



Cascade Caver



Newsletter of the Cascade Grotto of the National Speleological Society

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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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All materials to be published and exchange publications should be sent to the Editor.

Subscription requests and renewals should be sent to the grotto Treasurer.

In This Issue

<i>Trips and Events</i>	3
<i>A Caving Song</i>	4
<i>From the Last Meeting</i>	4
<i>Election Results</i>	4
<i>Bat Droppings</i>	5
<i>Rechargeable Alkaline Batteries</i>	6
<i>Eight Miles Inside the Big Island</i>	8
<i>Publishing Dates</i>	7
<i>Tongass Cave Project</i>	10
<i>NCA Regional Letter</i>	11

On the cover: Pen and ink by Linda Heslop

Trips & Events

Cave Ridge Trip. Winter hike up to the caves on Cave Ridge, be prepared for weather. February 12th. Contact Steve Sprague (206) 652-6489 or Wendel Pound (206)841-0374

McLaughlin Canyon Cave. Unique fissure cave system in Eastern Washington. March 19th, Contact Bruce Nagata (206)623-5149

Caves from the rumor files. A trip in search of a cave from the "Rumor File" will be planned at the meeting on April 15th and the trip, to find this "rumor cave", will commence on the 16th. Contact Ben Tompkins (206)546-8025

'94 Northwest Caving Association Regional. Memorial Day Weekend May 28, 29, 30, 1994. Marble Mountain SnoPark on the south Side of Mt. St. Helen. See Description Letter in this issue.

NCRIC Work Camp at Trout Lake. Surveying, Ridge walking, gathering GPS locations, and more. Contact Bob Brown or Ben Tompkins for details.

'94 NSS Convention June 20-24. Ft. Clark Springs, Brackettville Texas. Registration forms to be included in an upcoming Cascade Caver.

Tongass Cave Project 1994. Caving in Southeast Alaska from July 1 - 31. Survey and exploration. See description in this issue and the slide show at grotto meeting later this spring. For more information call Dave Klinger (509) 548-5480 or the Project director, Pete Smith (907)846-5223

Things Without Dates and Other Ideas

Bonanza Queen cave/mine, we will try to find it again this year.

Cave ridge trips-hopefully quite a few this summer

Windy Creek Cave. If we can get the road open we will go this summer.

It should be noted that while some trips die for a lack of interest, many more successful trips happen on the spur of the moment without being announced in the caver. Please contact the trip coordinator regarding any trips being planned or with a request regarding a trip that you would like to happen. Members and family of any recognized caving organization are encouraged to join us on our field trips. Nonaffiliated participants are by invitation only. For additional information call:

Jim Harp - 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.

A Caving Song

*I went into a tavern
one evening near Luray
A forty year old waitress
to me these words did say:*

*I see that you're a caver
and not just a common bum
for no one but a caver
puts carbide in his rum*

*My lover was a caver
his equal I never saw
if you poured cave-mud in it
he'd crawl right through a straw*

*He never washed the cave-mud
from off his horny hide
He said it improved the friction
when down the rope he'd slide*

*My lover came to see me
before descent one day
he held me in a fond embrace
that broke six vertebrae*

*He kissed me when we parted
so hard that it broke both jaws
I could not speak to tell him
his rope had thirteen flaws*

*I peered into the entrance
and saw my lover go
and sliding gaily downwards
five hundred feet below*

*The cave it tried to kill him
it tried its vertical best
but pits and chimneys were for him
a game and not a test*

*The crawlways squeezed to nothing
and the breakdown covered the floor
But when the whole earth split in two
my lover was no more*

*They tried in vain to pull him out
his bones were all they saved
they made him into pitons
to conquer Virgin Cave*

*And so I lost my lover
and to this tavern I've come
and here I'll wait till someone
puts carbide in his rum.*

This was given to the editor by two women from Sweden while caving in New Mexico. The author is unknown.

From the Last Meeting

Election result for Cascade Grotto 1994 officers were determined at the beginning of the last meeting. The results were as follows:

Ben Tompkins	Grotto Chairperson.
Paul Ostby	Vice-Chairperson
Bruce Nagata	Secretary/treasurer

Meeting Minutes

After the unceremonious changing of the chairmanship Ben Tompkins took the floor. Ben proposed that the grotto needs a focus, and a project to give the club. He suggested a project of collecting a data base on all the known caves in Washington. This would involve recording locations, descriptions, surveys and other information for a large database. The could be achieved by dividing up the state into a grid and sending out teams to record information about the known or rumored caves in an area. The team could then report back to the grotto and prepare their records for the database. A group of willing volunteers is needed to formalize the objectives of the survey and outline the procedures of the field teams. More to come on this idea later.

Bill Bennett brought up the issues of programs at the grotto meetings and how important they are to the draw of the meetings. He volunteered to aid in program development this year. Any suggestions for the up coming year would be greatly appreciated.

A suggestion for the Caver was proposed in that it become a quarterly or there about publication and have a once a month one page flyer to announce meeting programs, trips, events and other important dated information. More on this later. (Editor's note this would be a much easier schedule on the editor's due to the sometimes difficulty in getting enough material for an issue every month.)

The issue of the lousy pizza place after the meeting was also raised and a group attempted to find another locations somewhat unsuccessfully but Karl has taken it upon himself to find a list of restaurants within the area of the U with parking, a group table and reasonably priced for future grotto functions.

Next Meeting : Survey Techniques and Tips

With the help of some experienced cave surveyors we will all brush up on our technique or learn how if you have never surveyed. How to use instruments, take survey notes properly and other useful tips.

Bat Droppings

Bat Droppings is a column of bits and pieces of useful caving information from a variety of sources and any suggestions for future droppings is appreciated.

A Batty Project? A Little Bat Room Humor

by Mike Drummond

Reprinted from *Woodwork: A Magazine For All Woodworkers* Jan/Feb 1992

One evening my wife mentioned that the bats weren't flying around our yard eating insects like they once had- and wouldn't it be nice if I built a bat house like the one she had clipped out of a magazine.

"What a wonderful opportunity!" I said and my wife eyed me suspiciously.

Naturally, my first order of business was to fire off a mail order for more power tools. As a veteran home-handyman, I knew if I had the right tool for the job anything was possible. It would also make it a whole lot easier to hand that "right tool" to someone who really knew what they were doing when they tried to undo my initial handiwork.

A week later, the entire contents of several pages of the Sears tool-catalog appeared on my doorstep. Now I was prepared to handle anything that required cutting, drilling, nailing, smoothing, or shaping wood- in theory, anyway- and provided that nobody at the power company accidently unplugged the extension cord that usually serves our neighborhood.

I was adjusting the bright red suspenders supporting my new 50 pound tool belt when a booklet that had arrived with my new tools caught my eye: *What Every Novice Handyman Should Know*. I was no novice, but I picked it up anyway, hoping there was a chapter entitled "Overcoming Spousal Power-Tool Resistance."

There wasn't. The book's author kept harping on things like the importance of planning, safety precautions and reading directions. Well, I didn't want to waste time on stuff like that!

I drove my sports car to the lumberyard to get some wood for my project. A burly lumberjack-type employee was lounging near a pile of sawdust when I arrived. He smiled at me, and I noticed that he had about as many teeth left as he had fingers- seven or eight

of each, I think. I didn't want to stare, even though he was taking a long look at my new suspenders and toolbelt.

"I need some wood" I said, forcefully.

"Can you be a little more specific, Chief?"

"Not really. Just wood, I need some regular wood."

"That's different form the unleaded kind right?"

"Look, I'm building a bat house ..."

Quite a project a bath-house. Sure you don't mean a bathroom?"

"No, no! A bat house for flying bats. You know..." and I began flapping my arms and baring my teeth, presumably looking like a 168 pound bat wearing a plaid shirt and a 50 pound toolbelt.

"You know, sir" he said, "I just spotted a whole stack of regular wood over there."

I must have made a bat impression on him.

The construction itself went smoothly- ignoring the times when some stray items were accidentally glued or nailed to the workbench.

A bat house is kind of like a bird house, except that there is no door and no floor. The bats fly in the open bottom and fall asleep while hanging upside down by their rear claws.

I painted the bat abode to match our house, and proudly mounted the thing above our front door, under the eaves. It was a neighborhood conversation piece. Soon all the neighbors were pointing at it and whispering to each other.

The thing I liked about the project was that it was simple. For example, bats don't need indoor plumbing. With the open floor plan arrangement, they use a primitive gravity-flow system for eliminating wastes: everything drops straight down. The porch, however, is quite a mess most mornings.

My wife insists that the instructions warned about that "Why won't men ever use directions?" she asks.

"But I did use them," I insist.

And I did, several times - to wipe the glue off my hands and to mop up a paint spill.

Mike Drummond is a free-lance writer and newspaper columnist in Grass Valley, California.

Rechargeable Alkaline Batteries

By Paul Ostby

New Battery Technology

Rayovac Corporation recently introduced a new type of battery which will be of interest to electric light cavers. Called the Renewal Reusable Alkaline battery, it has many of the features of a regular alkaline battery except that it is rechargeable 25 times or more. Anyone who currently uses alkaline batteries for caving should consider switching to Renewal since they pay for themselves after just a few uses. People who currently use Nickel-Cadmium (NiCad) batteries may also want to try Renewal batteries, especially for backup batteries.

Renewal batteries come in four standard sizes: AAA, AA, C, and D. They cost about twice as much as regular alkaline batteries, and about half as much as Hi-Capacity NiCads. However over the life of the battery, NiCads are much less expensive than Renewal cells which in turn are much less expensive than regular alkaline batteries. I paid about \$6 for four AA batteries at Best.

There are two chargers - called Power Stations - available

from Rayovac. The PS1 will charge up to four AA or four AAA batteries and costs about \$16. PS2 will charge up to eight Renewal batteries of any size or combination of sizes and costs about \$30.

Battery Capacity

One of the best things about Renewal batteries is their very low self-discharge rate compared to NiCads. Even when batteries are not being used they slowly lose energy. This is called self-discharge. Renewal batteries will hold a charge for up to five years. This makes them ideal for backup batteries as well as being good main batteries.

NiCads on the other hand have a high self-discharge rate, typically 1% per day. Even if they are not used NiCads will be completely discharged within two or three months. I normally recharge my NiCad batteries before every trip.

Battery capacity is a measure of how much energy a battery can supply and is usually measured in Amp-hours (Ah). The initial capacity of Renewal batteries is nearly the same as regular alkaline batteries, and is much greater than regular NiCad batteries. A Renewal AA cell has an initial

Rechargeable Battery Characteristics

Characteristic	Renewal "AA" cell	Renewal "D" cell	Hi-Capacity "D" NiCad	Comparable Lead-acid
Cell voltage	1.5	1.5	1.2	2.0
Recharge cycles	25-100	25-100	300-2000	200-2000
Initial capacity	1.5 Ah	5.5 Ah	4.3 Ah	5.0 Ah
Capacity after 25 charge cycles	about half	about half	unchanged	unchanged
Self-discharge rate	very low	very low	high	moderate
Recommended max discharge rate	500 mA	500 mA	4.0 A	5.0 A
Discharge curve	sloping	sloping	flat	sloping
Low temperature capacity	good	good	very good	very good
Charging system electronics	complex	complex	simple	moderate
Weight for a 6V battery pack	86 gm	532 gm	600 gm (5 V)	1110 gm

capacity of 1.5 Ah, about the same capacity as a regular NiCad D cell. The Renewal AA cell weighs one third as much. A Renewal D cell has somewhat more capacity (5.5 Ah) than the Energcell Hi-Capacity NiCad D cell (4.3 Ah) that I often use, and the Renewal cell weighs about 10% less.

However, comparing the initial capacities can be misleading. NiCads can typically be recharged 300-2000 times and they retain about the same capacity from charge to charge. Renewal cells can be recharged 25-100 times, but each time they lose some of their capacity. This loss of capacity is fairly constant for each full discharge/recharge cycle. After 12 full discharges and recharges, the battery has about 75% of its original capacity. After 25 full discharge cycles the cell has about half of its initial capacity.

Batteries that are used together should stay together. If you mix new and old batteries, or if you mix batteries with different charge/discharge histories some of the batteries will give out first and the others cannot be fully used. You may want to label each set of batteries so that you can keep them together.

Recharging

In practice you can recharge Renewal batteries more than 25 times, but after a while isn't worth it because they need charging more and more frequently.

Note that there is no significant penalty for short depth-of-discharge cycles. A Renewal battery which has seen 25 full discharge and recharge cycles will be in nearly the same condition as a Renewal battery which has seen 100 cycles of 25% discharge and recharge. This is different from lead-acid and NiCad batteries which should be fully discharged every now and then for best performance.

DO NOT try to recharge Renewal batteries in a NiCad charger. Renewal batteries must only be recharged in a charger specifically made for Renewal batteries. Also, the Rayovac Power Stations will only charge Renewal batteries. A Power Station cannot charge any other kind of battery.

For now, Renewal batteries can only be charged in a Rayovac Power Station. This will probably change as soon as tinkerers figure out how to build their own chargers. In particular it would be nice if someone came out with a

charger that can run off a car battery instead of requiring 110 VAC. Because of variations in capacity between different batteries, Renewal batteries must be charged individually. This may never change. Unfortunately this means that they must be removed from the battery holders each time they need charging.

One final note on charging: Rayovac claims that the PS1 will recharge AAA and AA cells in 3 to 5 hours. I found that it took about 8 hours to recharge the AA batteries after running them completely down in my headlamp.

Renewal Batteries In Use

Renewal batteries have a sloping discharge curve. As they are drained the voltage drops. Cavers will notice their lights getting dimmer as the batteries wear down. Some cavers will prefer this to the flat discharge of NiCads which will put out fairly constant voltage (and light) while they discharge, then die rather quickly.

Renewal batteries are still new. I have had no chance yet to use them in caving. However I have run a few simple tests with four AA Renewal batteries. Right out of the package they ran my caving headlamp for over 5 hours. This is in perfect agreement with the 1.5 Amp-hour rating since I use a number 27 lamp ($0.3 \text{ Amps} \times 5 \text{ hours} = 1.5 \text{ Ah}$). After recharging, the batteries again ran the headlamp for over five hours. After five full discharges/recharges the batteries ran the headlamp for 4 hours. As I continue to use these batteries they should run my headlamp for shorter and shorter periods of time.

More detailed information, including typical discharge curves, is available in the "Application Notes & Data

Cascade Caver Publishing and Deadlines-1994

<u>Issue</u>	<u>Deadline</u>	<u>Publishing Date</u>
April-June	April 4th	April 11th
July-Sept	July 4th	July 11th
Oct-Dec	Oct 10th	Oct 17th

Sheet" for the Renewal Reusable Alkaline batteries, available from Rayovac.

One important bit of information not covered in the Data Sheets is how temperature affects battery performance. Regular alkaline batteries perform fairly well at low temperatures so Renewal batteries should also work fine in the cold. At the temperature of my refrigerator (about 40 degrees Fahrenheit) those same AA Renewal batteries ran my headlamp for three hours. This was a loss of about 25% compared to room temperature performance.

Conclusions

It is now reasonable to go caving using only AA rechargeable batteries. Three to five hours per set of batteries (more with a lower power bulb) means only a few battery changes for even a long day of caving. And no need to throw away a dozen disposable batteries. With AA cells, the battery pack can go on the helmet instead of the belt, which means no long cable snagging on the rock and no squirming to adjust the belt pack in a tight squeeze.

For those who prefer a long trips without switching batteries, four Renewal D batteries gave me over 26 hours of flight with a #27 bulb. This is 40% more than my Hi-Capacity NiCad batteries, and with a lower initial cost and with less care and maintenance.

You may find that you get fewer than 25 full discharge/charge cycles before you want to replace the batteries. You may not be willing to lose half the battery capacity just to get 25 uses from your batteries. Even so, Renewal batteries will be a great improvement over regular disposable batteries. And with their low self-discharge and long shelf life they make excellent backup batteries.

Legal Stuff

Renewal is a registered trademark and Reusable Alkaline is a trademark of the Rayovac Corporation; Enercell is a registered trademark and Hi-Capacity is a trademark of the Radio Shack Division of Tandy Corporation.

Eight Miles Inside The Big Island Summer 1993

By William R. Halliday

On June 27th, Steve Smith (Flittermouse Grotto) and I flew to Hilo and began the summer field season of the Hawaii Speleological Survey. Because of the timing of the NSS Convention, it was an abbreviated season. Principal purposes were:

1) Compass and tape mapping of Puna District lava tube caves to obtain information requested by the USGS' Hawaiian Volcano Observatory Staff.

2) Study of thermal erosion by down cutting of lava streams in lava tubes, desired by NASA teams.

3) Further reconnaissance of pit craters and high altitude lava tube caves on Hualalai Volcano, in part related to the source vents of the fascinating Kaupulehu xenolith nodule lava vents which are the subject of geological controversy, preparatory to 1994 SRT explorations.

Field time was limited by the need for days of cartography and administrative work, but a total of about 44,000 feet - 8.3 miles were mapped. That totaled about 70,000 feet for the year.

Our beginning was not exactly auspicious. In the crawl way beneath the main entrance sink of Kaumana Cave it was raining so hard that the eyeglasses and compasses got badly fogged and waterproof paper got soggy. Up slope it got better, however, and we pushed on past the commonly visited section to a beautiful jungle filled sink.

The next morning we consoled Jim Martin (NSS # 2886 and Chief Ranger of Hawaii Volcanoes National Park) who had just amputated his boot toe and rearranged some of his own toes. Then we went on down the Chain of Craters Road to have a look at the lava flowing in the Lac Aupuki-Kamoamoamoa skylights. But the rains came and we never got near them.

July began bright and clear, however. On the first we returned briefly to upper Kumana Cave with local cavers Thomas Hargrave and his friend Edith. We continued the

survey to the Garbage Entrance - one of the worst vandalized areas yet seen in a Hawaii cave - for a total of 2795 feet. Then Steve and I went back to the flowing skylights and obtained some good photos of molten lava - some were shown at the NSS Convention in August.

After a morning of cartography, on July 2 Steve and I returned to Epperson's Cave where new passages seem to appear out of nowhere on every trip. Here Steve pushed a tight lead at ceiling level at the makai end of the Right Hand Passage, beyond was the Mud Complex as anticipated, partially mapped from the other end in the past. We found at least 200 feet of additional passage, but decided we had better uses for our time that mapping it at least until 1994.

The remapping of the John Martin Cave System began July 3. When we had tried to plot Gerald Favre's 1981 map on the topo it was obvious that something was wrong. Also there was a question whether it is all one cave. On July 3rd, we settled that matter with the help of Ollie Fulks and another neighbor. Starting mauka the mid-portion of the system, we covered about a mile measured and found that there are two caves in the system, with two segmenting collapse sinks and a short natural bridge between them.

We still couldn't figure out what was wrong with the Favre map. Stephan and Christild Kempe flew in on the 4th. On the 5th, with Ollie we all returned and mapped 5266 feet, as far as the slab-edged Infamous Crawl. It was a busy day; in the evening we attended an excellent lecture on Historic Preservation at the Lyman Museum.

We kicked around possible names for the cave at the makai end of the John Martin System, but we still couldn't figure out what was wrong with the Favre map. July 6th was a day for meetings and discussions at the U.S. Geological Survey's Hawaiian Volcano Observatory, followed by scouting for entrances reported in subdivisions between Volcano and Hilo, but July 7th was the breakthrough day for the John Martin System map. We pushed on through the Infamous Crawl (it only seems bad when you are in it) and mapped 3463 feet to a lava sump. When we plotted later, it out to be Pukalani Cave, which we thought had been lost forever to road construction. The construction fill is there, all right, but a lower level crawl way tunnels right under it.

With the lower end of the cave pinpointed, the problems of the Favre map became clear. Its north arrow lines up with subdivision roads that actually run approximately NW-SE, north with the compass. Other wise it's a fine map, and we decided not to bother resurveying the mauka end of the cave.

We did not find a reported small lower entrance but left unchecked an overhanging orifice several feet overhead that looks like it should go. On the way back to Hilo, we pinpointed some of the lower entrances of Kazumura Cave plus 7 Road Civil defense Cave (which I did not then recognize as Doc Bellou Cave, which I had visited years earlier when the subdivision was much more densely vegetated). We also had another look at a confusing little 3 level entrance section of John Martin Cave and located some new openings near F Road. The neighborhood kids call one of these Pirates Cave.

July 8th was a day of cartography and meetings, and the 9th saw only limited field work, clarifying the short 3 level section of John Martin Cave and checking the F Road caves. Pirates Cave was the only one worth mapping: 155 feet long plus a 20 foot side passage. Its flow features are only minimally developed, and it appears to be a shallow sub-crustal gas space rather than a lava tube. In the afternoon we began mapping the makai end of Epperson's Cave, finding it more braided than expected, with nonsuperimposed upper level sections. The length mapped was 1675 feet.

The big push on Keala Cave began on July 10th. This cave is roughly parallel to Kazumura Cave and the John Martin System, in the Ailaau Shield flows where the Big Ones grow. On the 10th and 11th, we mapped 3943 and 2617 feet for a temporary total of 6560 feet. On the 11th, we left an entire makai trending lower level unentered, and when we plotted our data, the upper level curved unexpectedly toward The Puka and stopped just short of it. (The Puka is a spacious 1225 foot lava tube cave we had mapped earlier in the year.) At several points we could look down into the lower level so chances for continuation looked good.

Planetary geologist Ron Greeley arrived the next day with two keen young graduate students he couldn't hold back Steve Kadel and Scott Harris. Instead of our planned meeting, they were off to the skylight to observe the flowing lava. We got together the next morning, but the 13th was a paperwork day, with the USGS' Jennifer Pallon joining us in working in our files at the Lyman Museum. In the evening we all drove up The Hill to Hawaii Volcanoes National Park to attend a some what self-contradictory but impressive lecture on Hawaiian sacred places.

The 14th saw up back at the lower level in Keala Cave with the Greeley crew. Along with Stephan Kemp they were delighted with examples of thermal erosion by down cutting lava streams, and joined in the mapping also. After 85 stations, we ended the day with the cave's length more than

doubled, to 13,488 feet, and the cave still went in both directions. On the 15th, I was tied down by administrative work, but the others visited the makai section of The Puka where thick bare lava units are exposed in the walls. Neither Stephan nor Ron could determine whether they are eroded country rock or trench spill over units. Then they returned to the corresponding section of Keala Cave, where they think they established slight connection back into the makai end of The Puka. Between is a crawl way with numerous thin plates of lava angling into the phoehoe floor: an interesting challenge.

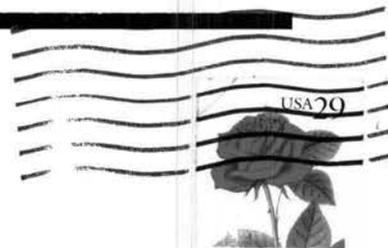
On the 16th I took a small crew back into mauka Kaumana Cave to check on segmentation (so far, it's all one cave). On the 17th Ollie Fluks had a look at the road 7 Civil defense Cave and emerged from what was thought to be one of the makai entrances of Kazumura Cave, but without tying into Kazumura Cave itself: our first clue that the CD cave is Doc Bellou Cave, though we didn't realize it at the time. Meanwhile on the 17th, the Kempes, Steve Smith and I drove over to Kona to meet the Werners and Ron Greeley's group. Along the way we checked out Petroglyph Cave (mapping 724 feet) but found little of interest except a block of la

rain which was barely slowed by the cave's roof (like Kaumana and most other caves, this was not exactly an ideal fallout shelter). We found that the entire makai end had been closed off by loads of red cinders dumped in the makai entrance since we had mapped that part to the cave. We mapped the rest: about 1512 feet, and wrung quarts of water out of o

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