



The Cascade Caver

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



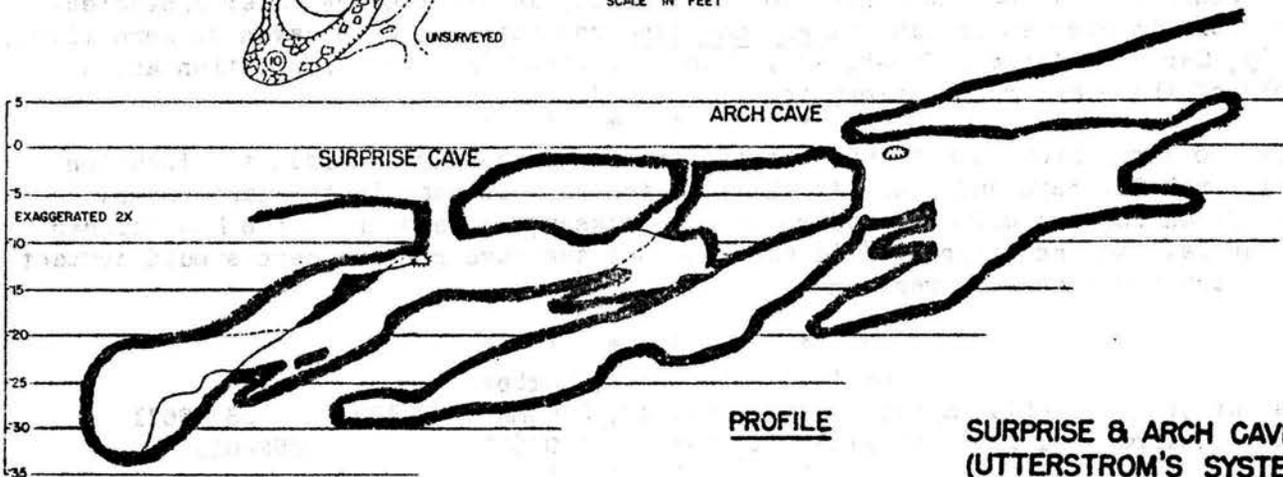
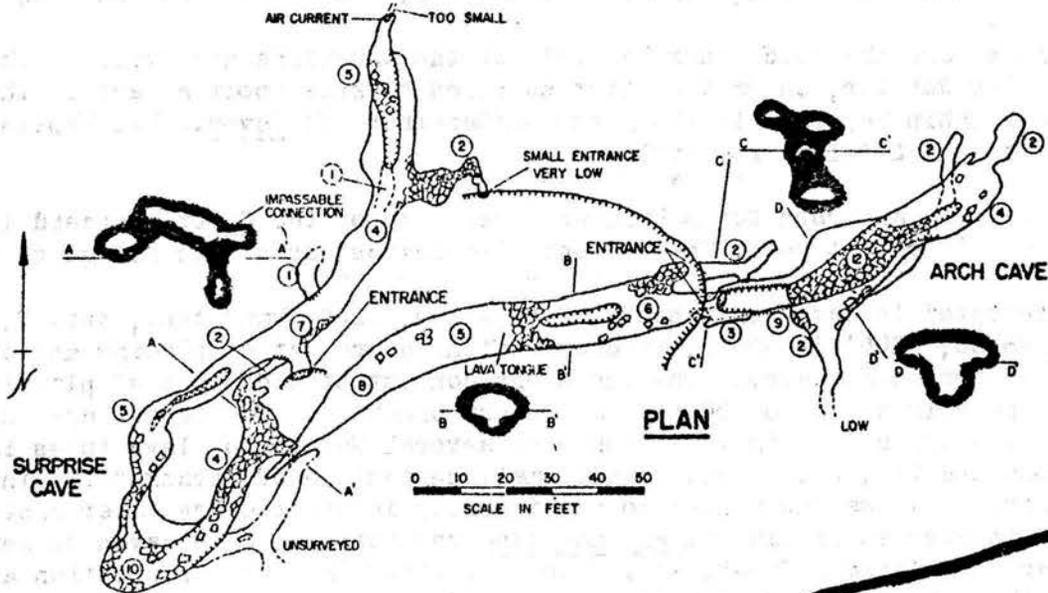
Volume 14 No. 9

Editor: Rod Crawford

September 1975

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UTTERSTROM'S CAVE SYSTEM St Helens



**SURPRISE & ARCH CAVE
(UTTERSTROM'S SYSTEM)**
SKAMANIA CO. WASHINGTON
TAPE & COMPASS SURVEY 7/13 & 7/22 1974 BY
RICK POPE, RICK LONERGAN & DENNIS BELL

FROM THE SPELEOGRAPH

P# P1.10U

COMING EVENTS

Sept. 27-28. Windy Creek Cave surveying. (Anybody got an aluminum tripod?)
Call Coughlin, 772-1170.

October sometime: There is still a Tiger Mtn. Talus Caves trip in the works--
contact Chris Miller, RO2-7585.

Dave Walker, 232-1698, and Pat Shaw want to visit Newton Cave but need some more
experienced vertical cavers to mount a suitable expedition.

Oct. 10, Friday. Special Business Meeting. See back cover.

Oct. 11-12. Cave Ridge. Call Bob Brown, (206) 569-2724.

Oct. 20. Regular Meeting in the Hallidays' basement. Nominations for next
year's officers begin this meeting.

Oct. 25-27. Papoose Cave. Call Brown.

Anytime: Charlie Anderson is available for weekend trips to Paradise Glacier Cave.

Call him at work, during day: 622-3848 (Dieterich-Post).

November: Byron Glacier, Alaska. Contact Halliday, EA4-7474, or Cady, 763-0858.

NEWS AND NOTES

If anyone is going to Canada, contact the Caprons, 525-2260. They have an errand.
* * * * *

Immediately before the epic Labor Day trip of the Coughlins and friends, Chuck
called Dr. Roy Webster, an Omak dentist supposed to know about a cave in the
Scotch Creek Basin reported in the November/December '74 Caver. Dr. Webster
described it as a 25' long rockshelter.
* * * * *

Thanks to Charlie Anderson for making up a new copy of the Caver masthead (even
though I haven't got it yet). The old one disappeared during the change of editors.
* * * * *

Anyone interested in cave registers?? Dave Jones, 3202 Grand Ave., Apt. 2, Van-
couver WA 98663, (206) 695-2671, is coordinating a project of placing and checking
registers in Northwest caves. The registers consist of wide-mouthed plastic jugs
containing pencils and 25 or 50 standard questionnaires. The latter are checked
and replaced after a set time. Response in several Washington lava tubes is so
far very encouraging, with a relatively small percentage of "cranks" filling out
questionnaires. Those who appear to be sincerely interested are later contacted.

Persons interested in placing and checking registers in some caves up here (i.e.,
Ramsey, Cascade, Jackman Creek, etc.) should contact Dave for information and a
supply of the standard questionnaires.
* * * * *

Thanks to Jerry Broadus and Jan Roberts, who independently reported the location
of Fisher's Chimneys and Winnie's Slide, noted on this page in the last issue.
They are on regular climbing routes of Mt. Shuksan, and appear on the Mt. Shuksan
quadrangle. Anyone interested in checking out the cave rumors there should contact
the Editor for precise directions.
* * * * *

New (and not-so-new) Members

Russ Turner 10214 Lakeview Ave., Apt. 40, Tacoma WA 98498 588-9671

John Torkelson 19219 99th Place S., Renton WA 98055 852-0195
* * * * *

New Address

Phil Whitfield #104, 505 2nd St., Nelson B.C. V1L 5P2 (604) 352-9846
* * * * *

NOTE ALSO that if mail does not reach the Caver via the address on the back cover,
it may be sent c/o Kanadu Grotto, Box 5044, University Station, Seattle WA 98105.

FEATURES

CHEESE CAVE OF MT. ADAMS

by Patsie Sinkey

from the Seattle Times Magazine, 24 September 1944

When war closed off the exports from France to the Allies, many a [cheese] epicure felt desperately frustrated after sampling new, domestic "Roqueforts" that were supposed to be "just as good" as the original.

Then, suddenly, a few months ago, came a ray of light! Unheralded and unsung, a new cheese appeared on the market. It was discovered modestly gracing the shelves of a few venturesome merchants; and startled gourmets became aware that this new product so nearly duplicated that from the caves of the ancient Gauls that, with their eyes blindfolded, even the most painstaking expert could not tell the difference. The new cheese had a simple name, "Guler."

It, too, was cured in a lava-born cave and, strangely, the cave of Guler, although on the opposite face of the earth, has the same altitude and virtually the same degree of latitude as the French caves, which are but 60 miles farther south.

Checking further, much of the same flora and fauna abound in the Alpine pastures surrounding both of these caverns. Around Guler Cave, in the New World, grows the same variety of wild thyme as that which made sweet fragrance for the Gallic shepherds. Like the caves of Roquefort, it is situated 2,000 feet up on a mountain slope; a slope that travels steeply to the 12,000-foot, glacier-capped summit of Mount Adams, in the southern part of Washington.

Guler Cave, formed at a time of bubbling lava flow, has no limestone to soften the glistening black of its walls, which lead downward and along the valley floor instead of directly into the mountain side. The American cave looks like a vast, agonized tube, weirdly contorted when some prehistoric flow of water evidently caused a quick hardening of its bulwarks [sic!]. It takes its name from a Swiss immigrant, Guler, who settled in the region in 1882 and died about 1900.

The cave was discovered 56 years ago by little Josi Aerni, the son of a Swiss pioneer, who chanced to see a strange hole in the ground when he was tending his father's cattle. Casting a rock into the abyss, he waited long and curiously before he heard the muffled thud of its arrival on the bottom. "That rock," decided Josi Aerni, who lived prosperously to become an "old-timer" himself, "certainly traveled quite a piece before it found a landing!" With a band of neighbors, he returned to investigate further. One brave man, Peter Schmid, whose descendents still live in the valley, made a descent into the black abyss, anchored to the world above by one good, stout rope tied around his middle.

His must have been a spine-tingling journey! Down, down, into the moist blackness, with the ragged spot of surface light getting farther away as he joggled downward. Like spectral fingers investigating his presence, a cool, persistent flow of air wrapped itself around the daring Mr. Schmid; the rays from his feeble pitch-torch stretched away into total oblivion. When he touched bottom, the lava floor was rough and slippery, extending downward, losing itself in the shape of a huge letter "S". Gray wisps of mold clung to the rounded walls and ceilings. The grotesque tube, with its 25 feet of width and 35 feet of height, appeared almost circular, but crept away in length for more than 2,000 feet before it began to taper off into a narrow passageway.

Mr. Schmid had seen enough.

In Trout Lake valley, which surrounds the cave, he had explored a mystery of the earth's crust that, from that day to this, has intrigued all who visited its depths. Unknown to Mr. Schmid, he had found a magic spot; for this cave is the

only known spot on earth, excepting the Roquefort Caves, where can be found exactly the right humidity, temperature, altitude, latitude and geological make-up required for the peculiar growth and action of blue-mold spores in producing perfect Roquefort-types of cheese...

Homer Spencer, the handsome young Oregonian who made this startling discovery, has given a terrific jolt to the pride of an Old-world monopoly. Through six long years of toil and investigation he has risked his all to perfect the scientific product of his vision. He became interested in blue molds while doing research to while away the time during his convalescence from a broken leg. Being the son of Oregon pioneers, he knew well the valleys of the Cascade Mountains; many times he had visited Guler Cave. The results of his scientific probings brought him to the inevitable conclusion that action of blue-mold spores in Guler Cave should be identical to that of molds in Roquefort Caves...

From the milestone of this decision, Mr. Spencer, then only 32 years old, carried on his conquest with a full heart, an empty purse, and a lack of confidence among his friends, who were convinced he was on a fruitless track. To keep the wolf from the door, he was obliged to go back to his occupation of construction engineering; meanwhile, hoarding every available penny, cherishing every bit of knowledge of cheese that he could scrape together. Gratefully, he was being advised by the obliging Dr. Rogers, then with the Department of Agriculture in Washington. For the privilege of spending a couple of midnight hours in his beloved cave laboratory, he would often drive a round-trip distance of 700 miles from his construction job at Medford, Oregon, rushing every minute to be back before his weekend of grace should be tolled off on Monday morning.

During this time, a vital experiment was taking place. A round of cheese sent from the experimental station at Grove City, Pa., was waiting out its curing time in the secret recesses of the cave. Homer Spencer was breathless with anxiety. It seemed the months would never pass while he waited to see what would happen to his precious cache in the damp, solitary darkness of Guler Cave. But when, at last, the curing period ended, the experiment proved itself more than successful.

The round of cheese came out as mellow as butter, daintily marbled with blue-gray mold; exactly correct as to texture. Now there was nothing that could discourage Mr. Spencer from full-time devotion to making Guler cheese! Slowly, impeded by sparse funds, using his own hands and his own ingenuity, he built the necessary equipment. A vine-covered barn became an immaculate factory, complete with concrete floor, sterilizing machinery, vats for the "mix," hoops for molds, assorted gadgets that he himself had to devise to aid him in his creation. A small farmhouse became the salting and cutting rooms, with space left over for packing boxes. Dairy herds, long resident in the valley, were called upon to contribute rich, whole milk for the new American product. But, for the magic touch that meant the sheer epicurean delight of a finished round of Guler Cheese, Mr. Spencer had to put in countless hours in the black, moist cave, which gets its sole illumination from small gasoline lanterns.

There, the rounds of cheese, all molded and salted, must rest on wooden racks for eight long months. There, during their aging process, they must be handled carefully, through a tedious series of manual operations. For the first three months, each round must be turned three times a week on its rack. It must be "needled" to permit inoculation by spore-laden air; it must be gently scraped and pampered and coddled. Explains Mr. Spencer: "Each round of cheese that reaches the market has undergone some 125 separate manipulations by hand. These include packing, salting, shaping, needling, turning, testing--as well as the intricate steps in actually starting and setting the cheese mixture."

For the final months of its curing, the cheese must be wrapped in foil and allowed to grow old in the cold, silent darkness of the cave, where it is constantly

bathed by air that never varies more than two degrees in temperature--remaining at from 42 to 44 degrees Fahrenheit, regardless of the season. With fame of Guler Cheese spreading, and demands far exceeding its creator's ability to meet the orders that pour in, Mr. Spencer wisely has acquired a 60-year lease on that cave.

By the end of that time he hopes to have finished his study of the mysterious blue molds! For now he is satisfied to have reached the first stepping-stone, the knowledge that Guler Cave is America's threat, after 2,000 years, to a cherished old-world monopoly.

* * * * *

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Lake Wenatchee Ranger District
Star Route Box 109
Leavenworth, Washington 98826

REPLY TO: 1600 Information Services

September 15, 1975

SUBJECT: Swallow Caves and Little Wenatchee Caves

TO: Rod Crawford
5235 17th Avenue N.E.
Seattle, Washington 98105

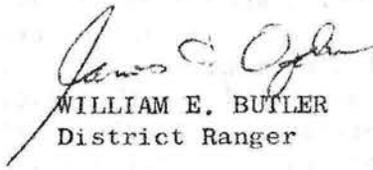


This is in answer to your letter of September 7.

The Swallow Caves Campground site was named for the small nesting holes that swallows have made in the steep-vertical sand bank on the opposite side of the river from the proposed campground. Perhaps you noticed these while exploring the area. As far as we know there are no caves in the area.

The cave in the Little Wenatchee area was well known to some of the older residents of the Lake Wenatchee area during the 1920's. None of them have visited the cave since about 1925. I made a search for this cave about 10 years ago and did not find it. I believe it was destroyed by the blasting at the Soda Springs quarry 15 or 20 years ago. The people who knew the cave say it was in that area. If it was not destroyed, the entrance may have been covered by rock blasted from the quarry.

If we may be of further help please contact us at the above address.


WILLIAM E. BUTLER
District Ranger

TRIP REPORT SECTION

Welcome to Washington, Russ

by Chuck Coughlin

Participants: Russ Turner, Rod Crawford, Sue Werblow and all the Coughlins.

Russ Turner is a newcomer to this area, a product of the Nittany Grotto, State College, Penn. The Labor Day holiday provided what seemed like an ideal opportunity to introduce him to the caves and countryside of Washington State. So off we went.

Our first stop was Ramsey Cave where I intended to push the high crawlway that I had left unchecked several weeks before. While I was putting on my woolies, Rod showed Russ through the cave and by the time I had crawled back to the spot where I had turned around on the previous trip, I decided I wasn't enthused enough to push it much further. The water was so COLD, and there was about 5" of it in the 18" high passage--too deep to push a carbide light ahead of me. Using this as a welcome excuse I decided to leave the exploration for another day and a wetsuit.

Our next stop was Jackman Creek Cave. The gate across the Scott Paper Co. road has been destroyed, so access was no problem. However the damp cave and constant rain had given Russ a bad cold and he didn't feel much like going in with us. Mary, her friend Sue, and Molly saw the cave. Then Katie and I went in. At 3' 3" she discovered that the cave had a good bit of walking passage. The rest of Saturday was spent touring the North Cascades Hwy.

The next day, since we were east of the mountains, was sunny and warm. We toured McLoughlin Canyon and Cave and then motored east to Republic, turned south and crossed the Columbia on the (free) Keller Ferry. We spent the night in a field near the Almira skeet range. Early the next morning, before things got too hot, everyone, including the 2 year olds, hiked down the Grand Coulee to Dry Falls Cave. The four swallow nests in the cave complete with young generated a lot of interest, but it was all I could do to coerce Rod into squeezing far enough back into the cave to see the formations. In the past I've had a hard time convincing people they exist, but now I have a witness and possibly pictures to prove it.

On the way home we looked for Chief Moses Council Cave near Appledale, but missed it. So after loading up with 125# of fruit in Wenatchee we crossed Stevens Pass to the wet side of the mountains and home.

Three Sinks Cave
12-14 September
by Rod Crawford

Friday night, Bill and Ruthie Capron and I drove down to Bob Brown's new house in Elbe, and continued in Bob's car with Bob and Jasper. We arrived at the campsite on Falls Creek about midnight, to rendezvous with a somnolent trio of Oregon Grottoites: Dave Jones, Mary White, and Paul Lindgren.

About 10 or 10:30 Saturday morning, we started the hike in to the cave. Dave found it with only one small detour, which is exceptional considering that many people never find it at all. The cave is very interesting geologically, having one section where the walls and floor are made up of perfectly smooth, flat plates. A slide section in this area, called the "Banana Peel," proved easily

negotiable. The gate was empty; apparently the plug had spontaneously pulled out. On the other side, Dave and Mary spent a half hour photographing formations while the rest of us shivered in an air temperature of 41°, water 39° F.; especially Paul, who had worn only a T-shirt and cutoffs under his coveralls in anticipation of doing some swimming. It should be noted that Jasper stayed in camp for this cave.

After this, we continued to the end of the cave and turned back. Having broken a wire on my headlamp, I was using my second light, a hand-held flashlight. In climbing the inmost breakdown pile, I stepped on a rock so lightly lodged that it shot away almost as if it weren't there at all. My right hand being too full of flashlight to grab for support, I plunged five feet or so and, I thought, sprained my left wrist. I emerged from the cave fairly easily nonetheless.

Troglobitic amphipods are known from the stream in this cave, but the only biota I noted was lava tube slime.

Bill lost his coverall and one or two wool shirts on the way back to the road. If anyone finds them there, please return them to him.

The remainder of the trip was productive from a spider collecting standpoint, but no further caving was done.

Monday, I had my wrist x-rayed and found that it was really broken--a partial fracture of the radius. Thus, yr editor will have a cast on his arm until toward the end of October.

Speleo-Adventures
in
ARMPIT, WYOMING
&
Nearby
Earwax, Montana

by Dave Walker

Thursday, August 28, 1975, Pat Shaw, Bruce Unger, Owen Wagner, and I left for Lovell at 5 P.M. We stopped in Moses Lake for dinner and had Breakfast in Butte, Montana, overlooking the lovely Berkely Pit (1300' Deep, but not a free drop).

We arrived in Lovell at noon on Friday, August 29th. We went to the ranger station to get permits and keys. The ranger checked our gear and asked how we planned to do Big Horn without a rope. Bruce told him we would find one, so he gave us permits after some thought. I would recomend all persons planning to do Big Horn take a rope, if you can find one.

After getting permits, keys, and supplies in Lovell we headed up towards the plateau. Since none of us were in a hurry to go caving, we went swimming. After all, a cave is just a lot of nothing with rock all around. If you have seen nothing once, you've seen it. Big Horn Lake (manmade) is like a tub in which a large number of cavers have washed; it was hard to be sure if the things that moved were fish or the water itself.

On the way up we stopped to hike in the John Blue Canyon, and saw the tailgate of Russ Martin's pickup at the bottom. The rest had already been removed for ecological reasons. After we pushed the van up a steep stretch, we arrived on top.

Our first stop was Groin, where Pete and Suds, proffessional cavers for the BLM live. They weren't in so we visited Natural Trap. The gate must be seen to be appreciated. The design is something from early storm sewer technology.

The first night at Armpit, Russ (of pickup truck fame) and I tried to return to town for additional supplies. After going about $\frac{1}{2}$ mile Russ hit two large rocks, putting two tires out of round. Just before the incident, he assured me he could drive and that the lost truck was just bad luck ("could happen to anyone"). When I looked closely, however it appeared he was steering by looking at the stars, rather than the road.

On Saturday we went to Devil's Canyon while waiting for people from Laramie and Colorado to arrive. No one was ready to go caving yet. We investigated several entrances, finding none which connected with a cave. I was surprised we didn't find anything, as we had taken care to have no lights or other caving gear along.

After lunch our group and Lynn Wayshner and Mitch Frey from Colorado took a trip to Horsethief. Lynn advised us to save our pictures for the Mind Bender, which we stumbled across in our blundering through the cave. After a most pleasant trip, we started looking for side passages in hopes of finding our way out before we got too hungry, the lamp water already having been exhausted.

Back at camp we had dinner and enjoyed the usual speleo-cameraderie which goes with any trip. Some nights were especially memorable, for instance the night of the cranberry juice (Egin). The mouse which got caught in the trap by the gut and struggled for a half hour before dying was another memorable moment.

Sunday we did Big Horn, which looks much like Horsethief, except you don't crawl as much and there's no Mind Bender. While underground we saw many wonderful things; however, they are all secret, so I can't mention them.

When we returned to the entrance, we were surprised to find someone had re-rigged the pit with both ends of the rope at the bottom. Who would do a thing like that you ask; so did we. As any vertical caver will realize, this is not the way to rig a pit. Normally the rope is tied to a root or a solid sagebrush and allowed to hang down the pit. Pat Shaw was able to climb the pit and rig the rope again so that we only had one end at the bottom. He reports free climbing is much more fun than jumaring out, especially the overhang.

Monday we did some hiking and visited Devil's Canyon Cave, after some trouble finding it. Much new passage will recently be found there. [???--ed.]

Tuesday we visited Horsethief again, our group reduced back to the original four, the Laramie and Colorado cavers having returned home. This time we saw much more of the cave, places with names like Powder Mountain, the Crack Where the Water Comes Down and others without names. We saw such wonders as angels hair, gypsum needles, flowers and crystals of all sizes. The wet parts of the cave are great for helictites and other speleothems.

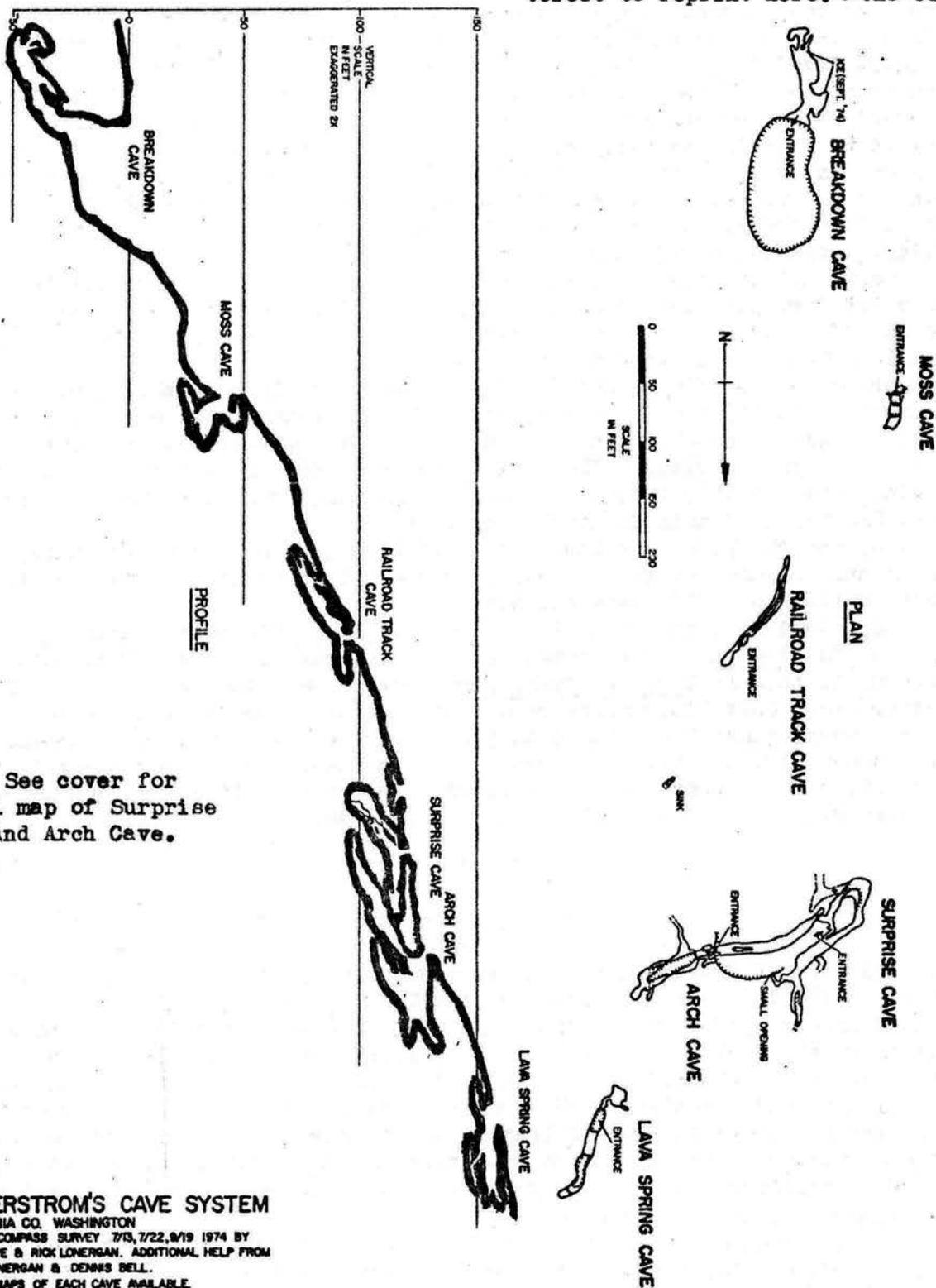
Wednesday we went to Lovell to turn in our keys and permits. We then took showers to wash off the gypsum dust and whatever else we had gotten into during the week.

The drive home was interrupted by a stop at Butte to look for old carbide lamps, but none were found, perhaps because all the stores were closed.

We arrived home Thursday, September 4 at six A. M. Pat left for home to organize a trip for the upcoming weekend, and the rest of us went about our tasks, looking forward to the time we could go again.

* * * * *

The Utterstrom's Cave System, discovered about 1963 by Jan Utterstrom, is the highest and most northerly known of the lava tubes in the Mt. St. Helens area. They were explored and named by Utterstrom and Dr. Halliday on June 1, 1963. Though small, they contain many features of interest. Their biota includes bats and grylloblattids. The following map and that on the cover, first published in the January Speleograph, were considered of sufficient interest to reprint here.--the editor.



Note: See cover for detail map of Surprise Cave and Arch Cave.

UTTERSTROM'S CAVE SYSTEM
 SKAMANIA CO. WASHINGTON
 TAPE & COMPASS SURVEY 7/13, 7/22, 8/19 1974 BY
 RICK POPE & RICK LONERGAN. ADDITIONAL HELP FROM
 BRAD LONERGAN & DENNIS BELL.
 DETAIL MAPS OF EACH CAVE AVAILABLE.

DISCOVERY OF N.S. CAVE AND OTHER SCOUTING NOTES
by Tom Miller

[The following consists of edited extracts from an account Tom wrote at Wind Cave last year, concerning scouting in Eastern Washington in 1971. Precise location of N.S. Cave is on file; other finds will require further checking---ed.]

[N.S. Cave] is located about 3-4 miles west of Albright on the southern end of Dunn Mountain. If you continue on the road to Albright, instead of turning off, you reach the area after a couple miles. Dunn Mtn. is shown in "Limestone of Eastern Washington" as being made of limestone and dolomite. A cliff runs around half of the mountain with numerous visible holes. One of these is actually a cave, going into total darkness, and about sixty feet long. The initials "N.S." were carved into rock in the entrance. All sorts of speleothems--popcorn, stalacs, stalags, columns, etc., were present.

Other solution tube segments, some involving climbs, are present farther along the cliff from the road; none are very long. I checked out some small shelters on the top of Dunn Mtn., and in the steep (100-150') limestone cliffs below left one good lead unchecked. Rope is probably needed.

Back in 1969 or '70, I and Bruce Ainslie had a blurb in the Caver concerning a rumored hole [in the same area] which the landowner would not let us visit. Well, I sneaked onto his land the same day, July or early August 1971, and found it to be a large shelter. The smoke-blackened roof and a screen, plus signs of digging, may possibly indicate he was protecting, or destroying, an archeologic site. [Location of this shelter is on file.]

Also, [on the Riverside-Conconully highway] just past the dry valley with the farmer and his shelter is a turnout, from which is visible an outcrop below (limestone) which has small caves and tubes.

Also around that same time I checked out _____ Mountain, around _____, as in Caves of Washington it said caves were rumored there. [I can find nothing corresponding to this in Caves of Washington, but perhaps Tom refers to Old Dominion Mountain near Colville, whence rumors have appeared in the Caver.--ed.] I covered nearly every square foot, found only mines. The locals knew of no caves either, even though it is mostly limestone. Also debunked any rumors of caves on Toroda Creek [N. central Okanogan Co.; geologic maps show no limestone on the creek]---probably mines for sure, locals know of no caves.

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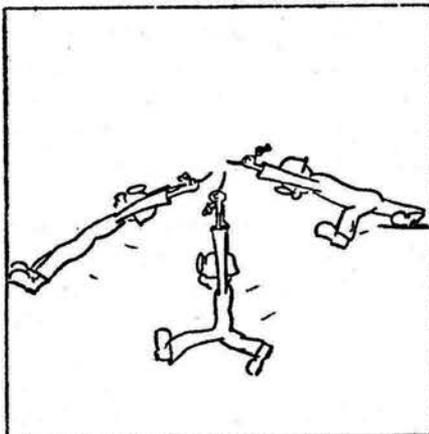
ROCKSHELTEROLOGICAL ABSTRACT

The following is extracted from a pamphlet, "The Dry Falls Story," obtained at the Dry Falls Interpretive Center on the Grand Coulee, Grant County.

"LAKE LENORE CAVES---Caves formed by the plucking of basalt from the walls of the coulees by the rush of melt waters were later used as shelters by prehistoric man. A band on the move would be limited to just the bare essentials in the way of material culture, and a family spending a few days in a cave would know what they brought with them and would be sure to leave with the same. Therefore, the absence of any large or valuable artifacts such as pestles in the caves today suggests they were used by a temporary and migratory population. The small scraper...is the artifact most commonly found in the caves...

"A trail leading to some of these caves has been developed near the north end of Lake Lenore. These caves are about 10 miles south of the Interpretive Center, just off Highway 17." (Abstracted by the editor.)

THE HUCKLEBERRY TRAVERSE
by Chuck Coughlin



On a trip to Washington Monument earlier this summer, several members of this grotto hit upon a new sequence of climbing moves which allow quick crossing of otherwise treacherous terrain. The technique was instantly dubbed--the Huckleberry Traverse. It basically involved making use of holds provided by natural vegetation to negotiate the steep, wet (and therefore slippery) slopes encountered on the cross country hike to Windy Creek Cave. The basic moves are illustrated on the left. Possible variations include the alder, devil's club or fern traverses, although the latter is not recommended because of the uncertain nature of the holds. The technique is expected to have very limited application underground.

* * * * *

BOOK REVIEW
by Bill Nixon

Bates, Edward, 1973. Detection of Subsurface Cavities. Army Engineer Waterways Experiment Station Miscellaneous Paper S-73-40, xvii+63+18 pp. Currently available for \$4.75 ppd. from National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield VA 22151; Catalog number AD 762 538.

Motivated by the problem of leaky reservoirs, the army engineers conducted this study on the use of geophysical methods to detect cavities in karst areas. The bibliography includes quite a number of references to U.S. and British speleological publications. The only method that appeared promising on the basis of preliminary work was an elaboration of the method of electrical resistivity surveying described by C.M. Bristow in Studies in Speleology vol. 1 pp. 204-227 (1966).

Several tests were made at sites of known cave passages in Missouri and Indiana. While all the sites were ideal from the point of view of terrain and geology, the results are nevertheless impressive. A passage about 8 feet in diameter in Kohms Cave, Ste. Genevieve Co., Missouri, was successfully located at a depth of 120 feet.

[Stolen from the Windy City Speleoneers, vol. 15 no. 4, August 1975.]

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THE BIOLOGIST'S CHAMBER: CAVE ENERGY SOURCES

By Rod Crawford



All life depends for its growth, reproduction, and survival on the availability of usable energy sources. The ultimate source of energy for life on earth is considered to be sunlight. The alternative of exploiting sunlight directly (as with green plants) is not available to cave life, which therefore require secondary sources, usually introduced organic matter, though occasionally inorganic minerals are used.

Iron carbonate, nitrites, and sulfur minerals can support the growth of "autotrophic" bacteria (see the Caver, Feb./March '75). In the deepest, best-sealed caves these bacteria probably provide the primary energy source, but when organic materials are present the "heterotrophic" bacteria that grow on them release substances inimical to the autotrophs, which are reduced to insignificant numbers. This situation prevails in even the deepest caves of the Northwest. Thus, organic material brought in from outside is almost the sole energy source for Northwest cave biota. The quantity, which of course is highly variable, is perhaps the chief determinant of how much life a cave contains.

Organic matter can be brought into caves in several ways: 1) by water; 2) by air; 3) by penetration through fissures; 4) by troglloxenic animals (i.e., those that spend part of their life outside of caves); and 5) by man. In most cases, water is by far the most important agent. Thus, dry caves and parts of caves tend to be comparatively abiotic except in special circumstances.

Caves with surface streams entering them contain an especially rich supply of organic matter. Particularly during spring floods, large amounts of organic debris are carried surprising distances into caves; for instance, last spring a sizable pile of sticks, leaves, dead beetles, etc. was found at the very bottom of Papoose Cave, Idaho, 900 vertical feet below the entrance. Such flood debris includes sticks, leaves, live plants, and live animals. Some of the latter live and become trogllophiles; others die and provide an additional energy source. This material also contains bacteria and fungi which grow directly on the debris and in turn provide nourishment for numerous cave animals.

Wet caves without active streams--including many lava tubes--receive much of their organic matter through seepage. Rainwater dissolves an appreciable amount of organic material from humus and carries it underground, where even in fairly deep limestone caves seepage water may contain ten or so milligrams organic matter per liter. In lava tubes, when a ground cover of humus is present, the proportion is probably even greater. The dissolved substances support a considerable growth of bacteria, forming in lava tubes the substance known as "lava tube slime." Dissolved organic matter in subterranean bodies of water also supports a growth of bacteria, as recently shown by Stu Nixon for Deadhorse Cave (see the Caver, July '75). Aquatic and slime bacterias provide food for many other cave organisms.

Energy sources carried into caves by air are usually insignificant in quantity. Air normally contains quite a lot of "aerial plankton," dust, spores, bacteria, pollen, and small insects. However, experiments in European caves have shown that even with strong air currents, this material rarely penetrates more than forty meters beyond the entrance. The reason for this is that in the humid cave atmosphere, such particles quickly condense droplets of water and are precipitated. Thus, people with allergies often find the cave atmosphere very healthful. Dry caves may acquire a larger proportion of their meager organic matter from the air.

Penetration through fissures of roots, soil, and so forth is negligible in limestone caves but provides a significant source of energy in lava tubes. We

have all seen the curtains of roots that hang from lava tube contraction fissures. These areas have a high concentration of biota, and some cave animals may feed directly on roots as well as on the microorganisms they support.

Few trogloneic animals penetrate a very considerable distance into caves; their contribution is mostly concentrated in the first one or two thousand feet. In this region, however, that contribution is sometimes very significant. For example, some moths, harvestmen, amphibians, etc., come into caves to overwinter; many of these never find their way out. Some larger animals occasionally die in caves, providing a substantial though temporary energy source. More importantly, several groups of mammals (such as bats, pack rats, porcupines, and pikas) nest in caves and forage outside, bringing in nesting material, droppings, and remains of food. The guano of bats is more important in the South, where there is a specialized fauna called the "guanobia." Even in Washington, some caves contain a little bat guano, and there are also deposits of moth wings left by bats. The ubiquitous pack rat, however, is probably the most important Washington cave mammal in terms of organic material brought into the cave. Small contributions are also made by cave-nesting birds such as swallows, and trogloneic insects such as camel crickets.

The contribution of man is highly variable. In unvisited caves it is, of course, absent. But even the most careful caver leaves something of himself behind besides footprints, if only the bacteria in his breath. While most cave litter contributes nothing, biodegradable materials such as food scraps and so forth sometimes provide a feast for cave animals. Occasionally, one of the main energy sources of a cave is contributed by man, as in Malheur Cave, Oregon, where the masses of sawdust brought in by the Masonic Lodge provide the basis for much larger populations of cave animals than would otherwise exist.

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VULCANOSPELEOLOGICAL ABSTRACT

LeConte, Joseph, 1905. Elements of geology, 5th edn. Appleton, New York.

p. 94. "Lava, like glass, passes through various grades of viscous fluidity in cooling. It gradually becomes so stiff that it may flow only a few feet per day. The froth or scum which covers the surface of a lava-stream quickly cools and hardens into a crust of vesicular lava, which may even be walked upon while the interior is still flowing beneath. In this way are often formed long galleries. Also the running together of the contained gas-bubbles and steam-bubbles forms huge blisters in the viscous mass, which, on hardening, form cavities often of great size. Thus, recent lavas often have a cavernous and galleried structure, like limestone, but from a different cause." Abstracted by the editor.

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THE SEPTEMBER MEETING

Was a moderate to great success. The great Chairman, returned from the wilds of Oregon, presided. Everyone had their turn at asking about yr editor's broken wrist. The program included Ed Crawford's movies of caves and cave areas in Colorado and Dave Walker's slide show on his trip to Bighorn.

Several business matters were discussed, and a motion was passed to drop the Grotto's special use permit on Dynamited Cave, on grounds that there was no longer anything we could do to justify keeping it.

There will be more, indeed, ample, discussion of these matters at the Special Business Meeting (see overleaf).

!ANNOUNCEMENT!

A Special Business Meeting, approved by the Chairman, will be held Friday evening, October 10, 8 or 8:30 P.M., at Bill Capron's house, 5117 Ravenna Ave. NE, Seattle (call 525-2260 if lost). The purpose of the meeting is for sincerely interested people to get their thoughts and differences on grotto business matters thrashed out, so as to avoid lengthy debate at the general meeting. Everyone is invited! Bob Brown will chair the meeting. It is to be hoped that polite discussion will triumph over verbal chaos.

Topics for discussion may be among the following:

- a). Desirability and possible composition of some sort of organization of the general meeting.
- b). Desirability and duties of a Program Chairman and Field Trip Chairman.
- c). The Alpine Karst Geological Area (Dock Butte/Washington Monument).
- d). The grotto Christmas Party.
- e). The possibility of hosting next year's regional meet at Trout Lake with the O.G.
- f). Fund raising and the Caver.
- g). The potential (or lack thereof) for alternate meeting places.

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