NSS slide show on Conservation.

August 23, Saturday. Official trip to Cave Ridge, Snoqualmie Pass. Contact Geary Sanders.

Aug. 30-Sept. 1, Labor Day Weekend. Northwest Regional Meet in Nelson, B.C. promises to be a great one with some great limestone caves!

Sept. 1. Abstracts due for International Congress of Speleology, 1981.

Sept. 3-7. Third International Speleology Film Festival, LaChapelle en Vercours, Drome, France. Contact Halliday for details.

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Wally Bosshart is back from New York--why not give him a call? 323-0831.

2 Eastern Washington members are working at caves this summer - Craig Hansen at Gardner Cave and Penny Humphries NEW MEMBERS at Oregon Cave.

Lee M. Schlosstein, PO Box 455, Airway Heights WA 99004, (509) 244-3876 (R)

Jeff S. Haynes, 3119 Cottonwood, Bellingham WA 98225 (R)

Daniel Lutjemeier, 2387 Alder Grove Rd, Ferndale WA 98248 (R)

Robert W. Simmons, Shore Drive, Winstead CT 06098 (R)

CHANGES OF ADDRESS

Kevin and Carlene Allred, General Delivery, Haines AK 99826

Mark Vining, P.O. Box 2131, Midland TX 79702

Penny Humphries, c/o Oregon Cave Chateau, Oregon Cave OR 97523

\* \* \* \* \*

COVER: Latest manifestation of the infamous Cascade Grotto Octopus; cartoon by Carlene Allred.

## FEATURES

### End-of-1979 Report on Northeastern Nonsolution Caves

by Robert W. Carroll, Jr.

The 1970's have been a momentous decade for cave areas everywhere, including the Northeast. Both solution and nonsolution areas have seen important discoveries, but the most spectacular relative advances were in the nonsolution regions. Less than ten years ago, the Northeast lacked even one confirmed 1000-foot talus or tectonic cave. Now we have a dozen, and more are anticipated in the 1980's. The twelve largest examples are as follows:

- 13050 ft. - TSOD, anorthosite talus, Essex Co., NY
- 5300 ft. - MBDATHS, granite talus, Grafton Co., NH
- 2500 ft. - W. H. Lyman, anorthosite talus, Essex Co., NY
- 1800 ft. - Eagle, gneiss tectonic, Hamilton Co., NY
- 1250 ft. - Mt. Washington Snow Talus Maze, gneiss talus, Coos Co., NH
- 1200 ft. - Franconia Notch Slabs, granite talus, Grafton Co., NH
- 1150 ft. - Franconia Notch Coral, granite talus, Grafton Co., NH
- 1150 ft. - Mt. Adams Ravine, gneiss talus, Coos Co., NH
- 1100 ft. - Saddleback Mtn., granite talus, Franklin Co., ME
- 1100 ft. - Manitou Abode, anorthosite talus, Essex Co., NY
- 1050 ft. - Ice Gulch Nightmare Maze, granite talus, Coos Co., NH
- 1050 ft. - Ravine Pools - Ice - Grunge, anorthosite talus, Essex Co., NY

Four of the above joined the list since the 1979 NSS Convention. Two - Mt. Adams and Ice Gulch - were noted as lesser caves during prior years, but two Essex County caves - Manitou Abode and Ravine Pools-Ice-Grunge - were found in 1979. The three counties with the "lion's share" of the above caves may well get a few more in the 1980's.

The most prolific Northeastern county, Essex (NY), had 483 caves as of November 4, 1979. These include 131 with at least 50 feet of passage, five (four talus, one marble) 1000-plus footers. The township of Keene alone, about 155 square miles, has over 150 caves. Less than one out of twelve Essex Co. caves are solution.

The county to improve the most in 1979 was Clinton, NY. For nearly a decade, sporadic and unsuccessful efforts had at best turned up a mere 50-footer. This August, a single ridge yielded a 500-foot talus cave, a 120-footer, and a 100-footer in one day. The largest is called Hawkeye Porkie Maze because of the numerous porcupine droppings and quills in its crawls. The area also has some curious "coral" speleothems and other geologically significant phenomena.

Vermont, left behind in the "tectonokarst race", may well be about to catch up fast. A new spectacular fragmented-rock area in Windsor Co. already has a 350-footer (Chiller Cave), two impressive 250-footers, and numerous openings amid incredibly large fragments to be checked. Vertical gear will be needed for numerous pits and crevasses, some 30 or more feet deep. Hopefully, a full-fledged Boston Grotto-A.C.C.A. project will commence late next summer. The curious form of the talus slope raises questions as to how much of what processes - tectonic, gravity sliding, or glaciation - and at what time - formed this curious piece of terrain.

Big challenge of the 1980's will be to find new - and larger - nonsolution caves in as great a variety of areas as possible and to get an accurate assessment of their unusual speleothems. By 1990, we may well have a continuous chain of states, from Washington to Maine, each with at least one 1000-plus foot long nonsolution cave.

## Editor's Comments on Carroll's Article

In an accompanying letter, Carroll mentions that five additional states would be needed to complete the "chain of States" he envisions with 1000+-foot long nonsolution caves: West Virginia, Virginia, Tennessee, New Mexico, and Oregon. Libby Nieland recently informed yr editor that there was a long talus cave mapped in Oregon, near Portland, a long time ago which she thinks was at least that long. Unfort unately, nobody seems to recall what happened to the map, or why it wasn't published. Anyway, if one interprets "nonsolution caves" literally it would have to include lava tubes, and both Oregon and New Mexico have several-thousand foot long lava tubes.

Carroll goes on to say that "A tougher challenge would be to get a Maine-to-Washington chain of contiguous counties with 1000+ - foot caves of any type. Four Maine counties, one in Vermont, and one to three in N.Y. would do it for the NRO's share; what lies beyond is uncertain, but the proposed "chain" would likely run down the Appalachians, parallel the Tennessee-Kentucky line, cross the Ozarks, involve the Oklahoma gypsum region, and finally involve caves of all types in the West. The South has much limestone but large numbers of small counties (some of which may have no limestone); other regions have small numbers of larger counties but less limestone. Such a project - no matter what the odds of its success - would encourage greater cooperation among Gröttos and put more emphasis on lesser-known areas." Intriguing idea! In yr editor's opinion, the only practical route across Washington may be along the northern edge and into Idaho, through Skagit, Okanogan, Ferry, Stevens, and Pend Oreille counties. It would be necessary to find 1000 foot limestone caves in Ferry and Stevens counties, which is entirely possible. If firm and glacier caves qualify, a north-to-south chain could be traced through Whatcom, Skagit, Snohomish, King, Pierce, Yakima, and Klickitat or Skamania counties into Oregon. The only missing link would be Yakima County, where probably a 1000-foot lava tube could be found.

Yr editor has severe doubts about the 483 "caves" listed for Essex County, New York, which include 352 with less than 50 feet of passage! Out in these parts we don't call those "caves"--we call them "rockshelters".

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### IN MEMORIAM

by William R. Halliday, M.D.

Don Holliday, formerly a leading member of the Cascade Grotto, died in January 1980, at the age of 54. A memorial service was held on January 26 in Kirkland. Don was a well-known Bellevue veterinarian since 1957 and became active in the grotto around 1960, shortly after the grotto was reactivated. He led the May 23, 1963 Tiger Mountain trip and was an eager participant in the Barkley Sound expedition in August of that year. He was (I think) the only member of the grotto to visit Jaekel's Cave, east of Bingen near the Columbia River. Always enthusiastic, he finally quit caving because of fear of damage to his hands after twice having to hire a replacement temporarily after rugged trips. Although few present members ever knew him, his death leaves a poignant gap for those who did.

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## TRIP REPORTS

Mt. Baker Crater Caves

July 29, 1979

by William R. Halliday, M.D.

On July 29, the grotto trip to the geothermal caves in the crater of Mt. Baker saw Roger Matthews, Wally Bosshart, and me rappelling into the crater a bit behind schedule: our camp was too comfortable, I guess, and it was hard to get up in the middle of the night. A fantastic day for the climb, however, and lots of climbers on the mountain in contrast to last year when we were the only ones on the glacier.

Changes in the crater were marked since last year. The outlet of the crater (into the Boulder Glacier) was blocked by a huge slab avalanche now. A large circular sinkhole was present in the western part of the crater's glacier, and the edge of the glacier was much farther down the crater wall than before. The cave entrances were larger, and some parts of the crater now were bare of snow and ice that were covered last year. The big steam vent below the rappel point now pointed vertically instead of horizontally. [Yes, that's what it said!]

We spent time photographing the geothermal features en route to the main entrance below--too much time, but what a temptation! Inside the cave, we found definite changes also. Fumaroles were still present in the entrance room, but much less active and the marvelous sound effects of last year were gone. So were the soft oolopholitic crystals we had expected to bring back for analysis. The duckwalk beyond the entrance room where we began to have eye trouble last year was almost free of steam and fumes. Perhaps 50 feet along it, a new passage opened on the left, and a small stream led us into it. Only a few yards onward, we burst out into the largest subglacial room I have ever seen. Estimates varied from 200 to 300 feet long, 75 to 100 feet wide, and 50-75 feet high. Unfortunately we had no measuring tape. At the lower (east) end, a steep stream slot led downward impressively. The entire room was free of steam and fumes.

We had time for either photography or additional exploration, and chose the former; at the present rate of ablation of this glacier, the room will be unroofed next year.

Now that we are becoming familiar with access to this magnificent system, I suggest that future trips plan to camp still higher on the glacier and get up earlier, so that we have enough time to do the job right! [Editor's note: those interested in this year's Mt. Baker trip please refer to the Coming Events page for details. Participation in training trips is required.]

Nakimu Caves Trip Report, Sept. 1-2, 1979

by Phil Whitfield

[Editor's note: In a meeting with Parks Canada on August 31, 1979, Phil Whitfield and Larry Tuttle of VICEG, with Dave Jones and Craig Hansen of the Cascade Grotto, discussed caver access to Nakimu Cave. It developed that the Parks Canada people feel they need more data on the cave's resources, hazards, etc. before opening the cave to sport caving. Naturally, the four cavers volunteered to help gather this data. The resulting trips through the cave were not written up for the Cascade Caver (shame on you, Cascade members!) and so I here reprint an abridged version of two trip reports originally appearing

in VICEG News, v. 9 no. 9, Sept. 1979, pp. 81-84.]

Leaving Revelstoke at 0700 on September 1, a party comprising Phil Whitfield, Larry Tuttle, Craig Hansen, and David Jones arrived at the TCH/Cougar Brook bridge by 0815 and started up the trail, making considerable noise to avoid grizzly incidents. The Main Entrance gate was reached at 0930, with no sign of bears en route; caving gear was donned, and the search for the Bear Falls Exit began. The Exit was not located until 1145, after the group had read previous reports more closely...

Entering the Bear Falls Series at 1145, the party proceeded down to the Great Slab, photographing the main vadose passage but not thoroughly investigating the several side passages shown on the map. Once at the Great Slab, Tuttle and Hansen reconnoitred through the Little Slab section while Whitfield and Jones photographed through the lower passages. Meeting at one of the lower springs, the two teams regrouped to photograph the low route along the bottom of the Slab to the head of Jabberwock Jump and thence up the Vadose Trench and into The Shatterbox...

Live and dead beetles and the skeletal remains of a small mammal (photographed) were noted in The Crypt. Some of the insects were collected and have been sent to a speleobiologist in Seattle for identification (no report received at time of writing). [Editor's note: Here's your report, Phil. The specimens consisted of a caddisfly, a stonefly, a wasp, two moths, carabid and staphylinid beetles, plus one that looks so strange I think I must have put it together wrong. All bear unmistakable signs of having been washed into a cave, battered between rocks, scooped up by a caver, and carried around in a film can in our Glorious Chairman's truck for five months. In other words, most legs, antennae, heads, etc. are broken off; wings are mangled; and identification beyond my skill. I think they must have been dead already when washed in, and so should be regarded more as organic detritus than as cave fauna. RC.] Following upstream through The Crypt, the group was impressed with the volume of water plunging 10 m from a high, dark, limestone canyon into the Wet Chamber. Apart from spray, however, no water affects the route through the chamber and into the narrow passage which leads to the head of Surprise Passage. With time drawing on, it was necessary to pass up investigation of Surprise Passage and proceed directly up the cobbled crawlway at its head, into a small, droplet-studded chamber, thence through a short sandy crawl, and into Milkshake Chamber, at the head of Perseverance Passage. The latter passage begins as a stoopway and tapers into a hands-and-knees crawl, arrow-straight all the way. Just before one reaches a final dog-leg to the right, the Back Door crawlway branches to the left.

Whitfield undertook to check the access into the Witches Ballroom...The other members of the party, already chilling in the draught of Perseverance, explored to the Chimney connecting with the Terror Series, then squeezed through The Back Door to join Whitfield. By 1900, the group was back at the Main Entrance, whose gate, fortunately, was working impeccably from the inside. A pleasantly bear-free hike down the trail ensued, and the vehicle was reached at 2015, just after dark.

Poor weather and a late Saturday night delayed our September 2 departure from Revelstoke until about 0930 Sunday morning. Hiking up a very wet Cougar Valley Trail between 1030 and noon, the party (Whitfield, Hansen, Jones, and Wally Bosshart) again saw no bears, but reached The Pit Entrance dampened in body and spirit. However, the rigging went quickly and, in spite of many delays for photography, everyone was quite warm and enthusiastic by the time the Witches Ballroom was reached. A tentative reconnaissance through the Dropping Cave revealed that a route was passable upstream to The Gorge, so it was de-

cided to try and photograph that section's larger chambers before tackling the black voids along the tourist route to the Main Entrance. To everyone's bemusement, the chain gate on the small Gorge Entrance was found to be missing, lock, chain, and eye bolt! Someone, obviously not enamoured of gates, had apparently cut the chain, unthreaded it, unscrewed the eye bolts, and thoughtfully poured epoxy into the bolt shields in order to prevent reinstallation.

For convenience, Whitfield and Hansen surfaced briefly, re-entered The Pit Entrance, derigged The Pit, and returned with the 150' rope, which could now be carried down to the Main Entrance and cached. Proceeding back underground in that direction, the party concentrated its photographic efforts on The Dome. Almost two hours were spent in this process, and by the time the Entrance was reached at 1630, no one was particularly keen to retrieve the rope from Jabberwock Jump.

After fifteen minutes' deliberation, Whitfield and Bosshart undertook to ascend through Bear Falls Series to take out the rope. Hansen and Jones accompanied them on a quick trip to The Back Door... Reunited, the two teams were on the trail down by 1830, and reached the vehicle at 1915.

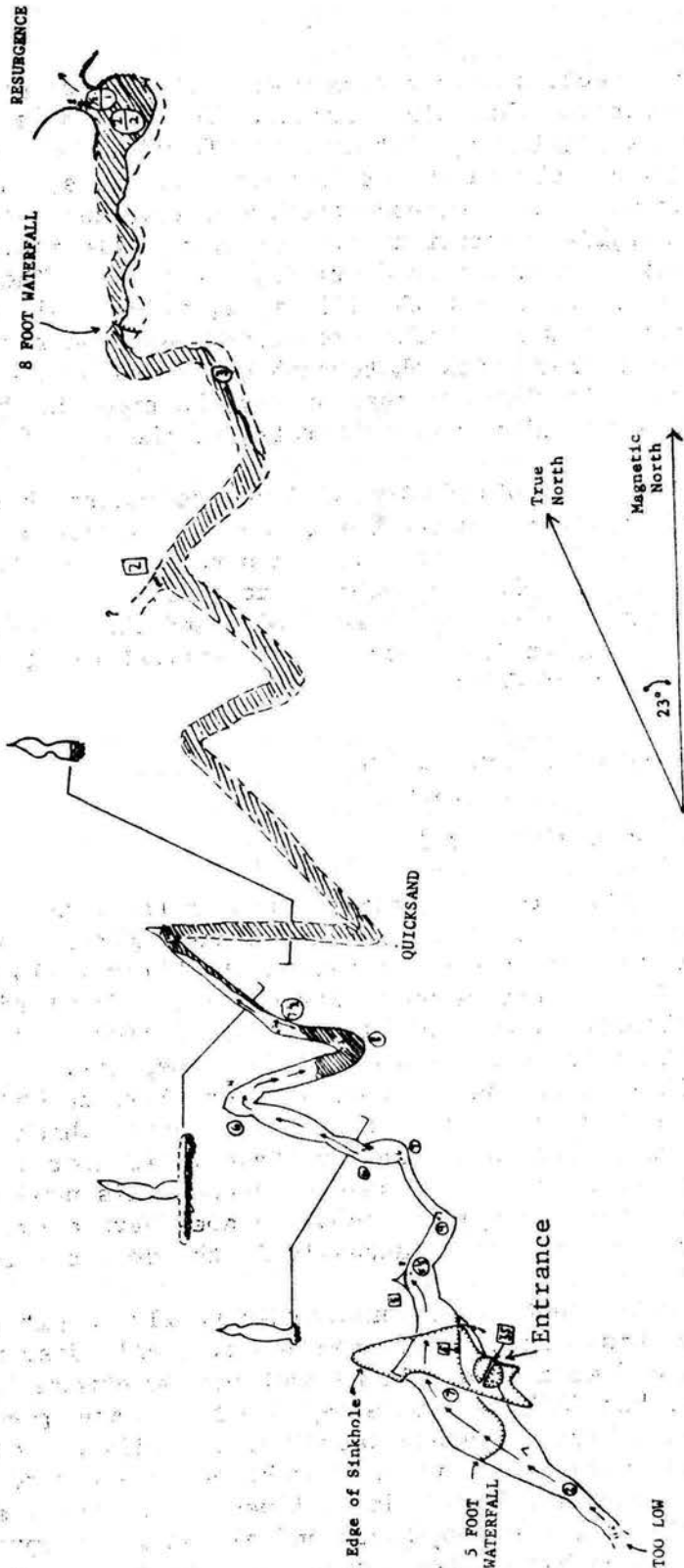
Thus, in 12 1/4 hours of caving over two days, two VICEG and three Cascade Grotto members were able to carry out an inventory and classification along main routes in the Bear Falls Series of Nakimu.

New Caves on Dock Butte  
September 22, 1979

by Kevin Allred

A number of us were excited by Bob Brown's description of a karst area he visited the week before, and we decided to check the three entrances he found. On Saturday Sept. 22, after the two carloads of us met at the karst following the hike from the Blue Lake trailhead, the group consisted of Rod Crawford, Paul Nystrom, Bob Brown, Wally Bosshart, Carlene Allred, Lehi Allred, and I. While I tended baby Lehi the others explored in some of the prospects. A walk-in entrance yielded some 50 feet of passage (barely a cave) which Rod and Paul explored. Carlene chimneyed down a pit in the other direction which Bob Brown later named "Pika Droppings in the Snow Twin Pits Cave". [Editor's note: for reasons of convenience and euphony, I have shortened this name; see map.] The pit really did contain pika droppings, snow and does have a twin pit. Bob made it sound like the droppings were actually in the snow to mislead people.

The best prospect was saved until last and is an impressive fluted pit some 30 feet deep. The sound of a running stream rose from below. Wally descended downward into the virgin cave and discovered a walk-through narrow stream passage. He found it to end soon upstream but followed it perhaps 70 feet downstream to deep water and a lower ceiling where he turned back. After Wally got out, he, Rod, and Carlene went down to a large resurgence nearby and started to dig it out. Bob watched because he was ill that day. I was up on the karst when suddenly the solitude of the breeze in the trees and almost imperceptible bubbling of the resurgence was broken by the sound of a bursting rush of water. This was very strange indeed, as I had no idea that they were digging to lower the resurgence level and suddenly there had been a bunch of water that came out. Paul tended Lehi while I helped dig for a while. Wally and Rod reported a pronounced sucking noise which happened when an air space had developed where there once was a sump just inside. After we had lowered the water level some



RESURGENCE CAVE  
 Whatcom Co., Washington  
 C.R.G. Grade 5 / Grade 2  
 Survey, 22 Sept. 1979,  
 by Carlene Allred, Wally  
 Bosshart, Kevin Allred  
 (sketch portion) and Rod  
 Crawford (surface portion).  
 Traverse: 130 (mapped)  
           +115 (estimated)  
           245 feet

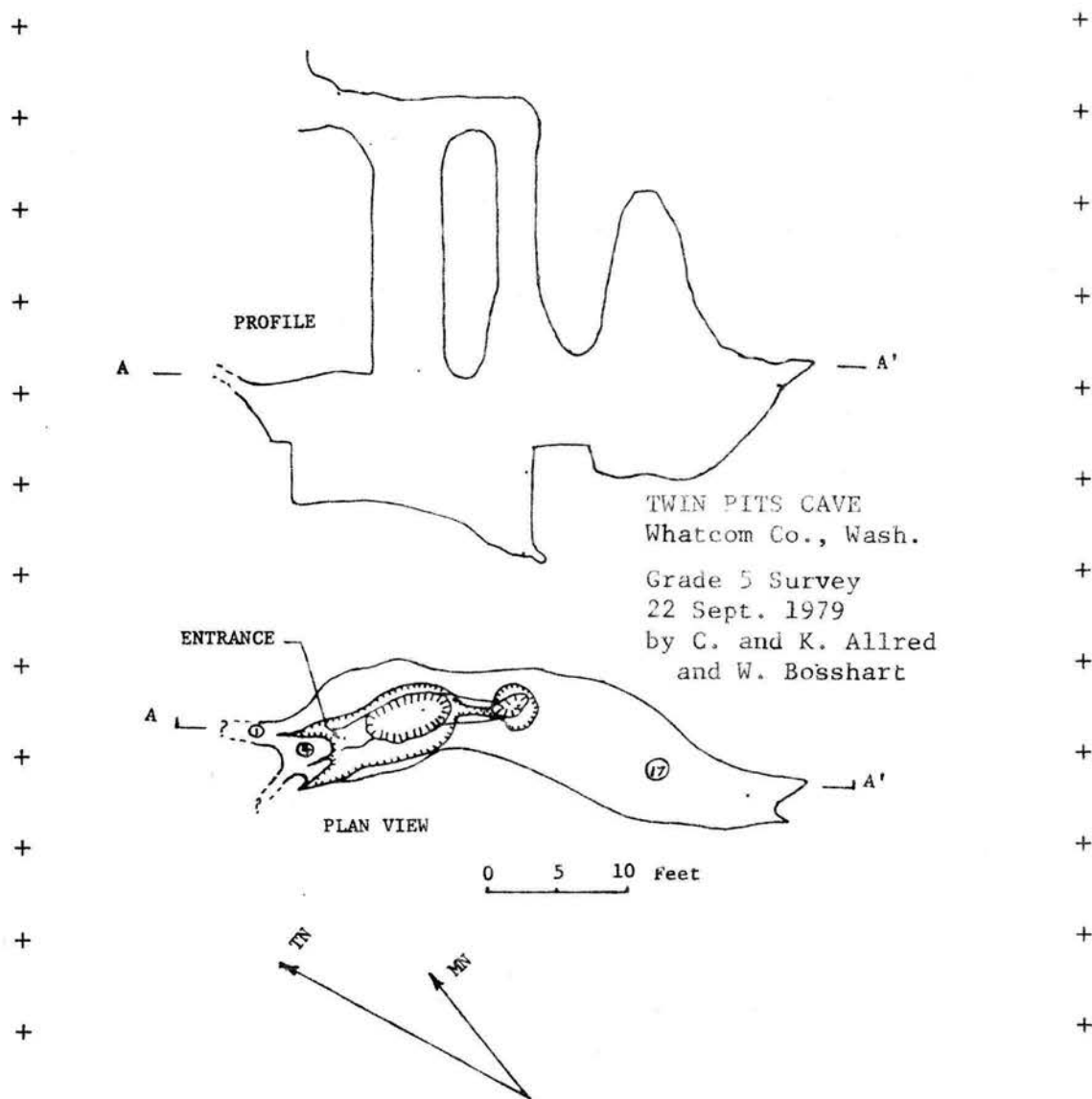


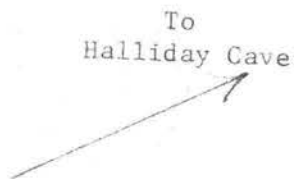
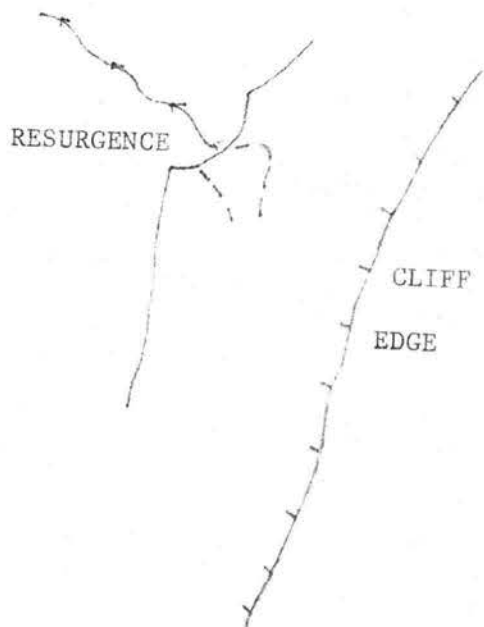
six inches more, Carlene, Wally and I entered the pit containing the stream while Rod and Paul waited at the resurgence in case we could make voice contact from within the cave which we figured might reach the resurgence.

At the point in the cave where Wally had stopped at deep water, I left the others to map out while I tried to continue without getting wet. Wishful thinking; a quick bat wouldn't have had much better luck, as after 60 or 70 feet I was almost completely drenched at the base of a 7 foot waterfall. After the waterfall, I was further tortured by the near freezing water while crawling through pools with little head space. After getting within ten feet of Rod and making contact, I abandoned the idea of plugging the resurgence trying to squeeze through a twelve inch high space half filled with flowing water; what more horrible way to die?

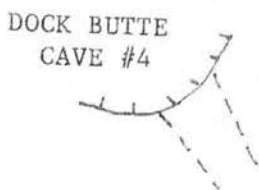
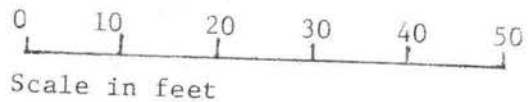
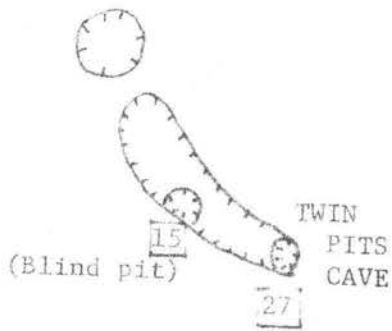
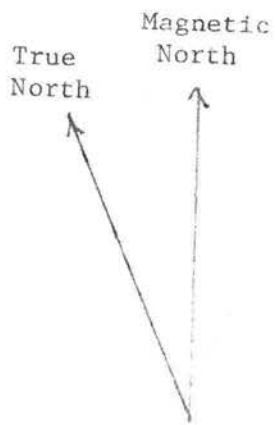
I quickly retreated back the way I had come and some extremities were numb with cold by the time I clawed out of that miserable cave. Bob has since named it Resurgence Cave; see map.

Rod and Carlene surveyed the surface from the entrance to the resurgence, and then several of us went and watched Wally unsuccessfully push 30 foot long Halliday Cave that a small resurgence comes out of. All in all it was a great trip, and the sunset view of Mt. Baker was fabulous!





SURFACE  
FEATURES -  
Resurgence Cave area  
Whatcom Co., Washington  
C.R.G. Grade 5 Survey  
September 22, 1979  
by R. Crawford, C. Allred,  
and W. Bosshart.  
(Some sinkholes not shown).



Annual Thanksgiving Sasquatch Hunt at Mt. St. Helens  
November 23, 1979

by Clyde Senger

We had gone to Portland to be with relatives for Thanksgiving, so had not planned to camp or to take students this year. Nov. 23 was rainy but the report was for clearing and a snow level of over 3000 feet, so I woke Stanley early, which is not easy. Things looked good until we neared Swift Dam. Stan noted that the rain was now really a wet snow. By the Ape Cave turnoff the situation was clear; there was snow sticking on the road. I decided to stop at the next "Y", but found so many hunter vehicles there that turning around might be a problem. A quick glance at the road, and we decided to go for the next turnaround. Unfortunately, each of them also had hunters. It was a case of seeming safer to keep going than to try to turn around in very poor locations. We were still going but slipping badly when we reached the "Y" near Little Red River Cave. Without thinking, I made a wide loop to turn around and discovered--just in time--that there were three jeeps and pickups right behind me. They probably thought we were crazy to be up there in 4 to 6 inches of fresh snow in a station wagon without chains. Little did they know that I didn't even have them in the car. I looked at it that they were following an experienced driver who obviously knew how to break trail.

We managed to park on the side of the road pointed downhill and loaded up for some caving. Everything was really beautiful with the fresh snow. I think I really prefer snow to rain anyway. However, I soon realized a problem; we didn't have any water for the carbide lamps. We wandered off the road to find a puddle, and found nothing but snow and a small black hole. It readily swallowed four feet of my walking stick. A prospect, but for a summer trip. After a visit to some of the local caves, we started back for the car. Suddenly we heard a shot very near by. Then a second and third shot. We kept going, but I certainly was uneasy. A little further on, we spotted a camper in the rock pit with a hunter sighting in his rifle.

Back at the car we loaded up, grabbed some food, and decided to call it a day. However, by the time we reached the diversion canal, I changed our minds and decided we would try the Dollar and a Dime area. A short time later we were at the top of the cliff and started off across the lava flow from a different angle. Nothing special except for a large sheet of plastic, which we left for the return trip. About the time we reached Green Mountain, there was another shot and perhaps some voices. At that point I was beginning to understand why people stay home during hunting season. We made the rest of the trip to and through the caves without incident. I didn't want to get lost again after dark, so we made it a short visit.

It wasn't really that dark, but I still managed to lose the survey trail. I thought we were east of it, but ended up on the west side at the powerline. Oh well, we did at least get to the powerlines. I noticed a trench in front of us which seemed to end in some rocks. Further downslope there was another short section of ditch. We checked on further, and soon Stan located what looked like stump casts with very large bases. Shortly later I came to an eight to ten foot deep canyon just to the north of the powerline clearing. The upper end was a rock wall with a small opening leading into a three foot diameter tunnel.

I charged on in, yelling for Stan to follow. The ceiling sloped down to the north, and was the lower surface of a lava flow. The floor and south wall were a mixture of dirt and rock. There was a gradual narrowing and after about

fifty feet, some rounded rocks partially blocked the passage. It was obviously the same kind of cave as Christmas Canyon Cave, formed by erosion of material from beneath the lava. Since Stan hadn't appeared, I turned around and headed out. He was nowhere in sight or sound. After considerable yelling and searching without success, I sort of leaned on a tree next to a stump cast and considered what to do next. Then from below me a muffled voice called out "Where were you". Stan had entered one of the stump casts and checked upstream, then gone down to meet me. He had been waiting by the rocks, wondering where I was.

Several years ago, I had reported some new surface erosion leading away from some stump casts, so we checked upslope. Sure enough, there they were, but not really obvious because they were now filled with leaves and branches. I suggest that when heavy rains saturate the sublava soils with water, there is surface flow of water on the flow and beside it. In places the flow is sufficient to erode tubes under the flow or ditches beside it. I doubt that this cave (which we suggest be called Powerline Too Cave) is as extensive as Christmas Canyon Cave. However, it does suggest that there may be other similar formations in between. Perhaps we can get back there next summer. [Then again, perhaps not!! - ed.]

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#### CAVING IN THE CITY: THE 1980 NSS CONVENTION

by Edward Zawlocki  
Convention Chairman

The 1980 National Speleological Society Convention, to be held at Lakewood Community College (NE of St. Paul, Minnesota) should be a minimal driving convention. Everything, except the Howdy Party and major cave trips, is on campus. Camping will be on the grounds and the college cafeteria will be open for breakfast and lunch. Within walking distance are grocery and liquor stores and five restaurants for other meals.

Non-convention activities, for those so inclined, include swimming and boating on the many nearby lakes, hiking, biking, and climbing, the Science Museum of Minnesota and its Omni-Theatre and the new Minnesota Zoo with two natural habitat bat exhibits. Most of the preceding can be reached by mass transportation.

Some of the special sessions and events planned are: SE Minnesota Karst Seminar, stream-tracing workshop (hands-on experience), a cave rescue contest, a trip into a natural cave beneath Minneapolis, and others still not finalized. Abstracts for Biology, Geology, History and other sessions can be sent directly to Program Editor Dennis Martin, 1055 24th Ave. SE, Minneapolis, MN 55414.

One of the highlights of the week is the Howdy Party. Monday night we will all bus down to Castle Royal, a restaurant in a cave, for food and dancing. Leave early and explore some of the sandstone caves along the Mississippi River!

The Geology Field Trip will be Sunday July 27, and if there is enough interest, a stream-tracing trip on Saturday August 2.

Pre- and Post-Convention cave trips will be held in Wisconsin, Iowa, and Minnesota. Speleocamps will be set up at Coldwater Cave in Iowa and at Mystery Cave in Minnesota for local trip co-ordination. These caves are the longest in each state and Mystery is the 31st longest in the U.S. as of this notice, and still mapping.

Lakewood Community College is only 1/2 mile north of I-694 on Minnesota 120. Convention dates are July 28 to August 1. [Pre-registration forms available at Grotto meetings or from yr editor.]

## VULCANOSPELEOLOGICAL ABSTRACTS

by the Editor

Ireton, Frank, 1977a. Relationship of a lava tube cave system to lava flow development, Lincoln County, Idaho. Abstract submitted to Geological Society of America and published in *Gem Caver*, 10 (3): 20.

Technical abstract on his classification of lava tubes into primary, secondary, and tertiary categories. This material not copied here, as it is elucidated more fully below. "Lava was transported away from the primary tubes by secondary tubes and then through tertiary tubes to the flow front. The study of lava tube systems can be used to interpret flow directions and extent as well as pre-flow surface topography."

Ireton, Frank, 1977b. Modern theories of passage formation (part I). *Gem Caver*, 10 (5): 32-38.

A summary and interpretation of the passage formation theories of Ollier and Brown, Ronald Greeley, and Harter and Harter.

Ireton, Frank, 1977c. The same, part II. *Gem Caver*, 10 (6): 44-48.

Ireton explains how many of the terms and categories in previous lava tube classifications are unclear or ambiguous. He proposes a system which classifies lava tubes according to their relationship to the lava flow as a whole, and the system of lava distribution during eruption. This system does not address itself directly to the problem of whether large lava tube passages are always formed by roofing over of lava rivers, or sometimes develop as conduits under the flow surface as the theories of Greeley and of Ollier would have it.

Ireton's proposed classification is as follows:

"Class 1 - Primary:

Tubes that form in main channels, and usually are the primary supply channel for the lava front. Leveed and layered lava may be present, while it often has multi-levels or conspicuous tide-marks. They are usually the larger tubes in the system, and tend to be found nearer the vents, where lava flow was deeper. Examples include Maze Cave, Idaho, and Dynamited Cave, Washington."

"Class 2 - Secondary:

Usually formed by branching of previously existing primary tube, but may form independently. They may have leveed walls, but more commonly layered. Multi-levels may be present, but, usually, only tide marks are revealed. They may have a flat floor and usually a rounded roof. Examples: Tee Cave, Idaho, and Horse Cave, Oregon."

"Class 3 - Tertiary:

The final class of true lava tubes includes surface tubes, terminal tubes, overflow tubes, and hornitos. They are normally formed at the flow margins except in the case of an overflow. Levees are absent, but layered walls could be present. Typically, they are only in a single flow thickness of lava and are semi-circular to elliptoidal in cross section. Linings are composed of a rudimentary glaze or are nonexistent. Multi-levels are absent, though rudimentary tide marks may exist. These are normally the smallest tubes of the flow, and feed the flow fronts. Examples include the Masochist Maze of Deadhorse Cave, Washington, and the lower end of Arco Tunnel, Idaho.

"Class 4 - Rifts and Associated Flow Features:

This class includes rift caves, spatter cone vents, lateral pressure ridges, subsidence cracks, and blisters. They do not have the "tube"

shape of the first three classes, tending more to look like a crack in formed lava, a somewhat rounded single room, or a vertical, roughly rounded pit. Examples include Crystal Pit, Idaho, and The Shaft, Australia."

Ireton, Frank, 1978a. Passage modification of lava tubes. *Gem Caver* 11 (3): 16-19.

P. 16-17: "[The] process of modification is a totally different subject from that of tube formation. Several questions remain to be answered before the entire tube formation process can be fully understood. Two of the more important questions are:

"1. What part does erosion, such as plucking, melting, or solution, abrasion, scouring, etc., play in passage modification?

"2. What is the actual depth of the tube-producing flow?

"If one of these questions can be answered positively, with documented evidence, the other will be at least partially explained. If, for instance, any or all of the afore-mentioned erosional agents play a large part in tube modification, then lava flows do not have to be deep to form some of the observed features. If, however, erosion is slight, then flows would have to be deep to explain deep, narrow tubes. The variable factors such as confinement of the flow, cooling rate, slope of underflow surface, laminar versus turbulent flow, and type of eruption will influence the final shapes of the lava tubes."

The author goes on to discuss several methods of roof formation and lining formation.

p. 19: "Primary modification takes place either in the form of linings or coatings of lava or in shrinkage of the lava as it cools, allowing blocks to fall. Shrinkage and cracking of ceilings, walls, and floors allow access of secondary minerals to form true speleothems. Some writers (Halliday, 1962; Lange, 1960) consider drip and accretion features to be speleothems, but Hill (1976) does not, adhering to the secondary origin definition. These features could be classed as Primary because they are primary or the first formations in the tube.

"Secondary would include mineral deposits such as gypsum, mirabilite, and thenardite. One other class is then needed for features that are not primary or secondary by nature, but are temporal, such as ice and other exogenic debris. This class is Transient, as it changes form or location with changes in the influx of supply."

#### VULCANOSPELEOLOGICAL ABSTRACTS

by Willaim R. Halliday, M.D.

Ollier, C.D., and P. Zariello, 1979. Pe'ape'a Lava Cave, Western Samoa; *British Cave Research Association Transactions*, 6 (3): 133-142.

In south-central Upolu a basalt flow about 3,000 years B.P. formed Peapea Cave, a moderately braided lava tube with a total length of about 1 km (the longest that has come to my attention in Samoa). Cross sections do not make clear whether or not it is segmented by the Spring Entrance in the lower third of the cave, nor an unnamed entrance a few meters farther down-tube. In flood times, the cave carries a sizable flow of the Pala River.

Ollier's previous speleogenetic concepts have been quite controversial, and this article will add to the controversy. His "diagrammatic cross section of a typical lava lobe" and his "block diagram showing some features of the cave" appear simplistic to this reviewer, and his bibliographic citations suggest an entire lack of access to the American and Spanish vulcanospeleological litera-

#### MARCH MEETING

Sixteen attended. The Grotto voted in favor of supporting a Cave Conservation commemorative stamp. \$30 was appropriated to the trip report contest. Bob Brown added \$10 of his own to make this year's prize \$40. \$100 was appropriated to the Cascade Caver [this is now exhausted]. The NSS slide show did not arrive due to "reorganization" of the NSS library.

#### APRIL MEETING

Fourteen attended. Money was appropriated as follows: \$19 to Bob Brown, \$20 to Craig Hansen, and \$50 to yr editor [this last not yet received at this writing] for Cascade Caver costs, and \$20 to Craig for petty cash. Bill Halliday was unanimously elected as the Grotto's second honorary member. Program was the NSS slide show on the C-3 Expedition to Floyd Collins Crystal Cave.

#### MAY MEETING

Eighteen attended and discussed the coming garage sale and woodcutting.

THE CASCADE CAVER  
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University of Washington  
Seattle, WA 98195

Take  
Nothing  
But  
Pictures  
Leave  
No  
Trace

[May meeting contd.] The Chairman was instructed to write a letter supporting cave conservation to the Lincoln National Forest in New Mexico. Program was on the Cave Creek cave system in Kentucky.

#### LATE NEWS ON MT. ST. HELENS

On Sunday, June 22, a party of Cascade and Oregon Grotto members entered the Red Zone by permit to investigate the effects of the recent eruptions on the caves on the south side of the mountain. Surface conditions were grim. There was an inch of ash at Ape Cave, some 2 1/2 inches at higher caves. Much of the vegetation, including most deciduous trees, is obviously doomed. A mudflow 200 feet wide had crossed the main road above Little Red River Cave. On the other hand, interiors of those caves visited appear unaltered, even Utterstrom's Caves at 3100-3300' elevation, which were visited. No ash has washed into the caves yet, though some mud flowed into Hopeless Cave. More details later. ---The Editor

NEXT GROTTTO MEETING IS TUESDAY, JULY 15TH! DON'T MISS IT!

tures, thus giving rise to some possible roots of the controversy. Because the article is certain to be widely discussed among vulcanospeleologists, it should be reviewed as soon as possible by all concerned.

Of special interest is a new classification system:

1. Minor partings and tubes, little more than very large vesicles.
2. Caves formed by roofing over of initially open lava channels.
3. Drained pahoehoe toes of flow units.
4. Subcrustal caves in which continuing flow of lava beneath the crust first forms and then enlarges by thermal erosion a lava conduit beneath the crust. This becomes a cave if the lava in the conduit is drained out, at least partially, and the crust has enough strength to resist collapse."

[Editor's note: for the edification of readers, I might mention that Ollier's fourth category is the controversial one, and many people (myself included) are not convinced that such caves exist. Also, this classification is not new. It was first published in 1977 (see *Cascade Caver* 17 (9-10) p. 47).]

Smithshuysen, E&f, 1979. Dutch Iceland Trip 1978. *British Caver*, vol. 73, pp. 43-51, with fold-out map.

A team from Speleo Nederland spent three weeks in Iceland in 1978. The detailed account gives much information on local conditions for anyone planning a field trip there. Some of the caves mentioned have not come to my attention elsewhere. Raufarsholshellir contained ice speleothems in July. 100 km north of Reykjavik, they visited several caves near Gullborg crater. Borgarhellir is more than 600 m long. The entrance is enormous. At the midpoint it bifurcates. Lava dripstone is prominent. The area is a protected "natural monument". Surtshellir also was a glaciere at the time of the visit. They did not visit a large lava cave near Lake Myvatn because in the past year, the water temperature had risen to 80° C. Proceeding north, from Selfoss, they visited several small caves, but none over 100 feet long. In west-central Iceland, they finally found Grettishellir (-hellir means cave in Icelandic) despite its small entrance and lack of landmarks. Lava stalagmites up to 1 m high are beautiful, but vandalism is occurring. They describe the cave as small and low. All in all, this is required reading for anyone planning to visit Icelandic lava caves.

Wood, Christopher, 1977. Morphology and evolution of the Lava del Passo dei Danmisi, 1614-24 lava flow, Mt. Etna, Sicily: Report of the Phoenix Exploration Club expedition to Mt. Etna, 1976. Scientific Report. Unpublished Ms., 22 pp., 18 May.

In August 1976 an international team studied a 9 square km quadrangle between Mt. Etna and Mt. Calabasso in Sicily. The area contains three major lava tube caves: Grotto del Labirinto - Pozzo Superior (about 1.5 km--the team had problems closing closed loops), Grotta degli Inglesi (565 m), and Grotta dei Lamponi (783 m) [see map in *Cascade Caver* v. 15 no. 8 p. 84--editor.]. Each formed independently. The last is the best known cave on Mt. Etna. G. degli Inglesi was discovered by J. E. Guest and Ron Greeley in 1975, and the labyrinth was found in 1976. Details of the speleogenesis and relationships between caves and lava terraces are studied in detail; it is concluded that "later onrushes of fluid lava travelled beneath the higher terraces and caused new lava tubes and flow units to form and to build new terraces on the treads of older terraces." "It is anticipated that a joint paper describing the full results of this research will be published in 1979."