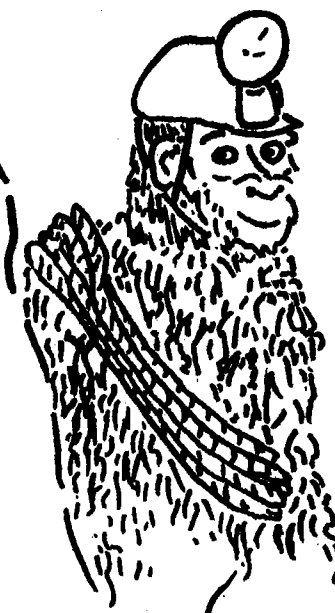
TROG



THE

TECH

TROGLODYTE

VOL XVIII
WINTER-SPRING 1979

TECH TROGLODYTE

VOLUME VIII WINTER & SPRING 1979

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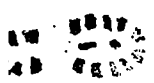
A.I. Cartwright is on the cover as seen in a little visited section of Clover Hollow Cave. (drawn by Bob Alderson)



PRESIDENTS COLUMN

I first heard of the VPI Cave Club in Thailand, back in 1973. The president of the Thai-Am caving grotto was an ex-VPI student who had been a member of the Blacksburg and Roanoke extensions of the UVa grotto in the early '60s. Coming back to the D.C. area in 1974, I hoped to go to school at Tech and to become involved in the VPI grotto.

Now, five years later, I stand in the honored position of president of the first student grotto in the National Speleological Society. This was beyond my wildest fantasies back then.

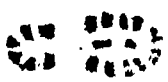
It's been almost two years since I first walked into Smyth Auditorium. During this time, the club has undergone quite a face lift. As a result of a lot of hard work and good recruiting by Ed Devine and Chuck Shorten, the club's membership has doubled since this time last year and our image has improved drastically.

As this school year winds down to an end, we'll be losing some of our best cavers. In view of this and our increase in new membership, our top priority is to keep people caving and thereby build experience. Richard and I also intend to increase the number of vertical workshops and practice rescues.

Hopefully we can accomplish a new membership goal of a dozen cavers. There are a lot of potential members at Tech and people who do a fair amount of caving on their own. There could be much mutual benefit if we can win some of these people over. This will take a good deal of publicity and personal effort on everyone's part. The work is cut out for us.

By the time next year's "Trog" hits the press, I should have something more relevant to say. Until then, I'd like to wish everyone a good summer and congratulate Ed and Chuck on a job well done. May the hair on your feet grow long and curly.

-- Bill



V.P.

Soon after Bill and I took office, we sat down with a few cold beers to talk over what we were going to do (or try to do) in the next year. We could see that enthusiasm in the club was high, and we wanted to make use of that enthusiasm and to keep it going.

We decided to find out what the people in the club wanted before we made any decisions. At two meetings, I passed out some 5x7 cards and asked people to write down their thoughts and suggestions. The following is a summary of some of the comments we received.

Chuck Shorten, Pat Louden, Lawrence Britt, Dave Shantz and two no names all agreed we should have more vertical sessions. They and Win Wright thought we needed more emphasis on rescue. Win, especially, felt that a lot of people, especially newer members, were not prepared to handle a real rescue.

Bill Shipman was in favor of a more structured program for prospective members, including some type arrangement for prospective members to cave with members in rotation, getting more contact with different people.

Doug Perkins thought it important that someone make a point of speaking to new visitors personally, to answer questions and to make them feel more comfortable.

Walt Pirie would like to see formal training sessions on such topics as knots, pulley systems and general caving practices.

Pat Louden, Chuck Shorten and Lawrence Britt favored reinstating a conservation trip requirement. Lawrence would also like to see a mapping trip be made part of the requirements, as well as requiring every active member to pass the knots test each year.

Jerry Redder felt more campus awareness of the club and its activities is needed. Bill Oliver, Dave Shantz and a no name agreed more publicity is needed. Dave feels that the club image needs to be improved so that we can get more women in the club. He also feels that the parties need to be jazzed up, and that a wine, liquor, etc., fund should be started in the treasury. A no name agreed that we are "not drinking enough beer. Drink beer! Raise hell!"

Bill Koerschner felt that guided tour type trips for new members should be minimized and new members should be involved in real caving as soon as possible so

they don't become bored. One suggestion he had was to go ridge walking with new people to find and explore new caves.

One no name felt there should be more trips for meeting the prusiking, climbing, belaying requirements. Another no name felt the requirement for the clove hitch should be changed to the water knot, since this has more use in caving.

Finally, two people thought it was important to get some sort of legal agreement with Buddy Penley about the use of his caves.

We were pleased with the response we received. It confirmed what we had felt about the club's enthusiasm. I can definitely state now that there will be more vertical sessions next year, especially in the fall. Also, there will be more than one practice rescue next year, probably increasing in difficulty as the year goes on.

Win Wright is the new publicity chairman, and he is working currently on some ideas for posters. Pat Louden (who has foolishly volunteered her services) is going to see if she can't come up with something to put in the women's dorms. In addition, there is an Exposition of campus organizations during fall check-in, and the club has plans to set up a booth there.

We're going to be losing a lot of our older members next year, which means that, new members, the future is up to you! If you had difficulty as a prospective member earlier this year finding a cave trip to go on, remember that this fall. If there is going to be any caving done, you are going to have to do it!

Richard Cobb

Editor's Column

Judging from this Trog , the V.P.I. Grotto has been increasingly active. At least we have a Trogg that nobody is going to read completely during the meeting.

Again I want to thank Laura Alderson for doing the typing and Pat Louden for the illustrations.

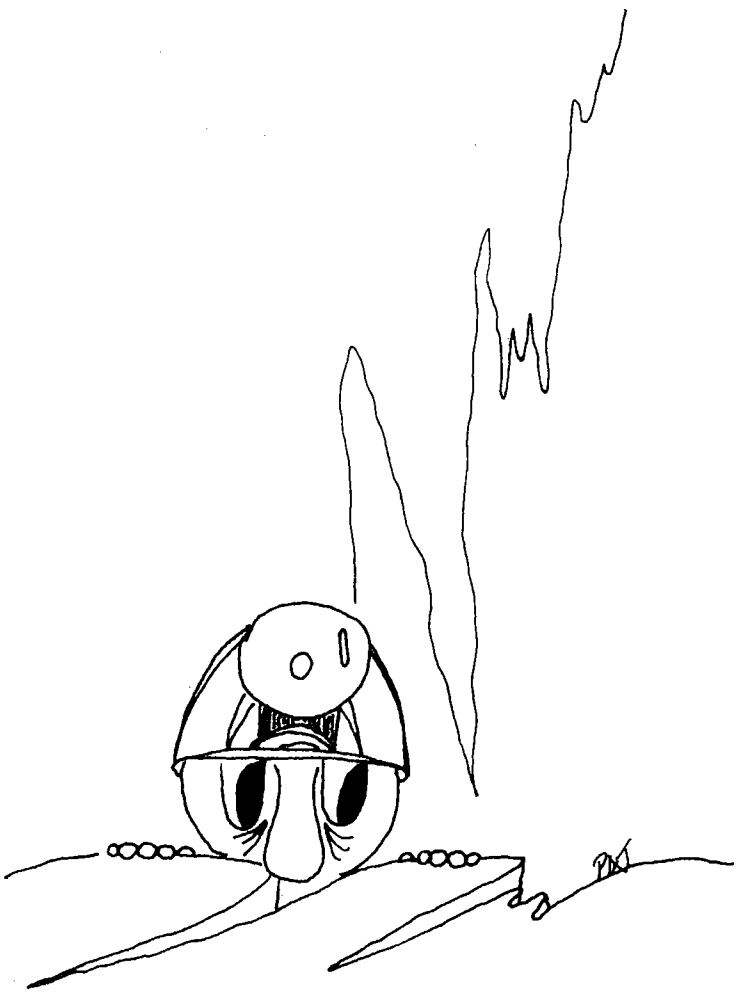
The next Trogg will be even better with more humor, more project reports, more technical articles, more cartoons, more graphics, more trip reports, and more exciting stories about the V.P.I. Grotto. Why? Because Bill Sydor is the next editor.

Bob Alderson

Grotto Grapevine

The entire VPI grotto has neither been seen nor heard of in the last six months. This disappearance was not gradual, but rather abrupt. Sometime in February. Anybody having any information about the whereabouts or doings of the grotto please sent a note to:

VPI grotto
P. O. Box 471
Blacksburg, Va. 24060



MORE
signs of life at vpi

More comments taken from the sign-out sheet made by anonymous cavers from the most active grotto this side of the continental divide.

11/18/78 Paul Penley's
Ed Devine, Win Wright, Bill Stephens
Paul Penley's gave it to us with both barrels.

12/2/78 Salamander
McQueary, Alderson, Anderson
The end has come. Five years of mapping & finally finished.

12/9/78 New River
Devine, Pruit, Andy Conlon
Back to meateater and out

12/14/78 Spring Hollow
Bill Koerschner, Joe Zokaites
9.5 hours caving, 6 hours car trouble

1/6/79 Spring Hollow
Devine, Win, Stephens, WFK
602' more, rough as a cob

1/20/79 Smoke Hole
Walt Pirie, Ben, JoZo, Mark Pane
Hugh Beard, Curt Moore
3 oh-shits on trip in, 2 oh-shits on way out & 2 holy-shits on way out. Rising water.

1/27/79 Paul Penley Cave
Ed Devine, Bob Alderson, Chuck Shorten
454 1/4' mapped in 13 stations.
Pit & the pendulum mapped. Lost 2 tapes.

1/28/79 Link's
Hugh Beard, Jan Roode, Dave Shantz.
Cold as a cob. Nice talk with Mrs. Link, who broke her arm (but not for us.) (Good whisky waiting.)

2/3/79 New River Practice Rescue
A.I. Cartwright, Phi Krappa Zappa boys, Cecil B. Demille and cast of thousands.

2/16/79 Paul Penley
Ed Devine, Joe Zokaites , Hugh Beard, Jay Kennedy, Mike McCarty
Scoop scoop

2/24/79 Pig Hole
Jay Kennedy, Bennie Hane & 4 others
Thunder Hammer Strikes
almost convinced Md. cavers Va. caves too tough. Ha.

3/2/79 New River
Bill Stephens, Mike Flairity
It's a cave!

3/10/79 Matachock
Chuck Shorten, Bob Alderson, Pete Sauvigne
mapped & oozed & cut prestige groovies in our racks.

3/10/79 Paul Penley
Ed Devine, Joe Zokaites, Paul Bizier
Many questions answered.

3/31/79 Spring Hollow
Paul K., Stephens, WFW
Pools, pools pools (fools fools fools)
Oh God it was bad --but finished

3/31/79 (Un-named)
Jay Kennedy, Paul Bizier, T. Moore, Dave Merrifield
Muddy as hell. Kennedy got stuck going through his $%¢!*& dig. Pea soup mud! Yech (wish you were there).

4/7/79 Links
Hugh Beard, Dave Shantz, Jan Roode
Virgin cave! 20 feet on this virgin
I got sloppy thirds. Quality affair.
Indeterminant sex, Jan had first shot.

4/15/79	Paul's Joe Zokaites, Hugh Beard, Dave Shantz Cleaned up after Ed (both D. & M.)
5/5/79	Paul (bah) Penley Win, Ed, WFK Each trip progressively worse Almost got stuck this time - buggerly
5/6/79	New Castle Murder Hole Aldersons, Don Anderson, Ben Keller, Jay Kennedy, L. Britt, Rich Cobb, Bill Stephens, John Updike, Candy Hauled korpse Kennedy out of the hole hauled petrified Pete too.
5/8/79	Wire Hole Jay Kennedy, Mike Beamer No comment. Again
5/10/79	Wire Hole Jay Kennedy, Steve N.C. Eat yer heart out
5/19/79	New River Many people (30-40) Rescued injured Radford College student with head injury. Out of cave 7 1/2 hours after victim (allegedly) hurt
5/22/79	New River Tom Kelly & Tex McCahill We had the muck man blues.

STRANGE HAPPENINGS AT PIG HOLE

One weekend during winter quarter, Richard Cobb (then a brand-new member) and I (then a trainee) went to Pig Hole for a scenic jaunt through the cave. Rich had been there once before and had liked the drop, but had never been in the cave itself.

The 100-foot rappel in is great because it is mostly free. Alongside the rope, we had red avalanche cord for hauling equipment out at the end of the day. We saw the Empire Ledge and the Queen's Bath, both staggering! Since we both had things to do back at Tech, we soon started out. We got back to the entrance and Rich cammed out and then hauled the equipment up. I went up, and we collapsed at the top, tired and happy, especially since I had retrieved the cold beer left under a tree stump.

While I started untying the rope pads, Rich started pulling up the avalanche cord. He pulled up no more than 10 feet when he said, in a strange tone, "Feel the weight on this cord."

I scrambled over and took it from him. Ordinarily there would have been very little weight. But now, there were a good five or 10 pounds on it! When I had cammed up, the cord had been touching bottom with nothing on it.

I started pulling the cord up. The weight remained. I had it about 60 feet off the floor when I looked at Rich and said, "Something is definitely wrong."

One second later, while I was still looking at Rich, the cord ripped out of my hands. Ten feet fed through before I caught it, rather involuntarily, I must say. My eyes must have bugged out of my head, because Rich, who had seen it happen out of the corner of his eye, said, "What have you got on the end of that?"

I shook my head and started pulling on the cord again. Rich said, "If it growls when it comes over the edge, drop it." I was beginning to wonder with what kind of beast I had been down there during the 15 minutes Rich took to cam out.

I finally got the end of the cord to the lip and pulled it over the ledge. I couldn't help but laugh.

The avalanche cord had tangled around the climbing rope in two places. When I had pulled it halfway up, one place had come loose. The weight of the rope had ripped the cord out of my hands. What a relief!

The cave itself is fascinating and I am definitely going back soon. I will, however, beware of Pig Hole gremlins.

-- Lawrence Britt

ADVENTURE IN NEWBERRY'S

Fifteen people were in Newberry's that day. Fortunately, there were four separate groups -- one behind us led by R.E. Whittemore.

Our group included Hugh Beard, Chuck Shorten, John and myself. We had rigged Triple Wells, and all were down except Hugh, who was looking down the rope. He said something to himself out loud, like, "Boy, that sure would be a long way to fall." A voice replied, "It sure would." Fortunately, when Hugh jumped, it wasn't down the hole. Whitt had sneaked up behind him.

We finally got together at the bottom and decided to do some exploring. Chuck took off in some direction; where we finally ended up, I don't know. We were walking between two walls in a muddy stream when the tunnel went through a small hole and opened up to a stooping height. A few hundred feet farther on, the passage took a sharp right angle and narrowed to about six inches high by two feet wide.

Obviously, it was too small ever to have been crawled through. We shone in our lights. Thirty feet in, it seemed to open up into a huge void. Our shouts produced a deep echo, as though it were a big room. We started getting excited about virgin passage and new connections, so Chuck crawled in a few feet and started digging.

He had done over half of it when he became too tired to continue. I was next in line, so I crawled through the mud and started digging. The entire passage was mud, so it was fairly easy, but the position made it very tiring. Every two feet, Chuck would ask me if I were through yet. I definitely know the feeling of "tight" now: when you have to dig to fit through.

One interesting thing about the passage was that it amplified sound. I noticed it while Chuck had been digging and especially while I was in there. My heartbeat was super loud to me, and to the others, it sounded like a loud drum. It really freaked us out.

Anyway, I finally got to the end of the mud passage (after only once putting my light out in the mud) and finally was able to look up. What a disappointment! What we had thought was a huge room was actually a small pool of water. A few inches below where I was, it filled the 20-foot-diameter room. The ceiling, four feet above the

surface, was a perfect dome over the round pool. The water was clear, about two feet deep in the middle. To my left, about eight feet away, was a mud wall. I believe the water continued around the wall, out of sight. I could have sworn that while I was there, I heard the others' voices, as though they were in a room a few inches through the wall on my left. It is very probably that the water passage is parallel to the mud passage.

The crawlway extended to the water's edge without expanding, so I had to get in the water to turn around. I had tried to back out once and knew I couldn't. I told the others about the room. Chuck wanted to see it, so he started through. The water at my edge was only a foot deep, so I maneuvered my feet into it and swung around, putting all my weight down. I promptly sank two feet into silt and mud. I was up to my waist in water. It was a real strange sensation standing there. I still was not on solid ground; there was nothing for my feet to catch on.

I told Chuck what was happening, and that he didn't want to have to turn around in it, so he started backing out. I tried to get back into the passage, a pretty good feat itself. Everything my hands could reach was loose mud. There was nothing to kick against. I thought for awhile that I was going to have to have Chuck wedge himself into the passage and give me an arm to pull myself out. Finally, however, I got out, and we proceeded to a place in which we could stand.

I felt awfully strange with all that steam rising from my body.

I think it would be a good idea if someone took a rope in there and, with its protection, waded around that left wall to see where the water goes. It may, indeed, lead to some new connection. Newberry's is a fascinating cave, just like them all. I am glad I discovered the cave club.

-- Lawrence Britt

RESCUE EQUIPMENT

Last fall the club voted to spend 500 dollars on rescue equipment. The following equipment has been bought with these funds.

9	SERA pulleys
2	gas mask packs
16	3 mil garbage bags
10	stubia 5000K caribiners
10	3/8" SMC bolt hangers
25	red head self drilling anchors
10	3/8" bolts
1	bolt driving tool
4	SMC hex nuts w/ runners
3	SMC cam locks w/ runners
1	wool army blanket
1	strecher blanket of composite materials
1	large ammo box
1	ABS plastic stokes litter
2	scissors
	notebooks
	pencils
1	insulating pad
3	rolls 1" adhesive tape
1	hot cold pack
1	pack scrub & dry pads
1	pack alcohol prep pads
2	wire splints
4	4" bandage compress
1	bag 4" kling bandage
4	40" triangular bandage
2	trauma bandage
8	Kwik Kold packs
1	tray 8" x 7" surgipad
2	rescue blankets
12	37x37x52 triangular bandages

This equipment plus equipment that the club already had will be underneath John Dec's trailor next year.

Bob Alderson

FRIAR'S HOLE INCIDENT

About 3 a.m. July 4, 1978, the phone range. I stumbled to the receiver and heard the deep, unmistakable voice of Bob Barlow say, "Is Bob there?" Where the devil was Bob, I wondered. Then I remembered. He was studying goat barns, the Alps and other structures in Switzerland for the summer.

I suppressed the urge to reply, "He's in Switzerland. Want his phone number?"

Barlow, in his typical deadpan, explained the situation: body in Friar's Hole, in Greenbrier County off Route 219. Two 30-foot drops inside, water in both. Greenbrier people already there. Morgantown is sending some. Cave Rescue Communications Network called. Need six people from Tech. Need evacuation stretcher with wooden slats. Barlow was getting on the road. Call him back through police department, Bland Car 19.

We discussed which he needed most, wet suits or the stretcher. Barlow said the stretcher.

The following are the notes I took that early morning while coordinating phone contacts.

4:10 a.m. I call Doughty, who is the nearest to the cave who's liable to be home this holiday. Pam sleepily replies they've caved all day, they're too tired.

I call back Barlow. He says try to get four people.

4:40 a.m. Andy Wnuk can't go, his parents are visiting. I consider calling Pete Sauvigne out of Pearisburg, but discard that. He has family plans for July 4th, probably. He'll be good backup if needed later.

I get Ed Devine, Nancy Moore, and call Chuck Shorten. Pat Louden answers. "Hello, Pat?" I say. "It's cave rescue time!"

I call Doug Perkins in Roanoke. He'll hold on for while to see what situation calls for.

4:45 a.m. I call Blacksburg Police to contact area rescue squads in case they have the right stretcher. Officer Robertson promises to have a squadman call me back. Blacksburg P.D. is glad to help. They are bored this time of holiday morning, know they can't go out of their jurisdiction, but are willing to help coordinate.

4:50 a.m. I need to get in touch with Barlow to get cave location. I should have asked him better directions.

I cannot use the phone until Blacksburg P. D. has a chance to call back.

Pat Louden calls. Frame and Suzanne are going.

Blacksburg P.Do. phones. No area squad has what's needed. Officer Robertson suggests calling Roanoke County.

Roanoke County emergency says it will call someone. A woman officer is very nice. She says if it were here body in a cave, she would want someone to get it out. She promises to call me back.

5:05 a.m. Barlow calls back through Blacksburg P. D., who are patched into him. The cave is 2 1/2 hours away. West Virginia State Police are standing by the Virginia line to show rescuers from Tech where to go.

Roanoke County emergency wants to know which rescue squad in its area to call. I don't know.

5:20 a.m. I wish Roanoke County would call back. Perkins is still on hold, told to wait to see if he has a stretcher near there to pick up. We need an equipment inventory of local squads.

Roanoke County calls! They say Fort Lewis rescue might have what we need. The woman's name is Dispatcher Kirby.

5:34 a.m. I call Perkins, tell him to hold on. I phone Glen Davis, tell him to wait for Perkins.

5:50 a.m. Cecil Crockett telephones me. He has two stretchers made in that style, and he is down at the Fort Lewis rescue building in West Salem, waiting for them to be picked up. I say a silent prayer for helpful people on this holiday dawn.

My list of rescuers now includes Carolyn Lewis. They'll leave Blacksburg at 6:15 a.m.

6 a.m. I call Blacksburg P.D. to relay to Barlow that the stretchers are on the way. They advise Bland 19 that stretchers ETA 8 or 9 a.m. and that seven Blacksburg cavers are leaving at 6:15 a.m.

There is one dash to our Montgomery Street house for rescue equipment, and they're gone. That evening we rehash among those who stay behind.

Laura Alderson

NEW RIVER RESCUE, BY THE MEDIA

Note: the following is a reprint of Roland Kidwell's report in the Roanoke Times & World-News Sunday, May 20, 1979. Corrections according to the Cave Club rescuers' experience appear in brackets.

UNIDENTIFIED SPELUNKER TRAPPED IN GILES CAVE

GOODWINS FERRY -- Rescue workers from Giles County and Virginia Tech [Cave Club] were attempting to free [carry out] an unidentified explorer who fell and was knocked unconscious in a cave along New River late Saturday afternoon.

Authorities said the mishap occurred in the New River Cave, which is off Virginia 625 in Giles County near the Montgomery County line.

Rescuers reached the injured caver shortly after 10 p.m., but they reported it would take about two hours to bring the victim out. There was no word on the spelunker's condition.

The cave, which is several thousand feet in length, is a popular spot for exploring by local residents and visitors to the area, according to Glen Davis, a member of the Virginia Tech Cave Club. The club was participating in the rescue.

A spokesman for the Giles County Sheriff's Department said someone called authorities about 6:45 p.m. to report the caver had been injured.

Rescuers called for a generator to be brought to the cave to light up the area [the road], the spokesman said.

Davis said apparently the caver is not a member of the Tech Cave Club.

The VPI graduate student said no club members had filled out sign-up sheets to go through the cave on Saturday.

Davis said the New River Cave is not a difficult cavern to get through, but "if you don't know what you're doing, any cave can be dangerous."

The cave is in the side of Gap Mountain, about 200 feet up a steep incline.

The Giles County Rescue Squad's "vertical" rescue team, which specializes in rescues in caves [outdoors, from cliffs] and off mountain ledges, was participating in the rescue along with the cave club.

* * *

From the Roanoke Times & World-News Monday, May 21, 1979:

DAD THANKFUL SON IS ALIVE AFTER FALL IN GILES CAVE

Joseph C. Smith was at his son's bedside in Roanoke's Community Hospital Sunday thankful that the 20-year-old Radford College sophomore was alive.

"Any person going into a cave untrained without any equipment is a fool," said the Winchester restauranteur.

It took rescue workers from Giles County and the Virginia Tech Cave Club about four hours to carry Scott Morgan Smith out of New River Cave late Saturday.

Smith had gone into the cave off Virginia 625 Saturday for an exploring trip with two companions. The trio neglected to take proper equipment and had scant experience in caving, according to a spokesman for the Giles County Rescue Squad.

When Smith fell about 20 feet off a walkway [mudbank] and suffered a gash in his head [imbedding an arrow-point like piece of chert between his eyes that took surgery to remove], what started as a leisurely trip almost became a tragedy.

Smith's father said his son, who was in satisfactory condition at the hospital, had been in the cave about three hours when the mishap occurred.

When Smith hit the cave floor, an inch-long rock became imbedded in his head. "He said he reached up and tried to pull the rock out of his head and couldn't do it," the father said.

Doctors told the injured student he looked as though he had been hit with a tomahawk. "The doctor said he had a hard head," Smith said.

The younger Smith fell about 5 p.m. By the time rescue personnel got to the cave, it was after 7.

Steve Davis of the Giles County Rescue Squad said when rescuers reached Smith he had a deep gash on his head and his body temperature was extremely low. Davis said that Smith had fallen into a creek inside the cave and his clothes were soaked.

While rescue squadsmen attempted to stabilize Smith's condition, about 20 [25] Virginia Tech Cave Club members prepared to take him out by stretcher [Stokes].

The exit route took them through passages two feet wide by three feet long and only about three feet high. A pulley system was rigged to get the stretcher through the narrower passageways [up and down bad climbs].

Ed Devine of the cavers' organization said it was a "very smoothly run rescue." Negotiating the 5,000-foot long cavern was helped by the fact that the cave club had practiced a rescue inside New River Cave only a few months ago.

Smith was carried out of the cave and down a steep hillside to a waiting ambulance about 1 a.m. [nearer midnight], almost 12 hours after he went inside. He was rushed to Montgomery County Hospital and then taken to Roanoke.

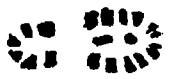
Davis said the Radford College business major apparently never lost consciousness despite his injury. He was in a stupor during most of the rescue, and his father said Sunday he was still groggy from the incident.

The elder Smith, who praised the rescue efforts, said his son suffered a possible hairline fracture of the skull and would be laid up several days.

Smith added his son had not done much cave exploring, and he hoped Saturday's adventure would be his last experience.

The father suggested that caves on private property be either plugged or declared off limits to those without caving experience.

Devine said Smith was the first person to be seriously injured at New River Cave in recent years. The labyrinthine cavern is located in the side of Gap [Spruce Run] Mountain near Goodwins Ferry in Giles County and is a popular spot for novice as well as experienced spelunkers.



ON CAVE RESCUE

Our practice rescue in New River Cave this February worked very well for the club. The ability of the club to work together and to solve problems was well demonstrated.

In brief summation, we were in the cave about six hours. It was about two hours from the time we left the Smyth Hall parking lot until the search teams located the victim near the water fall. We carried the stretcher from there to the Lunch Room in about four hours, where we quit for the day. People were getting tired by then and were not anxious to continue to the entrance and down the hill. Another hour would have been required for this, but the purpose of the practice, to familiarize people with basic stretcher handling techniques, had been fulfilled.

The practice rescue was limited to basic search organization and to stretcher handling. This aspect of cave rescue is the most basic and the simplist problems are actually more extensive and more difficult to deal with. This article will outline some of the major concerns.

Contacting people in the event of a resuce can be very time-consuming. The practice rescue had been arranged the night before and people had planned for it. In the event of a rescue, people are likely to be scattered throughout Blacksburg with no thoughts of going caving, or some may already be in a cave at the far end of the county. The distribution of people and the demand for qualified cavers can make call down communications and initial organization difficult at best.

Even though a cave rescue may be regarded as an inside affair by cavers and cavers take pride in taking care of their own, outside authorities must be dealt with. The resources and knowledge of the local rescue squads is important. Their experience in dealing with injured people is far greater than the club's experience. They will have a greater range of specialized equipment than the club and a more highly developed system of communication, which means in cases aside from club members, they will be notified of rescues before the club. To be the most effective in rescue situations, we must be able to cooperate with the local authorities.

The publicity given to the rescue operation can be beneficial to the club and rescue squad but at the same

time, it can be detrimental to the caving community. To have the club recognized as well organized and capable of handling rescue situations is good, but locating caves in the news media can perpetuate rescue situations.

In addition to rescue squads and publicity, the landowner will undoubtedly want to be informed and reassured about the situation. The owner's property may need to be protected from convoys of cavers coming to the rescue.

Hungry, tired and cold rescuers need to be taken care of. On long rescues, they need food and a warm, dry place to rest. Relief crews will need to be organized so they can move in without interrupting the operation.

Bringing in relief crews, provisions and equipment presents problems in communications and in logistics. Getting accurate information from inside the cave to the outside, where necessary equipment and relief crews are -- by passing it down 30 people -- is tenuous at best.

Different technical problems such as a drop may be impossible to solve if the equipment isn't there, or if all the rescuers are at the bottom of a drop when some are needed at the top. If everyone is on the wrong side of an obstacle, then the stretcher has to be stopped until enough people pass the obstruction. In tight passages, the victim himself becomes an obstacle.

Other obstacles besides drops will be encountered. Areas that are inaccessible for stretchers, or scree slopes, breakdown piles, mud and water, will require special attention. Extra time and additional techniques will be needed to adequately protect the victim and the rescuers in these situations.

The utmost concern is to avoid additional trauma and injury to the victim. To this end, techniques and logistics should be thought out carefully, and the time necessary for this is justified. Five minutes extra worth of consideration to a hauling rig may save 15-20 minutes of wrestling the litter out of a keyhole situation. Proper first aid for the victim, as far as possible, is essential. A well organized technical effort may be wasted if first aid is not handled carefully.

VPI has particular problems of manpower. The turnover of students in the club means that the state of training and leadership is in constant flux. The nature of the club is to have a wide variety of interest in caving, from mapping to conservation to vertical to cave biology. The change in people insures a constant shift in emphasis or particular interest. The quarter breaks, summer sessions

and holidays guarantee that the manpower available will never be constant.

In dealing with more difficult situations, we will have to be able to judge when to call for outside help, specifically from other grottoes in the region and from the Cave Rescue Communications Network. Calling outside for help that isn't needed can be just as detrimental as not having enough help. Other cavers may be on the road for hours only to find the farmer's field crowded with vehicles and the victim on the way to a hospital. The decision to call should be made early on. In a long rescue outside help may arrive just in time to make up a relief crew, and the consequences of not having enough help could be near disastrous.

Initial organization and communications are the vaguest problems, but where the success of a difficult rescue may be. Communication is information and organization is coordination. Information about the extent of the situation and the proposed means of solving it are needed so the equipment and personnel can be at the right place at the right time. Good communications can mean that special first aid equipment that may be needed can be called for and acquired, or that a relief crew doesn't get lost. Good organization means that a crowd of rescuers is not at the bottom of the drop when it is needed at the top to haul.

This article is a brief summary of rescue problems, most of which were not considered in the New River practice this past winter. The problems involved in cave rescue remain pretty much the same from rescue to rescue. The situations will vary greatly, however. Considering solutions would require a great deal of experience and research, resulting in a book (such as the Handbook of Cave Rescue Operations or Single Rope Techniques. The club and the library have copies).

I'm not proposing that the club become a super rescue operation. But it should be realized that cave rescue is a part of caving, just as mapping, sport caving or pit bouncing is. If someone wants to direct their caving efforts toward rescue techniques, there is more than enough place for it in the caving community. Competence in caving is the first step. Any caver on a cave rescue better be prepared to take care of him or herself. The caver whose main interest lies elsewhere should be aware at least of the problems involved and should think about how his or her own particular skills might be applied to a rescue. Developing and practicing these skills can be advantageous.

Taking basic first aid, as offered by the Red Cross and local rescue squads, can be an important step in developing rescue skills. Practice rescues and rigging sessions are good places to learn techniques and to introduce club members to the problems of cave rescues and the capabilities of fellow cavers.

Bob Alderson

* * *

Membership No. 19999

Hugh Alman Beard, Jr.

IS A Regular MEMBER OF

The National Speleological Society

for the year beginning May 1, 19 79

Gerald H. Lorney

Secretary-Treasurer

?

Membership No. 20001

Richard E. Cobb

IS A Associate MEMBER OF

The National Speleological Society

for the year beginning May 1, 19 79

Gerald H. Lorney

Secretary-Treasurer

NEW RIVER RESCUE, BY THE GROTTO

The article on cave rescue problems was written just before the recent rescue in New River Cave. Most of the problems mentioned were handled very well.

The Redders handled the initial organization very well. When we got to the cave Jackie was able to to tell us the situation so that we could fit right in to the effort so far.

Back in Blacksburg we spent about an hour on the phone contacting people. When we had a fair sized group together we left for the cave. Pat Louden stayed at the phone to contact people we hadn't gotten in touch with and to provide a relay point for information.

Ironically, only one group had gone caving that Saturday so the entire club was available with the exception of a few who were out of town.

When we got there Don Anderson, Pete Sauvigne, Jerry Redder and several of the Giles County Rescue Squad were already in the cave. First aide was being administered and Pete and Don were on their way out to tell us where the victem was.

Once in the cave the scene was a reinactment of the practice rescue we had in February, but with twice as many people.

The stretcher moved rapidly out of the cave. Scott Smith was out of the cave no more than 2 1/2 hours after we put him in the stretcher. The only problem was a communication concerning a blanket, which was asked for, abtained, but never used.

The Giles County Rescue Squad was our greatest asset. Perhaps we should say that it was their operation and we helped them. Whatever view point we take, we are very fortionate to have the Giles County Squad to work with.

Bob Alderson

CAVE of the RISING SUN

There is a cave in Skydusky
They call Newberry-Banes
And it's been the ruin of many a poor boy
who tried to map that cave.

So when you're out a-drinkin'
A-laughin' and havin' fun
A-pity the poor boys a-mappin'
way down in Newberry-Banes.

So it's one foot in the entrance
the other in the grave
I'm going back in Newberry-Banes
to wear that ball and chain.

Yes I'm goin' back to Skydusky
to the cave called Newberry-Banes
I'm going back to spend my life
A-mappin' that Goddamn cave.

Well it's four damn miles I've surveyed
and eighty-two leads to go.
Will I ever finish this Goddamn cave?
Well I'm sure that I don't know.

So if you're ever asked to survey
And you're sure the cave will go,
be quick to grab your armchair,
be sure to tell them no.

Bill Koerschner

SKYDUSKY HOLLOW

The past six months have seen the completion of two major mapping projects and the beginning of another by members of the VPI Cave Club. Steady effort in Spring Hollow Cave has pushed the cave to beyond the predicted four miles. The strike-parallel base level trunk was mapped to siphons at either end, but a surprise find renewed hopes for the elusive connections to neighboring Newberry-Bane's and Bane Spring Caves. This lead began as a low belly crawl carrying a small tributary stream but soon opened up into dry canyon passage. This lead was mapped 2,000 feet straight southwest to within striking distance of upstream Banes. The passage in fact passed under the eastern portion of Banes Spring, which lies 150 feet above it. This high potential lead was recently mapped to a fork where it split into two wet and very windy belly crawls which unfortunately (fortunately?) proved to be entirely impassable.

Thus Spring Hollow officially has zero leads left and a length of 4.15 miles, though one additional trip will probably be taken to insure nothing has escaped notice.

The success of the Spring Hollow survey has inspired renewed effort in some of the other Skydusky Hollow caves. The dry fall season saw completion of Harman's Avalanche Pit with only 1,200 feet of passage, but a depth of over 200 feet (and that without a rigged drop). After completion of this survey, Ed Devine began the monumental task of surveying neighboring Paul Penley Cave, the only totally unmapped cave in the hollow. This highly complex 3-D maze strains even the best cartographer's abilities as the 2.5 miles surveyed so far fit under only six acres. On a recent mapping trip, all 92 stations fit on a single surveying notebook page at 40 feet to the inch!

The survey is now at the edge of the known portions of the cave and virgin passages are beginning to turn up. Recently a small trickle stream was pushed to a sump of a depth of 324 feet, making this cave one of the deepest in the Skydusky Hollow system.

This same trickle was pushed upstream through a series of low, sloppy stream crawls (dubbed Wallow Hollow) to a new section of cave with airflow enough to rattle a lamp flame! This area is only 300 feet away from downstream Harman's and a handshake connection seems possible. The cave contains two large streams which are expected to join near base level (about -350') and hopefully form a passage of truly admirable proportions. At present, leads are still proliferating and a length of 3 miles plus seems a certainty.

Bill Koerschner

CAVE 1 SILTSPRING

Now that summer is nearly upon us, those incredible icy weekends of last winter are nearly forgotten. During those slick weekends when most people were afraid to walk around, let alone go driving, VPI cavers were out in force, stupidly going caving. For the fourth icy Saturday in a row several of us decided to do a little more mapping. I felt like I needed a rest from the rigors of Paul Penley Cave surveying so after twisting Bill Koerschner's arm and obtaining two additional adventurous souls in the form of Win Wright and Bill Olver, we headed out to the most obscure and ridiculous unmapped cave we could think of - SILTSPRING CAVE.

On the way out to Staffordsville, in Giles Co. Virginia, where the cave is located the temperature was starting to warm up and it looked like most of the ice would soon be melting. Unfortunately, a near freezing rain had again started. Approaching the gravel road which turned sharply off Route 100 and lead to the cave, I gunned the engine, flew onto the slickest ice I had ever seen, hit the brakes, and miraculously came to a precarious stop on the edge of a steep hill overlooking Wabash Creek. After cleaning out my pants I parked the car along Route 100 and we headed off through the freezing rain in search of Koerschner's wonderful cave.

Half a mile later, soaked and frozen, we were there. There was no whiskey, wild women or song as Bill had promised. Rather, there was a cave and several interesting karst springs. Wabash Spring, from which all of Wabash Creek flowed was about 200 yards to the north. The Siltspring Cave resurgence is about 100 yards to the north but apparently is unrelated to Wabash Spring. The area appeared exciting since no major caves are known dispite all this resurging cave water.

Siltspring Cave consists of several small connected rooms leading down to a small stream. The stream could only be followed for a few feet up to a low, silty siphon. There was no noticable airflow in the cave but Koerschner had remembered considerable air flow when he had been there several years earlier, and he had not remembered a siphoned stream. The water was obviously way up from the rain and melting ice and snow so it is likely that during dry weather there may be something substantial above this point.

Going downstream, we followed the stream under a low ledge where Bill Olver learned how cold water could get. This immediately opened up into a steeply slanting room which went nowhere. The stream, however, went about fifty feet further to a very low stream crawl. As the water was already very deep in this crawl and as it was rising, and as we weren't to far from the resurgence outside, we decided the cave quit at this point and we exited. Total length of surveyed passage turned out to be 383'.

It was still raining outside but Koerschner insisted that we go check out several small holes about half a mile up the valley from the cave. Dispite our soaked, frozen condition, we all followed Bill, not wanting to appear un-macho.

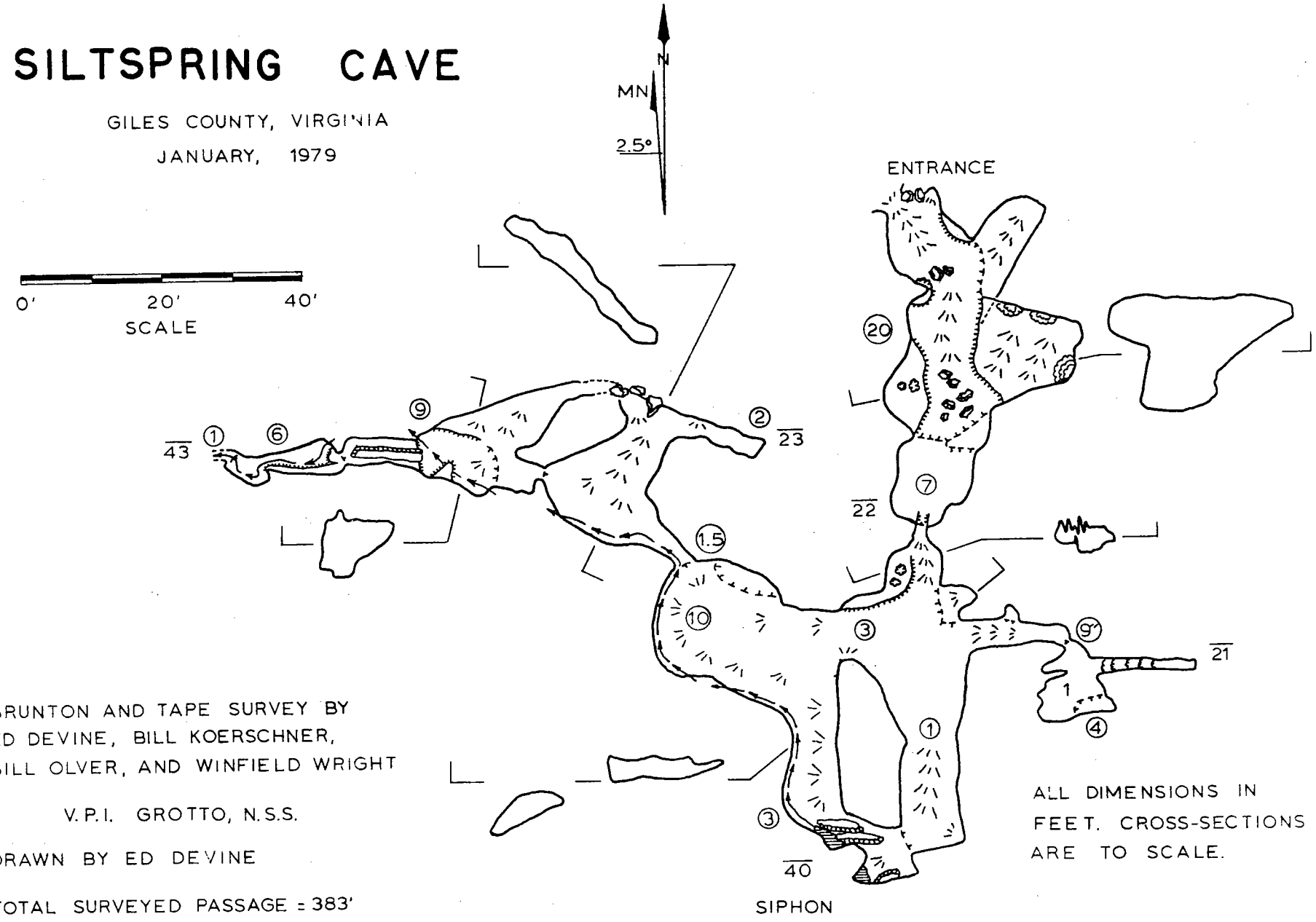
Near where he had remembered the holes we found a fresh sinkhole with several holes in it taking a tremendous quantity of runoff from two small valleys. As we were poking sticks into the holes and noticing how deep they seemed to be, my survey notebook jumped out of my jacket and flew down one of swallow-holes disappearing below the swirling, muddy waters. Miraculously, several moments later the notebopk bobbed the surface and we retrieved it. With all safe, the soggy crew returned to Blacksburg.

Ed Devine

SILTSPRING CAVE

GILES COUNTY, VIRGINIA

JANUARY, 1979



BRUNTON AND TAPE SURVEY BY
ED DEVINE, BILL KOERSCHNER,
BILL OLVER, AND WINFIELD WRIGHT

V.P.I. GROTTO, N.S.S.

DRAWN BY ED DEVINE

TOTAL SURVEYED PASSAGE = 383'

ALL DIMENSIONS IN FEET. CROSS-SECTIONS ARE TO SCALE.

CAVE 2 HARMONS AVALANCHE PIT

The most striking feature about Harmon's Avalanche Pit is the fact that there is no pit at all- just several short, climbable drops.

Harmon's Avalanche Pit is the smallest of the significant caves of the Skydusky Hollow Cave System in Bland Co., Virginia. It is found between Coon Cave at the extreme western end of the system and Paul Penley Cave.

During January, 1978, Doug Perkins, Jim Eller, and Ed Devine decided to kill a Saturday by mapping a small cave that could be finished up in one day and then forgotten. Ed had remembered finding the entrance to Avalanche Pit while ridgewalking during the previous VPI Grotto picnic which had been held near the entrance to Newberry Cave to the east. The Avalanche Pit was only supposed to be "several hundred feet long" according to Caves of Virginia. Being a Skydusky Hollow cave, they should have known better. The cave took four trips to finish, went to 208' in depth and surveyed to about 1200'.

The cave starts out deceptively as a steeply descending trunk-like passage thirty feet high and eight feet wide. This is entered through a steeply spiraling passage which "avalanches" mud and rocks as one descends - hence the name. Unfortunately, after about fifty feet the nature of the cave completely changes becoming a low crawling passage. At the beginning of this part of the cave, a side passage is encountered which leads back toward the entrance and mud fills after about 70'. The main passage changes from a low crawl to a narrow, tight canyon leading to the top of a crevice drop of about 30'. This drop can be free-climbed but is so narrow that a cable ladder is almost essential for getting back up. The drop opens up on a canyon passage with a trickle stream. On the left side of the passage leading to the top of this drop, a tight lead was dug open which leads to climbable drop which also opens up on the trickle-stream canyon. This drop is the preferable means of getting into the depths of the cave as it is significantly easier to negotiate.

The cave is very straight-forward from this point. It continues as a narrow, frequently tight trickle-stream canyon for about four or five hundred feet that finally reaches a six-inch wide pinch in bedrock that could not be pushed. Several short, climbable pitches are encountered before this end is reached.

The end of Avalanche Pit comes within two or three hundred of the known portions of Paul Penley Cave where numerous going leads are currently being explored and where a trickle stream similar to to Avalanche Pit stream has been encountered. It appears that it is only a matter of time before a hand-shake connection will be made between the two caves.

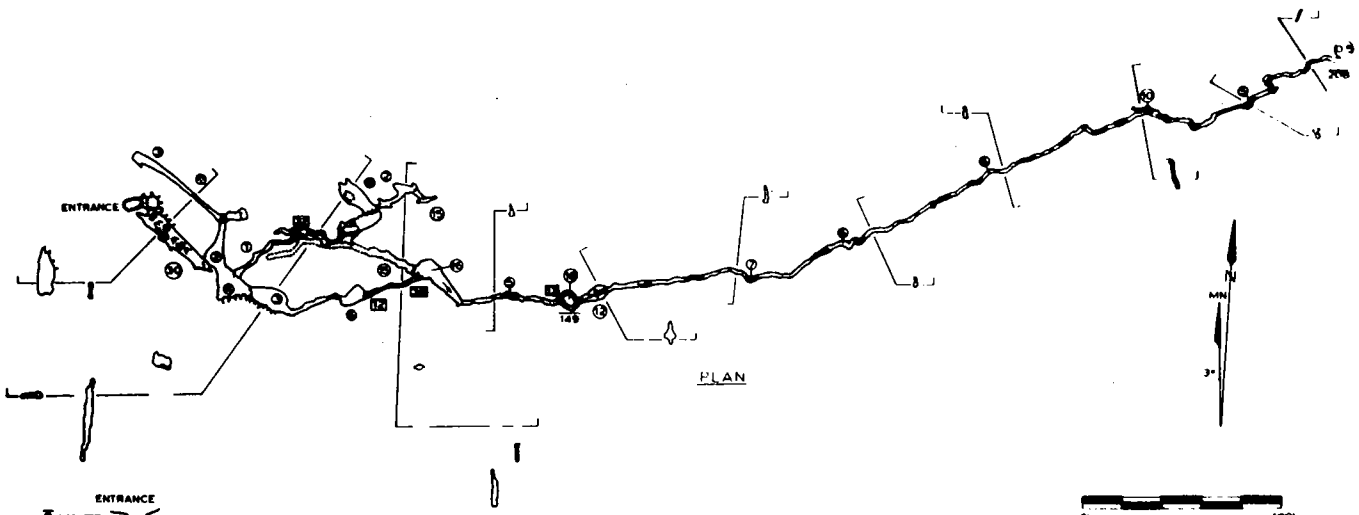
This survey project was a classic example of how not to map a cave quickly. Figuring the cave was only a few hundred feet in length, the first trip told the owner that they would be out "well before dinnertime" and therefore ran out of time. The second trip, figuring they had to be about through with the survey, did the exact same thing. Incredibly, the third trip, not having learned yet, repeated the mistake. The fourth trip knew better and finished up the cave but was unable to push the super-tight slot at the cave's end.

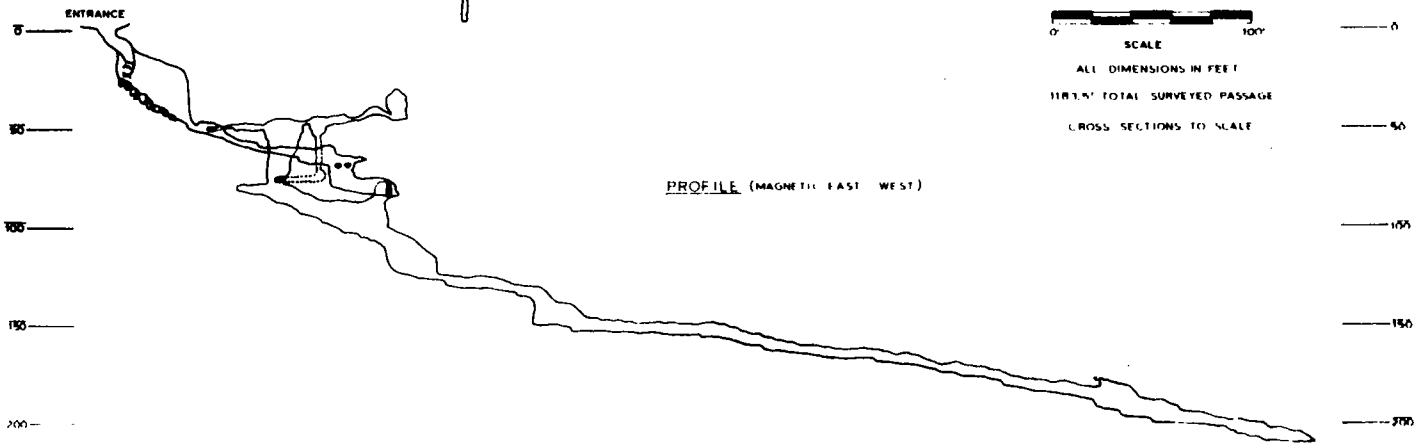
Ed Devine

HARMON'S AVALANCHE PIT

BLAND COUNTY, VIRGINIA

NOVEMBER, 1978





0' 100'

SCALE

ALL DIMENSIONS IN FEET

1183.5' TOTAL SURVEYED PASSAGE

CROSS SECTIONS TO SCALE

LEGEND

CAVE PASSAGE

BREAKDOWN WALL

DROP IN FLOOR TOP BOTTOM

DEPTH OF FLOOR DROP (32)

SIZE IN CEILING LOW HIGH

MUD SLOPE LOW HIGH

POOL

STREAM

LOWER PASSAGE

BREAKDOWN BLOCKS

CEILING HEIGHT

DEPTH BELOW ENTRANCE 157

PASSAGE CROSS-SECTION

DIRECTION OF VIEW

MARYLAND system

FREE STATE VERTICAL CAVING--"THE MARYLAND SYSTEM"

Maryland is not known for its vertical caving. Most hardcore Maryland cavers, when quizzed on rope length for one of the eight or ten drops needing one, will sagely reply "six hundred feet." After the listener has regained his composure, he adds "Throw it in the pit, coiled. Then jump in on it."

Joking aside, Maryland vertical caving does present challenges. On a Christmas trip to Round Top Summit Cave (Washington County) with three Frederick Grotto members, we were faced with a mere 20 foot entrance pit--but 15 of those twenty feet required wall-walking and the last three were in a 1.5 x 4 foot slot. My Mitchell system was useless; on an earlier trip it required 15 minutes for me to manipulate the lower Jumar through the entrance slot.

To solve this lower ascender problem I switched to a foot Gibbs (figures 1-3). I planned to use a chest harness clipped to the rope and pass my long Jumar-foot sling behind it (as in the Mitchell System), letting my legs do the work and putting the second ascender where I could reach it easily. But complications arose when a young lady sharing my rig had difficulty with the chest sling.

I modified the rig by substituting my short rest sling (Mitchell System) attached to Amy's Texas seat and a Jumar for the long Jumar-to-foot sling arrangement. With the Gibbs cam on her left foot, she had the Maryland equivalent of the Texas System--Bruce Miller dubbed it "the Maryland System."

Impressed with Amy's ease in climbing out using the Maryland system, Bruce and I also used it. Negotiating the entrance slot was simplified as one took small (6-8") bites and kept the Jumar-seat sling tight, using a sit-stand technique. The drop that had previously taken me twenty minutes now took me two.

Modifying the system for permanent use, the 1" tubular webbing Jumar rest sling is replaced by 5/16" PMI Pit Rope (for abrasion resistance and low stretch), threaded through the holes in the Jumar handle and tied together in a double-tucked sheet bend, fishermans knot or the equivalent. The Maryland System is particularly useful for narrow vertical drops where a Gibbs ropewalker system is preferred but the caver doesn't want to sew a lot of webbing or has only Jumars and the gibbs from his rappel safety. As a drop opens out, other systems become more efficient. But hard-core "Maryland cavers" will continue to use the system--at least until their evolutionary development gives them wings or suction cup toes.

Jay Kennedy

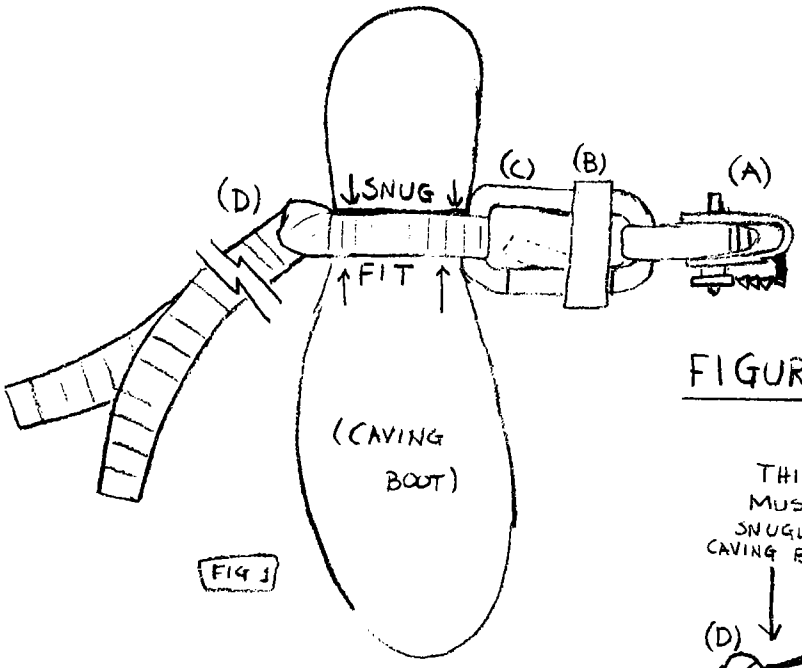


FIG 1

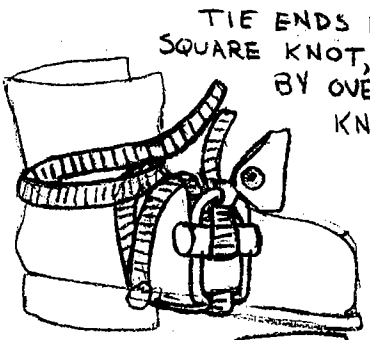


FIG 3

FIGURES 1-3

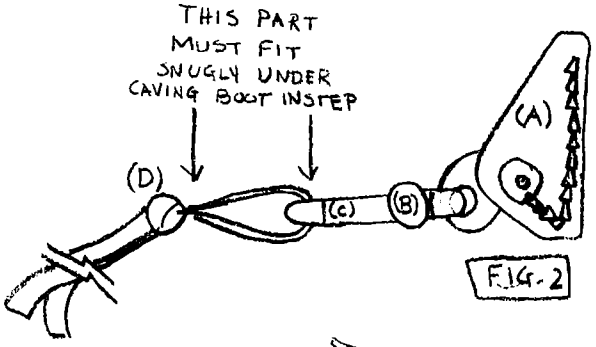
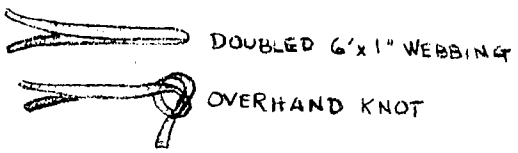


FIG. 2

MATERIALS

GIBBS ASCENDER (A)
BRAKE BAR (B)
OVAL CARABINER (C)
6'x1" TUBULAR WEBBING (D)
JUMAR ASCENDER
4'x 5/16" PMI PIT ROPE
LOCKING D CARABINER
SEAT SLING



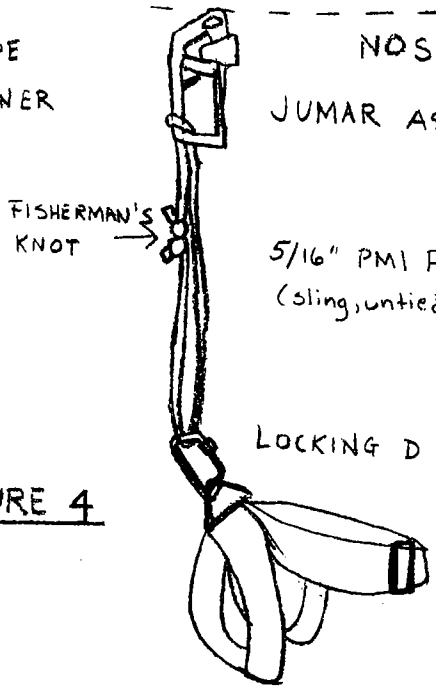


FIGURE 4

Sketches by Jay Kennedy IVSS 1813g

FOOT GIBBS

BATS

Jay Kennedy

Michael Hodge

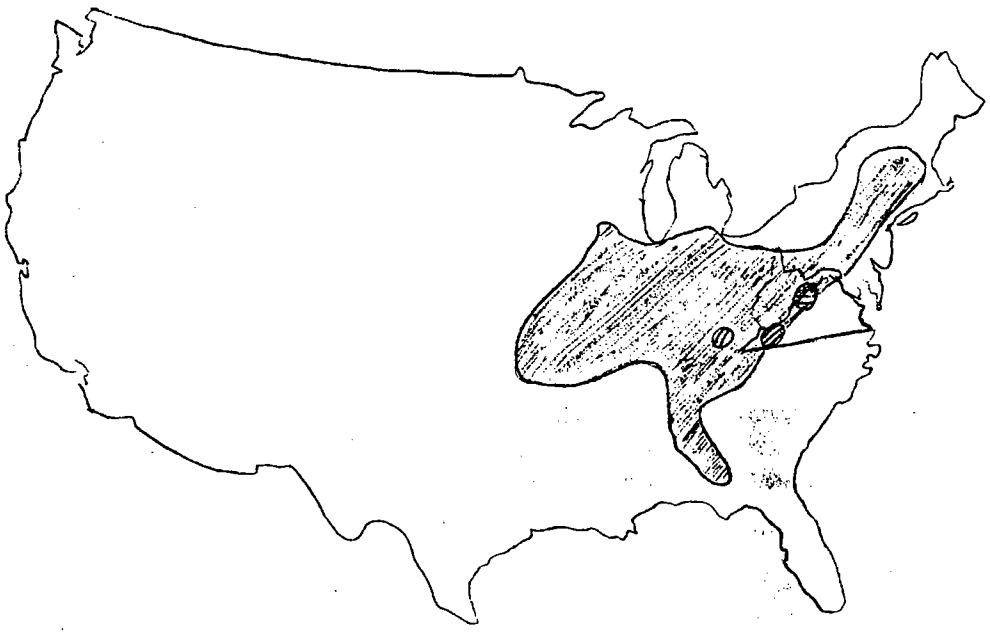
February 22, 1979

ENDANGERED BATS OF THE VIRGINIAS: A Problem of Protection

Populations of all bat species in the United States have been declining within the last several years, expecially cave-dwelling populations. Caves formerly containing millions of bats now harbor only a few thousand. Some colonies are now extinct. Three species of bat have been placed on the endangered species list, and others are being considered. Many factors have contributed to this alarming dropoff in bat populations: increased disturbance of bat caves by cave explorers and scientists, flooding of winter roost sites during early spring, and injuries due to banding.[1]

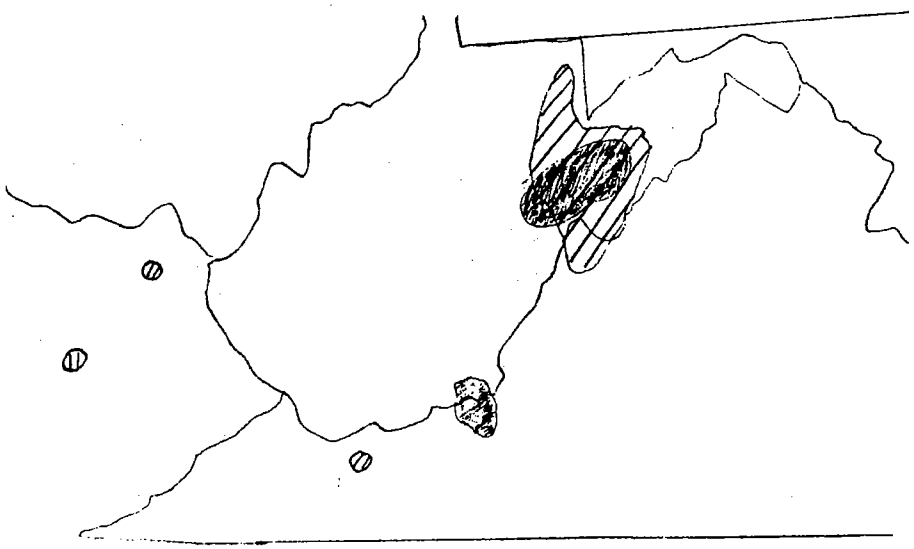
Although bats everywhere are in need of protection, in Virginia and West Virginia cavers and scientists are concerned mainly with the Indiana social bat (Myotis sodalis) and the Virginia big-eared bat (Plecotus townsendii virginianus). M. sodalis has been on the endangered species list since 1966,[2] and P. t. virginianus was recently added. Populations of both of these species of bat have been steadily decreasing in recent years, so alarmingly that bat researchers and the National Speleological Society (NSS) have become concerned.

These two species are found in caves scattered through the mountainous regions of the two states.[3-10] (Figures 1 & 2) Either or both species are reported from nine caves found in six counties in Virginia and twenty-five caves in seven counties in West Virginia.[3-10] This



(AFTER BARBOUR AND DAVIS, 1969)

FIGURE 1



▨ — Plecotus townsendii virginianus

▩ — Myotis sodalis

(AFTER CONRAD, 1961; HANDLEY, 1997)

FIGURE 2

represents a very small percentage of the total caves found in each state and illustrates the selectiveness of the bats in choosing roost caves.

Cavers and scientists disturbing this limited number of roost sites constitutes the greatest threat to these endangered species. Both bats are quite sensitive to man's intrusion, and when disturbed may move to another part of the cave or leave the cave entirely.[11] Caves suitable as habitat for these two species are "relatively rare,"[12] and if a colony leaves its cave in winter it will probably freeze before it finds another suitable roost.

Therefore, limiting human access to these caves, particularly during hibernation periods (1 October to 1 May)[10], is of significant importance in stopping the plummeting population levels of M. sodalis and P. t. virginianus. This paper will attempt to deal with some of the complications of gating bat caves in the Virginias.

Many organizations are seeking a solution to the problems of protecting cave-dwelling bats. Within the National Speleological Society (NSS), the Bat Subcommittee actively works on various aspects of bat conservation. The various regional NSS divisions are also forming bat-associated committees, such as the Virginia Area Region's Bat Subcommittee. The Richmond Area Speleological Society of the VAR compiles a list of current "limited access caves"--some of which are closed to visitation in order to protect their

bat populations, the "closing" enforced by peer pressure.[10] The Nature Conservancy is investigating the possibility of purchasing the major cave in the Virginias inhabited by both M. sodalis and P. t. virginianus--Hell Hole in Pendleton County, West Virginia--and other caves.[13] A proposal has been made to form an organization devoted to the "better conservation of bats (Plecotus townsendii virginianus and Myotis sodalis in particular)."[14]

This last organization, the Middle Atlantic Bat Conservancy, is concerned mainly with purchasing and gating caves recognized as critical habitat for the Virginias' endangered bat species. The MABC's goal of gating and controlling access to bat caves is noble, but hardly feasible without the widespread support of cavers and scientists. In addition, considerable financial expense is involved in obtaining cave entrances and constructing satisfactory gates.

Several organizations do have the funds necessary to purchase cave entrances, if and when the property becomes available for sale, and to install gates--private organizations such as the NSS and The Nature Conservancy, and governmental agencies such as the Department of Wildlife. If these organizations can be convinced of the effectiveness of gating, then the money obstacle would be overcome. However, money is not the only problem in controlling access to bat caves; the gate must be maintained by a competent, responsible organization and , most importantly, the gate must be designed to keep people out without obstructing air flow or "cave critters."

Designing such a gate is not as easy as it may appear. Bat researcher Merlin Tuttle investigated the effect poorly conceived gates can have on the cave environment and bat utilization of the cave,[15] and recommends fencing of entrances where suitable. Fencing may be more expensive than gating, but can be as effective.[15] Both methods have their advantages and disadvantages. For more information on the pros and cons of gates and fences, one is referred to Cave Gating Handbook, by Hunt and Stitt (see bibliography).

When gating one must consider where in the cave to install the gate and what design is suitable for a particular location within the cave. Gates are usually located at some point near the entrance where the passage cross-section is small enough to make gating possible--the smaller the opening, the smaller the gate (and the less material needed to construct the gate, hence a cheaper gate.) Ideally the gate should be located in a crawlway. Location definitely affects gate vandalism; in a constricted crawlway the vandal has less room to attack the gate with a sledgehammer or crowbar. Design of the gate is important for reasons previously mentioned (obstrucing air and fauna).

Once the gate is installed another problem surfaces; who is to be allowed entry into the gated cave? One of the reasons moratoriums[16] do not work is because sport cavers and scientists continue to visit the cave even after it is "closed." Sport cavers, upon finding the cave gated, may destroy the gate in their efforts to enter the cave.

Cedar Ridge Crystal Cave in Marion County, Tennessee is a good example: two gates were destroyed before cavers were forced to cement the entrance shut.[17]

The solution for gated bat caves is not so drastic: allow the cavers to enter the cave, when the bats are gone. Many Virginia and West Virginia bat caves are closed only during the winter or summer months when the cave is inhabited by either hibernating or nursery colonies, respectively. Once gated, they would remain closed to everyone during this period of time, except for a single scientific trip to evaluate the population roosting there. However, when the cave is not occupied by the bats, the gate could be ~~either~~ unlocked and left open, like the gate in Bowden Cave, Randolph County, West Virginia. A "turnstile" gate such as the one on Dead Dog Cave (Jefferson County, West Virginia) could be removed entirely. Sport cavers could then explore the cave and cave scientists could conduct their studies. Pending the return of the bats, the cave could be locked up until the next "open season." Caves such as HellHole, which is closed year-round, could not be opened in this manner, and would have to remain closed year-round. For those caves another solution must be found.

Thus, gating of critical habitat caves should in theory, and if properly done, slow or halt the decrease of M. sodalis and P. t. virginianus populations in the Virginias by limiting their disturbance by humans. To date the only widespread attempt at controlling caver access to critical habitat bat caves, through moratoriums,

has been ineffective; largely because some cavers (NSS members included) do not care enough about conservation to honor the moratoriums.[18-20] Gating, if done properly, is the solution.

Bat scientists and concerned cavers must continue to monitor the situation and seriously consider the effects their activities will have on bat populations. The caving community is responsible for implementing a plan to conserve endangered bat species, and soon. If something is not done soon to protect the bats, there will no longer be any bats to protect.

Notes

1 Charles Mohr, "The Status of Threatened Species of Cave-Dwelling Bats," Bulletin of the National Speleological Society, 34 (1972), pp. 35-38.

2 Bureau of Sport Fisheries and Wildlife, Rare and Endangered Fish and Wildlife of the United States, BSF7 Research Publication 34 (Washington: U.S. Government Printing Office, 1966).

3 Raymond Hall and Keith Kelson, The Mammals of North America (New York: The Ronald Press Company, 1959), pp. 171, 199.

4 Roger Barbour and Wayne Davis, Bats of America (Lexington: University Press of Kentucky, 1969), pp. 94, 173.

5 William Burt and Richard Grossenheider, A Field Guide to the Mammals (Boston: Houghton Mifflin Company, 1952), pp. 31, 43.

6 Charles Handley, Jr. and Clyde Patton, Wild Mammals of Virginia (Richmond: Commission of Game and Inland Fisheries, 1947), p. 116.

7 John Hall, A Life History and Taxonomic Study of the Indiana Bat Myotis sodalis, RPM & AG Scientific Publication No. 12, (Reading: Reading Public Museum and Art Gallery, 1962), p. 18.

8 Lyle G. Conrad, "Distribution and Speciation Problems Concerning the Long-Eared Bat, Plecotus townsendii virginianus," D.C. Speleograph, August, 1961, pp. 49-51.

9 Mike Dyas, "Save the Bats," NSS News, Vol. 32 (1974), p. 214.

[10] Richmond Area Speleological Society, "VAR Closed Cave List," D.C. Speleograph, September, 1978, pp. 24-24.

[11] Barbour and Davis, p. 95.

[12] Merlin Tuttle, in Jay Kennedy, "Possible Occurence of Endangered Species of Cave-Dwelling Bats in Maryland," Frederick Grotto Underground, Vol. 4, No. 4, 1978, n.p.

[13] Letter received from Evelyn Bradshaw, 16 January 1979.

[14] Jay Kennedy, Letter, Night Flyer, Vol. I, No. 4, October 1978.

[15] Merlin Tuttle, "Gating: A Means of Protecting Cave-Dwelling Bats," NSS News, Vol. 35,No. 9, September 1977.

[16] A moratorium is an unwritten agreement among cavers not to enter a particular cave. The Richmond Area Speleological Society's "VAR Closed Cave List" contains the names and counties of caves in the Virginias which are under a moratorium.

[17] Larry Matthews, "Cedar Ridge Crystal Cave," NSS News, Vol. 36 (1978), pp. 128-9.

[18] Jay Kennedy, Editorial, Frederick Grotto Underground, Vol. 4, No. 2, April 1978, n.p.

[19] Paul Roney, Letter, FGU, Vol. 4, No. 3, May 1978, n.p.

[20] Jay Kennedy, Editorial, FGU, Vol. 4, No. 3, May 1978, n.p.

[21] Mike Dyas, "Update on HellHole, Stanislaus River, Mineral King Projects," NSS News, Vol. 34 (1976), p. 77.

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