



THE CASCADE CAVER

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

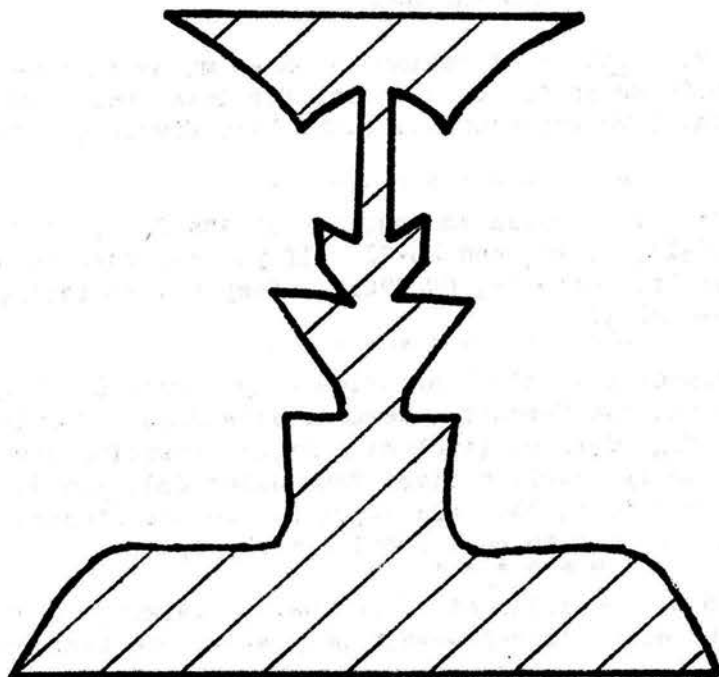


INTERNATIONAL JOURNAL OF VULCANOSPELEOLOGY

Vol. 14, No. 7

Editor: Rod Crawford

July, 1975



OPTICAL ILLUSION

Is it an ornamental vase of the Ming Dynasty

14th Century A. D.

or—? IS IT A CARBIDE
FACE DOWN?

OR A

CARBIDE KISS
ABOUT TO HAPPEN

TH # 11.10U

COMING EVENTS

August 9-10. Washington Monument, to explore Washington's brand new limestone cave. Call Dave Walker, 232-1698.

August 9-10. Mt. Rainier, to Camp Muir to stow gear for next weekend. Call Halliday, EA4-7474.

Aug. 15 (and 16-17). Joint meeting at Trout Lake with Oregon Grotto. Is anyone going?

Aug. 16-17-(18). Mt. Rainier summit steam caves. Participants should have some altitude conditioning. Call Coughlin, 772-1170.

Aug. 18. Regular meeting at the Hallidays'.

Aug. 28- Sep. 1. Yugoslavia trip. Call Halliday.

Aug. 30 - Sep. 1. NWRA Convention, at Papoose (!)---see below.

Early September: NE Washington trip. Call Coughlin.

NEWS AND NOTES

The 1975 NWRA Convention will not be at Nakimu Caves -- maybe in some future year, but Phil Whitfield has recieved an official denial for this one. Papoose Cave, Riggins, Idaho, is the tentative replacement. Call Dave Mischke, 542-2425, for information.

The Oregon Grotto needs bodies to guide the ouigees at Ape Cave, from 10 A.M. to 4 P.M., on August 9-10, 16-17, 23-24, and 30-31. If you can volunteer, contact Leonard Mills, 5764 N. Haight, Portland, OR 97217. They are recieving nearly 400 visitors per weekend---help!!

On July 27th, the Xanadu/Cascade vertical practice duly occurred. Four attended from Xanadu: two Mischkes and two Tubbses. Cascade attendees and relations numbered twelve: one Walker, four Caprons (including Bill's visiting parents), and seven Crawfords: Ed, his family (newly arrived from Colorado), and I. Two or three people were briefly vertical, then all adjourned to the picnic. Inter-grotto relations hereabouts appear to be improving markedly.

Bob Tower spent July 22-26 at the lodge at Oregon Caves, talking to various people about cave locations in the area: loggers---BIM people---Steve Knutson---etc., and has information on some of them. One sounds "very promising."

Jack Hyde was on Mt. Baker July 17th. He reports that there is no crater lake; the fumaroles are causing rapid melting of the snow cover, leaving many bare areas and thin bridges. Incidentally, the grotto Baker climb is off, since Dr. Kiver will be going up during the week, and we aren't allowed in the crater without him.

Grylloblattids collected in Ice Rink Cave (Trout Lake area) in June, including two mature males, have proven to be Grylloblatta chirurgica Gurney, the same species that occurs in the Mt. St. Helens caves. There are some small differences but the specimens are obviously much closer to G. chirurgica than anything else.

PLEASE NOTE: The Cascade Caver now has its very own mailbox, to which all correspondence, reports, articles and exchanges should be sent. Address is on the back cover of this issue.

***** This month's cover by Frank Ramsey (slightly modified) *****

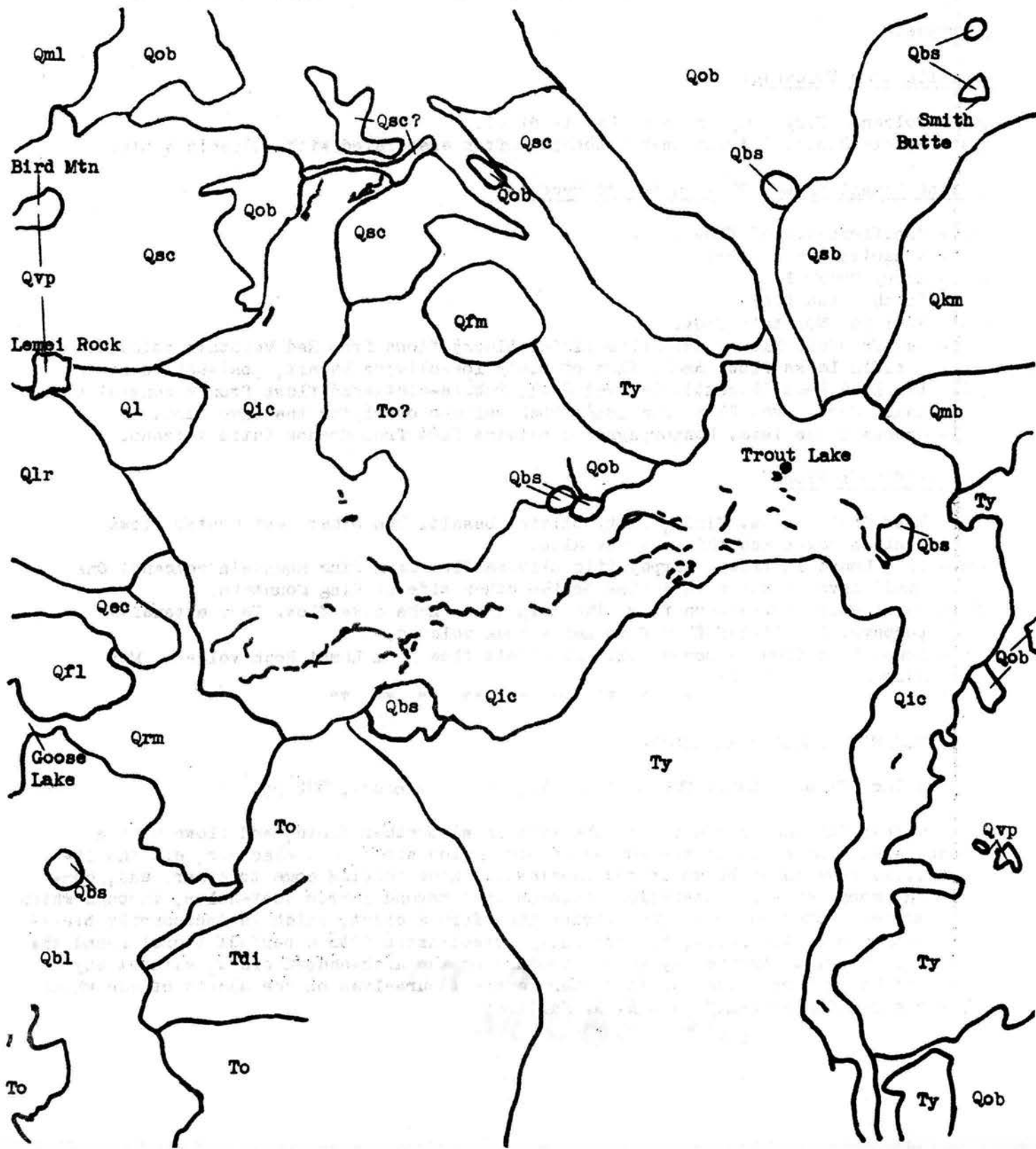
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FEATURES

TENTATIVE GEOLOGY
OF THE TROUT LAKE CAVE AREAShowing the Approximate Course
of Known Lava Tubes

Geology by W. S. Wise, P. E. Hammond, and R. A. Sheppard

Additions by R. L. Crawford



GEOLOGIC LEGEND

TERTIARY

To - Chanapecosh Formation (Oligocene)

Pyroclastic debris with interbedded basalt and andesite.

Ty - Yakima Basalt (Miocene). Basalt of the Columbia River group.

Tdi - Diorite Intrusive (post-Oligocene). Augite-Hornblende diorite sill or plug.

QUATERNARY

Miscellaneous Volcanics

Qvp - Volcanic Plugs. Hypersthene dacite et al.

Qbs - Scoria Cones. Olivine basalt scoria. Often associated with volcanic vents.

Olivine Basalt Flows, Pleistocene to Recent

Qob - Undifferentiated flows.

Qml - Mosquito Lakes Flow.

Qsc - Smoky Creek Flow.

Qsb - Smith Butte flow.

Qfm - Flat Top Mountain flow.

Qrm - Red Mountain flows. Extensive fluid, blocky flows from Red Mountain volcano.

Qfl - Forlorn Lakes flow. Small flow of platy low-olivine basalt, post-Red Mountain.

Qbl - Big Lava Beds (Recent). Several dark, rubble-cluttered flows from a central vent.

Ql - Lemei Rock lava. Flow from Lemei Rock volcano overlying the cave flow.

Qmb - Meadow Butte lava. Nonporphyritic olivine flow from Meadow Butte volcano.

Speleoliferous Flows

Qec - East Crater flow. Fluid, platy olivine basalt. Two other East Crater flows contain caves and this one may also.

Qkm - King Mountain flows. Porphyritic olivine flow from King Mountain volcano. One small cave is known in a flow on the other side of King Mountain.

Qic - Lemei Rock intracanyon flow. The main Trout Lake cave flow. Very extensive porphyritic olivine flow from Lemei Rock volcano.

Qlr - Lemei Rock flow. A second olivine basalt flow from Lemei Rock volcano. May also contain caves.

** ** * * * * * * * * * *

VULCANOSPELEOLOGICAL ABSTRACT

Reclus, Elisee, 1873. The Earth. N.Y., Harper & Bros., 573 pp.

P. 464: "At the source itself the lava is altogether fluid, and flows with a considerable speed...but the course of the molten stone soon slackens, and the liquid...is covered by brown or red scoriae... These scoriae come together, and, combining, soon leave no interstices between them beyond narrow vent-holes, through which the molten matter escapes. The scoriae then form a crust, which is incessantly breaking with a metallic noise, but gradually consolidates into a perfect tunnel round the river of fire... Anyone may safely venture on the arch-shaped crust, without any fear of being burnt, just as in winter we trust ourselves on the sheets of ice which cover a running stream." --- W. R. Halliday

TRIP REPORT SECTION

Trout Lake, July 4 - 6
by Rod Crawford

Thursday night, Bill and Ruthie Capron, Dave Walker, and I started out from Seattle in the van of Bill's friend Jim from Philadelphia, an ex-Marine Episcopal preacher with a Mohawk haircut, who had taken a detour northwards after attending the convention in California. We slept that night at Bob Brown's house in Eatonville, and started thence Friday morning with his car as well as the van; also with Jasper and Curt, our illustrious chairman, who, having planned on staying home and accomplishing some honest work, was literally tied up and kidnaped by that blackguard, Mohawk Jim--a disgraceful exhibition.

Halfway between Randle and Trout Lake, the inevitable happened--Brown's car's fuel pump died. Fortunately, by gravity feeding from a fuel can held on the roof, we managed to reach our camp at Deadhorse Cave just before dark.

Saturday morning, while some people went down to Bingen for a new fuel pump, I discovered a new cave while scouting in the clearcut above Deadhorse--a penetrable hole with a respectable breeze. I came back with Dave and we explored it; it proved to be a miserable 50' crawl, with two places where we almost got stuck. Its only feature of interest is a multitude of droppings of the Pika or Rock Rabbit; I elected to name it Rabbit Hole Cave. Hiking back to camp was such hot work that both of us then took a dip in Deadhorse Creek.

By this time the others had returned and the car was fixed, so after a certain amount of "What-are-we-going-to-do"-ing and cursing the heat, Dave and Curt took Jim through Deadhorse while the rest of us went off scouting. The latter was primarily because I had recently obtained the 1974 Fireman Map of the area, and on it, near a large blind sink--known for years--SW of Peterson Prairie, were shown a number of other holes that no one had ever heard of. An enlargement of the relevant area appears below.

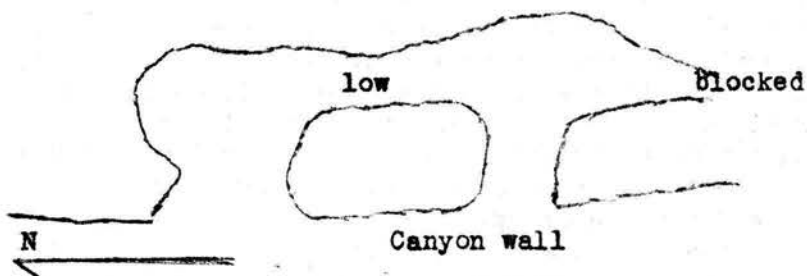


Fortunately, we stopped off in Trout Lake first to visit the Oregon Grotto party camped there, and talked to Luurt Nieuwenhuis and Jim Nieland, who had just finished checking out three of our five new sinks (they didn't go). When searching for the remaining two, we ran into a small problem: the borders of the two clearcuts in the area are no longer clear-cut, having been

growing new trees since ca. 1948. Thus, we didn't find either of the two sinks we were looking for.

That night, in the upper entrance chamber of Deadhorse, we played the First Northwest Subterranean Chess Tournament. Since not everyone played the same number of games, it's difficult to say who won, but results were: Crawford, 2 of 3; Brown, 1 of 2; Capron, 1 of 1; Walker, 0 of 2.

The next day, Curt and Dave took Jim down as far as the bottom of the 40' pit in Dynamited with Stan Pugh's ladders. They had planned to use the Willamette Valley Grotto's rigging, but they, while present, appear not to have been underground all weekend. Brown, the Caprons, and I went to check out the lava tubes intersected by Little Goose Creek Canyon. These holes, which, according to Charlie Larson, have never all been checked out, are mostly near the top of this very impressive gorge. Bill and Bob explored two (which connected) for a total of about 75' of crawl; a sketch map appears below. These caves are so situated that they may form the lower end of the Smoky Creek Cave System.



Little Goose Canyon Cave
#1

Sketch map by Bill Capron
6 July 1975

We had planned to rendezvous at a small lake on the way to Randle--a great mistake, as one could scarcely see the lake for the mosquitoes. We compromised by waiting for the other group back by the road; all later arrived home without further adventure.

Reports from Chuck and Mary Coughlin

June - Underground in Seattle

Several weeks ago we noticed a site, under the Seneca St. off ramp from Hwy. 99, where a building had been razed. Exposed windows and doors in an old brick wall on the east boundary of the lot promised to lead to the famous Seattle Underground - and so they did! After questioning several of the locals, the party of Dave Walker, Bill Capron, and Chuck and Mary Coughlin climbed a pile of "breakdown" to an open window. We explored about a block of passage before meeting dead ends in both directions. We searched several blocks further south, looking for new leads, but couldn't find any more that "went." About 10 P.M., scouting was discontinued because of darkness.

Ape

On July 5th, the Coughlins (8 of us including grandma and grandpa from Wisconsin) toured Ape Cave. We had stopped at Reese's store, near Cougar, for some vintage post cards, ice cream, and caving information. The cave hasn't changed much, except that the clean-up campaign seems to be successful. The cave and surrounding area are nearly rubbish-free. We had 3 flashlights, a Coleman lantern, and 2 carbide headlamps when we entered. It was cold in the cave and probably 100° F. outside. We walked down to the "meatball" and met several other parties, but conditions were hardly crowded. After spending about an hour in the cave, scraping 6 little knees

and losing most of the function of the 3 flashlights, due to clumsy little hands, it was a relief to see daylight. Topping the stairs, we felt the frost leave our fingers and toes. There was a spectacular view of Mt. St. Helens from the parking area. A good time was had by all.

Washington Monument, July 19 - 20, 1975
by Dave Walker

Participants: Jan Roberts and Dave Walker

Saturday, July 19, Jan and I left the road at 1:00 P.M.. The hike to Washington Monument by this route was rather difficult. There are no trails to the area. The route we took involved about one mile of steepside hill hiking and one mile up and down. There is ample devils club and other brush to hold onto on the hills. (The next trip will be by an easier route, since uncovered).

After dinner we explored five sinks. Two were entered; the others would not allow human entry. The first sink was about 10 feet deep; the ceiling was mud and sticks. The floor was mud; there were no penetrable openings.

The second sink was penetrable for about 50 feet; there was one side passage, leading to the bottom of a pit. This cave contained a very active stream. The cave ended in a gravel and dirt choke at the end of a slope.

Sunday we got an early start; my clothes had almost dried overnight. Jan led the way to a resurgence, which could not be entered. About 200 feet south of the resurgence we found a cave with wind blowing from it. This cave was entered for about 150'; the only obstacle to further progress was a mud puddle. We did not explore further because we wanted to do more scouting and we were not fully equipped for caving, having taken only flashlights (we felt this would assure finding a cave).

Another cave was found about 200 feet farther south. This cave ended in less than 100 feet; no wind blew from it.

Large areas remain to be scouted and the cave we found has yet to be explored fully.

We started the hike out at 2 P.M.; we did not arrive back at the car until 9 P.M.

Jefferson Ridge, July 13, 1975
by Stan Pugh

Any "old time" caver who has lived in the Northwest will tell you..."There just ain't any limestone caves in the Olympic Mountains." Two years ago at a Grotto Meeting Bob Brown reported that his friend found a "hole in the ground" on Jefferson Ridge. It's been some time since that report, but some of us have been "itchin'" to check it out.

Sunday morning, Bob Brown & Jasper, Bill & Ruth Capron, and Rod Crawford met at my house to head out to the Peninsula to find this cave. After some bumpy roads and a bit of dust we stopped at a "dead end" Forest Service road where we saw the sign "Jefferson Lookout Trail." Jasper was, of course, the most eager to get started, but in due time we all got our boots and packs on and began the switchbacks...up...up...we gained 1400 feet the first hour. It was a lovely trail with rhododendrons all along the way.

After two hours our "guide" caught up with us and told us that it was "easy going" from there on up!! He was almost right...we got to the cave after 2 3/4 hours of climbing. Sure enough there was a hole right next to the trail just like he had said. Rod was the first to don his coveralls and slip through the 24 inch round hole in solid basalt. Down...down he climbed until he reached a new Olympic record of nearly twelve feet!! He figured that there was approximately

30 feet of "passage" in the two "leads" and entrance drop. After Ruth and I found a souvenir from the demolished lookout tower, we headed back down the steep trail... just the kind needed to toughen you up for Cave Ridge.

Reports from W.R.H.:

Boulder Glacier Scouting

On the July 4 weekend, Patricia, Ross, and I scouted the snout of the Boulder Glacier of Mt. Baker below the summit thermal activity. The main stream channel was still snowed in, but in cavernous fissures above the firn level we found evidence of recent upward flow, with standing water in one of the fissures. A full report is being prepared for the U.S. Forest Service, which is willing to issue permits to qualified glaciologists for continuing study in this fascinating area.

Mt. St. Helens Glacier Cave Scouting

On July 27, Dr. Wayne Smith of Chehalis led Chuck Coughlin, Ross, Patricia and myself all over the north side of Mt. St. Helens looking for a steam cave reported to be on the west side of the "ankle" of "The Boot," just below a focus of thermal activity. At the site we found no thermal activity and the largely melted remains of a snow cave. Nearby, however, we found the entrances of several glacier caves, one marked by an entrance moraine. We also had an interesting time with an unexpectedly touchy ice-fall which looks as if at least part of its contour is the result of cavernous undermining. Just up-glacier from one part of the ice-fall, we observed a large jet of silt-charged water bursting out of a small hole under hydrostatic pressure. I frankly am getting more and more intrigued by sub- and intraglacial hydrology and speleology all the time. We obviously have an enormous amount to learn.

Cave Ridge 'Cave-In'

August 3, 1975

by Bill Capron

Ever since I first got to Washington almost a year ago, I have heard cavers talk about Cave Ridge. After taking on Jefferson Ridge a few weeks before, I was ready (I hoped) for the trip up the ridge. Early Sunday morning, 3 August, John Torkelson, Ruthie, and I arrived at the Alpentel lot. Shortly later Stan Pugh and another Tacoma caver, Doug Walters, arrived. After waiting fruitlessly almost till 8 A.M. for three novice cavers, we departed.

The trip up was, in short, uneventful. Thanks to Stan's guidance we hardly strayed from the trail. We arrived at Lookout Cave 2 hours, 20 minutes after starting, not at all exhausted. The trip was far less severe than I expected. This may have been due to the cool, crisp morning air.

We ate lunch with Mt. Rainier and Lake Keechelus. There were small patches of snow, but all the caves we saw were open. Our main objective was to bottom Danger Cave. We found the entrance with a little difficulty and got our gear out.

Danger Cave is fairly short. Just inside the entrance, though, is a real 40-foot pit. We rigged it with Curt's rope and Stan's ladder. Stan and Doug climbed down the ladder, of all things. The rest of us rappelled. The rest of the cave is fairly steep with boulders to climb over. It is all free-climbable. The 15 foot pit is just a slope--wet but easy to climb. The terminal room is filled with large break-down blocks. Two small rooms with wet, sandy bottoms were explored. One had some thin stalactites clinging to the wall.

Springtails are second only to mites as the most abundant "bugs" on earth; estimates vary, but normal populations in moist areas seem to be in the billions per acre. Some are predators on nematode worms---eating them like a child sucking in a strand of spaghetti---but most live on fungi, mold, or the feces of other animals. Many species are noted for their bright blue or purple coloration. Mating---always an interesting subject---is usually accomplished indirectly, with the male leaving stalked droplets of semen where the female's genitalia are liable to brush against them. In one group, the male literally rings his chosen female with these droplets so that she cannot escape being fertilized.

Springtails occur wherever there is damp soil or organic debris; I illustrate a selection of soil species in Fig. 1, showing that the spring mechanism tends to disappear in species inhabiting such a tightly packed medium. Most caves containing soil probably have soil springtails, but they are rarely discovered because the soil species are too small to be seen by the unaided caver. They have to be collected by placing a soil sample in a Berlese Funnel, a device that sends the inhabitants of a soil or debris sample into a jar of alcohol below by drying it with a light bulb suspended above. I have done this only once, in VICEG Cave where the bucket of soil had to be hoisted out the entrance pit on a rope; it yielded several of the smaller springtails in addition to some mites.

The only springtails ever seen by most cavers are the large (2-3 mm long or more) members of the genus Tomocerus. They occur in most of our caves, concentrating around such food sources as moldy fecal material, but also to be found simply crawling about. In addition to their size, they can be distinguished from other springtails by the division of their antennae into many smaller segments (see figures). A less technical form of recognition: a little grey-white thing that jumps when you touch it is probably a Tomocerus. They are collected by allowing them to stick to a wet watercolor brush (and hoping they won't jump off!), then dipping the brush into a vial of alcohol.

Some Tomocerine species, like the Japanese Plutomurus illustrated, have been claimed by some to be troglobites. Of the fifteen species known from the United States, only one, T. missus, is known only from caves, and it, though pale and eyeless, does not differ in this respect from T. californicus which is known from both cave and surface collections (see figures). Of the rest, six are known from caves and the surface, the other seven only from the surface. T. californicus is the most common Tomocerus in Oregon and Californian caves. T. brevimicronatus, described from Oregon Caves, is also known from Seattle. However, the only species I have found in Washington caves is the grey-white T. vulgaris, for which I have numerous records, from limestone, lava, and talus caves.

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SPELEOCOOCKERY DEPARTMENT: How to Make Your Own "Swiss Miss"
by Mary Coughlin

Here's an easy recipe for concocting your own instant cocoa mix. It's considerably cheaper than the commercial product---averaging about 4 cents per serving as compared to 10 - 12 cents per serving of the ready-made packaged mix.

- 1 cup cocoa
- 2 cups sugar
- 5 1/2 cups dry milk powder
- 1 cup coffee whitener (dry)
- 1 1/2 tsp salt

Mix all ingredients thoroughly and store in a jar with a tight lid. To use simply put about 1/4 cup of mix in a cup and fill with hot water. Makes about 40 servings.

NOW HEAR THIS: Check out the Caver's new address, on the back cover.

The following is taken from a last year's issue of the Madigan General Hospital newsletter:

Spelunking is deep subject for Madigan OT tech

(Editor's note: Readers of the June 14 TACOMA NEWS TRIBUNE saw the face of Occupational Therapy tech Specialist 5 Robert E. Richardson looking up at them from the front page. Richardson was emerging from a 32-foot well in the backyard of the James Johnson family of Tacoma, where he'd been helping the Cascade Grotto of the National Speleological Society (NSS) examine the Johnson's well. We talked to Richardson in an attempt to, if you'll pardon the pun, shed some light on the deep subject of spelunking.)

SP5 Richardson originally became interested in spelunking, or exploring caves, while he was attending the University of Texas in 1967. There were more active spelunkers in the state than in many multi-state regions, and the UT had an active recruiting program for its Grotto. Richardson and his roommate went to one of their meetings, and he's been hooked ever since.

Journey to Mexico

Spelunking has led SP5 Richardson as far away as Valles, Mexico, where he experienced the only real hair-raising experience of his time in caves.

The group with which he traveled to Mexico had decided to explore the Tinaja Cave near Valles. There were fears that Hurricane Beulah, which had poured more than 20 inches of rain on the surrounding country-

side, might have flooded the cave. The group climbed down the 150-foot, slanted entrance to the cave, and Bob climbed a van-sized rock to look around.

Suddenly, the group heard a roar and a wall of water rushed into the cave. Bob looked on in shock as first his equipment and then his future wife floated past his perch and he found himself in knee-deep water. After some quick scrambling, the group got out of the cave, wetter but wiser.

World's longest

SP5 Richardson explained that caves are generally created when seeping underground water dissolves limestone formations or widens existing cracks in the earth. Caves are also found in ice and glacier masses and in lava flows. Washington, a relatively poor state for caves, holds the distinction of possessing the world's longest lava cave. He reports that its caves, like its winter weather, tend to be wet and cold.

In addition to his Mexico trip, Bob has journeyed to Oregon, Idaho and Montana to explore caves, and has taken about six trips already this summer.

"Many spelunkers are interested in photography, geology or

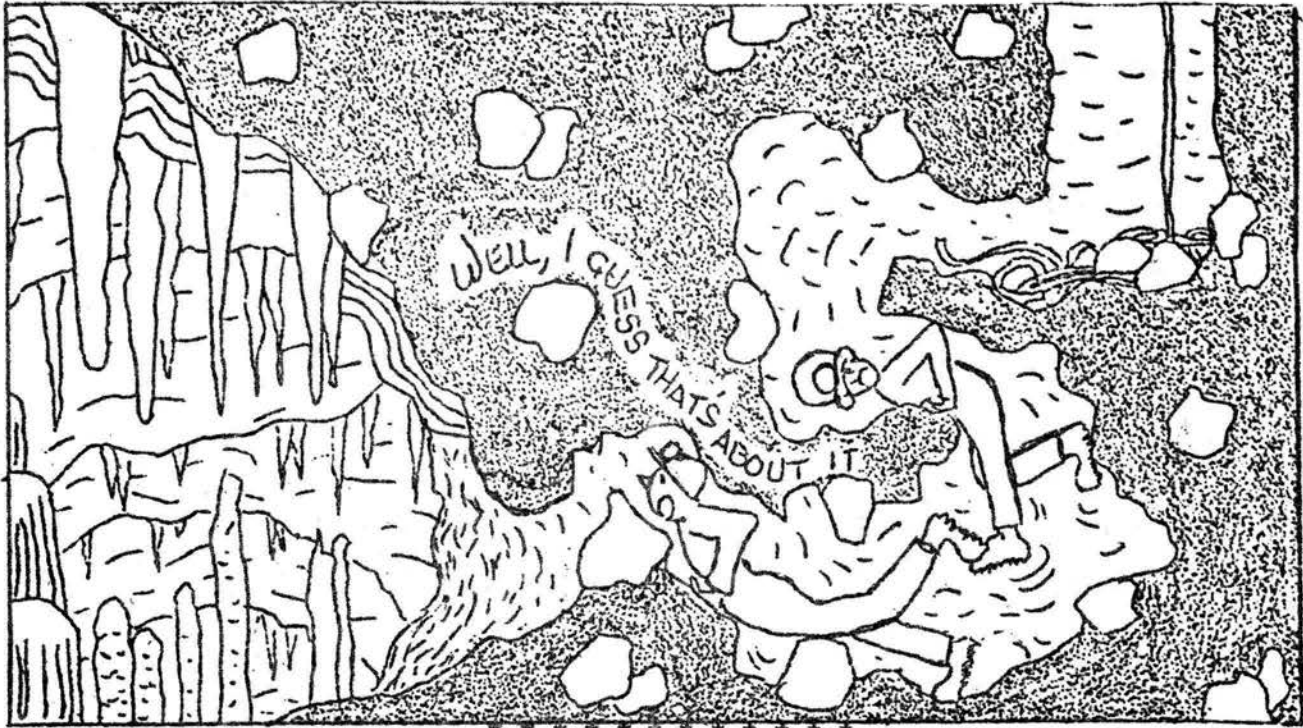
biology, but I just like to explore and map the caves. Some are fantastically beautiful, and I've found some with Indian artifacts, indicating that people once lived or worked in them," he said.

Meets wife

Bob met his wife, Diane, while on a cave-exploring expedition. "We spent several hours in a narrow crawl space. You really get to know people in a situation like that," he said. In order to assure that future meetings will be possible, Bob makes sure that he wears a hard-hat and that his group has available three separate light sources before he ventures into the interior of the earth.

"Spelunking is like mountain climbing inside out; we use similar equipment. It requires pure concentration, and it's a great way to get your mind cleaned out of the world's worries," Bob says.

He urges potential Madigan spelunkers to call him at 584-5317, for more information about this fascinating hobby. There are some ground rules, however, says Bob. "The NSS motto is 'We kill only time, take nothing but pictures, and leave nothing but footprints.'"



New Mineral King Bill Could End Disney Plans

By BOB RITTER
Times-Delta Staff Writer

The Times-Delta has learned that legislation may be introduced to place Mineral King within the boundaries of Sequoia National Park.

Approval of such a bill could conceivably rule out any possibility of development of the proposed ski area planned by Walt Disney Productions.

Although similar legislation has failed to get out of committee in the past, officials believe that the bill may have enough support this year to reach a floor vote.

Informed sources have indicated that if the measure should progress to a vote it would pass both houses of Congress.

The proposal is being considered for introduction by Rep. George Miller, D-Pleasant Hill.

Contacted Wednesday in Pittsburg, Rep. Miller said he probably will author the legislation but indicated that he has not reached a final decision.

Miller is currently visiting his district during the ongoing Congressional recess.

"I am considering it (the bill) and I probably will," Miller said. "The final decision will be made after I return to Washington."

The legislation would present newly elected Rep. John Krebs, D-Fresno, with

one of his first major political decisions directly involving his home district.

Rep. Krebs, who visited in Visalia Wednesday, said it is much too soon to comment on the matter.

"I must hear the pros and cons first," Krebs said. "I'm in no position to state whether I would or would not support it."

The Congressman said he would consider the matter in relationship to Tulare County and the interests of his constituents and other parties that might be affected.

Miller, the youngest representative currently serving in the House, occupies the seat formerly held by Jerome Waldie, who introduced similar legislation in 1973.

The proposal in various forms has been introduced several times since 1956. The Waldie bill was co-sponsored by some 30 congressmen — mostly from California.

The measure has the staunch backing of the powerful Sierra Club and other conservation-minded lobbyists.

Michael McCloskey, Sierra Club's executive director, said his organization has conferred with Miller and is giving full support to the proposed bill.

McCloskey said the legislation would include some 15,000 acres including the headwaters of the Kaweah River.

"We are supporting the measure basically because we feel that the land is topographically part of the same area in the park," McCloskey said. "It has the scenic and natural characteristics which qualify it for national park status."

Asked if the bill would rule out the possibility of a large ski-area development, McCloskey said it would be "unlikely that anything more than some kind of cross-country ski facility would ever be built there."

Walt Disney Productions now holds a Forest Service permit (the area is currently part of the Sequoia National Forest) for year-round development of the area.

If the legislation is approved, it would place jurisdiction in the hands of the National Park Service, which is governed by more stringent provisions regarding such developments.

McCloskey said that the House Interior Committee has requested a report from the U.S. Department of Interior on Mineral King which he said indicates that a hearing may be held if the bill is placed in the hopper.

The Sierra Club has sought approval of such legislation since 1911. McCloskey said that Congress came closest to adoption in 1926, but fell short because of remaining hopes for mining development.

From a recent issue of the Vesalia (Cal.) Times-Delta.

DEPARTMENT OF CONSTRUCTIVE PLAGIARISM

(from Science, 4 August 1972; "Understanding of Science," by Amitai Etzional)

"To understand science, one must acquire a taste, or at least a tolerance, for the beauty of mathematical models, of the structure of galaxies or crystals, of DNA. One must appreciate the process itself - data that fall into place after years of analysis, finding the missing element that completes a table, predicting an event on the basis of careful calculations and a flash of insight - as an end in itself.

One must understand that the scientist, while not a rainmaker who can deliver solutions to specific problems on short order, nevertheless addresses himself to relevant problems of the day - that, in ways difficult to specifically foresee and almost impossible to control, scientific efforts do "pay off" and are not just idle games. The public must learn that scientific findings are always tentative and may prove erroneous or obsolete, but that their tentative guide is more valid and safe than any other approach in the world.

To advance this understanding, especially in the face of renewed hostility and suspicion of science - some of it limited to small counterculture groups, some widely shared by middle America - will require all the ingenuity that the AAAS board, staff, and Committee on the Public Understanding of Science can muster. Misconceptions, anxiety, and paranoia rarely retreat when merely bombarded with facts, and new appreciation is rarely cultivated by mere sharing of information...."

Vulcanospeleological Abstract

Bryans, Robin. 1963. The Azores. London, Faber & Faber. 203pp.

P. 134 - littoral caves.

p. 123 - two large lava tubes on the island of Terceira, one with an underground river.

p. 129 - Sulfur Grotto, locally called Furnas do Enxofre; "a unique miracle of nature", supposedly according to the late Prince Albert of Monaco, on Graciosa Island.

pp. 84 ff. An extensive lava tube cave, part in use as a store for a tobacco factory. Electrically lit for several hundred yards. Said to run on "for many miles."

--W.R.H.

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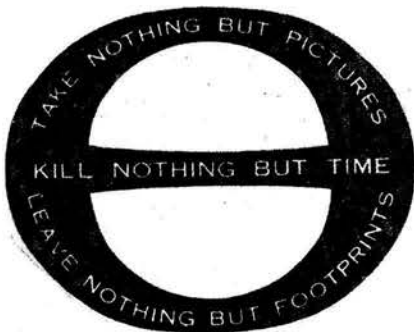
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 W/TR.N.F. \$3.50

FROM
 Bill ZARWELL
 1040 N. 47th ST.
 MILWAUKEE, WIS. 53208
 1-75 Bill Davis 1971