

Cascade Caver

Newsletter of the Cascade Grotto of the National Speleological Society
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LINDA HESLOP

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Meetings

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 in odd-numbered months immediately following the regular grotto meeting for the month.

Upcoming Events

May 17 — Grotto meeting. Slides of Bighorn Caverns and Pryor Mountains. Business meeting after general meeting
May 25 — Northwest Regional Meet (NCA), Trout Lake, WA, Memorial Day weekend hosted by the Cascade Grotto. Contact Jim Harp for details.
Jun 21 — Grotto Meeting. Pre-Convention slide show
Jun 29 — Cave Ridge - Mark Wilson - Cave register program needs your help. (formerly scheduled for June 22)
Jun 30 — NSS Convention in Cobleskill, NY
Jul 13 — Cave Ridge - Mike Wagner - Rappelling into Hellhole Cave.
Jul 19 — Grotto meeting.
Jul 20 — Rock climbing and SRT clinic - John Benson - Larabee State Park, on Chuckanut Dr.
July 27-Aug 10 — Northwest Cave Research Institute project in the Pryor Mountains of Montana. Contact John Buchanan, project coordinator, at (509) 259-7493 or in Seattle contact Ben Tompkins at 546-8025.

Aug 5-11 — 6th International Symposium on Vulcanospeleology, Hilo, Hawaii. Contact W. R. Halliday, 6530 Cornwall Court; Nashville, TN 37205.
Aug 10 — Index Ice Caves - Karl Steinke - A fun hike with beautiful views.
Aug 18 — Windy Creek Cave - Jerry Thompson - Investigating the new Discovery room.
Aug 30-Sep 2 — Papoose Cave - Jim Harp - Labor day near Riggins Idaho - great formations.
Sep 14 — Cave Ridge - Mark Wilson - Rappelling into Newton Cave.
Oct 5 — Dynamited Cave - Alan Coakley - Goal is the seldom visited New Big Room.
Nov 23-30 — Lava beds National Monument - Rod Crawford - Field research project.
1992 — NCA Regional in Idaho.
1992 — NSS Convention, Salem, Indiana, Aug. 3-7.

Trout Lake on Two Caves a Day

A guide page to the general area

by Joe and Laura Roeder

Getting there

From Seattle, brave I-5 southbound (a risk during rush hours but I like it at 4 a.m. on Saturdays) until nearly to Vancouver. Take I-205 south and after crossing the Columbia River, pick up I-84 going east. Drive to Hood River, take the exit for the toll bridge (second exit), pay the attendant four bits (50 cents), and turn left after crossing the river. You are now on Highway 14 but not for long. In a mile or two turn right onto a winding road that leads shortly to Highway 141, the road to Trout Lake. It is 23 miles, all uphill, to the sprawling metropolis.

Or instead of turning left after crossing the toll bridge, turn right. In two miles you enter Bingen, a quasi-Bavarian burg that's interesting to look at. Turn left onto Highway 141, go through White Salmon, and in a half hour or so you will find yourself in downtown Trout Lake.

Staying There

Here are the accommodations in and around Trout Lake, in no particular order whatsoever, and with no guarantees on accuracy.

The **Llama Ranch B&B** is just before town on Highway 141. Rates are \$40-\$60 per night.

The **Trout Lake Grocery** has three rooms for \$25 per night on a first come-first served basis and is in the middle of town. The Trout Lake Grocery is typically open from 7 a.m. to 7 p.m. but, like many of the establishments we spoke to, they plan to extend their hours during the Memorial Day weekend.

The **Country Inn** is just north of the main road and has rooms. They serve breakfast to guests but lunch and dinner are open to the public. Rooms are in the \$40-\$60 range.

The **Ice Caves Campground** is ten miles past (west) of Trout Lake and has about 8 campsites, two outhouses, and no running water.

Peterson Prairie Campground, site of the Regional, is just west of the Ice Caves Campground. Since we've never stayed there, we can't tell you about it.

Eating there

Bonnie's Place is the local (read "only") hangout. It is small so don't expect a non-smoking section other than the table outside. The food's good though.

Serenities just before town on Highway 141 has excellent food. Their salad bar is wonderful! (apart from the Jell-o salads) They only serve dinner and it can get pricey (\$20) but well worth it. In Trout Lake?! Surprise!

The **Country Inn** serves lunch and dinner, as I already mentioned, but the locals don't recommend it. We haven't tried it.

The Logs is about ten miles south of Trout Lake in the "town" of B.Z. Corner. Of course it's "B.Z.", it is the only corner for miles. It calls itself a family restaurant but there were some shady-looking characters swilling beer and shooting pool that we had to get past in order to get to the restaurant half. The food was decent but they desperately needed to make the joint non-smoking. If you like adventure, however, ...

If you don't want to be there

Conboy Lake National Wildlife Refuge is ten miles east of Trout Lake and has 5,500 acres of trees, lake, marsh, birds, deer, and an occasional elk. There is hiking and fishing plus Mt. Adams staring you in the face. (But if you really don't want to be there, why have you read this far?)

There you have it, the definitive, complete, and total guide to the Trout Lake area, at least until some other guy decides to take his typewriter and bang out some more propaganda.

Pryor Mountain Project

by Bob Brown

The Northwest Cave Research Institute will be holding a second field work camp in the Pryor Mountain region of Montana. The camp will run July 27 to August 10, 1991. The objectives for this camp are to assess the accuracy of maps and inventories for known caves, locate additional unknown caves, and perform reconnaissance for future projects. Space is limited to the first 40 qualified cavers to apply.

The Pryor Mountains were chosen for a project site because of the enormous potential for discovery of new caves. The Mission Canyon Formation is the cavernous unit in the Pryors and provides a large, complex area to search for caves. Field camp participants will be working at elevations between 5,000 and 9,000 feet and in extremely rugged terrain with virtually no established trail system.

Base camp will be at Big Ice Cave Campground at an elevation of 7,600 feet, but other overnight camps may be used. Many of the 35 known caves in the Pryor Mountains will be visited during this field camp. Information from new infrared aerial photographs will be used this year to locate new caves.

The project cost includes base camp cost and all meals. Fees per participant are the same as last year: \$70.00 for one week or \$100.00 for two weeks.

For information write: NCRI, 9417 - 8th Ave N.E., Seattle, WA 98115, or call me at (206) 569-2724.

Leadership

Discussion of Kelly's Cave Puzzler

The Kelly's Cave Leadership Puzzler printed last month outlined a situation requiring decisions by a trip leader as presented in a leadership training course. Here is the discussion and suggestions as reprinted from the March 1991 *SFBC Newsletter*.

- Your party is strung out through a set of vertical pitches and one member has made a mistake — scarcely a fatal one but more in the nature of embarrassment or inconvenience. The presence of a waterfall pitch could easily compound this to a life-threatening situation. Fortunately, Seth is just above Colin and can offer advice, encouragement, and coaching if necessary. The pitch is narrow, perhaps making it difficult to see or reach his feet.

- The simplest solution would be for Colin to forsake the rappel and take advantage of the narrow pitch to chimney upwards taking the load from the

jammed rack. By engaging the shunt at the higher position it should be possible to back the shirttail out of the rack, extract the slack, and resume the rappel. If for some reason the chimneying move isn't possible, Colin has enough vertical gear to do a self rescue.

- Engage the "spelean shunt". Attach the Jumar with etrier to the rope and step up into the etrier. Raise the shunt again and sit, thereby unloading the rack.

- Back out the shirt, removing bars as necessary. Rethread the rack with the rappel rope, extracting the slack rope from between the rack and shunt. Tie off the rack. Descend with the shunt and Jumar until the rack and sit harness can take your weight. Remove the Jumar, release the shunt, and untie the rack. Resume the rappel.

Hawaii, December 1990

by William R. Halliday, M.D.

Preparing for the August symposium and with other Hawaii Speleological Survey work to be done, my December trip to Hawaii was another extra-busy time. Again, I never got into the water.

We arrived in Honolulu late on December 20. Early the next morning NSS member Darrel Tanaka and I proceeded to the main campus of the University of Hawaii where we met successively with Professors Cliff Smith (Botany Department, Cooperative National Park Research Unit), Kenneth Kaneshiro (entomologist in the Hawaiian Evolutionary Biology Program), Mike Garcia (Geology Department), and Everett Wingert (Geography Department). Tony Jones was away for a couple of months.

Mike Garcia fished out unpublished geological maps and confirmed that Judd Street Cave, Pupukeya Cave, and Niu Burial Cave are all in Koolau basalt, about 2 million years old. He also gave us the names of a couple of cave-oriented geologists temporarily on the Big Island, one of whom proved very interested in the NSS.

Everett Wingert has a contract for a data base of Hawaii data bases and we made preliminary plans for including the Hawaii Speleological Survey (but not its file data) in his file.

As for Kenneth Kaneshiro, even though he is on the Board of Nature Conservancy of Hawaii and is the entomologist of the Hawaiian Evolutionary Biology Program, he had received very little information about the extraordinary insect and arachnid cave fauna of Kauai and the threats to it posed by urbanization. We urged him to have Frank Howarth brief him and see what he could do to help preserve it.

Cliff Smith turned out to be generally favorable to tread-softly cavers as resources to Park managers and is interested in publication of a data base on Hawaii caves. He also suggested publication of a handbook for overseas and mainland cavers coming to Hawaii.

At the State Office Building we found that the Historic Site Section of the state's Department of Lands and Natural Resources had just moved to a part of town with heavy traffic and little parking. So it didn't work out for us to meet with any of the archeologists. Instead, we proceeded to the Bishop Museum where we were cordially received by Donald Duckworth, its Director. He agreed that the museum would be one of the co-sponsors of the symposium. Finally we met with Sandi Halualani to make arrangements for the pre-symposium reception and museum tour August 2. These will have to be late

Friday afternoon instead of Friday evening as tentatively planned. Unfortunately, this means that some symposium participants may have to come a day earlier than planned if they wish to attend.

Next day we flew to Hilo and on Sunday we got organized there, beginning a lot of telephoning all over the Big Island and Maui. On Monday I deposited the second increment of HSS file data in the restricted innards of the Lyman Museum and had a cordial but short meeting with its director, Leon Bruno. At dinner I met with Spike Werner, HSS vice-chairman, in preparation for the annual HSS executive committee meeting. We continued the pre-meeting meeting at lunch Christmas Day then held the meeting itself.

On December 26 Sis and I flew to Maui where NSS member Linda Scully drove us up the mountain to park headquarters at Haleakala National Park (which contains several important lava tube caves and some pits famous in Hawaiian folklore). As we began liaison work there it became apparent that this park is badly under-funded and that the NSS and its HSS should be able to be a significant resource to its staff. Contact person is Ron Nagata, a geographer who is chief of its resource management. At dinner, Linda and I reviewed the speleological potential of Maui at length; she knows Maui very well and has even dived in the Wainapanapa Wet Cave. Next day she drove me to Skull Cave (called Kalua O Lapa Cave in some of the biological literature) in the most recent lava flow on Maui. It is a delightful little two-level cave in an area of great cultural importance, and is of considerable biological significance. We found fresh offerings in the cave, including cooked rice, berries, ti leaves, and pocket change (to which I duly contributed). But sport cavers will want to go to the Hana area instead, where much larger and more sporting caves exist.

Friday, December 28, had been billed as a field seminar for staff members of Hawaii Volcanoes National Park, with me as leader. But it turned out to be merely a normal introductory field trip with about half novices and half experienced cavers: Dan Taylor, Andy Kikuta, and Chuck Stone from the Park, plus NSS members Spike Werner, Darrel Tanaka, and Barbara Schaefer. Dan led us to a newly-reported little cave near a pig-control fence in rain forest wilderness about a mile from Thurston Lava Tube. His thought was that it might be a good cave for wild caving in the Park. It has notable geological features and indeed is a good one for visiting cavers with the tread-softly ethic. But it is

much too fragile for local outing clubs with dubious hangers-on. Its lava dripstone and both its longitudinal and vertical flowstone are special, including two small but notable cockscomb stalagmites. We called it Fence Cave. It is somewhere in the general area Robin Holcomb wants investigated but landmarks are few in the jungle.

After belated locomocos at the Volcano Store, Spike, Darrel, and I checked out a few reports. First we visited Bill Rowland on Ala Loop just off the Volcano highway. A couple of years ago Bill was digging in his garden and opened a small hole he could see down into. Not being a caver, he used it as the drain for a pipe that carries runoff from the road, put a slab over the hole, buried it with cinders, and went on with his garden. Eventually he told Spike about it. With obvious glee, he redug his hole for us without worrying about the garden. A bit of prying pahoehoe slabs and the entrance was human-sized. Alas! Bill Rowland's Cave is just seven feet deep, 19 feet long, an 4 feet in diameter. It is a genuine lava tube cave in a granular red-brown lava, but is virtually featureless.

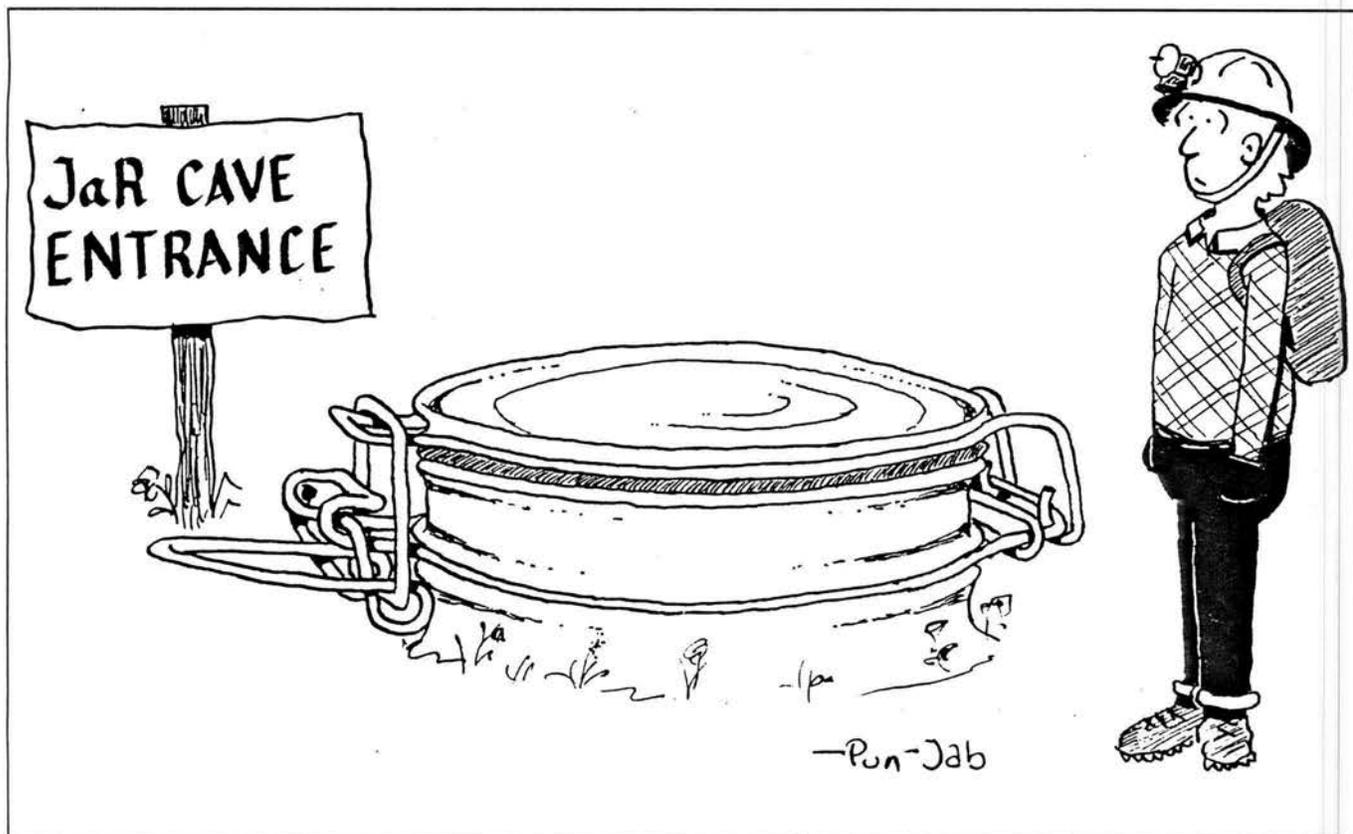
Next we searched in vain for a cave entrance supposed to be alongside a church alongside the Volcano highway. Then in vain again for the lady said to be a source of cave information in the Paradise Park Subdivision. Then in vain for a cave

said to be at the end of 18th Street in that subdivision. At this point we decided it was time to start talking to the experts — the neighborhood kids. One promptly led us to the entrance of a low cave near the outfield of the Paradise Park softball field. It was so filled with roots that we decided not to go more than a few feet until it had been checked by biologists.

Finally we had a look at two possible descent routes in an intriguing sheer-walled crater at the end of Hinoloa Street. It will require more non-stretch rope than cavers currently have in Hawaii. Maybe during the field work after the symposium.

On the 29th, Spike and I returned to map Fence Cave with Curvin Metzler of the Glacier Grotto and geologist Will Bussard. The sink makai also was checked and it appears that opening the next segment of this tube system will not be difficult. Afterwards we talked with some of Spike's Hawaiian friends about caves and pits near the lower East Rift Zone, and looked at new construction (house almost finished) alongside Malama Cave in this rift zone.

On Sunday, Rob Shapiro joined Curvin, Darrel, and me in another fruitless search in Paradise Park. Then Curvin took us to what he remembered as an unexplored pit at the bottom of a crack near Highway 130 between Pahoia and the site of Kalapana, near the 15-mile turnout. Things evidently had changed



a lot since he and Mat Champion had been there a few years ago: maybe an earthquake's effects. Instead of an unplumbed pit at the bottom of a grotto at the bottom of a fissure longitudinal to a lava flow, we found a high, narrow natural bridge at the bottom of the crack. The crack itself was interesting, some ten to 25 feet wide and locally as much as 50 feet deep. It was floored with unstable breakdown, dirt, rubble, and vegetation, much of it near or at the angle of repose. Much of the walls also appeared loose. The natural bridge is slightly sinuous longitudinally and in cross section. It is as much as 25 or 30 feet high and ten feet wide. The ceiling line is so irregular that it is difficult to determine its length. Looking aback to its makai side, however we could see typical lateral coatings characteristic of deposits by flowing lava, suggesting that the natural bridge is a remnant of a true rift cave. Superimposed several yards above the passage we also observed the opening of a smaller tube remnant. Champion's Cave we called the cavernous natural bridge, in honor of the first caver we know to have seen it.

Curvin led us onward along the crack, beyond the natural bridge, into lengths that he and Matt had never explored. We clambered along the open rift for another 200 or 300 feet to a point where it seemed to end. But at its seeming end was a gaping cave entrance, much larger than the natural bridge (although it, too, had a small upper level tube above it). This cave, too, had lateral lava coatings.

Clearly someone had been here before, however. In twilight at the bottom of a steep talus entrance slope about 80 feet long we could what turned out to be the crumbled remains of black plastic tarps and broken wooden frames: evidently the remains of an unsuccessful attempt to hide a marijuana operation underground. Beyond this spacious entrance room is a tall, rocky inner chamber about 35 feet long. Atop its steep rear wall a crawl continues through the breakdown but does not appear promising. We plan to return to see if the crack continues further makai when we have plenty of daylight hours. The jungle is dense here and Rob had to leave early.

The rest of us proceeded to MacKenzie Park to recheck a suspicious-looking bearing that linked the main cave to the dwelling cave in the August survey. The bearing was OK; it was my cave sense that was off. Then we proceeded west on Highway 137 for the Survey's first look at the Natural Bridge System, newly purchased by a transplanted Virginian who has done some Shenandoah caving. Here we found only a series of short segments of a once-extensive tube system, developed on at least three minor levels. But none was more than about 100 feet long and primarily, they were of cultural, biological, and speleogenetic significance. A native octopus lure had

been left in one, maybe not so many years ago. Another is a refuge cave where a Hawaiian family built a rectangular enclosure of rock over the cave's stoopway entrance in such a way that visitors — hostile or otherwise — still must squeeze down and through, slowly and awkwardly, one at a time. There is no sign that it ever had to be used as a refuge.

In the wide entrance crawlway of another are rounded cobbles that look like beach cobbles from an old sea level. In still another, a brand-new coconut sprout more than two feet high was trying to make it in a cave about 4 feet high, deep in twilight. The most mauka segment of the system, whose entrance is barely across an old stone fence mauka of the Weede property, has numerous roots and flying insects. Almost entirely in breakdown, it is about 60 feet long. In two of the longer caves we noted arched red lava on the floor and in one, an underground tubulus is present. We ran out of time before completing more than preliminary work here.

Darrel and I met at length on December 31 with Dan Taylor, Chief of Resource Management at Hawaii Volcanoes National Park. While things look good for a deep rift trip after the symposium and for videotaping lava flowing in active tubes within the park, he was obdurate about controversial parts of the park's cave management plan, insisting, in several unfortunate places, on using his interpretation instead of the exact wording of the Federal Cave Resources Protection Act, the National Park Organic Act, and other Federal definitions. The problem thus was not resolved at Park level. We also met with Hugo Huntsinger, Park superintendent, who was favorable to Park co-sponsorship of the August symposium.

On proceeding to the Hawaii Volcano Observatory of the U.S. Geological Survey, we found nearly everyone at work. Considering that this was New Year's Eve, this constituted true dedication. Here we firmed up a lot of plans for Observatory participation in the symposium. Then we checked a cave mentioned in a recent publication of the Volcano Art Center. As suspected, it turned out to be little Roadside Cave in the Kealakomo Village System below Holei Pali. Despite its short length, this potentially is an interpretive site for the public, with much nicer flow features than Thurston Lava Tube.

Anyone planning to come to Hawaii to enjoy beach life had better not get involved with the Hawaii Speleological Survey. And while the group was relaxing after field work one afternoon, participants decided to form a Hawaii Grotto of the NSS, with Spike as chairman and Darrel as secretary-treasurer. The application has been sent to Evelyn Bradshaw for approval.

NSS Computer bulletin board established

The NSS has established an electronic bulletin board, according to the *NSS Administrative Memo*, for access by NSS members. There is not a lot on it yet other than the usual message service but plans include maintaining a nationwide list of cave rescue telephone numbers, a closed cave list, an international calendar of caving events, plus cave related software available for downloading. Suggestions for additions and improvements from users are eagerly solicited.

The BBS is running PCBoard software on a IBMPC-XT with a 2400 baud modem is operated by Tom Rea. The telephone number is (317) 745-2197.

A more detailed two-page article by Tom Rea in the 2/91 *D.C. Speleograph* lists what is currently available including the NSS constitution and bylaws, an "IBM"-based cave survey processing program called CMAP, some Macintosh data conversion utilities, and more.

Only NSS members will be accepted as users of the board. On your first call you can leave your NSS number and other information. Once that has been verified your security and access levels will be upgraded so that you can read messages or download files.

New NSS section for diggers

John Halleck, Section Coordinator for the NSS Internal Organizations Committee, has announced that a Section was added to the NSS last October for cave diggers. Its chairman is Steve Peerman and Bill Yett publishes the *Diggers Journal*. The section had 34 active members as of December, 1990 and dues are currently \$5 per year. To contact the group, write to: Digging Section of the NSS, P.O. Box 2763, Las Cruces, N.M. 88004-2763

John's announcement came in response to comments from Rane Curl on a cavers computer network.

"The prospective NSS Digging Section," Rane writes, "prompts me to broadcast a request to all diggers: record all connections made by digging, including entrances, both in your survey records and on your maps. Over some period of time I have studied the relations between cave lengths, numbers of entrances, passages sizes, and other aspects of cave size and shape. These all exhibit a great deal of

internal order, in fact, fractal order. For example, it is reasonable and possible to estimate the number of entranceless caves in an area, knowing the lengths and number of entrances of caves with one or more natural entrances. The key word is natural. If an entrance has been dug open, that cave must be considered as an "entranceless cave" in using the estimation method. The same is true of internal connections: these change the length and number of caves, again changing the "natural" statistics. I welcome a Digging Section that could help save the data about the natural state of caves, even when furthering exploration. Otherwise the destruction of an accurate data base about natural caves would in time make such statistical/fractal studies impossible."

Robin's handy household caving hints

Yoo-hoo it's me again. Ever wonder how to get rid of the smells that come out of those grubby old cave packs? I think the absolute worst is that carbide - phew! You know the stuff, it looks like the bottom of an aquarium. Well, we all have our own pet cures, but the only sure cure I know is: make sure it gets out and STAYS out of the house! Lysol won't work, and it makes such a mess when it spills on the floor. I believe the kids wanted to use it in their pea-shooter last Thursday. You could poke out an eye, and just the other day Mickey was saying to me.. (Oops. Leslie's word-proceser is just so much fun.)

Les calls it carbide, although after that mess in Bhopal India, how a caver could use union-made chemicals is just beyond me. We home-makers have to take a stand. Get rid of these lethal, and smelly, goods being sold as common caving supplies! I'm putting my foot down!! Tonight is Leslie's Wednesday night card party. While Les is gone I'm getting rid of every last bit of that carbide.

Since they're always babbling about water this, and water that, it's probably like ballast in florescent lights. I'll bet if I switched it with old aquarium gravel nobody would even notice the difference. I'll eventually think of some good way to get rid of the stuff, but for now I can just flush it down the toilet.

Thanks for February's tip from Pat about keeping used kitty litter from accumulating under the porch. I didn't know you could seal up that kind of stuff in pressure canners. Gerry adds - "Put in scrapings from dinner. It saves the seals". Gerry is always getting advice on seals from that Greenpeace bunch. Moe tapes space blankets inside the top of cave helmets. It's there for emergencies and adds warm padding. Till next time - keep those letters coming.

The Vandalism Chain

Editorial found in the middle of some executive meeting notes in the February 1991 D.C. Speleograph. What is the vandalism chain? Lets say that you take a novice, who may or may not be a friend of yours, on a trip to a reasonably easy cave. It has nothing vertical, no tricky hazardous traverses, but enough mud and crawlways so they know caving isn't all pretties. You don't see the person again but he has become hooked and decides to take some others to the same cave. You may have given him a good dose of safety and conservation messages and some of it may have rubbed off.

After two or three trips to this same cave, the suspicion grows that there probably are other interesting caves to visit. A trip to the library or some questions of individuals does yield directions to

other caves and off our friends go, merrily trooping to a cave that has a number of hazards for which they are not prepared, as well as formations of whose fragility they are not really aware. So all the care taken on that initial novice trip to instill safety and conservation guidelines is lost in the vandalism chain. Because the initial experience was a safe one into a cave with little that traffic could really damage, those involved have little preparation for more hazardous or more fragile caves.

If at all possible, it's probably better to bring would-be cavers into the grotto where there can be continuing contact and training. Experience has shown that the conservation ethic usually isn't absorbed at the outset but grows upon one gradually.

On conservation and breaking the vandalism chain

by Tom Kilroy and Sandy Major

Experienced cavers often bring beginners into caving, the sport, but do not bring them into the caving ethic. There is a need for a continued reinforcement of responsible caving practices in order to instill a conservation ethic in your caving. Beginners should be encouraged to cave through the grotto and to join the NSS. We have thought of some ways that we, as grotto members, could work with beginners to instill a conservation ethic. Some things to think about.

Food: Eat well before entering a cave and make sure everyone has enough to eat while inside. A hungry and tired person becomes a sloppy caver and loses judgement.

Nature's Calling: Remember to remind everyone to relieve themselves before entering the cave.

Clothing: Just as with food, a cold or hypothermic person is no benefit to a fragile cave system. Make sure beginners are well prepared.

Use of Carbide: Remember a bottle or bag for spent carbide. Describe to beginners the hazards of carbide to the cave ecosystem. Instill care in recharging. When taking water from a source in a cave avoid dipping the lamp top into the water.

Know your cave: It is important to learn as much about a new cave as possible before entering. The more you understand the fragile areas the better you

can avoid inflicting harm. As a leader with beginners, make sure you're in front, pointing out fragile areas. Explain how formations develop and how humans impact them through breakage, skin oil, lint, and so forth. Instill in beginners the need for caution while exploring, unfamiliar territory.

Leadership: How do you respond to a person saying "I'll do anything to get into that cave. My friends and I used to break into that cave all the time."? What do you say to a beginner who has just broken a speleothem? How do you re-evaluate your own leadership when someone breaks something on your trip? What kind of constructive comments do you make so the person understands the importance of the "mistake"? It is important to think about these possibilities and our responses. We should make a constant effort to teach the cave conservation ethic, to break the vandalism chain. Let's hear your comments!

Calcium Carbide

by Ben Tompkins

Although I'm an electrical type with more of an affinity for bulbs and batteries, I do use carbide on occasion and was interested in the discussion on the cave news net about the origins and chemistry of calcium carbide.

Frank Reid: Disclaimer: This article is not intended to provoke flames (so to speak) about carbide vs. electric cave lights. For a full discussion of their relative merits, see the excellent articles by Donald Davis and Tom Kaye in *Caving Basics* (NSS, 1988).

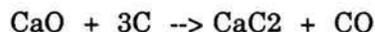
An informal survey which I conducted reveals that many cavers don't know where calcium carbide comes from. Many believe that it is mined from the earth, and that carbide was used before electric lights were invented.

Frank quotes James Burke, historian of technology, about how Henri Moissan of Paris, France discovered calcium carbide in 1895 while attempting to make artificial diamonds in the newly-invented electric arc furnace. After many tests, he tried a mixture of lime and carbon at a temperature of 2000 degrees C. The result was uninteresting until he brought it into contact with water: It gave off a gas which burned with brilliant white light. Acetylene light was a sensational discovery in the era of dim coal-gas light and very expensive electricity. The acetylene industry attracted much investment, and competed successfully with gas and electricity. By 1899 there were nearly a quarter of a million acetylene gas jets operating in Germany, served by over 8000 acetylene plants. The gas cost half as much as electric light, and required a quarter the space needed to provide the same illumination by coal gas. Before 1900 there were acetylene plants near major sources of hydroelectric power where the electric-arc furnaces necessary to produce the carbide could be operated cheaply. Acetylene was also used to produce lampblack, and as a substitute for coal gas in engines (it was four times more efficient), and together with oxygen it produced a very hot flame ideal for welding.

Then Auer von Welsbach invented the gas mantle, which greatly increased the luminosity of coal gas. At about the same time, electricity became much less expensive. By 1905, the acetylene industry was in trouble, and there was a great surplus of unused carbide. Chemists of the German BASF company, looking for new ways to make dye, heated calcium carbide to 1000 deg. C and passed nitrogen gas over it. The nitrogen combined with the carbide

to produce calcium cyanamide, an inexpensive fertilizer. (1, 3)

Larry Lippman: The process... utilizes calcium oxide (quicklime) and coke, and takes place in a modified arc-resistance furnace:



The carbon monoxide is usually recovered. Materials and energy required to produce one ton of calcium carbide are: 1900 lb lime, 1300 lb coke, and 3000 Kwh of energy. These figures are accurate, since there happened to be a suitable reference book lying on my conference table.

Probably the most common use of calcium carbide today is the manufacture of cyanamide by combining it with nitrogen. The use of calcium carbide for production of acetylene has substantially declined. Acetylene is today more commonly manufactured from natural gas by pyrolysis and partial oxidation of methane. There are various processes operating on this principle, one of which (the Du Pont Process) employs a special arc furnace with a rotating magnetic field for quenching the arc.

Union Carbide used to manufacture carbide and acetylene in Louisville, Kentucky. It's a dirty process; they were cited numerous times for air-pollution violations. Circa 1961, their tailings-pond of spent carbide (calcium hydroxide), approx. 1/4 mile square x 100 feet deep, broke its dam (a hardened crust of the same material) and flowed through the neighborhood like cold lava, overturning trucks and knocking houses off their foundations. The newspaper published a photo of a sign on someone's front lawn reading, "Don't nudge the sludge." Much of the stuff was dumped into an abandoned quarry.

...Thomas Edison's carbon-filament light bulb was patented in 1879. French experimenters had made incandescent lamps previously (1854) using expensive platinum filaments. Electric mine-safety lamps were used as early as 1869. (2)

Among its virtues, carbide light is aesthetically pleasing. Although electric light is older, some cavers argue that carbide is more "basic" (true, in that the residue has a Ph greater than 7. :-)

It takes about 1.5 kilowatt-hours of electricity to make a pound of calcium carbide (not counting the heat energy needed to make calcium oxide from limestone). A pound of carbide will fill a cap-lamp about 10 times, yielding perhaps 30 hours of light under caving conditions.

A new Wheat Lamp(tm) battery stores 14 ampere-hours at 4 volts, or 56 watt-hours. One pound of carbide represents the electrical energy in 24 Wheat Lamp charges (at 90% charging efficiency). With a 1.2-ampere bulb, that's 280 hours of light (but you must leave the cave to recharge).

Although carbide light appears inefficient by the above calculations it is still unbeatable for caving, in terms of volume, weight, reliability and cost. A kilowatt-hour from the power company costs perhaps 10 cents at consumer rates in the U.S., far less for large industries (there are large regional variations in cost of commercial electricity). One Kwh from alkaline D-cells at retail price is about \$67 (calculated at 1.5 volts, 15 amp-hours, \$1.50 per cell.)

CAUTION: Alkaline cells contain mercury, and should be considered toxic waste. During cave cleanup projects, separate them from the rest of the trash. They should not be disposed of in landfills. I'm not sure how to properly get rid of them.

Paul Hill: I come from an area of the country that doesn't use carbide, despite the "friendly" diffuse light, hours of light per pound and heat generating features. I have attributed this local bias to the more pronounced yellow of a carbide flame in our area. My question for those chemists with the right knowledge, is the marked difference in color: (1) more a result of less oxygen and air pressure, or (2) more a result of the lower temperature of the gases being burned.

Most of our caves are in the 1200m - 2700m range with more toward the higher than the lower value. 40-50 F (5-15 C) would cover a majority of caves. I do assume the colder temperatures cause the production of carbide to be slowed. This even came in very handy at least once, when I was able to cave for six hours (!) on one charge of a Premier cap lamp without a micro sized flame. This was at around 3000 m. in a very cold cave. This slower production also allows the excess heat to dissipate into the colder air. Cap lamp bottoms rarely if ever get too warm to grab in this area.

Note: The pressure of gas delivery is limited by the column of water above the carbide. Too much pressure will release through the water tank and NOT deliver higher pressure gas to the tip.

Roger Haley: Do carbide cavers need to worry about being able to find it?

Frank Reid: For now, probably not. Carbide is an important industrial chemical. However, given current attitudes of government and the legal profession, I expect that we may someday have to get it by paths less direct than at present.

Cavers into explosives, and readers of rec.pyrotechnics, know that the Bureau of Alcohol, Tobacco and Firearms (BATF, a.k.a. "revenooers," part of the U.S. Treasury Dept.) is slowly increasing

its restrictions on potentially-explosive chemicals. They have not regulated calcium carbide, but who knows what they might do if some second-rate terrorist blows up a town by dumping 100 pounds of carbide in the sewer?

Andrew J. Holtsbery: ...When the University Security came through the building [where we hold our meetings and store our carbide] on their rounds they flipped out when reading the flammable solid labels on the rusted, but still intact barrels. They called the University Environmental Safety people and had them removed... The University didn't bother telling us they had taken it... They insisted that they put on a "Carbide School" to inform us of proper storage, and disposal of our carbide... They also asked questions like, "You do wear dust and mist respirators with full facepieces, splash-proof dust-resistant safety goggles and use glove when you come in contact with it don't you?"

Scott Linn: In Corvallis, Oregon about a month ago someone had left a drum of carbide out for trash pickup (if I had known, I would have picked it up myself!). Anyway, it wasn't labeled, and went into the back of the pickup... It rains a lot here, and it happened to be raining then, so most of the trash was wet. The garbage men started to think something was wrong when they heard loud hissing sounds coming from the back of their truck, even when it was off. Someone from EPA came out and figured everything out, before anyone got too close and lit a cigarette.

References:

1. Connections by James Burke, Macmillan, London, 1978. ISBN 0-316-11685-8 (paperback). (Companion book for the PBS TV series.)
2. Historical article on mining lamps by Chuck Young, *Potomac Caver* 13(1)4-7, (2)13-17, reprinted in *Speleo Digest* 1970, pp. 302-305. Partial reprint in *Speleonia* 15, v.4 no. 3, Oct. 1990.
3. Young's article includes references from *Scientific American*, 9 Feb and 23 Feb 1895, about the invention and production of calcium carbide, and reports that Scientific American ran many articles about carbide and acetylene over the next 15 years.

Grotto Notes

April Grotto Meeting

The April meeting was another well-attended gathering. Sandy Major opened the meeting with a description of the NSS Conservation Committee and a call to form a grotto conservation committee. A number of people expressed interest.

Mark Wilson announced that the June 22 trip to Cave Ridge was rescheduled for June 29.

Sandy outlined the agenda for the May business meeting.

Jim Harp made a plea for preregistering for the NCA regional and passed out registration forms.

Chuck Crandell, Phil Erickson, and Mike Wagner described their adventures getting to Lechuguilla Cave, working on the project, and participating in the rescue that got so much media attention.

Next came the perennial rehash of who to call in a cave emergency and what the grotto's role ought to be.

And finally came Steve Sprague's survey clinic. The group broke up into three crews to survey a loop around the building. But it was dark outside and not everyone had three sources of light so the loops were done indoors. Disregarding the steel floors, steel pipes on the ceiling, and steel door frames, it was a good first exercise. Each team then processed their data on a laptop computer to see that part of the process also.

New Grotto

Puget Sound Grotto, c/o Charlie Anderson, 547 S.W. 304th, Federal Way, WA 98023

New Members

Dean Berg

Edmonds, (206) 743-1569.

"I am a Phd candidate in Forest Systems Engineering. I work with geographic information systems and can help generate 3D maps, although not on demand and with a little patience. My caving experience is limited to being a participant but I have some basic climbing skills. I'm 35 years old, married, and have 3 dogs." - Dean

Michael Compton

Tacoma, (206) 535-5144 NSS 33221

"I am 35 years old, own my own business as an audio engineer, and have been caving for 2 years now. I am interested in bats, cave exploration, and

vertical caving. So far I have been exploring the lava tubes around Mt. St. Helens and am planning a trip to central Oregon and the Bend area caves this summer."

Scott Duncan and Inga Thornell

Federal Way, (206) 838-6163.

"I am intensely interested in caves and have explored caves in Wisconsin, Iowa, Kentucky, and Arizona. I have spend one night in a cave in Wisconsin and loved it. I have also done extensive cave diving in northern Florida. Backpacking is also a hobby and I did a lot of free climbing in the seventies."

"I strongly believe in protecting cave environments and I strive to leave no trace when I explore a cave. Based on the number of caves that I've found to be locked up tight to keep the public out, I've come to realize that the only way in is to join a recognized, responsible caving group."

"We were introduced to the grotto by Bob Brown and we look forward to learning more about caves and caving from the dedicated, experienced people I've met at the grotto meetings." - Scott

Roy (M.L.) Robinson

Seattle, (206) 935-7464. NSS 22848.

"The Northern New Jersey Grotto introduced me to caving in 1979 and I was an active member up until my move to Seattle in 1990. I have done a variety of east coast caves in NY, NJ, PA, VA, and WV, all of them horizontal in nature. In the last year or two I have become interested in vertical caving but so far have limited experience. I am looking forward to caving on the west coast and possibly trips to Bighorn, Jewel, and other expeditions of that kind." - Roy

Doug Singer

Seattle, (206) 285-8340.

"I am new to Seattle, interested in caving for the physical challenge and as the 'Last frontier for the common man', and because it is an exploration of space and place, which seems to be a recurring theme in my life. I also passionately love to travel."

"I am 32 years old, have a degree in geography, and am studying for a masters in architecture. Currently, I am self-employed as a travel broker.

Dues

As a friendly reminder, the following members or subscribers have dues presently due or coming up. You can check your mailing label on any issue to see your next due date. Don't panic if your name appears here and you've just paid. Your treasurer and your editor are no longer the same so there is a little more delay in the system. As of 05/05/91:

Overdue: Curtis Rideout, Robert DeWolf, Roger Garratt, Shaun Larson, Molly McBride, Randy Vance, Kay A. Willhight, Mark M. Wilson

Due now: Robert Brown

Coming up: Curt W. Black, Wayne Cebell, Rod Crawford, Dick Garnick, Kevin Bagley, Howard Hoyt, Dr. Eugene Kiver, Larry McTigue, Daniel W. Smith, Robert Stitt, Sue Elson

Corrections:

The source of the Pits and Domes puzzle was omitted in the April issue. It came from the Winter 1988 issue of *Compass and Tape*, newsletter of the Survey and Cartography Section of the NSS.

Tom Strong's NSS number is 9110, not 29319 as listed in the January-February issue.

Lech-Note

From Rane Curl: lech-u-gui-lla, also lech-e-gui-lla [MexSp. fr Sp. wild lettuce, dim. of lechuga/lettuce, from L. lectuca]: any of several Mexican agaves (as Agave lecheguilla) yielding istle fiber.

Lechugilla fever -also- lechuguilla poisoning: a serious intoxication occurring in sheep and goats in the southwestern U.S. as a result of their feeding on a lechuguilla (Agave lecheguilla) and involving necrosis of the liver and kidney accompanied by jaundice and in light-skinned animals, photosensitization and dermatitis.

Let's start a project

by Ben Tompkins

Now that we've all had hands-on experience with cave surveying, let's start a project. A nice BIG project! Something like Mammoth Cave, for example,

which has about 100,500 stations in the survey. If we're serious about this we could field 3 teams averaging 50 stations each for 40 weekends per year and get the baby done in about 17 years. By then we'll have an instructor lined up for a cartography training seminar so we can start the map. Or maybe we should start on a small, local cave.

Carbide Shortage Predicted

by Frank Reid

Underprivileged delinquents in big-city slums, whose welfare checks are no longer adequate to purchase sufficient quantities of regular booze and dope, have been getting stoned, so to speak, by adding water to calcium carbide and inhaling the resultant fumes.

The practice is widespread in Europe, which is why French carbide lamps are very large and have hoses attached. Because of low price and easy availability, carbide abuse in America is considered very low-class, although spectacular disasters have occurred among sophisticated drug-users who experimented with "getting their rocks off" while smoking other substances.

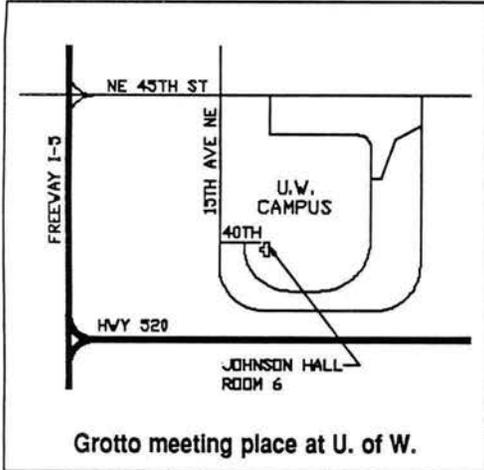
The American Civil Liberties Union attempted to defend a New York carbide-sniffer arrested at a ghetto meeting with a can of funny white powder, on grounds of religious freedom, citing a Biblical reference to "Shepherds a'biding in the fields, keeping watch over their flocks by night," during which they received a glorious vision. The judge dismissed the case because calcium carbide is not, as yet, a controlled substance.

Needless to say, Big Brother is taking appropriate measures to keep this deadly social dynamite out of the innocent hands of the youth of our great nation, with the expected result that a kilo of uncut 'bide will have a street value in excess of \$1000. Possession of carbide lamps will be regulated by drug-paraphernalia laws.

Exposure to even small amounts of carbide gas is known to produce bizarre behavior, often causing its victims to crawl into holes in the ground. A preliminary USDA study of NSS life-members has indicated a possible correlation between carbide use and premature senility.

- reprinted from cavers@m2c cavers news net, originally from Frank Reid (reid@ucs.indiana.edu) Notice to the humor-impaired: The preceding is a joke! *(:-) - Frank

Cascade Caver



MAY MEETING

May 17, 7pm

Mark Sherman will show slides from trips to the Pryor Mountains and Bighorn Caverns

Business meeting follows regular meeting. Agenda includes vote on changes to Bylaws.

See you there!

Room 6 of Johnson Hall, University of Washington.

Cascade Caver

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12/91

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