Cascade Caver

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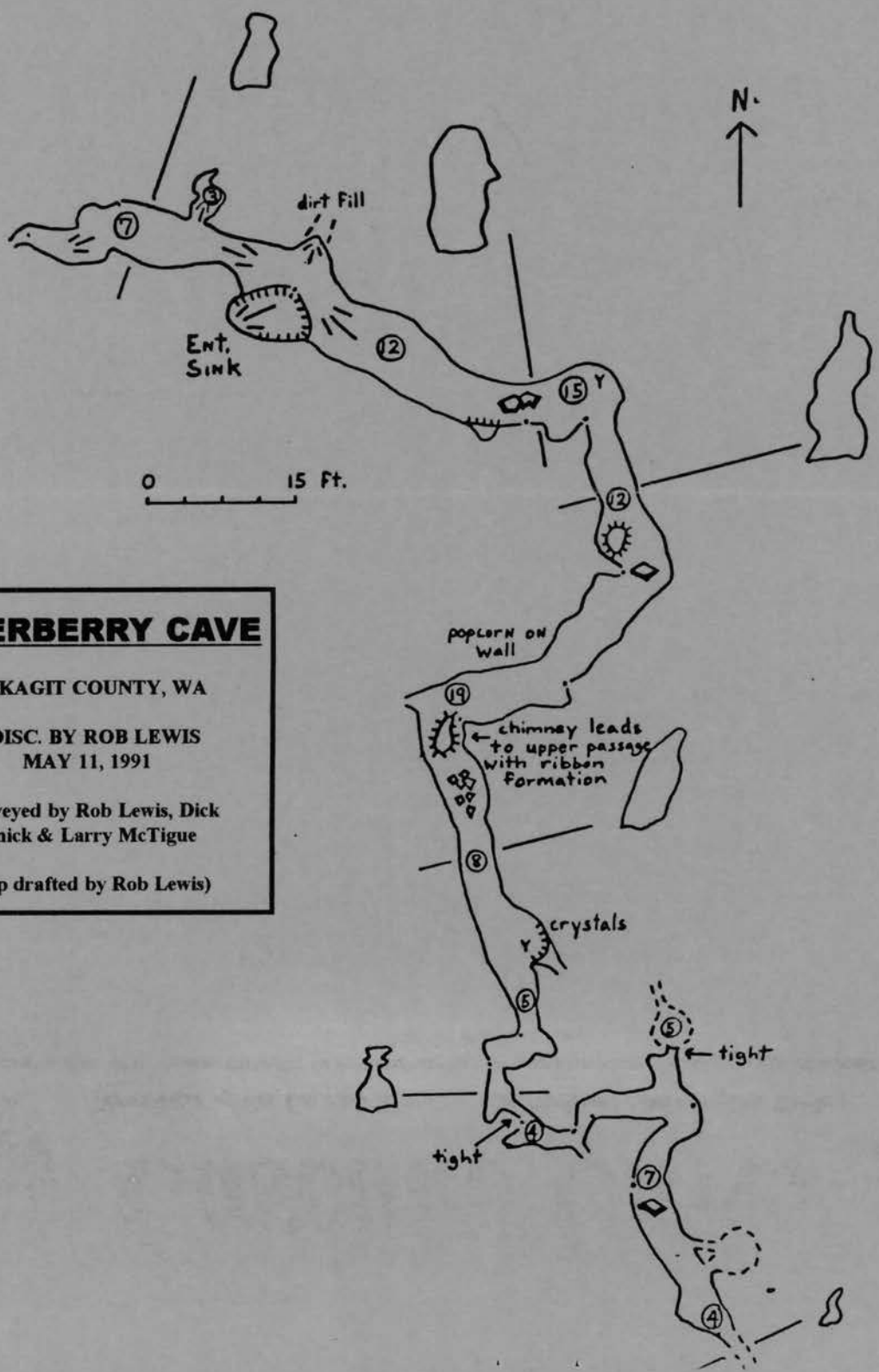

ELDERBERRY CAVE

SKAGIT COUNTY, WA

DISC. BY ROB LEWIS
MAY 11, 1991

Surveyed by Rob Lewis, Dick Garnick & Larry McTigue

(Map drafted by Rob Lewis)

CASCADE GROTTO

Regular grotto meetings are held monthly at 7:00 PM on the third Friday of each month at the University of Washington, Room 6 in the basement of Johnson Hall. Business meetings are held on odd numbered months immediately following the regular grotto meetings.

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IN THIS ISSUE

LAST MONTH

EDITORIAL OPINION

As editor of a grotto newsletter, one is given quite a bit of latitude and freedom as to how it looks and what it contains. Especially, when there are so few willing to take on such a job. You get to decide what gets printed and what doesn't.

Often-times, the editor has to walk a fine line between trying to please those submitting material and those who will eventually read it. If anyone is offended by what is or is not published, let us know. We will explain our philosophy and feelings with you and try to come to a mutual understanding.

In the last issue, the editor discouraged "tourist caving". This may seem a difficult stance to take especially with new members of the grotto. But, for those who have never seen a particular cave, "touring" can still be accomplished while carrying-on other worthwhile projects.

Servicing cave registers, litter clean-up, surveying, etc. can be carried out in conjunction with a tour of the cave. Not only will we be teaching proper caving etiquette, cave conservation and getting them involved in a work-related project but, we will also be setting a good example by doing something we should have been doing all along ourselves. Hopefully, this will become the norm rather than the exception.

If anyone would like to express their own views regarding this subject, feel free to send a letter to the editors. We will print it in the next issue. If you have any other ideas to get the grotto more active and in turn generate more material for the newsletter, let us know.

Encourage new members to submit trip reports of their visit to a cave to be published in the newsletter. Also send in your cave maps, photos, drawings, cartoons, etc. If we have any artists or creative writers of speleo-fiction stories in the grotto, we encourage them to submit their works as well. Any constructive ideas you have would be appreciated.

EARLIER THIS MONTH

On Friday March 3, we got together over at Camp Long in West Seattle for an enjoyable and fascinating slide show put on by Marcel LaPerriere, Chair of the Glacier Grotto in Alaska. He had some colorful underwater photography from up north in addition to many worthwhile cave slides. Included were many pictures of the gigantic clearcuts and devastation left by the logging industry on the karst terrain of the State of Alaska. One large island had been completely stripped of its trees!!!

Many groans were heard in the audience as we viewed slide after slide of the damage done to the cave ecosystem by a large Louisiana Logging Corporation whose owners don't even live in Alaska!!! Their lack of concern for the environment was quite evident in the photos showing entire regions of karst entirely denuded of their old growth timber. Many of the trees were huge and 800 or more years old. They had all been cut down. All that the big logging companies left were the gigantic stumps and huge piles of slash dumped in the sinkholes. Many of the salmon-spawning streams are being destroyed by logging right up to their edges which leaves slash and silt from erosion to clog them and prevent the salmon from swimming upriver. Where logging has taken place near the ocean, divers such as Marcel and his friends have found that debris dumped in the water has wiped out whole areas of life on the seabed.

Marcel said the government subsidizes the private logging industry by building and maintaining roads for the logging companies to use to remove the timber. As taxpayers, we pay for this to the tune of $300,000-$1,000,000 or more per mile of road. Thousands of miles of roads have been built at taxpayer expense. The Alaskan cavers need our support to stop this waste and mismanagement of our national forests and tax money. The logging industry is getting rich at the expense of the environment and American taxpayer. Write your congressmen and representatives demanding that an end be put to these wasteful and destructive practises. Insist that they enforce good conservation of our national forests and their delicate ecosystems.

1995 GROTTO TRIP & ACTIVITY CALENDAR

DATE	EVENT	PLACE	TIME	LEADER	CLUB
Mar 17	Cascade Grotto Meeting	(Seattle)	(7PM)	Paul Ostby (206)823-5107	CG
	This month's program will be a slide show on local bats. Earl Matsui, a bat specialist from Woodland Park Zoo will be the featured speaker.				
Mar 21	Puget Sound Grotto Meeting	(Fed Wy)	(7PM)	Jeff Wheeler (206)925-1748	PSG
Mar 25	Ice Formation Photography	(Trout Lake)		Matt Joerin (360)944-7017	OG
	Be at Bonnie's Cafe in Trout Lake at 9:30am.				
Apr 18	Puget Sound Grotto Meeting	(Fed Wy)	(7PM)	Jeff Wheeler (206)925-1748	PSG
Apr 21	Cascade Grotto Meeting	(Seattle)	(7PM)	Paul Ostby (206)823-5107	CG
May 21	Ape Cave Cleanup	(Mt St Helens)		Jim Nieland (360)231-4298	OG
	Bring your own mop and broom.				
May 27-29	Mini-Regional/Speleo Camp	(Trout Lake)		Mike Compton (206)535-5144	PSG
	Puget Sound Grotto is sponsoring a get-together on this 3-day week-end. This is the time we normally hold our annual Northwest (NCA) Regional Meet. However, this year there will be a joint Northwest Region/Western Region Meet at Lava Beds Nat. Mon. in N. Calif. in Oct. (see below) Nevertheless, the 1995 NCA Executive Board Meeting will be held here to take care of regional business for those who can't attend the joint regional in October. The Peterson Prairie area near Mt. Adams is scheduled as the meeting place for this Speleo Camp. All who can attend the Joint Regional in Oct. are encouraged to do so. It will be a great opportunity to meet and cave with the California cavers and others who are members of the Western Region of the N.S.S.				
June 2-4	Vancouver Island	(CANADA)		Scott Davis (206)862-1035	PSG
	Campbell River limestone/easy caves				
June 30-July 4	Vancouver Island	(CANADA)		Larry McTigue (206)850-8614	CG
	Thanksgiving Cave/moderately easy to difficult depending on where in the cave you go. Kate Woods, a caver from Victoria has agreed to lead an easy trip. Let me know, if you want a more difficult trip and I will introduce you to the right people.				
June 30-July 28	Tongass Cave Project	(SE Alaska)		Dave Klinger (509)548-5480	GG
	An NSS Project in the Ketchikan area/Expedition Caving with lots of opportunities.				
July 1-4	Mt. St. Helens/Spirit Lake Pseudo-Karst Study Project			Bill Halliday (615)352-9204	CG
	Dr. Halliday is planning a trip into the "red zone" to study the giant sinkholes and caves near the mountain. For those who haven't been there before, it should be a real blast. (pun intended) Permits from the Forest Service to enter the "red zone" have to be signed by those wishing to attend. Contact Dr. Halliday for further details.				
July 17-21	NSS Convention/Blacksburg, Virginia			Jeff Wheeler & Dawn Kiss (206)925-1748	PSG
	These former locals are going to show us the caves of the Blacksburg, VA. area.				
Aug 18-20	Dynamited Cave Trip	(Trout Lake)		Steve Fogdall (206)527-4741	CG
	2nd annual "Clean Up The Pit" and 1st annual "Lower Rod Down The Pit" conservation work party.				
Sept 9-10	Windy Creek Cave	(Concrete)		Jerry Thompson (360)653-7390	CG
	Jerry'll have the key, if fire and ice allows. Cold, wet alpine caving at its best.				
Oct 7-9	Joint Northwest Region/Western Region Meet			Bill Devereaux (503)363-3831	WVG
	Yes, you read that right; Columbus Day weekend, not Memorial Day weekend. Well worth the trip to Lava Beds National Monument in Northern California. Willamette Valley Grotto is hosting it.				
Nov 5	Vertical Practice			Paul Ostby (206)823-5107	CG
	Guy Fawke's Day Memorial vertical practice. More details to follow.				

While some trips die for a lack of interest, many successful trips happen on the spur of the moment. Please contact the trip coordinator regarding trips being planned or with a request regarding a trip that you would like to see happen. Members and family of any recognized caving organization are encouraged to join us on our field trips. Non-affiliated participants are by invitation only. For additional information call: **Jim Harp--Cascade Grotto Trip Coordinator/home(206)745-1010 work (206)388-3585 work 1-800-562-4367 ext. 3585 or 3436 The toll-free number works only from limited areas in Washington State.**

"FEATURE ARTICLE"

ALLRED'S MORE THAN DOUBLE THE LENGTH OF KAZUMURA CAVE, HI.

(A short history of Kazumura Cave and its new extensions)

-- William R. Halliday
Chairman, Hawaii Speleological Survey

The earliest history of **Kazumura Cave** is obscure, specifically including the reason for its name. It first came to the attention of cavers because of its designation as a Civil Defense fallout shelter in the '50's. In the early '70's, Frank Howarth and Fred Stone reported its length as more than 10km (6 miles) and it was considered the longest lava tube cave in the world.

In early 1979, a British expedition, headed by Chris Wood, mapped it in detail finding a total of 11,713m (7.28 miles). A 1983 Japanese expedition headed by Takanori Ogawa added a length of 140m (460 feet), as published in *The Cascade Caver* and elsewhere but, this was not noted in *Underground Atlas* (1986) nor in *Great Caves of the World* (1989).

Other lava tube caves of comparable length came to light in Korea (**Bilemot and Manjang Caves** on Cheju Island) and Kenya (**Leviathan Cave**). Questions of segmentation and actual lengths of individual caves arose. These still are not entirely settled and by seeming general consent, these usually have been spoken of as the four longest lava tube caves. In late 1979, I checked what was then known of **Kazumura Cave** for possible segmentation. I found that it looked like it was segmented; near its midpoint, visitors emerge into broad daylight for more than 100 feet (30m). However, it is possible to remain beneath an overhang along one side of this collapse sink, which qualifies it as all one cave.

In 1986, *Underground Atlas* made an interesting statement: "**Kazumura Cave** has 11.7km of passage...separated by just one choke from a downflow extension which is nearly as long again." The source of this statement is not clear. In 1994, it turned out to be true but, until this year all written and oral communications known to me indicated a gap of more than 8,000 feet between **Kazumura Cave** and **Upper Paradise Park Cave**. This was much more than the similar gap below **Keala Cave** headed in the same direction.

Because it had been studied so extensively, organized caving gave little attention to **Kazumura Cave** between 1979 and very late 1993. Most visits to it were by unaffiliated local cavers who are plentiful in the subdivisions beneath which it extends. Then, in November 1993, Kevin and Carlene Allred and their family returned to Hawaii for a winter of caving: their first visit since 1979. After some initial work in **Moku Cave** (their discovery), **Epperson's Cave** and some others in lower Hawaiian Acres Subdivision, they learned of a cave above the upper end of **Kazumura**. Upslope, the new cave went and went and went towards **Sexton's Cave** (which was not yet known). Downslope, their mapping showed that it pinched out at about the location of the upper end of **Kazumura**.

Kevin tried to force his way through the upper end of **Kazumura** but, was no more sucessful than those who had preceded him. His mapping was so convincing, however, that he returned to the lower end of the new cave ("Upper Kazumura"), while Mike Shambaugh went to the upper end of the old cave. Soon, they heard each other scrambling. When they yelled, "it was as if we were right next to each other", Kevin later recalled. And they were.Soon they saw each others' lights and Kevin got through with anti-climactic ease.

The significance of this breakthrough re-focussed the entire Hawaii Speleological Survey winter field season to **Kazumura** and nearby caves; especially, others that might connect to it. Through January 1994, the Allred's surveyed 29,842 feet (9,096 meters) or, 5.64 miles in the new cave, "Upper Kazumura" with a variety of companions of whom Mike Shambaugh was the most frequent. That made the total for **Kazumura** 20,809 meters or, 68,252 feet (12.92 miles). The upper end was a plug of intrusive black pahoehoe and aa lava (like that subsequently found) at the lower end of **Sexton's Cave** (see elsewhere in this issue). Hammering on the wall of **Sexton's Cave** could be heard faintly in **Kazumura** and vice versa.

Meanwhile, down-flow possibilities were not being neglected. The **Doc Bellou System** was checked especially but, it yielded no connection to **Kazumura**. Of vital importance, however, was the discovery of a puka not far above the gates at the upper end of **Upper Paradise Park Cave**. On January 19, mapping began extending that cave higher toward the breakdown choke at the lower end of **Kazumura**.

Soon, the Allred's realized they had gone past that breakdown choke in a big upper level with lots of breakdown. On February 4th, 1994, Kevin and Mike Shambaugh "moved about three tons" of tricky, unstable breakdown and made the lower connection, adding 31,623 feet (5.98 miles or 9639 meters) to the cave. They also found that the collapse sinks supposedly separating **Upper, Middle and Lower Paradise Park Caves** do not segment the cave. "I had to work hard to stay under one overhang, however", Kevin smiled later.

But, the Allred's were not through. Some uncertainties remained about "Old Kazumura" so, the Allred's resurveyed that too -- again with Mike Shambaugh most often joining the team. One finding was that both the British and Japanese expeditions had surveyed the old 140m "addition" but, the British map had it in the wrong place. So, the 1983 Japanese team naturally thought they had a new passage. The 1994 team found additional passage bringing the length of "Old Kazumura" to 41,817 feet (7.91 miles or 12,746 meters). Thus, the length of **Kazumura Cave** was increased to 103,265 feet (19.55 miles or 31,457 meters): more than twice the length of any other known lava tube cave in the world.

As for depth, the greatest depth of the entire cave is about 60 feet below the surface. Because all lava tube caves extend up and downhill within about 100 feet of the surface, this is the way lava tube cave depths should be recorded not, the end-to-end vertical range. The end-to-end difference merely reflects unitary length and, to a lesser degree, slope steepness. For those who keep records on vertical ranges of caves, based on topographic maps, the highest point in the cave is at about 2210 feet a.s.l. (674m) and the lowest point at about 130 feet (39.6m) for a total range of about 634m (2080 feet).

(Editor's note--For those of us who are "purists or, otherwise", that makes it the deepest cave in the U.S. I agree with Dr. Halliday that lava tube caves should be noted as such. But, listed separately? What about limestone caves such as **Columbine Crawl** and **Great Ex Cave** in Wyoming? The profile map of **Columbine Crawl** on p.88 of the 1989 edition of the *Atlas/ Great Caves of the World* shows a crude representation of the surface topography above the cave indicating the horizontal linear extension of the cave as about 1700m (5,650ft) and the deepest point in the cave to be about 289m (948ft) below the over-lying surface directly above that point. That's quite a loss of depth compared to the 472m (1550ft) as measured from the entrance of the cave down to its lowest surveyed station.

Correct me if I'm wrong but, I believe **Great Ex Cave** with its 12km (7.5 mile) long stream passage might well prove quite similar in appearance to a lava tube cave having a great linear extent but, not much overburden above the cave unless, it goes under a high ridge or mountain. If measured by lava tube standards, its depth of 430m (1410ft) from upper entrance to lower entrance would, most likely, be substantially reduced. If we are to treat all caves equally, we need to set standard rules for measuring the depth of caves just as we have for deciding whether a collapse "segments" a limestone or lava cave into two separate caves. I don't think we should treat lava tubes separately in light of the existence of similar caves such as **Great Ex** in Wyoming. Besides, with the persistence and luck Kevin and Carlene Allred are having, they will probably find the entrance to a huge multi-level lava tube/rift system that not only is long but, incredibly deep shattering all our pre-conceived notions as to how such caves should form. What if a lava tube is found with a lower entrance but, no upper or middle entrances? If it ends up to be as long or longer than Kazumura requiring bolting of numerous pits along 30 miles or more of passage and ascending 3,000 or

more feet over that distance, wouldn't explorers consider it a difficult "vertical" cave to traverse? If we rate a cave's difficulty by the distance one has to travel both horizontally and vertically and the number of pits that have to be descended and ascended then, shouldn't we count the vertical distance travelled as the true depth of the cave? If you have to come back out the same way you went in then, the distance and difficulty will double. Am I fanning the flames of speleo-political controversy? You bet!!! If the depth of Wyoming caves or any others for that matter are reduced by some set of standardized rules, I think I know what the Wyoming cavers would say, "Them're fightin' words, mister!!!" But, if we don't set standards, we will never have a rule by which to compare different caves to one another whether they be limestone or lava. My own preference, for the time being, is to list the lava tube caves with the limestone, etc. but, also put in parentheses next to the name of the lava cave a note to that effect, in case someone else prefers to make two separate lists.--the editor)

Dr. Halliday goes on to say, "All these new figures are subject to change as Kevin and Carlene Allred refine their enormous mass of data and also as Kevin and Mike Shambaugh work on the lava plug currently separating **Kazumura** and **Sexton's Cave**. After these are connected, will **Olaa Cave** be the next addition to **Kazumura** or, **Keala** or, **Doc Bellou**? Keep your subscription current for the latest news."

(In late 1994, Dr. Halliday, the Allred's and their team announced that **Sexton's Cave** had also been connected to **Kazumura** bringing the total surveyed length to an astounding 29.32 miles and a depth of 2,912 feet, more than quadrupuling the 7.28 miles it had in Nov. 1993 and extending its lead as the longest and deepest lava tube cave in the world. See article on **Sexton's Cave** later in this issue.)

PIT 6083 -- AND SOME OTHERS

-- William R. Halliday

Rick Robinson kindly gave Hawaii Speleological Survey teams permission to enter the summit area of Hualalai Volcano for a week in January 1994. On Jan. 21, Kevin Allred and I hiked to the lower pit craters of the southwest rift of Hualalai Volcano from the gate at the end of Huehue Street. It was a pleasantly misty day and the hike was both enjoyable and productive. We located and hiked the edge of Hinakapoula Crater without difficulty and Kevin located good rigging points at its upper end. Then, we continued up the ridgeline to a big unnamed pit about 300 yards farther east. It looks like a big black hole on the topo map and on aerial photos. From the ground it looks shallower than Hinakapoula Crater, maybe about 150 feet deep with a mound of rubble and vegetation for a floor. Because the pit is home to a flock of green parrots(whose forbears escaped from somewhere in Kona), we call this Parrot Pit.

This area is at the head of the Kaupulehu lava flows which contain ultramafic xenolith nodules farther down. Looking for such nodules, we ascended a lava trench at the NE side of Kaupulehu Crater itself. All we found is that the trench is an extension of a minor ridge of the crater wall.

From the rim of the crater, we could see an inner puka in the crater. Kevin went down to have a look and rigged a handline to get to the bottom of the inner puka. To our surprise, he also found an open vertical volcanic conduit continuing down, requiring vertical gear. We expected to return to these pits later in the week but, ran out of time. Pit 6083 intervened.

On January 24, I managed to get us lost and unlost several times in summit fog enroute to Pit 6083 (it's almost 15 miles of 4x4 road in distinctly hostile volcanic terrain). The pit actually still is unnamed but, the topo map shows a USGS benchmark on its rim with the elevation of 6083 feet. It looks much like a sotano in limestone about 500 feet across. Originally, I estimated its depth at about 250 feet but, I am no vertical caver and Steve Smith had said it was much deeper. Regardless, a simultaneous intake of breath revealed that the newcomers all were impressed: Kevin Allred, Dave Bunnell, Don Coons, Dave Doyle and Carol Vesely were seeing it for the first time.

Kevin was the project leader. He and Don rigged a 500 foot rope near the east side and only a little coiled at the bottom. Don rappelled in, placing rope pads but, three "caterpillars" from abrasion by sharp lava ledges developed on the rope, anyway, before they were back up. Kevin and Don mapped the floor of the pit in relative comfort, while the rest of us shivered mapping its rim in a driving sleet storm. Kevin descended 50 to 75 feet into an inner pit 40 feet up on a ledge on the west side of the outer pit. Below him, it belled out into a vast black void. Anchor points just didn't exist so, they returned to the top without attempting the further descent.

Directly above the inner pit was loose rubble and sharp ledges and the topside anchor points weren't very reassuring either. The 4x4 could have been used for a rigging point but, nobody wanted to go down the wall there and to rig a Tyrolean traverse, a lot more rope would be needed. Dave Doyle became an instant hero. He telephoned to Kentucky and his 900 foot rope arrived via Federal Express, just in time for another attempt on Jan. 27th.

In twilight, on Jan 27, the H.S.S. vertical team rigged a Tyrolean traverse across the 500 foot outer pit. The weather still was windy and cold with three feet of new snow on nearby Mauna Kea Volcano. Everyone felt they were freezing.

A guide line was used to position the traverse rope across the inner pit. Mostly by moonlight, Kevin and Don descended and returned to the surface without incident. But, it was quite a workout. The surface crew used a pulley system (with carabiner backup) to slide the descent crew to the descent point and to pull them back up to the crater rim. Kevin carried a load of 70 pounds of rope to the descent point; a truly "sporting" experience. This, incidently, was the second time Kevin was the first person to descend the deepest pit in the United States. (Editor's note--Prior to this, Kevin discovered El Capitan Pit in Alaska, a 598ft freefall drop and at that time the deepest pit yet found in the U.S. Much to the chagrin of his fellow cavers in Alaska, he surpassed that record in his descent of this pit in Hawaii.)

The inner pit was found to begin about 400 feet below the "V" in the traverse line and itself was 410 feet deep. The inner chamber was irregularly cylindrical with a sloping floor which met the walls everywhere: no rift cave at the bottom of this one. A reddish material Kevin described as silt-like in appearance coated most of its walls. Near the bottom was a small exposure of dense red-brown lava with a few inclusions -- not xenoliths, as hoped but, altered magmatic minerals, possibly altered olivine. A small sample was retrieved for study by Ron Greeley. He reported that it wasn't anything unusual.

By trigonometry, after the trip, it was determined that there had been 52 feet of "give" in the Tyrolean traverse rope and the total depth of Pit 6083 was 862 feet. This is the deepest listed for any pit in the United States in lava or limestone. This figure also is the deepest for volcanic pits of the entire world but, record keeping on volcanic pits is in its infancy. One in Australia and perhaps others elsewhere are likely to be deeper. If Kauhako Crater on Molokai were not partially filled by a lake 813 feet (248m) deep, it would be about 1255 feet (383m) deep. (Perhaps, the NSS Cave Diving Section might take up the challenge.--editor) The H.S.S. has data on other HI pits and expects to expand its vertical program. A map of the cave was drafted by Carol Vesely.

SEXTON'S CAVE

THE MISSING LINK
BETWEEN KAZUMURA & OLAA CAVES

-- William R. Halliday

On February 7, 1994, Ruth Levin and I checked out a cave on property of her neighbors, the Sexton's. The entrance is in line with the upper end of **Kazumura Cave** but, the gap was more than three miles. We ended up mapping 4,042 feet in 53 stations, quitting at a lavafall where the only known previous explorer of the cave also stopped. The first 637 feet were in an entrance level beyond which is an overhanging drop of about 8 feet to the

main level which we followed elsewhere in the cave in both directions. We had a quick look uptube, pacing about 700 feet to the first breakdown pile large enough to extend completely across the passage. Ruth, subsequently paced another 700 or 800 hundred feet farther up, stopping at the bottom of a 30-foot lavafall.

We mapped downtube, where the cave resembles **Kazumura Cave** in many ways. One of the most notable similarities consists of pseudokarrenrillen which, I have seen only in **Kazumura Cave** and its detached upper level, **Anthurium Sink Cave**. But, **Sexton's Cave** has many more upper levels; there's a lot of passage to be mapped up high. Their collapse has produced considerable breakdown locally.

Red, orange, chocolate and other colors of lava are locally dramatic. Lava cascades and small lava falls are notable. Many tall passage cross-sections are keyhole-shaped and cut-banks and slip slopes are present. Other features include toothed and nipple pendants. Near the point where Ruth and I stopped, fragments of breakdown contain nipple pendants encased in lava. Roots are infrequent and the only biota observed consisted of flying gnats, presumedly lava tube slime eaters. Other notable geologic features included ceiling channels and vertical lava beds locally exposed in ceilings. The only cultural features noted were three beer bottles (Budweiser, ca. 1993) which were removed.

On February 21, Ruth Levin and I returned with Russ Bickler, Pamela Lockwood, Steve Mattox and Bill McClellan. We mapped another 4347 feet, totalling 8,490 feet. Again, we stopped at a lavafall with a plunge pool below. (Editor's note -- Halliday's figure here is 100ft more than one might expect to get with normal addition methods. Perhaps, he's counting enthusiasm as well as mileage. Sorry Bill, I couldn't resist that one.)

Even more windows to upper levels were present in this length and we observed several rodent skeletons. A few of the latter appeared fresh and were accompanied by unusual life forms, some of which were collected for identification. A few dry fern fronds were found on the floor at a point with a ceiling height of about 40 feet, about halfway along this section but, no daylight was visible.

Subsequently, Kevin and Carlene Allred and Mike Shambaugh went to the lower end of the cave about two miles farther. They reported that it ended with a black pahoehoe intrusive plug like the one plugging the upper end of **Kazumura Cave**. Pounding on the wall of one cave could be heard faintly in the other so, **Sexton's Cave** is part of the **Kazumura System**.

The entrance area of **Sexton's Cave** (and, for that matter, the cave as a whole) lines up with the lower end of **Olaa Cave** with a beeline gap of about one mile between them. But, the terminal section of **Olaa Cave** angles away from **Sexton's Cave** more toward **John Martin Cave**: an intriguing question for explorers to resolve.

On April 4th, 1994, Ruth Levin returned to the upper section of **Sexton's Cave** with Nancy Powell, David Oien and Phillip Jenkins. They were successful in scaling two forminable lavafalls but, otherwise found no real obstacles for about 1 1/2 miles of meandering passage. Then, they encountered a pahoehoe intrusion, gradually thickening, mixed with breakdown. At the seeming end were two skylights about 15 feet in diameter. Phillip Jenkins shimmied up a coupla ohia trees to the surface and heard a car. A few minutes on the surface confirmed that they were where Bob Richards had plotted out the lower terminal plug of **Olaa Cave**. So, **Olaa Cave** too is part of the **Kazumura System**.

Ruth reports that they left several upper level passages unchecked in **Sexton's Cave** and one is close to its terminal plug. Dave Bunnell has said that unmapped upper levels also exist in **Olaa Cave**. The presently listed length of **Olaa Cave** is 22,786 feet (6.95km or 4.32 miles). That of **Sexton's Cave** will be about 27,500 feet when the main route is fully mapped (5 1/4 miles or 8.4km) and much more when the upper levels are tied in. Even if no further connections are made in the **Kazumura System**, the Puna district now has a confirmed 30-plus mile lava tube system and years of work to be undertaken. Kevin and Mike already have begun a detailed map of **Sexton's** from the bottom up. Much more will be heard of this, the missing link in the **Kazumura System**.

(Editor's note--As mentioned earlier, **Sexton's** was eventually found to be a part of the nearly 30 miles of unsegmented cave making up the **Kazumura System** in Hawaii. Congratulations to all those involved.)

MAS/MSS SPELEOLOGY SYMPOSIUM

-- report by William R. Halliday

On April 30, 1994 the Missouri Speleological Survey and the Missouri Academy of Sciences co-sponsored a one-day symposium on speleology as part of the meeting of the latter at Southeast Missouri State College, Cape Girardeau, MO. In addition to biological and cave management topics, several papers were presented on geological and geographical topics.

Stan Sides discussed "Karst Groundwater Basins of Cape Girardeau and Perry Counties, Missouri." The latter, of course, is the location of the longest caves in Missouri: **Crevice Cave**, the **Berome Moore-Tom Moore System**, **Mystery Cave** and **Rimstone River Cave**. Because of the magnitude of the karst here, extensive water tracing is little more than a good beginning. Comparatively little speleogenesis here is joint controlled and in at least two locations, small stream-bearing passages cross over larger dry passages.

Nick Crawford discussed "Environmental Problems Associated With Development Over Karstic Terrains" with particular reference to the Bowling Green, KY area. Because of direct recharge of acquifers, karst aquifers are the most vulnerable in the world to chemical and other pollution. In others, the action of soil and laminar flow has a purifying effect which is not present in karstic conduits. He cited the article in the May 1921 POPULAR MECHANICS, Vol. 35, No. 5, entitled "Sewer System More Than A Million Years Old" which specified that there was not a foot of sewer in Bowling Green (until the 1930's). "Crevice witches" and city inspectors alike approved this direct pollution of the aquifers.

Dwight Weaver discussed the new "Missouri Caves and Karst Conservancy, a Management Tool for a Threatened Resource." In 38 years the MSS has listed about 5,000 caves and mapped about 2,000 of them, a figure growing about 100 per year. About 20% of the state's caves now are owned by the State or Federal government but, urbanization (such as at Columbia) is expanding into karst and cave areas. While most endangered bats are now protected, cave fish and crayfish remain at risk.

The State of Missouri now formally recognizes caves as valuable natural resources. Nevertheless, a new expansion of the highway system seems to ignore the presence of caves and karst. The MSS is shifting from survey and exploration to management and protection and the new conservancy is expected to play a major role in this.

Jerry Vineyard went "Into the Phreatic Zone: Divable Springs of the Ozarks." At least 36 Ozark springs are diveable. The maximum depth reached is 98m (310 feet) and the maximum horizontal distance is 435m. The maximum dye trace is 65km so, there is much to be done. A new method is needed with minisubs and the like. There is evidence of groundwater circulation to at least 200m and further exploration is needed for "total speleology".

Blue Spring on the Current River has an oval "ramp" leading down at 30 to 45 degrees from the conduit with a depth of at least 60m. Alley Spring is over 100 feet deep with sponge-work, pendants and other phreatic speleogens. It is an ebb-and-flow spring, perhaps because of shifting of gravel along the "ramp".

I spoke on "Pseudokarsts and Vulcanospeleology of Hawaii", stressing the remarkable similarities between phenomena of karsts and pseudokarsts in the contexts of pollution of freshwater lenses of oceanic islands, sotano-like pits up to 862 feet deep and the presence of caves up to 19.5 miles long with borehole passages, some of which act as groundwater conduits.

A choice of short field excursions was offered. One was to **Tom Moore Cave**, the other toured the surface of the Perryville karst with a short entry into **Tom Moore Cave**. Many potentially penetrable sinks remain uninvestigated in areas where no cave is known below.

NOTES FROM DYNAMITED CAVE OCT. '94

--by Jim Harp

(It should be mentioned that prior to this trip, a few individuals had expressed the possibility that the wood debris in **Dynamited Cave's** 55 ft. pit might be hosting its own biological environment and therefore should be closely examined before removal. Although this likelihood was given little or no attention during the planning of the project, ultimately it was the reason for aborting.

References to spiders and curses are intended to poke fun at our resident entomologist, Rod Crawford, who voiced this opinion. The fun poking is done in the spirit of friendship and humor. I hope that it will be received accordingly. Cavers interested in reading other reports of this trip should refer to articles by Bruce Nagata and Paul Ostby in the November 1994 Cascade Caver, also by Steve Spears in the October 1994, Oregon Grotto Speleograph.)

THE MISSION

Hosted by Cascade Grotto with invitations to Puget Sound, Oregon and Willamette Valley Grottos, the October '94 trip to **Dynamited Cave** had been in the works for about nine months. The stated mission being removal of debris from the bottom of the 55 foot pit. Offending materials included wire from some long forgotten endeavor to run telephone communications to the back of the cave and lots of lumber left after attempts to bridge the pit. The lumber having soaked up many gallons of moisture over the years is extremely heavy and difficult to handle. I still own 100 ft. of 11 mm Edelrid rope, brought back from a trip to the UK with much pride, only to be wrecked on its maiden voyage, hauling lumber over the pit edge to be used as a bridge. This rope is now reserved for pulling automobiles out of ditches.

THE DRIVE

Mike Wagner and I departed Seattle about 8:15 am with a 40 oz. can of Dinty Moore's warming under the hood and the ever present tent trailer pushing us through rush hour traffic. One goal of our transportation plan was to answer the age old query: What is the time difference between driving to Trout Lake over Babyshoe Pass compared to traveling via the Columbia Gorge? We drove down by way of the gorge and returned north over the pass. The answer: Babyshoe pass is still at least one hour faster and getting more expeditious every year as more washboard is covered with blacktop.

THE CURSE

Shortly after setting up camp at Peterson Prairie campground, Mike, who is always fooling around, got into an arm wrestling contest with a small but powerful spider, claiming ownership over the campsite. Obviously out matched by the muscular arachnid, the altercation terminated when the spider took an appalling bite out of Mike's right arm, scarring him for life and causing him to cry "uncle". This was the first detectable sign that a curse had been placed on the project. Placed by some person with a dominion over spiders and an antipathy toward our goals.

THE TREE

After setting up camp Mike wanted to check the cave entrance as he had never been to **Dynamited** before. One thing led to another and we hence found ourselves climbing through the breakdown and flying-insect infested entrance, carrying a potpourri of appropriate ropes and tackle. First stop was at the 15 ft. drop which we proceeded to rig with a cable ladder loaned to me by Rod Crawford a long time ago and still not returned. (Don't you just hate people who do that?) The cable seemed to pulse and glow, strangely warm to the touch in spite of the cool temperature of the cave.

At the top of the 45 ft. drop, there was some confusion, while we searched around for the rigging bolts. People are always changing the bolt locations these days and you never know where you'll find them. The new location was found to be on the floor, far enough back from the drop so that the grotto's 50 meter rope was no longer sufficient to rig the drop and reach over the chockstone. This situation was corrected when Steve Fogdall relocated the bolts on the following day.

Mike who was first down the rope couldn't help but notice a pine tree about 18 ft. in length and studded down each side with extra large 1600-penny nails, forming a crude species of ladder. It had been lowered down the drop and was leaning up against the free-rappel portion, to be used by some ingenious non-SRT educated (caver?) as a climbing aid. I quickly followed down the rope and also found the object hard to ignore. If the owners had but taken the time to hang a few Christmas tree ornaments, it might not have seemed so intrusive. At this point, we agreed that it was too close to steak and ale time to proceed any longer so, we turned around and departed the cave, noting that we were still the only cavers in the area.

THE NEXT DAY

The next day we were up and off to the cave and as if by magic the parking and camping areas were now full of people, tents and vehicles. I recognized cavers from the various different grottos plus some whom I didn't know. Bruce Nagata and Steve Fogdall (our trip leader) were working with Paul Ostby on their homemade, battery-powered, electromagnetic, subterranean, 2-way communicator.

Steve stopped us on our way to the cave to state that he and Bruce had been up early and rigged the pitches above the chockstone. He then proceeded to act kind of nervous. "I don't feel comfortable removing the debris from the 55." he said. "Why is that?" I replied. Fogdall glanced at the ground and made a noise like a horse clearing his throat, " Rod Crawford!" he exclaimed. Mike yelped and grabbed his arm where the spider had bitten him. At the grotto meeting prior to our departure, Rod had spoken out against removing anything from the pit, as the debris could now be hosting some sort of cave habitat.

Once again, Mike and I found ourselves stumbling down the entrance breakdown and spitting bugs. This time we had Steve Spears from OG along with us and by the time we bottomed the 45, Bill and Christine Bennett had caught up with us. We arrived at the 55 ft. pit to discover that the mysterious cavers with the

Christmas tree ladder had built "the Mother of all bridges" across the pit.

Construction was of 2x6 joists covered with ½ in. plywood, measuring about two feet wide and long enough to span the approximate ten foot pit very nicely. Another supply of enriched lumber to be tossed down the pit by persons unknown, for use by the residents of the alleged bio-speleosphere.

The pit was quickly rigged and Steve Spears rappelled down, landing on the pile of offending materials. "Wow!, this place sure needs a good cleaning, there is junk everywhere." he yelled up. I looked over at Mike as he spit on his spider bite then preceded to rub it circuitously with little motions of his mini-mag light.

Steve ascended the rope and joined Bill and Christine Bennett along with Ron and Peggie Erickson in crossing "the mother bridge" to continue toward the end of the cave. Mike and I returned to the bottom of the 45 and ascended up the rope to the chockstone. Mike went on ahead to examine the next ascension while I waited in the dark with Chris Wiley watching the lights and listening to the conversation of cavers in the process of rappelling the drop.

A bloody oath rose up in my throat as I recognized the strange smell assaulting my nosebuds, some arsevoid was smoking a joint in the cave. Later, it was apparent that somebody was also smoking tobacco in the cave. Dog gone it! Now they made me swear.

I located Mike and we moved on to the top of the 45 where we organized a work party of cavers, mostly from WVG, in an effort to raise the tree up the lava fall. Enough people were on hand to quickly accomplish this chore. The tree was then used to access a small hole or tube entrance located in the ceiling above the vertical drop.

The passage had been observed by everybody over the years but, few had ever visited it. The tube went back about 100 feet and was comprised of very fascinating lava flows and gutters. No signs were evident that anybody had been there before. This is one of the prettiest areas that I have seen in the cave and well worth a visit.

I climbed down from the upper passage to see that Bruce and Steve had arrived with their half of the radio locator and were waiting a turn to drop the pitch. In conversation, we learned that they were on their way to the end of the upper annex above the chockstone and were in successful communication with Paul and Katrina Ostby on the surface. They also reinforced their discomfort with removing debris from the pit, at least until it was looked at by some authority to see if it did indeed contain micro cave-habitat. A conversation then took place between the various cavers present and it was decided to postpone the debris removal until after Rod Crawford could be brought to the site for an inspection. At this point, Mike and I headed out to see if we could locate the surface radio team.

THE SURFACE

Back on the surface Mike and I were joined by Richard James and Kwang Lee and together we headed across country with map and compass in hand, searching for the Ostby's. After a great deal of stumbling around we finally orienteered our way to the pair who resembled a couple of water witches zigzagging their way across the lava flows with radio-locator in hand, tracking their subterranean counterparts.

Things really started getting exciting as Bruce and Paul sent messages back and forth using their homemade Morse code. Shortly, we found ourselves on the rim of a round sinkhole approximately 100 feet in diameter and about 15 feet deep. Paul received a message that the boys were at the end of the annex and proceeded to take readings from around the "X" spot to determine the depth of rock and soil between the two radio-locators. Paul's estimate was 28 feet.

In my enthusiasm, I picked up a large tree branch and commenced beating on a nearby tree in an attempt to do some communicating of my own. I was surprised to learn later that Bruce and Steve could hear the pounding quite clearly in the cave below. Obviously, the amount of excavation necessary to dig into the cave prevents any attempt to open the sought after rear entrance. It is still exciting to be able to see the collapsed sink responsible for the termination of the upper annex passageway.

The above narrative is about the extent of my experiences that weekend. Even though we didn't clear any debris from the pit, we did have a very good time. I have subsequently received requests from cavers interested in helping to lower Rod down into the pit for purposes of scientific examination. You can look for the second annual "Clean Up The Pit." and first annual "Lower Rod Down The Pit" trip to be scheduled for sometime later in 1995. See you then.

EDITOR'S NOTE

The editor has to mail this newsletter and the alternate month activity calendar one week before the monthly grotto meeting as a reminder to people that the meeting is coming up. Brief notes, information on trips or other activities to be announced in the ***"Cascade Caver"*** need to be mailed to me two weeks before the meeting as it may take a few days for the mail to arrive and another few days for me to get around to formatting it all into my computer, print it out, go to the copy store and have 75-100 duplicates made, bring it home fold and staple it, attach mailing labels and stamps and then take them all to the post office to be mailed. If short messages/ announcements arrive late, I will try to get them in but, I can't make any promises. If you have a short last minute item to go in the newsletter, you can call me. If I'm not home, leave the message on my answering machine.

Any longer articles or trip reports you submit for publishing should be mailed to me three weeks before the next meeting as they take much more time to format. This includes material submitted on computer disks in case I run into trouble importing it into my word-processor. Don't laugh, I'm a slow typer and I have an even slower computer!!!

If sending computer disks, please include a generic Ascii text file copy of your article on the same disk in the event I encounter problems importing your particular word-processing software. Also include a printed paper copy in case I can't import either one so, I can type it in by hand. Remember, if you miss the deadline, your article may not get published until the next issue two months later. On alternate months, all I send out is the grotto activity calendar which includes only brief notes on trips, activities and other announcements. Thanks for your help

"RENEWAL" BATTERY UPDATE

by Paul Ostby

(I have been using "Renewal" rechargeable alkaline batteries for over a year now. It is time to update the initial article I wrote last year.)

I have been quite happy with these batteries. They seem to perform exactly as specified. They lose about 2-3 percent of their capacity with each full discharge, so after about 25 charges they would have only half their original capacity. I have several sets of these batteries and none of them have been charged more than a dozen times. So far the loss of capacity is not very noticeable.

Unfortunately, my battery charger - Rayovac calls them "Power Stations" - seems to have a problem. The charger is specially built for charging "Renewal" batteries. It is supposed to give each battery a full charge without over-charging. However I have had several batteries start leaking after leaving them in the charger for extended periods of time. This happened on two occasions.

In both cases the batteries had been left in the charger for several weeks. Also in both cases there had been a power failure during the time when the batteries were in the charger. The leaking was probably due to over-charging, but I don't know whether it was caused by the power fluctuations or by leaving the batteries in the charger too long. If you use "Renewal" batteries I would recommend that you remove them from the "Power Station" after they are fully charged.

Also note that these batteries are not made for high drain rates. According to Rayovac's specifications, these rechargeable alkalines have a maximum recommended discharge rate of 500 mA. My UK1200 dive light (for scuba diving) draws considerably more current than that. The rechargeable alkalines seem to be unreliable in my dive light and sometimes give out in less than an hour. Regular alkalines are better, and will last for about three hours.

However, 500 mA is plenty for most flashlights and headlamps. A set of four "Renewal" D-cells will run my caving headlamp for over 18 hours when they are new. Mostly I have sets of four 'AA' cells for use in caves. When new, these batteries ran my headlamp for five hours. After nearly a dozen recharges, they still last almost four hours.

On the whole I have been happy with these batteries. I use them not only in caving lights but also in household flashlights, clocks, radios, voltmeters, tape recorders, and TV remote controls. In fact, I have replaced most of the batteries in my house with rechargeables. Compared to other types of batteries, alkalines are not particularly bad in landfills. Still, it is nice to get many charges out of a set of alkaline batteries before throwing them away.

CAVING IN TROUT LAKE

by Mike Fraley

(Weekend of Jan 21-22, 1995)
Members- Mike Fraley, Bill Bailey and Larry McTigue

The idea was spawned in the mind of Bill Bailey; a trip to **Dynamited Cave**. Luckily, I was able to talk some sense into him. A six mile hike through the snow each way, carrying a large load on our backs, just to get to a cave that will drain all your energy away was not a pleasant thought. We still wanted to go caving though, so we decided to visit some of the caves in that general area. Luckily for Bill and I, we convinced Larry McTigue into going (someone who has actually been there before).

The drive from Seattle was long, boring and uneventful. Six hours later, we **finally** arrived in Trout Lake Washington. We found a nice little spot off the side of the road to serve as a campsite, and parked. We immediately got our stuff together, and headed out into the snow-covered lava fields to find some caves.

We were using a rather old, poorly drawn map of the area, and subsequently had a little trouble finding the right spot to even look for the caves we wanted to visit. We split up and spread out in hopes of finding something before the sun went down. I went tearing out across the undulating snow pack, hoping to be the one to stumble upon a gaping sink with huge passages leading off in all directions.

The result: Larry found a cave before I saw anything promising, I was the last to arrive at this cave, and it turned out to be a small surface tube which pinched off after about forty or fifty feet.

(Actually, your editor thinks it was less than 25ft before it squeezed down. But, we didn't have our cave suits or knee and elbow pads with us so, we didn't push it. It could theoretically connect into a segment of large trunk passage in the nearby Coyote Trench System. It should be checked again by cave "squeezers" with coveralls and kneepads. I have the latitude and longitude coordinates and directions on how to relocate it if anyone is interested.--editor)

While at this surface tube, we couldn't resist the urge to be the first members of the Grotto to implement the new philosophy of NO MORE TOURIST TRIPS! Both Larry and Bill brought along their GPS navigation units and obtained an accurate location of the surface tube.

On our way back, we stumbled across a large lava trench system with multiple lava bridges spanning its length. We returned the next day to explore it in more detail. We tracked along the length of the trench until we found where the trench terminated and a cave began.

I was the first one into the cave, since Larry and Bill were busy with their GPS units. It was a very treacherous walk due to the amount of ice near the entrance. I discovered a plaque nailed to one of the entrance walls which was placed there by the Oregon Grotto back in 1971. It identified the cave, ironically, as **Mike's Cave**, being part of the **Coyote Trench System**. Well,

apparently the cave was named after me, so I immediately exclaimed to Larry not to enter, since this cave belonged to me. Just kidding, of course.

The first few hundred feet of the cave was studded with spectacular icicles and ice stalagmites. Many of the ice stalagmites were hollow and full of water, due to the warmer water dripping down from the ceiling. Hanging from one side of the passage, in utter defiance of gravity and all rational thought, was an icicle which had somehow grown down at a thirty degree angle. Why an icicle would or could do this is anyone's guess. (It was straight as an arrow and about three feet long and I have pictures to prove it. We should enter it in "Ripley's Believe It Or Not" magazine--editor.)

Mike's Cave turned out to be several thousand feet long with some extensive areas of rather spectacular breakdown. (Actually, it's about 1500ft long but, with all the breakdown Mike and Bill had to cross, it's easy to exaggerate and imagine it's much longer than it is --editor.) Curiously, there are several areas of the cave where the original lava floor is still intact, providing a very nice, very smooth walking surface. The cave ends like most lava tubes, abruptly closing in a lava seal.

As we were turning around, I saw something which made my entire trip through the cave worth the effort. Snuggled in a little cavity at the base of the lava seal, were three perfectly shaped cones of lava. It appeared that lava had somehow dripped from the ceiling and formed these tiny cones about six to eight inches in height. The almost perfect shape they exhibited was the most striking feature they possessed. It also struck me that the cones looked more like wax than lava?

We exited **Mike's Cave** and proceeded towards **Cheese Cave**. On the way there, Larry got his truck stuck in the snow, just after I told him that there was no danger of getting stuck. We spent the next several hours trying to dislodge the truck from the impossible barrier of snow we had collided with, trying every method we knew to get a truck unstuck. (My 4x4 was trapped for about three hours but, it seemed like more --editor.)

Eventually, we managed to get to **Cheese Cave.** The cave turned out to be a mammoth, fifty to sixty foot diameter lava tube with long, gentle turns. We walked on for what seemed like forever, until we reached the inevitable lava seal. I was very impressed with the immensity of this cave, I never would have believed such a large, single lava tube could form. We took GPS readings at each of the two entrances of **Cheese Cave** and called it a day.

The drive back to Seattle was uneventful, except for one thing. When we arrived in Woodland Washington, everyone's favorite little restaurant (hack, cough, gag), "Whimpies", was closed. I'm not sure whether to cheer or cry. We were all very hungry, but not having to eat there may be a blessing in disguise. The only words of wisdom I can say about the trip: you never realize how monotonous and boring your everyday life is until you spend two days doing nothing but pure caving!

ELDERBERRY CAVE

by Larry McTigue

As far as I know, no one has ever published a trip report on this cave and since I decided to use the map of it as our cover this month, I thought something ought to be said about it. Especially in light of the fact that we may never hear much about it anymore. New homes are being built near it and all the land has been posted "No Trespassing" and a gate put across the road blocking all access to the caves there.

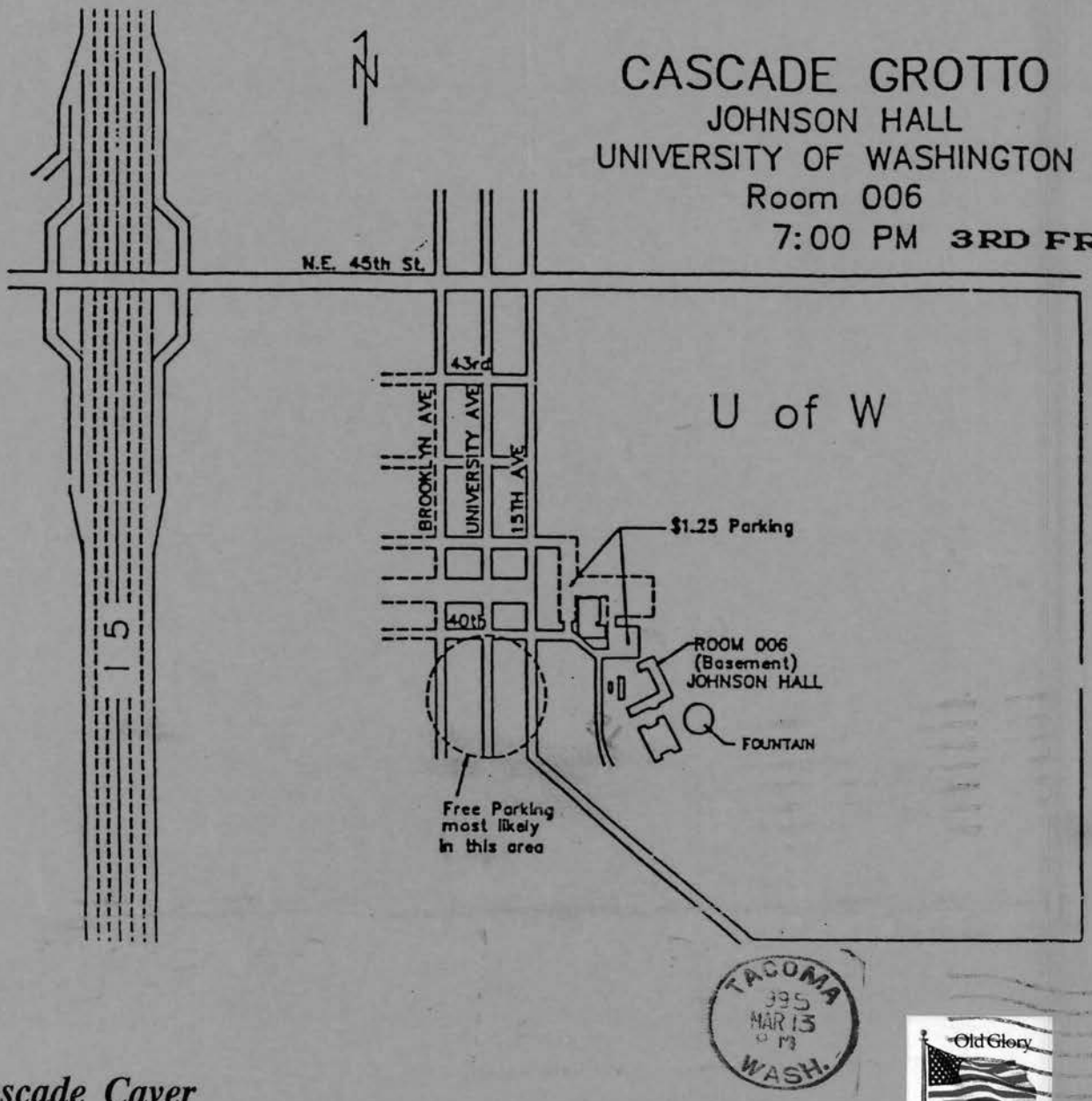
On Saturday, May 11th, 1991, Rob Lewis from Tacoma, Dick Garnick from Bellingham and I decided to visit the Concrete area looking for new caves. As has been my habit for many years now, I brought along digging tools to probe the various sinkholes there for possible cave entrances. It has also been Rob and Dick's habit to go looking for easy walk-in cave entrances, while I expend incredible amounts of effort in moving tons of rock and dirt to dig open a cave.

We've noticed on more than one occasion that while I'm intently focused on digging and exerting myself physically and mentally concentrating on opening up a sink or resurgence, Rob has incredible luck discovering new caves obscured by thick brush that most people would walk right by without noticing. One of his best discoveries in Canada, **Bog Creek Cave** was found this way. While I dug in the bottom of a deep doline, he and Dick went for a hike. On the way back, he found the cave.

So, while I began my excavations on a resurgence up the hill from **Ramsey Cave**, they took off on a hike higher up on the mountain. They were gone for quite some time and when they returned, I had moved quite a lot of material from around the spring issuing out of the ground but, without getting into the hoped for cave. They were surprized at my progress but, told me to stop digging and come help them survey a cave. I thought they were joking at first and they could see the suspicion written all over my face. They both laughed and chided me for not believing them. When I realized they were serious then, I really got excited. Then they said they had found not one but, two new caves!!!

I immediately dropped my shovel and hurried to follow them back up the hill to the new caves. Although these limestone caves are small by Eastern standards, the larger of the two had nearly 20 foot high walking passage, impressive by our standards. Much to our disappointment, neither cave has proven to be very extensive but, digging possibilities still remain in both. We had fortuitously brought our compasses, tape and other survey gear with us that day so, we began a "survey as you go" mapping of the larger of the two caves.

On June 1st, Rob and I returned to dig in the big new cave, which he named **Elderberry Cave** after the elderberry bushes growing around the entrance. Tiring of this, he convinced me to hike up the hill toward the smaller cave he had found the same day he discovered this one in order to scout for other caves in the same area. Not having much luck, we returned and walked out the old railroad grade and found the sink containing **Jensen Cave**. By now, it was getting rather late in the day so, we decided to leave further adventures for another time.



CASCADE GROTTO

JOHNSON HALL
UNIVERSITY OF WASHINGTON
Room 006
7:00 PM **3RD FRIDAY**

TACOMA
995
MAR 13
WASH.

Old Glory
USA G
For U.S. addresses only

Cascade Caver
c/o Larry McTigue
2713 Meadow Ave N
Renton, WA 98056

Paid to 99/99
Windy City Grotto
c/o Ralph Earlandson
802 S Highland Ave
Oak Park, IL 60304-1529

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