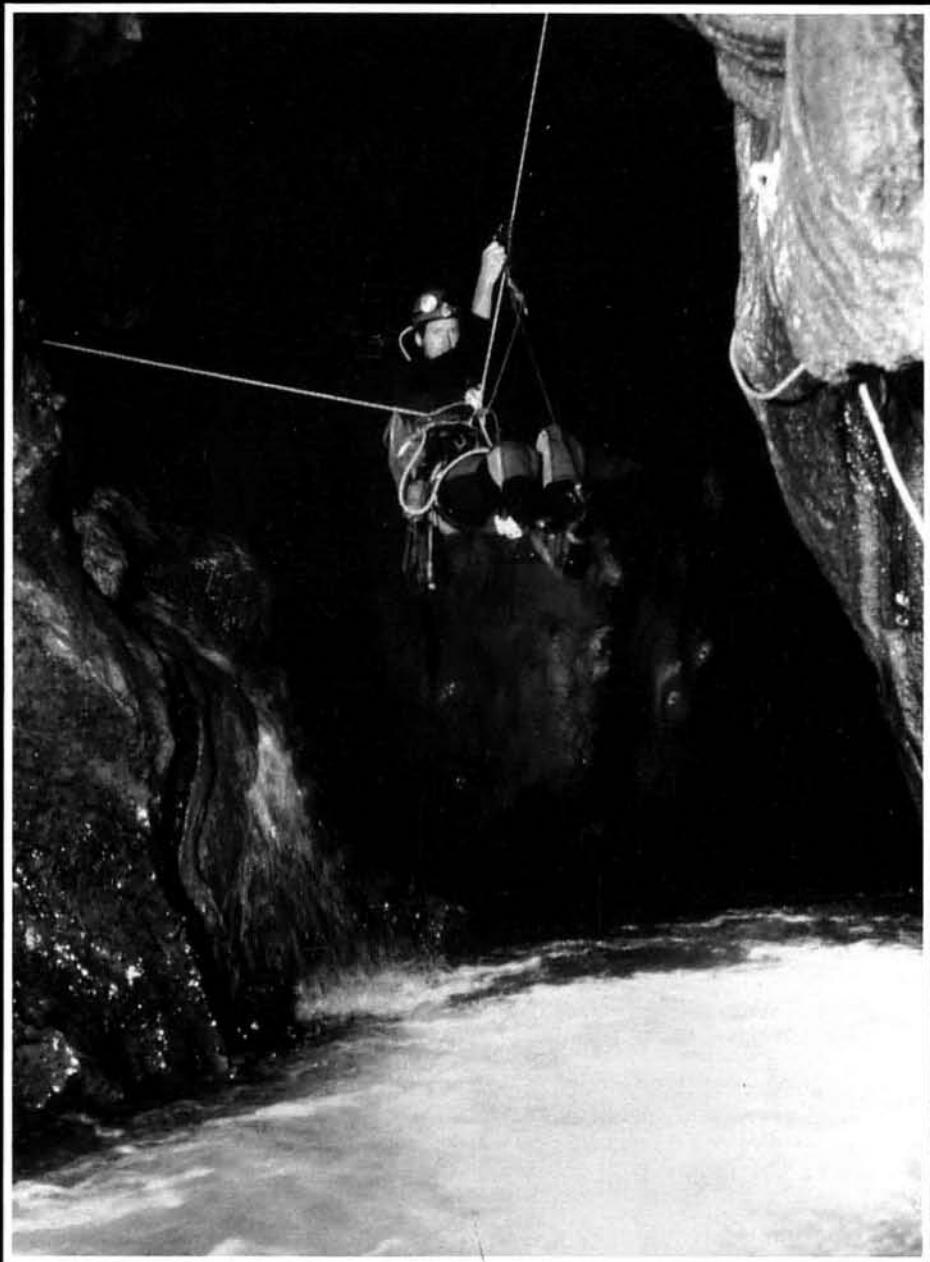


# NSS NEWS

DECEMBER 1992, PART II



## American Caving Accidents

1991

# An Introduction to the 1991 Edition of American Caving Accidents

By Steve Knutson

This is the 1991 edition of the National Speleological Society annual report on safety incidents resulting from cave exploration in the Americas. These range from no consequence to fatalities. The analyses offered are not intended to be the final conclusions, but more as additional food for thought. It is your reflection on these incidents that can make you a safer caver. If you read these incidents, you will come away with a greater safety awareness.

*Send Any  
Information On  
Any Incident  
To:*

Steve Knutson, Editor  
American Caving Accidents  
41811 S.E. Loudon Road  
Corbett, OR 97019

I would like to thank all those who sent reports, news clippings or grotto publications. This publication would not exist without them. Still, some grotto publications are not received; I would

greatly appreciate it if publication editors would watch for issues containing a safety incident and make a point of sending me one.

Thank you!

## CONTENTS

Introduction .....	334
Synopsis.....	335
Incidents and Accidents: A Study .....	337
Be Warned: The Figure-8 Is Dead.....	337
Previously Unreported Incidents .....	338
Cave Accidents and Publicity.....	339
Two Fatalities Using European Vertical Equipment & Techniques.	339
1991 Reports.....	340
1991 Incidents in Practice Sessions .....	355
1991 Cave Diving Incidents .....	356
Accident/Incident Report Form .....	359

## NSS NEWS

DECEMBER 1992  
PART 2  
VOLUME 50  
NUMBER 12

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The NSS NEWS (ISSN 0027-7010) is published monthly with occasional special editions by the National Speleological Society, Inc., Cave Avenue, Huntsville, AL 35810 (phone no. 205-852-1300). Regular membership in the NSS is \$25 per year, subscriptions to the NSS NEWS are \$18 per year, individual copies are \$1.50 each. Contact the Huntsville office for membership applications, subscriptions, orders, or for replacement of issues missing or damaged in the mail. Second-class postage paid at Huntsville, AL and additional mailing offices.

POSTMASTER: Send address changes to the National Speleological Society, Inc., Cave Avenue, Huntsville, AL 35810.

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## ON THE COVERS

Two views of spirited caving in the Rio San Ramon Cave, Guatemala.

Photos ©1992 by Steve Knutson.

# 1991 AMERICAN CAVING ACCIDENTS — A SYNOPSIS

By Steve Knutson

**A**s one can see from the adjacent table, 1991 is consistent with a very gradual increase in incidents reported (a few usually show up during the next year). Again, as previously, the three categories of caver fall, equipment problems and rock fall dominate, with a scattering of other types.

One alarming fact is that the six fatalities, the most yet in one year, included three from the caving community. Prior to this, excluding cave diving accidents, we had probably averaged less than one

true-caver accidental death per year. I hope this is not a trend.

In cave diving, the certified divers seem to have taken heed of the fatalities from their ranks in recent years. Furthermore, there seem to be fewer fatalities from among non-certified divers; this hopefully reflects the safety propaganda put forth for some time by the certified cave diving community.

## Accident Causes and Comments

a) Acetylene Explosions: Again there were none reported; this may reflect the move toward using electric primary lights.

b) Bad Air: There were two (7-13 and Fall A) and in both, the victim(s) exited in panic.

c) Caver fall: The 22 falls ranged from no consequence, (7-6, where a belay was used, August B, September A, 9-15, 10-20, 11-26 B and 12-28 rappel), to fatalities (1-13, 3-1 and 12-14). In between

## REPORTED INCIDENTS

### 1. Incidents Not Previously Reported:

Code	Cave Name	Location	Date	Synopsis
Be	Cave at Campbellsville	KY	5-6-90	lack of light
Beo	Blue Spring Cave	TN	5-27-90	rope theft
De	Fern Cave	AL	10-13-90	ascender
De	Ophir Cave	MT	10-20-90	rope abrasion
De	Lost Creek Siphon	MT	12-18-90	ice on rope
Ac	Clover Hollow Cave	VA	Dec-90	caverfall
Df	Kings Cave	TN	12-30-90	flood

### 2. 1991 Incidents:

Df	Wildcat Cave	WV	Winter	flood
Ac	Cave Mountain Cave	WV	January A	caverfall
AAce	Megawell	AL	1-13	caverfall
Be	Anvil Cave	AL	1-23	light
Co	Sotano de las Cotoras	CHIAP-MEX	1-26	bee attack
Cc	El Choreadero	CHIAP-MEX	1-28	caverfall
Be	Tiftonia Pit	TN	2-16	vertical gear
Bs	Old Mill Cave	VA	February	stuck caver
Beh	Cemetery Pit	TN	2-24	hypothermia
AAce	Cueva Cheve	OAX-MEX	3-1	caverfall
Cr	Rippled Cave	CA	3-2	rockfall
Bf	Fern Cave	AL	3-11	high flow
Ac	J-4 Cave	PA	3-23	caverfall
Ar	Lechuguilla Cave	NM	3-31	rockfall
Be	Whiteside Well	TN	4-27 A	lack of gear
Bl	Organ Cave	WV	4-27 B	lost
AAd	Grutas de Cacahuamilpa	GUER-MEX	April	drowning
Ac	Beacon Cave	WV	Spring A	caverfall
Ac	Burnside Branch Cave	WV	Spring B	caverfall

Bx	Shaft Cave	IN	May	exhausted
Ace	Saltpetre Cave	TN	5-9	caverfall
AAAd	Grutas de Cacahuamilpa	GUER-MEX	5-12	drowning
Ace	Bone/Norman Cave	WV	5-25	caverfall
Bs	Wind Cave	SD	Summer A	helmet jam
Br	Harry Lip Cave	MT	Summer B	ladderfall
Cr	Brown's Depression Cave	NY	Summer C	rockfall
Ble	Chinn Springs Cave	AK	Summer D	lack of light
Bc	Hosterman's Pit	PA	7-6	belayed fall
Db	Breathless Cave	AZ	7-13	bad air
Ao	Soldiers Cave	CA	7-27	dislocation
Dr	Ruth Cave	PA	7-29	rockfall
Ao	Lawrence Domepit Cave	WV	8-4	shoulder
Cc	Lechuguilla Cave	NM	8-7	caverfall
Ac	Ape Cave	WA	August A	caverfall
Dc	Bigfoot Cave	CA	August B	caverfall
Cr	Big Ridge Cave	PA	8-17	rockfall
Bs	Clarksville Cave	NY	9-2	stuck caver
Dc	Roadside Pit	WV	Sept A	caverfall
Dr	Unspecified Pit	MO	Sept B	rackfall
Ar	Endless Cave	NM	Sept C	rockfall
Ac	Trenton Well	AL	9-8	caverfall
Drc	McFerrin Breakdown Cave	WV	9-15	rockfall
Be	Skylight Cavern	MO	9-30	lack of light
Cb	Morgan's Pit	KY	Fall A	bad air
Ao	Onyx Cave	AZ	Fall B	knee dislocation
Cc	Urin Heaven Cave	CA	10-13	caverfall
AAr	Arctomys Cave	BC-CAN	10-17	rockfall
Bl	Arctomys Cave	BC-CAN	10-19 A	lost caver
Ach	Sloan's Valley Cave	KY	10-19 B	caverfall
Ac	Cascade Cave	WA	10-20	caverfall
Ax	Sloan's Valley Cave	KY	10-26	exhaustion
Be	Sloan's Valley Cave	KY	10-27	lost caver
Be	Mystery Falls	TN	11-8	vertical gear
Be	Cave Disappointment	NY	11-10	vertical gear
Cr	Nickwackett Bat Cave	VE	11-17	rockfall
Co	Unnamed Cave	BC-CAN	11-24	fire
De	Crevice Cave	MO	11-26 A	vertical gear
De	Sotano de Latevio	SLP-MEX	11-26 B	caverfall
De	Sotano Golondrinas	SLP-MEX	11-27	vertical gear
AAc	Vista Cave	KS	12-14	caverfall
Ce	John Brown Cave	WV	12-15 A	lack of light
Dr	Porter Potty Cave	TN	12-15 B	logfall
Cec	Unnamed Cave	UT	12-28	rappel

### 3. Incidents at Practice Sessions:

De	Saddle Butte State Park	OR	2-9	lack of gear
Ace	Ravens Roost	VA	5-12	rappel control

### 4. Cave Diving Incidents:

De	Bradt Sink Cave	NY	February	regulator
Do	Peacock Spring	FL	Summer A	lightning
Do	Scorpion Spring	FL	Summer B	alligator
Dr	Unnamed Cave	FL	Summer C	rockfall
AAadi	Old Russ Pile Spring	TN	6-1	drowning, illness
DI	Spout Cave	WV	June	silting
Bl	Del Riito de Acarite	FAL-VZ	7-13-91	silting
AAadr	Indian Springs	FL	11-17	rockfall

were numerous injuries: a broken leg was popular (Spring A, Spring B, 5-9 hand-over-hand, and 9-8 rappel), sprained or broken ankles (1-28, 8-7 glove caught in ascender and 10-19 B), ruptured ovarian cyst (January), concussion (3-23), bad bruises (10-13), and burns (12-24). The two rappel incidents were the result of using only four bars. The deaths were due to a rope (European) apparently chopped by a falling rock, a locking carabiner being unlocked while passing a belay, and a caver free-climbing from a cave entrance on a cliff, respectively.

d) Drowning: There was one incident (5-12), and apparently an earlier one in the same cave (April), where tourist cavers were swept away by a current.

e) Equipment Problems: Vertical gear problems dominated (2-16, 2-24, 3-1, 4-27, 8-7, Sept B, 9-8, 11-8, 11-26 A, 11-27 and 12-28), but flashlight cavers are still out there (1-23, 5-25, Summer D, 9-30, 10-27 and 12-15 A), and the hand-over-hand vertical system is still alive but not so well (5-9 and 11-10). Falls resulted from a rack coming out of a locking biner (3-1), and a glove caught in an ascender (8-7), as well as two cases of rappels with only four bars.

f) Flood: There were two (Winter and 3-11). Perhaps cavers are learning to watch the weather.

h) Hypothermia: Two, one in a waterfall pit (2-24), and the other apparently the result of a rescue that went too slow (10-19 B).

i) Illness: None.

j) Lost: This actually happens (4-27 B and 10-19 A), but one case (Summer D), was probably due to lack of light.

r) Rock fall: Some of these were just near-misses (3-2, Summer B, 7-29, 8-17, Sept B, 9-15 and 12-15 B), but there were minor injuries (Summer C and 11-17), and two caused major rescue call-outs — the largest ever in their respective countries — when a rock caused a broken leg in the U.S. (3-31), and a falling boulder crushed the pelvis of a Canadian caver (10-17).

s) Stuck: Two of the three were minor, one in a crawlway (February), and one in a vertical crack where a helmet was temporarily jammed (Summer A), but the third, in a crawl, could have been fatal (9-2).

x) Exhaustion: The two reported (May and 10-26) were not serious.

o) Other: Always an interesting category. There were two shoulder dislocations and one knee dislocation (7-27, 8-4 and Fall B). Bees (killer?) attacked a caver starting a rappel (1-26), and a caver was burned by a fire at the entrance to a crawl cave (11-24).

# Incidents and Accidents: A Study

By Steve Knutson

The following is a breakdown of incidents for the last six years by result and cause. This is admittedly simplistic but will serve to indicate the major hazards associated with caving.

## 1. RESULT OF INCIDENT

Code-Result	1986	1987	1988	1989	1990	1991
AA-Fatality	4	3	4	1	4	6
A—Injury and Aid	10	15	11	16	18	16
B—Aid (no injury)	21	15	20	20	22	18
C—Injury (no aid)	10	15	14	14	10	12
D—no consequence	19	16	12	21	9	11
Total:	64	64	61	72	63	63
Total AA,A,B,C:	45	48	49	51	54	52

## 2. CAUSE OF INCIDENT

Code-Cause	1986	1987	1988	1989	1990	1991
a-acetylene explosion	3	0	1	1	0	0
b-bad air	3	2	1	1	1	2
c-caver fall	25	14	20	19	22	22
d-drowning	1	2	0	2	2	2
e-equipment problems	14	17	20	20	22	19
f-flood	1	3	3	4	2	2
h-hypothermia	1	2	0	5	0	2
i-illness	0	0	2	3	2	0
l-lost	8	5	3	9	4	3
r-rock fall	12	17	7	11	11	12
s-stuck	3	1	0	1	1	3
x-exhaustion	0	1	1	3	0	2
o-other	3	4	8	6	8	4

## 3. PRACTICE INCIDENTS

4. CAVE DIVING	9	7	10	5	9	8
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# BE WARNED The Figure-8 Is Dead

By Steve Knutson

Yes, we must mourn the passing of what many cavers thought was the ideal light, compact rappel device. Experience has now shown the figure-8 twists the rope in a spiral fashion as it passes through, causing an apparently permanent kinkiness in the rope. As I understand, at least some rescue groups are banning use of the device, and cavers will undoubtedly follow suit. So be warned. I intend to ban the use of figure-8's in my projects. It appears that mini-racks will be the device of choice for something compact.

If anyone goes to a carabiner brake bar setup, beware of the current style of aluminum oval that has a bump or enlargement at the gate. This prevents the brake bar from sliding up over the gate closure in use and makes for a weak device.

# PREVIOUSLY UNREPORTED INCIDENTS

## CAVE AT CAMPBELLSVILLE, KY

May 6, 1990

**Be — lack of light**

On Sunday, May 6, a group of three teenagers entered a cave on Friendship Pike in Campbellsville, Kentucky. They had no caving gear except flashlights. During the trip they became separated and one of the party, Terry Bright (16), found himself alone. When he experienced light failure, he was stranded. The other two left the cave and when Bright didn't show up, one went for help while the other waited at the cave entrance.

Rescue personnel arrived and a search party soon found Bright, in good condition but suffering mild hypothermia. He was conducted out.

### Reference:

911 Communication Center, *NSS Accident Report*, January 14, 1992, two pages.

## BLUE SPRING CAVE, TN

May 27, 1990

**Beo — rope theft**

On Sunday morning, May 27, a group of four cavers entered Blue Spring Cave near Sparta in White County, Tennessee. They were Nathaniel Mann, Sarah Gayle, and two companions. The objective was a pit that was supposed to be virgin and might lead to a shortcut to the main part of the cave. They reached the pit, it was rigged, and Gayle and Mann went down. There was not much passage at the bottom but they spent a short time on two digs. When they returned to the pit, the rope was gone.

From above came an enraged voice saying he was a caver (known to be a rival) and upset about other cavers scooping his cave. The two at the bottom were shocked and a little terrified. Mann is a diabetic and takes insulin — being stranded could be serious; Gayle had already mentioned feeling hypoglycemic. Gayle proceeded to plead for their lives "repeatedly and plaintively." After more angry shouting from above, and a long silence, the rope was lowered. Now they had to wonder if the rope was safe. Gayle got on and, trembling from fear, climbed up. Mann followed. They got up safely — no one was there.

Near the top they found their companions who said they had gone to another area, having got cold waiting, and had just passed the person who had pulled the rope. Mann was furious

about what had happened and railed on about what he was going to do. Finally, as they were heading for the entrance, one of their companions admitted he had been the voice at the top of the pit and had pulled up the rope — it was just a "joke." Needless to say, they are no longer friends.

### Reference:

Nathaniel Mann "Incident at Blue Spring Cave," *Unpublished Report* June 12, 1991, 11 pages.

## FERN CAVE, AL

October 13, 1990

**De — ascender**

On Saturday, October 13, a group of nine cavers visited Fern Cave in Alabama to do 400+ foot Surprise Pit. Richard Walk (37) began to ascend using a ropewalker rig. He noticed his foot Gibbs would hang up a bit occasionally as he went; he didn't stop to check it. At a knot in the rope, he did the passing except for his foot ascender. The pin on it was jammed; when he pulled hard it popped out and slipped from his grasp — the pin and shell went back down the pit. The tie, 1/4 inch webbing, had apparently abraded away against the rope. Walk was cold and didn't want to delay so he put his extra ascender on rope and ascended the rest of the way Texas style.

### Reference:

Richard Walk, *NSS Accident Report*, undated, two pages.

## OPHIR CAVE, MT

October 20, 1990

**De — rope abrasion**

On October 20, two cavers visited Ophir Cave in Montana. They proceeded to the lower levels and checked for leads but found little. They headed out. After both had completed the rope climb up to the upper level, they noticed that an animal had chewed 40% of the way through their rope near the anchor.

### Reference:

Sam Martinez "October 20, 1990 ..." *Lake Missoula Grotto News*, (1)2, January, 1991, pp 5-6.

## LOST CREEK SIPHON, MT

December 18, 1990

**De — icing ascenders**

Lost Creek Siphon consists of a stream sink that can be followed down a number of very wet pitches. Because of the lack of space to rig out of the waterfalls, the cave may best be done in the winter. On December 18 two cavers were visiting the cave. As they exited things went fine until they got halfway up pit #2. At that point, the cave was subject to the outside temperature which had fallen to -25 degrees F, and ice had accumulated on the rope. Everything they wore or carried froze. On the entrance drop their Gibbs ascenders had to be banged every few minutes to loosen the cams so they would function. The ascenders going up were like little ice-breakers, with up to 1/2 inch of ice on the rope, even for the second man. Getting off rope at the top was a chore — a hammer was used to pound the ascenders open.

### Reference:

Mark Madson "Lost Creek Siphon — 1990" *Lake Missoula Grotto News*, (1)8, November, 1991, p 1-3.

## CLOVER HOLLOW CAVE, VA

December, 1990

**Ac — caver fall**

On a trip to Clover Hollow Cave Ann Strange slid down a five-foot descent a little too fast and injured her wrist. A new angle to the limb indicated a bone was broken. Pain medication was administered and the arm was splinted with a rack and blue-jean material. With the arm in a sling she proceeded out, being belayed at exposed places that included a crawl across a ledge at the edge of one pit. At the 70-foot entrance pit, she was put into a companion's rig that would allow her to make it using one arm. There was no further incident.

### Reference:

Ann Strange "Clover Hollow" *The Groundhog*, (22)1, January, 1991, pp 7-8.

**Df — flooding**

On Sunday, December 30, a group of cavers entered Kings Cave near Jamestown, Tennessee. The afternoon was hot and humid as they walked to the entrance and noted that a nearby stream was in high flow. In the cave they formed into two groups; one began surveying while the others headed for the end of the cave. A few hours later, they were on their way out when they heard water sounds ahead. At the Big Room there was water coming in like a leaky ship and they hurried toward the entrance. The others were still surveying, aware of a stream now coming down the passage, but not concerned. They all headed out, encountering water in crawls and partly filling the entrance. Outside it was raining hard.

**Reference:**

Frank Vlcek "Trapped ... or ... The Day the Cars Stood Still" *Cave-O-Grotto News*, (37)1, January, 1991, pp 2-4.

# Cave Accidents And Publicity

*By Steve Knutson*

The tremendous publicity attendant on the several-day evacuation of a caver from Lechuguilla Cave in New Mexico in late March is in stark contrast to an accident of greater magnitude earlier that same month in Cueva Cheve in Oaxaca, Mexico, where there was virtually no media attention. Granted, the Cheve accident was a fatality, whereas the victim at Lechuguilla was five days being carried out, and one might expect there would be no way to avoid the media for so long. Yet three years before, a caver was injured deep in Cheve and took about the same amount of time to self-rescue, with help from the rest of the expedition. This effort, surely as potentially newsworthy as the Lechuguilla incident, went virtually unmentioned in the media. How can such disparity occur?

Both Cheve incidents were handled by essentially the same people. In both cases they decided from the outset that publicity was to be avoided. As rescue resources were mobilized for the incident three years ago, including a caver doctor from Indiana who flew down to at-

tend the victim during the self-rescue, and crews on standby, ready to fly down if the victim became incapacitated, the word was passed along — no publicity ... and there was none.

One has to suspect that the National Park Service and the cavers administering the project at Lechuguilla (the most publicized cave project ever), even before the accident, desired media exposure and either called it in or, when the incident was discovered by the media, welcomed it. The NPS might see it as increasing tourist attraction to the Carlsbad area, thereby potentially enlarging their budget. If either NPS or LCP didn't want publicity, it surely would not have occurred to the extent it did.

I don't really want to make an issue of this particular instance of publicity. Yet I believe that if one thinks publicity is good for caving, there are other ways to produce it. It is difficult for me to see how it is beneficial to publicize accidents in this typically sensationalistic way. The Cheve examples show that if you don't want it, it is not inevitable.

# Two Fatalities Using European Vertical Equipment And Techniques

*By Steve Knutson*

It was unusual for two American cavers to die in one year in non-diving incidents. The very interesting aspect of this is that both died because of European techniques or equipment. At Megawell (1-13) a European rope, rigged in a typically American way, failed; at Cheve (3-1), the victim was passing a European-style belay when he fell.

The Megawell incident would be clear-cut if the rope had failed due to abrasion. The rope was tested later and found to be greatly inferior to American caving rope in regard to abrasion, and the obvious conclusion would be that if the victim had used American rope he would still be alive. By the same token, if he had rigged the European rope in a European manner, he again would have lived. The message would be clear — don't mix styles and equipment or, at least, that European rope is incompatible with American-style rigging. One of the main reasons Europeans use rebelay is to keep their poor-quality rope from abrading.

Forensic analysis, however, seems to indicate the rope was chopped by a falling rock rather than abraded by rubbing on a surface. I don't believe

American caving rope has been tested for such, so it is difficult to say what would have occurred if American rope had been used.

In the Cheve incident, it seems clear that the crossing of the belay, not the simple act of rappelling, resulted in the fall. This is not to infer that the belay was unnecessary. Indeed, there was a slope of loose rocks above the free portion of the drop, and the belay enabled one to rappel the free portion without danger of the rope dislodging rocks from the slope. Rather, I would like to urge cavers to be prudent in their use of rebelay. If you are using American caving rope there is often no need for a belay, even though the rope passes over edges and contacts walls.

In my own caving I don't use a re-anchor unless the rope begins to show signs of wear, and you might be surprised by how much contact an American rope will put up with. Every time you cross a belay, you expose yourself to danger that is not there in a continuous rappel. You must attach to the anchor, undo your rappel device, re-attach it to the rope past the anchor and unclip from the anchor. This process cost Chris Yeager his life.

# 1991 REPORTS

## WILDCAT CAVE, WV

Winter, 1991

### Df — flooding

Cavers preparing to visit Wildcat Cave in West Virginia consulted the weather and found a forecast for light drizzle. On the way to the cave they observed Culverson Creek to be low and clear. Thus reassured, they entered and proceeded via Death Canyon to the Williams Passage to continue a survey. They mapped for 285 feet but were nervous about the weather and headed for the entrance at that point. At Death Canyon they found a two-foot increase in the water level. They continued out through high water now involving swims and low ceiling space.

#### References:

Dave Socky Carbide Dump (Blue Ridge Grotto, NSS), January, 1991.

## CAVE MOUNTAIN CAVE, WV 1991 A

### Ac — caver fall

During a trip to Cave Mountain Cave, Pendleton County, West Virginia, a caver fell, landing on her behind. She was apparently uninjured and so continued for a bit, but soon began to suffer pain in the affected area. This increased until she had to be carried from the cave. At Grant General Hospital in Petersburg no injury could be found, but the pain continued, so she later went to the hospital in Harrisonburg where it was discovered that she had a ruptured ovarian cyst.

#### Reference:

George Dasher "Rockin' Chair" *The West Virginia Caver* (9)4 August 1991, p 9.

## MEGAWELL, AL

January 13

### AAce — caver fall/ equipment failure

At about 12:30 p.m. on Sunday, January 13, a group of three cavers entered Megawell, a cave in Jackson County, Alabama (ACS no. 2310). These were John McCloskey (the leader), Linda O'Donnell, and Charles Daffinger (26), all members of the Bloomington Grotto (NSS), though the latter two were not NSS members. McCloskey had been caving for some 10 years, the others for no more than a year. All were sufficiently competent in vertical techniques to have previously done other pit work, including The Sinkhole, a 165-foot deep pit in Tennessee.

Daffinger had apparently been quite active since becoming a caver.

The cave entrance is located in a streambed which is active in wet weather. About two hundred feet into the cave is a 310-foot pit; if the stream is active water cascades down the pit and one is in the spray while going up or down. There had been three inches of rain the preceding week and on this day, the stream was active.

They proceeded to the pit and rigged it using bolts already in place and a 600-foot rope. The rope was of European manufacture with a braided or woven outer layer and had been bought in used condition by McCloskey from Polish cavers he met in Mexico. He was told the rope had been new at the start of the Polish expedition and that it was rated at 2200 kg (4500 lb). There are two rig points and they chose the right-hand one, hoping it would afford a less-wet descent/ascent. The disadvantage was that this rig spot required a straight-out pull on the bolts rather than the preferred right-angle shear loading.

Once rigged, the rope ran down a 44 degree slope dropping 21 feet to the edge of the pit, a boulder. The rope then lay against the wall for the first six feet with the next 20 feet free. At that point, the rope is against a projecting ledge for four feet. The rope lies heavily on this, as evidenced by numerous rope marks and grooves from previous use. The rest of the drop is free.

The three descended, all being down by about 2 p.m. Forty-five minutes were spent exploring about the chamber at the bottom, and they started out. O'Donnell and McCloskey ascended and observed no abrasion problems with the rope. Once Daffinger had commenced climbing, the two at the top exited, since O'Donnell was wet and had become chilled waiting for McCloskey.

With O'Donnell safely out of the cave, McCloskey returned to the pit, having been absent for about 20 minutes. Daffinger was not yet up, so McCloskey called out to see how he was doing — there was no reply. A tug on the rope showed it to be slack, that no one was on it. Had Daffinger backed down because of a problem? The rope felt suspiciously light so McCloskey pulled it up — only 40 feet came up ... it had failed at that point.

McCloskey exited and informed O'Donnell; they returned to their car and fetched two PMI ropes, 308 and 174 feet long. At the road, they also stopped a passing motorist and told him to call for help. Taking the ropes, a sleeping bag and his rain suit, McCloskey headed back to the cave while O'Donnell took the car to make sure help was called and to wait at the main road to direct rescuers. McCloskey re-rigged the pit and descended to find Daffinger obviously dead from a long fall. He exited, encountering the first of the rescuers at the entrance.

The rescue personnel effected the body removal, using a haul system at the pit and having

to enlarge some of the passage near the entrance to allow passage of the SKED holding the body. For the pit haul "many" bolts were placed, and during the haul one of these failed, placing a sufficient shock load on the system that they had to retire a 600 foot rope, ten carabiners and a pulley. Dragging the SKED with the 240 pound victim to the entrance over sharp rocks apparently also caused the retirement of the SKED. The body removal was completed by about 7 a.m. Monday.

#### References:

1. Buddy Lane and Bill Putnam "MegaWell Cave Fatality" *Speleonews*, (35)1 February, 1991, pp 3-8.
2. Buddy Lane "Cave Rescue/Body Recovery" (Chattanooga-Hamilton County Rescue Service Call Reports) *ibid.*, p 9.
3. Eric Jeschke, Frank Reid, Jeff Barry, Bill Putnam and 'MIRZA-ANMAR-BACS' "Caving Death" *Cavers Forum* (computer bulletin board) various speculation and accounts, January 15, 1991, 10 pages.

#### Analysis:

At the request of the county coroner, a section of the rope was sent to Pigeon Mountain Industries, a rope manufacturer, for testing. Their observations follow:

"The rope is 10 mm in diameter and has a kernmantle construction with a braided sheath over a twisted strand core. The sheath is thinner and of lighter weight than is usual for American caving ropes. The twisted core and thin sheath make the rope exhibit greater stretch under load than most static ropes used for caving. The elongation was observed to be between 5.6 and 18.7 percent under loads from 200 to 1,000 pounds (American caving rope stretches about two percent under 200 lb load). The breaking strength was found to be 2770 pounds (10 mm PMI tests at 5800 lbs). In the abrasion resistance test, the rope failed after 287 cycles (10 mm PMI survives 900 cycles). The pieces tested were taken from the end of the rope off the upper section. It should be noted that the part of the rope near the ends usually tests out stronger than the middle (where the failure occurred).

These are rather poor figures compared to contemporary American caving rope but are not so bad that the rope could not be used successfully. Recall that the first two up reported little apparent abrasion, and signs of abrasion are something about which most cavers are very paranoid.

Daffinger was a large man of some 240 pounds, and with wet clothes and full caving and vertical gear could have topped 260 pounds. He was using a Frog vertical system in which you squat, raise up, squat, raise up, etc., and with such a motion it is very easy, and in fact some cavers try, to generate a "bounce" that rhythmically stretches the rope as you go up. Thus he

might have been generating a bounce load on the rope of two to three times his body weight — 500 to 800 pounds. Furthermore, the rhythmic stretching tends to abrade the rope very quickly at any rough rock contacts. The combination of abrasion weakening and bounce load could easily have broken a rope that started with a strength of only 2800 pounds. Could a combination of weak rope and poor ascending technique have killed Daffinger?

An examination of the failed portion of the rope revealed a break that "did not appear to be frayed or abraded — rather it looked like the sheath and some of the core had been cut, with the remainder of the core failing under load. The distance from the break ... to the rigging knots was ... found to be 42.6 feet." A return to the cave for precise measurements showed that the broken end would have hung free about six feet above the ledge contact area. If Daffinger had been ascending with good, smooth technique he would have been loading the rope with perhaps 300 lbs and would have stretched the rope some seven percent, or less than three feet. We can thus assume he was in fact putting a bounce in his ascent.

The rope, however, did not fail simply from weakness and/or abrasion. "Loose rocks were observed at and around the lip of the pit as well as on the wall and on the ledge below." It may be that the rope, while taut and stretched with Daffinger's weight and bounce, was struck by a falling rock at the edge of the ledge. The other possible scenario is that Daffinger might have begun his ascent off the fall line of the rope and thus have been swinging from side to side as he ascended — this could have cut the rope where it contacts sharp edges at the ledge.

The rope was also examined by the Alabama Department of Forensic Services. They determined "that the majority of the sheath filaments appeared to have been crushed, and that the breakage appeared to have resulted from a crushing of the filaments against a solid object" giving further weight to the chopping-by-a-falling-rock notion. Bad luck may have been Daffinger's undoing.

I would like to point out that the root cause of this incident is the mixing of European and American single rope techniques. Beware! You can use American caving rope and at least the Mitchell system (and the ropewalker if you are very determined and adept) with European belay style rigging, but not European caving rope and the Frog (unless you have smooth technique) with American style rigging. Be careful out there — contemporary caving tends to mix the two styles.

## ANVIL CAVE, AL

January 23

### Be — light failure

At about 2:30 a.m. on Wednesday, January 23, Danny Morgan (17) and Brandon Pitt (19) entered Anvil Cave (ACS 279) in Morgan County, Alabama, for some late night exploration. One or two companions stayed at the entrance, and this was fortunate since the explorers

were equipped only with flashlights. Anvil Cave has over 12 miles of mapped passage and is a maze cave with five entrances. Perhaps they became confused by the maze — in any case, their lights failed and they were stranded.

Eventually their companion(s) went for help. A search in the cave was initiated at 12:15 p.m. As the search party reached the breakdown near the Dining Room they heard voices and quickly located the lost pair. They were given lights and led out, reaching the Sink 5 entrance by 12:27 p.m. A 12 minute rescue!

### Reference:

Bill Varnadore "Another Anvil Cave Rescue" *Huntsville Grotto News* (33)1 January-February 1991.

## SOTANO DE LAS COTORAS, CHIAPAS, MEXICO

January 26

### Co — bee attack

On Saturday, January 26, a group of four cavers, Rubin Comstock, Don Coons, Peter Haberland and Matt Olyphant, arrived at Sotano de las Cotoras, an 80 meter pit in Chiapas, Mexico. The pit opening is large, surrounded by dry brush and an arid plain. They found a rig point with one disadvantage — there was a large nest of bees in the pit edge about five meters to one side. Comstock is a beekeeper and assured them that as long as they were calm the bees would be no problem. They rigged the pit and Coons got his gear on, to be the first on rope. Haberland had already observed a bee sting his shirt and then was stung on the arm. He resolved to just take photos and got out his sleeping bag which he draped over his head to protect himself, much to everyone's amusement.

Coons put his rappel device on the rope and had swung his legs over the edge when the bees attacked. He instantly scrambled back, detached and ran for the truck along with Olyphant and Comstock. Haberland tried to run, maintain his sleeping bag protection and flail at the bees at the same time. Realizing he was very near the edge of the pit and couldn't really see, he crouched down, trying to complete the coverage and protection with the sleeping bag.

This failed painfully as there were already bees inside it, and moreover the coverage was too hot. He threw off the bag and ran for the truck but it was already driving away, tailgate open and gear falling out. This afforded Coons' sleeping bag, which he put over him, but was still getting stung. He tossed the bag and ran for it, down the road. Luckily the others had overcome their panic and returned to pick him up. They drove away killing bees that had already gotten inside.

### Reference:

Peter Haberland "Sotano de las Cotoras" unpublished, undated report, two pages.

### Analysis:

These may or may not have been "killer" bees. Any wild bees, wasps or hornets will attack if their nest territory is disturbed. My experience is that disturbed bees act in an aggressive manner and this is a tipoff that you are too close to their nest. No calm behavior will work at that point — it is time to jump and run. A large nest as this was is very dangerous. If someone had actually started rappelling this could have been an even more serious situation. If nights are cold, bees become inactive and can be dealt with. Killer bees must be given even more respect for they attack in a swarm and death can result from the hundreds of stings. The victims here each received from 12 to 20 stings.

### Analysis (by Donald G. Davis, a beekeeper):

The unusually vicious stinging in this case is consistent with the behavior of Africanized or "killer" honeybees, which have spread from South and Central America through Mexico in recent years. These bees have reached southern Texas and are likely soon to become a cave-entrance hazard in the warmer parts of the southern United States. Solution pockets and overhangs around cave mouths can be ideal honeybee colony sites.

Where hostile bees are present, the safest procedure is to move past them at night, as far from the nest as possible, while directing lights away. In the dark, bees may crawl, but do not fly freely. If in doubt, use red light, which bees can't see. It is also best to be downwind from bees, since they attack by both sight and scent.

## EL CHOREADERO, CHIAPAS, MEXICO

January 28

### Cc — caver fall

On Monday, January 28, a party of four cavers, Peter Haberland, Don Coons, Rubin Comstock and Matt Olyphant, entered the upper entrance of El Choradero, a three km through-trip stream cave in Chiapas, Mexico. The stream is quite small during good weather in the dry season. They proceeded with a pull-down excursion to the lower entrance. Of the two dozen drops along the way, about half can be jumped down, landing in a pool. The other half must be rigged with a rope doubled through the anchor at the top without a knot and both free ends at the bottom, so that the rope can be derigged from the bottom by pulling on one of the ends. Thus one can proceed past numerous descents using only one rope.

Partway through the cave they descended a seven meter drop, and Coons and Olyphant proceeded to the next pitch to place a bolt, leaving the other two to effect the pulling down of the rope. They pulled on one end but failed to observe a tangle in the other portion. When this reached the anchor, it jammed. To free the rope Haberland used one Jumar to help him climb up. He got up about two or three meters and was pushing out with his legs to get past an overhang

when the jam at the anchor came loose. Haberland fell, landing on his left side. He suffered some bruises and a sprained right ankle. He was able to hobble and crawl the last section of the cave on his own, but for the next three days could walk only with great difficulty.

#### Reference:

Peter Haberland "El Choradero" unpublished, undated report, one page.

#### Analysis:

Haberland feels he was impatient and should have gone the short distance ahead to get the other two to help pull the rope. On pulldowns, the last one down must keep the rope halves apart and free of tangles. One must speculate that pull-downs would be more difficult if one rappels with a figure-8, since that descender kinks up the rope. If you must climb a rope that is doubled and fouled as in this situation, secure the end you are not climbing.

## TIFTONIA PIT, TN

**February 16**

#### **Be — equipment lack**

On Saturday, February 16, two novice vertical cavers (both 17) descended 105-foot Tiftonia Pit on Cash Canyon Road in Chattanooga, Tennessee. It was a cold day with a temperature of 20 degrees F. They rappelled, using figure-8s and seat harnesses made of nylon webbing, on Bluewater rope. Their technique so far is by-the-book, but ascent was to be accomplished by a friend who had remained at the top and was to pull them up. Much to their dismay, this proved impossible. The friend went to a nearby house and called for help. Hamilton County Rescue Service arrived, descended the pit on their own ropes, and equipped the two with warm clothing, instruction and gear for SRT ascent. With a rescuer on a parallel rope, each stranded caver then ascended under his own power. They had been in the pit for 1.5 to 2 hours.

#### Reference:

Buddy Lane "Vertical Cave Rescue 105 foot pit" *Speleonews* (35)1, February, 1991, p 10.

## OLD MILL CAVE, VA

**February**

#### **Bs — stuck caver**

A sizable group of cavers visited Old Mill Cave in Virginia in February. A wrong turn led them to force a tight crawl in which one caver got stuck. Another caver had to help him undo his clothes so he could free himself.

#### Reference:

Stephanie Karen Meridith "Obscene Excitement II: the sequel" *The Tech Troglodyte*, (30)2, Spring 1991.

## CEMETERY PIT, TN

**February 24**

#### **Beh — equipment lack, hypothermia**

On Sunday, February 24, six novice cavers descended 160 foot Cemetery Pit on Fox Mountain in Dade County, Georgia. They apparently had normal gear for SRT. After exploring some of the cave that leads from the bottom, they started up the pit. Either their personal ascending rigs were poorly adjusted or they were in very poor physical condition — it took them over 39 minutes each to climb to the first ledge, only 30 feet above the floor. At that point they decided only the strongest would continue, to get help. This caver reached the surface and drove south on I-59 to the Ider exit and called 911 for help.

They were then in Alabama, so their request was routed to the Ider/Rainsville (Alabama) Rescue Squad. At about the same time a parent of one of the cavers realized the caver was 15 minutes overdue on a call-in, and called the Dade County Rescue Squad (Georgia). As the Rainsville Squad left to respond, their dispatcher called the Hamilton County Rescue Squad (Tennessee) for additional assistance. Hamilton couldn't respond until Dade County cleared the request. After half an hour of discussion, this was approved.

Once rescuers were on the scene and additional rigging set up, a paramedic descended to check on the victims' condition. Hypothermia was the only problem, and additional clothing was sent down, along with a F/W basket litter for the only victim that was incapacitated. The victims were then hauled up one at a time with a rescuer accompanying each.

#### Reference:

Buddy Lane "Vertical Cave Rescue: 160 foot pit" *Speleonews* (35)1, February, 1991, p 10.

## CUEVA CHEVE, OAXACA, MEXICO

**March 1**

#### **AAce — caver fall, equipment?**

The main entrance of Cueva Cheve is situated at an elevation of 2700 meters on a broad mountain mass in northwest Oaxaca, Mexico. One of the deepest caves in the world, it is the scene of annual American expeditions to pursue ongoing exploration. In late February, a group of 14 cavers gathered at Llano Cheve. The first objective was to dive the sump at the present end of the cave. During the next few days the 35 pitches between the entrance and the first campsite to be occupied (Camp II, at -850 meters) were rigged. To preserve rope for continued use year to year, the drops are rigged with rebelay to keep the rope hanging free of the walls.

What this means is that once you rig in to the rope to descend, your rappel device does not stay on the rope until you reach the bottom. In-

stead, you rappel until you come to a projection of the wall which would contact the rope. At that point, the rope is anchored, leaving a short loop of slack in the part of the rope coming from above to provide a foothold. You must attach to the anchor and put weight on this, detach the rappel device, re-attach it to the part of the rope continuing down, then step in the loop, take weight off the anchor, release the attachment to the anchor and finally put weight on the rappel device and continue the rappel. It is easy to see that rigging in such a manner is not as safe as simply anchoring the rope at the top and letting it hang, but it does preserve the rope.

On Monday, February 25, a group of six cavers traversed the four to five km of cave to Camp II with camp gear, a trip that takes from seven to ten hours. The next day, two returned to the surface while the other four rigged toward Camp III, another five km further. That same day, another four went with camp gear to Camp II from the surface. The two going out, Peter Bosted and Peter Haberland, agreed to come back in with more food to extend the stay of some of the others already in the cave.

For the return to Camp II they were joined by two cavers, James Brown and Chris Yeager (25) who had been sitting out temporary problems — Brown with a sprained shoulder and Yeager with diarrhea. To facilitate travel through the cave, they paired up with the pairs entering the cave an hour apart.

Thus on Friday, March 1, Bosted and Brown entered at 12:30 p.m. with Haberland and Yeager going at 1:30, for a seven day stay. While descending the fourth drop Yeager gave a shout, explaining to Haberland at the bottom that he had just done his first in-cave rebelay. This was exuberance — he was having no trouble and didn't need to ask for direction. They pressed on, reaching Saknussem's well, the start of the wet pitches, by 4:30.

Near the bottom of Saknussem's Well is a short, roped up-climb that facilitates access to the narrow passages at the start of a series of wet ones, the Salmon Ladders. At the top of this pitch, Yeager dropped his rack and had to borrow Haberland's to go back down and retrieve it. They proceeded and arrived at the end of the wet series of drops and passage at 7:40. From there the way to camp leads through some dry chambers and passage with flagging at junctions. They lost the way for 30-45 minutes, but the added dry activity served to warm them thoroughly. Near the end of the dry section are two roped drops that put one in the East Gorge, a stream passage that leads to Camp II.

At the top of the first pitch, Haberland explained that a ten meter slope of loose rocks leads to a rebelay followed by a 23 m free descent to the bottom. To be safe from rockfall, Haberland, going first, would not yell "off rope" until he was behind a boulder near the bottom. From there it was only a half hour to Camp II. Haberland went down, spending five to ten minutes crossing the rebelay. He found the loop was too long, so that standing in it did not allow slack to release your tether to the anchor after you had transferred your rack to the continuing rope. He had to put on a foot ascender to get himself high

enough to get some slack. At his boulder shelter, he let Yeager know it was okay to descend.

Some time later, Yeager yelled "rock!" and a rock came crashing down. Less than a minute later there came "a rush of air and a dull thud." Haberland called out, hoping a pack had been dropped. When he got no response, he had to go look and received the ultimate caver horror — Yeager had fallen down the drop and was lying at the bottom, obviously severely injured. Haberland felt that "his whole world of caving was shattered at that moment."

Yeager was lying within three feet of the bottom of the rope in a three-inch pool of water, his body on its right side, head bent forward with the helmet forced back. The hands and arms were extended in front of the body, gloves still on. Yeager's right leg had "the foot pointing up, and rotated to the right front of the body," apparently broken. His pack was still on his back. Since his face was in the water, Haberland moved Yeager's head and propped it against the wall so he could breathe. He feared neck or back injuries so he didn't move him otherwise. In a state of shock and horror, Haberland didn't check for vital signs or try any first aid. In apparent panic, he headed for Camp II as fast as possible, to get help, blowing his whistle all the way.

Haberland made it to camp in 15-20 minutes, alerted Bosted and Brown to the tragedy and, in ten minutes, they were heading back up the East Gorge with a sleeping bag, dry clothes and first aid equipment. Yeager lay as he had been left. Some blood had run from his nose. No pulse or breathing could be felt. First removing his pack, they lifted him from the pool onto a nearby ledge and covered him with the sleeping bag and clothes. They checked again — still no vital signs detectable — so they started CPR, mouth-to-mouth resuscitation. Gurgling was heard coming from the lungs when air was passing in or out and, after 20 minutes, the eyes and neck began to puff up. A light shown into his eyes got no response. Yeager was dead — they stopped their efforts.

In the following days they decided to bury Yeager in the cave, in the room above the drop. Exploration efforts in the cave were terminated, the authorities were dealt with and the parents were notified. Yeager's father, with several friends, actually flew down and came to the cave. He agreed to the in-cave burial and had a caver friend go in and assist with this. Some months later the relatives had second thoughts and got cavers to mount a successful effort, a little less than a year later, to remove the body.

#### References:

1. Peter Haberland "Accident Report" unpublished report, undated, 3 pages.
2. Peter Bosted "Fatality in Mexico's Sistema Cuicateco" *Rocky Mountain Caving Spring*, 1991, pp 22-25.
3. Bill Steele "Saga of an Underground Death" *The Texas Caver* June, 1991, pp 54-56.
4. Peter Haberland "Expedition Pushes Deep into Llano Cheve; Caver Killed in Fall" *Met Grotto News* (41)3 April, 1991.
5. Various AP news clippings reprinted in *The Michiana Caver* (28)4 April, 1991, pp 38-39.

6. Peter Haberland, personal communication, March, 1991.

#### Analysis:

Haberland ascended the rope at the incident site and discovered Yeager's rack correctly threaded on the rope, about two meters below the belay anchor. The locking carabiner that had fixed the rack to his seat harness was found to be unlocked. Haberland played with a rack and 'biner and demonstrated to me what he had found — if a rack on a 'biner has no tension on it, you can twist it around so that the stem forces the gate open ... if you apply tension again, it slides right out of the carabiner.

We can presume that while hanging from the belay, Yeager transferred his rack to the lower rope, but when he raised up to cause slack and release the tether to the belay, the rack, with no weight on it, twisted (as Haberland had demonstrated), forced the unlocked 'biner open, and slid off when Yeager lowered himself to put his weight on it. Yeager would probably not realize he was falling before he hit the bottom; this fits with the fact that Yeager made no outcry as he fell. He must not have seen it coming. The rack was farther from the anchor than one would place it, and we must suppose either he rappelled a few feet before the rack slipped out, or the rack slid down a bit as Haberland ascended. Also, he may have been able to hold onto it for a moment before falling.

To avoid this, Bosted recommends attaching the rack or other device with a quick-link (mailon) or two locking 'biners with gates opposed. He also points out that a second tether clipped onto the loop in the rope above the belay would allow you to put your weight on your rappel device after switching ropes and releasing from the belay; with your weight safely on the rappel gear, this second tether could be released.

Bosted also points out the American habit of leaving a pack on the person while rappelling is not a good one, that more body control is obtained by tethering the pack below you.

When Yeager's rack was dropped earlier on the trip it should have been cause for alarm. In serious caving, especially if stream passages are involved, one cannot be dropping essential pieces of gear. Your vertical rig must be attached and not otherwise while you are maneuvering through the cave.

The belay was apparently poorly rigged. Haberland himself took five to ten minutes to pass it.

I feel there are several contributing factors to this incident:

1. The drop was rigged with a belay.
2. The belay was poorly rigged.
3. Yeager either had a locking 'biner that wouldn't stay locked or had failed to lock it.
4. He was carrying a heavy camp pack on his back, which must have seriously impaired his maneuverability as he sought to pass the tricky belay.

Finally I would point out a strange coincidence — Steve Knutson was injured three years before in a fall not far from the top of the drop that killed Yeager. Yeager was temporarily buried in the same large chamber where Knutson

spent the first of three bivouacs on his self-rescue from the cave. A startling coincidence in such a huge cave.

## RIPPLED CAVE, CA

March 2

#### Cr — rockfall

On Saturday, March 2, cavers were practicing rappelling at a 30 foot drop leading into Rippled Cave east of Sacramento, California. As one caver began his rappel, the rope dislodged a 150 pound boulder that rolled five feet and then over the caver's thigh. Someone yelled "rock!" and everyone below scrambled out of the way. The rock landed on packs where three cavers had just been. The caver on rappel suffered painful bruises but no further injury. It strikes me that a practice area should be free of such hazards.

#### Reference:

Don Dunn "Cave Accident" *Unpublished Report* undated, 1 page.

## FERN CAVE, AL

March 11

#### Bf — high water flow

On Monday, March 11, a group of seven cavers, Bryce Bolton, Dave Colatosti, Mike Horne, Cecile James, Sandy Knapp, Mac McElroy and John Williams, entered Fern Cave, in Alabama. They were from VPI Grotto in Virginia and reportedly experienced and competent. They had been doing other pits in that area on prior days and had just then decided to go to Fern to do 404 foot Surprise Pit.

Only James had done that pit before and apparently didn't remember it well, but they talked to a caver who knew it about the rigging. He also told them it would likely be misty in the pit and difficult to communicate from top to bottom. They obtained some whistles to deal with that problem. It had not rained for five days, but the ground was still wet and water levels were high.

They entered the cave at 2:30 p.m., followed the inflowing stream to where it dropped over the edge of the pit, and, after crawling out onto the ledge, found two large eyebolts and a piton, all seeming quite solid. This was as they had been told so they proceeded to rig the pit there. What they didn't know is that there is a second rig point, further along, to be used in wet weather.

The plan was to have four descend, two go back up, two go down and continue until all had done it once and one of them done it twice, but no more than four on the bottom at one time. James felt moved to comment that she didn't remember the rigging point looking like the one they were using, but rope grooves near the anchors showed this was a commonly used rig point.

They proceeded. Knapp went down first as only she and James had done "long" pits before.

The nearby waterfall was making a lot of noise, but the only signal worked out was two blasts on the whistle if everything was okay; otherwise she would simply come back up.

As Knapp descended, the mists increased until she could see little and suddenly found herself in the full force of the waterfall. Her ascending system was not out and already rigged on her, so she had no choice but to proceed. At the bottom she was out of the waterfall but realized she might not be able to climb back up through it. Trying to signal that there was trouble, she blew the whistle once and put weight on the rope so no one would come down. She then went to Grahams Grotto, took off her wet clothes and went back and blew the whistle repeatedly. She heard nothing in reply, not surprising considering the noise of the waterfall, and went back to the Grotto and took shelter under a trash bag.

At the top, they replied to the unexpected whistle blasts with some of their own but were generally mystified and so Williams went down with his vertical gear on. They added signals — two meant send someone down and three blasts meant go get help. Williams could see the waterfall engulfing the rope, so he stopped and tried to yell to Knapp at the bottom but got no reply, so he continued down to see if she was okay. The rope was new and now wet and he was having trouble controlling the speed of his descent. He arrived cold and shivering to find Knapp in the same condition — she had an electric light system which provided no heat. He got out his trashbag and they passed his carbide lamp back and forth. After he had warmed up a bit, he went out and whistled three times.

This time, those at the top heard the signal but didn't obey the plan. Instead Colatosti went down with his vertical gear on and wearing a trash bag, to see what was going on and to bring some survival supplies. He arrived to find the other two cold and shivering. The three decided to again whistle for help and wait it out.

It took a half hour for a companion to reach a phone and call 911. The 911 operator notified Madison County Rescue, Madison called Jackson County (where the cave was located) and Jackson called in Hamilton Co., Tennessee who requested Walker County, Georgia, and Rainsville, Alabama rescue squads. The three in the cave had to wait seven hours before a rescuer arrived, having come down a rope rigged at the dry rig point. The three were then able to climb out under their own power, to see for themselves what full media and rescue coverage looks like.

#### References:

1. Dave Colatosti "Incident in Fern Cave in Alabama ..." *The Tech Troglodyte*, (30)2 spring, 1991, pp 4-6.
2. John Williams "Fern!" *ibid.*, page 7.
3. Buddy Lane "Vertical Pit/Cave Rescue ..." *Speleonews*, (35)1 February, 1991, pp 11-12.
4. Bill Putnam "'Trouble in TAG'" computer bulletin board, March 27, 1991, two pages.

#### Analysis:

As you read through this, did you get the feeling they were all going to end up at the bottom of the pit?

They admit they were poorly informed about the cave and were impatient and felt too rushed (due to their late start) to do proper thinking as the situation developed. Cotton clothing and plastic bags are poor substitutes for wetsuits — when you see a waterfall going into a pit, don't go down unless you are properly equipped and know what you are doing. Even then, the first person down should be the strongest and most experienced and have ascending gear on and ready to use. This whole situation could have been avoided if the first person down had been ready to change over and ascend when it was found that the rope went into the waterfall. The signal system: stop, up (go, come), down (go, come), off rope and help corresponding to one, two, three, four and a continuous blast(s) on a whistle or your voice if you have a loud one, works very well. Hypothermia kills.

## J-4 CAVE, PA

March 23

### Ac — caver fall

On Saturday, March 23, four separate groups of cavers visited J-4 Cave, a popular cave located in a quarry near the town of Pleasant Gap, Pennsylvania. The cave has 4300 feet of passage on two levels, with all types of passage represented. Two groups of two had merged for route-finding purposes and, at about 4:30 p.m., were heading into the cave on the lower level; a group of four were further into the cave on the lower level at that time, heading out. On the upper level was a group of about 20 boy scouts and associated members of a church group.

As this group passed from Goliath toward the Sliding Formation Room, they had to pass over two holes, under an overhanging ledge, that connected to the lower level. At a little after 5 p.m., as they did so, one scout apparently dropped a flashlight and Troy Crothers (12) lunged to catch it. He fell through one of the holes and plummeted down a steep, uneven wall (about 70 degree slope) for about 40 feet, coming to rest in the lower main passage about 200 feet from the entrance.

The cavers on the lower level heard "a loud scraping sound as the victim fell followed by a deep thud." Various screams issued from the upper level; a fall had obviously occurred, and they scrambled about to find the victim. Crothers was soon located, lying on his back, arms and legs spread wide, bleeding profusely from his head. He had been wearing a hardhat, but this had come off and was lying nearby. He had suffered numerous scrapes and bruises, two gashes on his head, and possible concussion. There was a large lump on his forehead and his upper lip was swollen. His body was trembling and his eyelids were fluttering. The bleeding wounds were bandaged while three cavers went for help. Other cavers arrived and the victim was treated for shock.

After just a few minutes the victim seemed to come out of shock and the bleeding was stopped, though the bandages were soaked with blood. He began to converse but could not remember the fall. By 5:40 p.m. rescuers were al-

ready at the entrance, and a first aid kit and vital sign gear were brought in. Crothers' blood pressure was 125/70 with a pulse of 80 — he was doing well. The neck brace was applied. Hypothermia began to set in and blankets were brought in. At 8:20, a SKED arrived at the site and cavers were hard at work preparing the evacuation route; in ten minutes, the victim transport began. At one point, he was removed from the SKED and maneuvered through a place too tight for both. The cave is tortuous and he didn't reach the entrance until 10:20 p.m.

#### References:

1. Keith Wheeland "Report of Rescue at J-4 Cave ..." unpublished, undated report, 10 pages.
2. Phil O'Kunewick "J-4 Accident Summary" *Commander Cody Chronicle*, (11)2, spring, 1991, pp 8-9.
3. George Dasher "Rockin' Chair" *The West Virginia Caver*, (9)4, August, 1991, p 9.

#### Analysis:

The victim was lucky to be wearing a hardhat, but such a fall points out the need for a proper chinstrap. A helmet should not come off in a fall. One also has to criticize the lack of protection at this exposed pit. The ease of getting across reportedly depends on body size — the small scouts should have been spotted or aided across or given a handline to use. Perhaps they were unaware of the exposure. Still, the scout master apparently learned a lesson about confusion in large parties.

In an otherwise unrelated footnote, one of the cavers to reach the victim initially was tragically killed the following day when he fell asleep at the wheel on I-95.

## LECHUGUILA CAVE, NM

March 31

### Ar — rockfall

Saturday, March 30, was the first day of the Spring expedition at Lechuguilla Cave in Carlsbad Caverns National Park, New Mexico. Lechuguilla is the deepest cave in the United States and is one of the longest as well, with some 60 miles of mapped passage. The distance to the limits of exploration requires multi-day trips, but the bivouacs are simplified by the warm temperatures in the cave. A complication is the rule that all body waste must be carried from the cave. Several roped drops are required to get into the main part of the cave.

At 1:00 p.m. a group of five entered the cave, led by Mike Mansur and including Dr. Stephen Mosberg, Emily Davis Mobley (40), Bill Bauman and Bob Addis. A 24 hour limit had been imposed on all trips for this expedition to allow everyone a chance to get into the cave. The group's objective was a climb in the Fubar Passage that had been attempted before but not completed, and Mansur realized it might be a problem to get there, do the climb and get out under the time limit.

Despite a lot of large passage, there is much uneven floor in the cave. By 8:45 p.m. they had

only reached the Deep Seas bivouac site, which normally takes three to four hours to reach. They took a break and napped until midnight, then continued. They had reached the first climb in the Beyond Reason Room when various members voiced the opinion that they were not going to be able to go on and still get out by the 1 p.m. curfew. They were about 1.5 miles from and about 1,000 feet below the entrance at that point. The main objective was aborted and the group rested while Mansur climbed the two pitches to the base of the Fubar balcony, the start of the objective climb, and stashed his climbing gear for a future attempt. He then began looking in breakdown for something to map so the trip would not be a complete waste. One lead went a little way before ending, so they formed up into a mapping team and surveyed the lead.

At around 6:30 a.m. they were exiting this lead, climbing a short pitch of 10-12 feet up through breakdown, when Mobley grabbed a large handhold that presumably had been used by the two who had just preceded her, and by Mobley herself as a foothold on the way down. The hold, part of a 70-80 pound rock, came loose. She threw herself to the right and slid backwards down the slope for 7-12 feet, but her left leg was extended and the rock struck her on that leg, near the knee.

Dr. Mosberg quickly diagnosed the leg to be broken, a closed fracture of the tibia, a bone below the knee joint. Her companions soon had helped her out of the hole and onto some flat rocks nearby. Pain medication was administered and the victim's condition was made stable. Mansur went quickly back along the main passage to the junction at the ABCs Room, where he knew three parties were to pass somewhat later, and left a note detailing the situation. He then proceeded to the Deep Seas bivouac site, where another group would be, and informed them. One of that group left for the surface to get a rescue started, and Mansur went back to the victim site.

The ensuing evacuation has been well documented elsewhere. It took until 2:30 a.m. Thursday, April 4, to get the victim to the surface. The extrication route included more than 50 roped hauling sections using over 9,000 feet of rope; in all, it was the biggest and most complicated rescue yet done in this country. Intensive news coverage occurred and more than 176 rescuers were involved. The cost has been estimated at some \$230,000.

#### References:

1. Emily Davis Mobley, Personal Communication July, 1992, 1 page.
2. Garry Petrie "The Rescue of Emily Davis Mobley" *Rocky Mountain Caving*, (8)2, Spring, 1991, pp 15, 22.
3. Dick LaForge "Emily's Spring Break ... Observations of a Litter Bearer" unpublished report, April 15, 1991, 4 pages.
4. Buddy Lane "Cave Rescue" *Speleonews*, February, 1991, p 12.
5. Michael Mansur "Rescue in Lechuguilla — More of the Story" Letter to the Editor, *NSS News*, (50)8 August, 1992, p 199.

6. Robin Wilson "Introduction" *The Texas Caver*, August, 1991, p 71.

7. Mark Minton and Don Broussard "The Lechuguilla Extrication" *ibid.*, pp 71-73.

8. Ronald Delano "Fatigue Cycles" Letter to the Editor, *NSS News*, (50)11, November, 1992, pp 279-280.

#### Analysis:

Mobley states she was not particularly tired, that fatigue was not really a factor, just an apparently solid rock that gave when pulled at the right angle.

The accident environment, in my opinion, was created by Park Service regulations restricting the time length of trips and the number of cavers who could be in the cave, and an expedition administration that for whatever reason did not properly limit the number of cavers that could be utilized safely. Either the expedition should have accepted fewer cavers or the Park Service should have eased the restrictions. As it was, you had an environment where cavers were forced out of their normal sleep cycles, rushed to complete objectives in the cave, and had five people in a party where only three are needed. When longer trips were allowed, on previous expeditions, you were still faced with the silliness of not being allowed to camp in the cave. Cavers could still stop and sleep and eat, of course, but a real camp where one could get a proper meal and sleep were not allowed. This is administrative nonsense.

## WHITESIDE WELL, TN

*April 27 A*

#### *Be — lack of gear, ineptitude*

On the night of Saturday, April 27, a group of three rappelled into 197 foot Whiteside Well in Hamilton County, Tennessee. The leader, Chris Cooke, had twice applied for permission to do the pit and been denied. At least one of his companions had no experience in this sort of thing. They had one set of vertical gear and no hard-hats. The pit is reportedly notorious for rockfall. When they could not get out, the authorities became involved and the victims were hauled out by Chattanooga/Hamilton County Rescue personnel.

#### Reference:

Editor "Have Mercy!" *Speleonews*, (35)3, June, 1991, page 15.

#### Analysis:

Cooke is apparently notorious for taking inexperienced people caving. In this case, he was convicted of trespassing.

## ORGAN CAVE, WV

*April 27 B*

#### *Bl — lost, disoriented*

On Monday, May 27, a large group of about a dozen girl scouts and several adult leaders entered Organ Cave in Greenbrier County, West

Virginia, via the Lipps Entrance. In the cave they split into smaller parties.

An hour later three cavers from Richmond, Virginia entered and used a compass, maps and flagging tape to find and mark their way.

One of the scout groups decided to exit and found the trail of flagging and followed it. In the Lipps Maze area they lost it and became confused. They passed within feet of the obscure connection to the final passage out but failed to notice it. They decided to wait where they were. Two hours later the Richmond cavers came upon them, shivering but gaining some warmth from trash bags, space blankets and candles. As they were led toward the entrance, they met another portion of the scout group, coming back in to look for their companions; a deadline for exiting had been prearranged.

#### Reference:

William White "Organ Cave ..." unpublished report, January 16, 1992, 1 page.

#### Analysis:

The lost cavers had never been in the cave before and had no orientation with maps before the trip. If not for the flagging they would have undoubtedly been lost in a more remote part of the cave. Fortunately they did have some survival equipment.

## BEACON CAVE, WV

*Spring A*

#### *Ac — caver fall*

A caver apparently fell and suffered a broken leg during a Spring trip to Beacon Cave in Mercer County, West Virginia. He was evacuated from the cave by the Bluefield Fire Department.

#### Reference:

George Dasher "Rockin' Chair" *The West Virginia Caver*, (9)4, August, 1991, p 9.

## BURNSIDE BRANCH CAVE, WV

*Spring? B*

#### *Ac — caver fall*

This cave was reported closed because of a caver suffering a broken leg inside and requiring a rescue. No details of this have surfaced.

#### Reference:

Tom Overbaugh "Fall Trip" *Commander Cody Chronicle*, (11)3, Fall, 1991, p 7.

## GRUTAS DE CACAHUAMILPA, GUERRERO, MEXICO

*April*

#### *AAd — drowning*

In an article describing drowning deaths in this cave on May 12, there was a reference to the

same thing happening less than 30 days before, but no details were given.

## SHAFT CAVE, IN

**May**

### **Bx — exhausted caver**

On a Saturday in May, a group of three cavers decided to do 70-foot Shaft Pit, near Bloomington, Indiana. They were all Central Indiana Grotto members and all were deaf and dumb. They all rappelled in but one found he did not have the strength to exit. One of his companions climbed out and went to the house of a caver and explained the situation on paper. Cavers were called out to assist. When they arrived at the cave there was a communication problem — no one had pencil and paper. This was soon remedied, a haul system was set up and the stranded caver was brought up.

#### **Reference:**

Editor "Shaft Rescue" *D.C. Speleograph*, (47)6 June, 1991.

#### **Analysis:**

At least one rescuer wasn't very impressed with the victim's effort to get himself out. He refused food and after being hauled up and walked a hundred feet up the hill to the vehicles without difficulty. The place to find out your capabilities is at a practice in a gym, not in a pit where you'll have to be rescued.

## SALTPETRE CAVE, TN

**May 9**

### **Ace — caver fall, equipment lack**

On Thursday, May 5, a group of three visited Saltpetre Cave in Cumberland County, Tennessee. The cave has some 7.9 miles of mapped passage and a vertical extent of 367 feet. In the cave they met a second group of three and proceeded together to a point about 3500 feet into the cave. Eddie Woody (22) was lowering himself down a 60-foot drop when he lost his grip and fell about 30 feet. He suffered a broken leg and minor hand injuries.

A companion went for help, was able to reach the entrance in an hour and telephoned the authorities from a nearby trailer at about 11 p.m. Rescue personnel were able to get him out after a six hour effort, sometime Friday morning.

#### **Reference:**

Mike Moser "Caver breaks leg, takes six hours to rescue" *Nashville Tennessean*, May 12, 1991, p 13B.

## GRUTAS DE CACAHUAMILPA, GUERRERO, MEXICO

**May 12**

### **AAd — drowning**

On Sunday, May 12, a number of persons had entered the San Jeronimo river passage of the Grutas de Cacahuamilpa. The river was apparently in high flow; eight of them were swept away by the current and three were drowned. The rest were rescued that night by their companions. The survivors complained that no one told them of the danger of the river.

#### **Reference:**

Teofilo Arce "Tres Muertos, Arrastrados por la Corriente ..." *Excelsior*, May 13, 14, 1991.

## BONE/NORMAN CAVE,

WV

**May 25**

### **Ace — caver fall, poor gear**

On Saturday, May 25, a caver (about 30) from Baltimore Grotto entered Norman Cave in Greenbrier County, West Virginia. He was apparently a novice. When he reached the 20-foot waterfall drop about 300 feet inside, he either didn't know about the crawlway and climbdown or couldn't find it, and tried to chimney down the falls. Shod in tennis shoes and carrying a flashlight for light, he fell the 20 feet to the bottom. It was awhile before he was found and it was seven hours before rescuers got him to the entrance; in the process it appears that hypothermia almost claimed him. He reportedly stopped breathing once or twice and had to be resuscitated. Plenty of cavers were on hand as a big effort was occurring at nearby Friars Hole. In any case he did suffer some back injury and a broken tibia and fibula in one leg.

#### **References:**

1. George Dasher "Rockin' Chair" *The West Virginia Caver*, (9)4, August, 1991, page 9.
2. John Chenger "Rescue at Bone/Norman mishandled?" *The Loyalhanna Troglodyte*, (4)4, Summer, 1991, p 141.

#### **Analysis:**

This guy is a grotto member and no one took him aside and gave him any advice? Supposedly, you can be thrown out of the NSS for unsafe caving. Solo, tennis shoe, flashlight, unbelayed ...

## WIND CAVE, SD

**Summer A**

### **Bs — jammed helmet**

On a survey trip to Wind Cave, three cavers had proceeded to the Colorado Section of the cave and were pursuing a lead. A narrow hole in

the ceiling of a larger passage lead up to going cave. Garry Petrie went up first, followed by Norm Thompson. As Pat Seiser struggled upward, she suddenly found herself with no foot-holds and basically suspended from her jammed helmet. Petrie grabbed one arm and helped support her and she quickly got her head free. Another pull on her arm and she was almost pulled free of all support. She yelled and when Petrie let go she was able to make a move that gave her foot support. Once she was up and recovered, they continued with the survey.

#### **Reference:**

Patricia Seiser "Wind Cave: Borehole Madness" *Rocky Mountain Caving*, (8)3, Summer, 1991, pp 16-17.

## HARRY LIP CAVE, MT

**Summer B**

### **Br — ladder-fall**

In the summer, Mark Madson and Greg Hanson were looking for caves in Granite County, Montana. A newspaper article described one in Peterson Meadow between Dry Creek and Blodged Gulch, with a ladder going down into it. They located the cave and the 40-foot pit just inside the entrance did indeed have a wooden ladder. The pit was rigged from four stout poles that crossed it with a backup to a tree just outside. A second rope was rigged just to the tree and passed over the edge of the pit. The old, rotten ladder spanned the pit below the poles.

They rappelled past the ladder with no problem but when Madson started back up, the ladder suddenly swung downward, then stopped. They discussed what to do and it was decided that Madson would switch to the backup rope. He did so and Hanson stood below to hold both ropes and hopefully swing Madson to one side if the ladder fell. They were both able to exit without further incident using the backup rope. The ladder was found to be still hanging by just a single, rusty nail.

#### **Reference:**

Greg Hanson "Mad Maxville and ..." *LMG News*, (1)7, September, 1991, pp 2-3.

## BROWNS DEPRESSION CAVE, NY

**Summer C**

### **Cr — rockfall**

On a Summer Met Grotto trip in Browns Depression Cave in Schoharie County, New York, cavers were working on a dig. Josh Rubinstein was digging in a place sufficiently tight that he removed his helmet. Unfortunately a rock fell and he suffered a gash on the head that eventually required stitches.

#### **Reference:**

Editor "Northeast News" *Northeastern Caver*, (22)3, Summer, 1991.

## CHINN SPRINGS CAVE,

AR

Summer D

### Ble — lack of light

Two flashlight-equipped cavers entered Chinn Springs Cave in Arkansas and proceeded deep into the complex cave. Finally their light gave out and they were stranded. When they were reported as overdue, local authorities responded and searched the cave but failed to find the lost pair. A local caver had offered his expertise to the rescuers but had been told he was not needed. After rescuers spent most of a day fruitlessly searching, some reportedly getting lost themselves, they were glad to have the caver and some companions again offer their services.

The caver crew proceeded into the cave and after while noticed a trail of cigarette butts, of a particular brand. Following this they found the stranded cavers.

#### Reference:

Billy Bonner *Arkansas Underground*, Fall, 1991.

## HOSTERMAN'S PIT, PA

July 6

### Bc — caver fall with belay

On Saturday, July 6, a group of three cavers entered Hosterman's Pit near State College, Pennsylvania. These were Nevin Davis, Gregg Clemmer and Mike Dyas. Their plan was to tour the cave and check on a couple of possible leads. The cave is described as quite complex in three dimensions and requires some exposed climbing. Dyas had broken his arm previously and this had healed, but it was still limited in motion and strength. They left their ascending gear at the base of the 70-foot entrance drop, but brought a length of caving rope and their descending equipment for doing a pull-down rappel to get back down out of the upper level.

After several hours, they were completing the upper level loop and were nearing the rappel to the entrance area. At the Pipe Pit one must traverse across the top of a 20-foot pit. They used a belay and Clemmer and Davis crossed. When Dyas tried to follow, he found he could not do a jam with the weak arm and lost his footing and fell. He was held by the belay and was lowered to the bottom of the pit. Davis went to the entrance area and retrieved Dyas' ascending gear, and he was able to ascend. They proceeded without further incident.

#### Reference:

Mike Dyas "Caving 'Near-miss' Report" *D.C. Speleograph*, (47)8, September, 1991.

#### Analysis:

Now this is the way a fall is supposed to go — you fall, the belay catches you and there is no problem. Of course, you must assume that you may have to ascend the fall line and bring ascenders.

Davis is a caver of great experience from years ago, and was wearing boots equipped with golf spikes, which is good for better footing in caves such as this with mud on rock. Such footwear is reported to have been common among cavers several decades ago.

## BREATHLESS CAVE, AZ

July 13

### Db — bad air

On Saturday, July 13, John Porter and Terry Sweet found a virgin cave while ridge-walking in Santa Cruz County, Arizona. An easy excavation produced going passage, and Sweet entered solo for an examination while Porter waited on the surface.

After maneuvering past a frustrated rattlesnake, Sweet continued on to a small room where he first noticed the effects of bad air — labored breathing and a rapid heartbeat. With minor concern, he continued along a narrow, descending passage to a depth of approximately -55 feet, with no voice contact to Porter above.

In a gravel-floored stream crawl he was nearly overcome by an extremely high level of carbon dioxide (CO<sub>2</sub>). Sweet recalls, "I began to suffocate, I was hyperventilating and began to panic, I turned and flashed towards the entrance, the pain was overwhelming, my lungs felt as though they were going to explode, my heart was pounding like an H-bomb as I dashed onward." Collapsing on the floor beneath the entrance shaft, he took several minutes to recuperate before being able to climb back to the surface. Dizziness continued for about a half hour.

The following day the cave air was tested with a butane lighter. At the bottom of the entrance shaft, the flame was suspended a few inches above the top of the lighter. Several feet farther along the passage, the lighter failed to produce a flame.

#### Reference:

Terry Sweet, "The Discovery of Breathless Cave, Truly a Breathtaking Experience" *The Desert Caver*, Vol. 21 No. 3, 1991.

#### Analysis: (Sweet)

1) Take note, everyone has their own opinion of solo caving; however, another person blocking Sweet's brisk exit could have proven to be fatal.

2) After recognizing the existence of high CO<sub>2</sub>, one should not continue deeper into a cave without backup breathing apparatuses.

3) Testing for high amounts of carbon dioxide with an open flame can be disastrous if there are explosive gases present.

## SOLDIER'S CAVE, CA

July 27

### Ao — shoulder dislocation

At 10 a.m. on Saturday, July 27, a group of five cavers entered Soldiers Cave in the Sierra Nevada foothills in California. The cave is within Sequoia National Park. The cavers proceeded down 20- and 60-foot rappels to the Waiting Room. At around noon one of the group, Rob Dreyer (40), was climbing in some breakdown just below that room when his shoulder dislocated. His companions came to his aid, but any movement of the shoulder was very painful and it was decided that help would be required to get him out of the cave. The cave is cool, about 45 degrees, so Dreyer was made as comfortable as possible and all extra clothing was gathered. Two companions then went for help, notifying the Park Service of the problem at about 1:30 p.m.

Rescuers began to arrive by 3 p.m. and medical equipment was brought in by helicopter. At 5 p.m. an EMT and two others entered to tend the victim while other personnel began to rig the drops for hauling. Unexpectedly, it proved possible to use two-way radios between the entrance and the Waiting Room, thus simplifying coordination of the efforts. As Dreyer was being hauled up the 60, the shoulder relocated, and subsequent work was easier since the victim was in less pain. Everyone was out of the cave by 3 a.m.

#### Reference:

Jef Levin, *NSS Accident Report*, unpublished, undated, two pages.

#### Analysis:

This is another case of a shoulder (or other joint) that has suffered dislocation in the past and does so again in a cave. Admittedly, the victim hadn't had a problem in this regard for 18 years, but such a shoulder is a handicap and should be recognized as such. Levin reflects they might have been able to immobilize the affected arm and had the victim ascend with one arm, but the 60 is narrow near the top and there were no extra ropes to allow someone to ascend alongside the victim and render aid. Warm clothing was not brought in to the cavers waiting with the victim until the rescue was underway.

## RUTH CAVE, PA

July 29

### Dr — rock fall

On a trip to Ruth Cave on Monday, July 29, cavers were working on a dig in the Cricket Room. They were bringing rocks down by tying webbing around them and pulling. Chris Brinker had one "watermelon sized" rock fall unexpectedly, narrowly missing his head. They aborted the dig at that point.

**Reference:**

John Chenger "July 29, Ruth Cave, Huntingdon County, PA" *The Loyalhanna Troglodyte*, (5)1, Fall, 1991, p 22.

## LAWRENCE DOMEPI T CAVE, WV

*August 4*

### **Ao — dislocated shoulder**

On Sunday, August 4, cavers visited Lawrence Domepit (Fieldhouse) Cave in Pendleton County, West Virginia. The cave has tight, awkward climbs and one caver (30) suffered a dislocated shoulder. Help was sought and the victim was carried from the cave. This was made difficult due to the nature of the cave but aided by the fact that the victim was conscious and able to help. Because of a fluctuating blood pressure he was flown by Healthnet to a hospital in Morgantown.

**Reference:**

George Dasher "Rockin' Chair" *The West Virginia Caver*, (9)5, October, 1991, p 7.

## LECHUGUILA CAVE, NM

*August 7*

### **Cce — caver fall, ascender**

On Wednesday afternoon, August 7, Dave Hamer, Ralph Clark, Doug Kent and Terry Sweet entered Lechuguilla Cave and began to make their way along the F-Survey toward Underground Atlanta to obtain some helium samples.

At the head of Seesaw Canyon a series of steep ascents fixed with handlines was encountered. The beginning section entailed ascending a sheer, 15-foot, gypsum wall which then tapered off to a 45 degree ascent for a few hundred feet. The group examined the situation and concluded the climb could be safely accomplished using a single ascender attached to one's seat harness and slid up the handline as a safety.

After two of the group had easily accomplished the ascent, Ralph Clark clipped his CMI Shorty ascender on the rope and began to climb. Approximately ten feet from the floor, his glove got caught between the cam of his ascender and the rope, causing him to free fall and suffer a sprained ankle upon landing at the bottom.

Clark was able to continue on to the Underground Atlanta bivouac under his own power. Ibuprofen and Tylenol #4 allowed him a rather restful night's sleep. The following day the ankle was tightly wrapped in duct tape, and with the aid of Ibuprofen he was able to continue cautiously for the remainder of the five day expedition.

**Reference:**

Terry Sweet, "Warning! CMI Ascenders May Be Extremely Hazardous To Your Health" *The Desert Caver*, (22)1, 1992.

**Analysis: (Sweet)**

- 1) Handled ascenders provide less chance for cam interference.
- 2) Some brands of ascenders perform better than others depending on the specific application for which they are being used.
- 3) Use of more than one ascender provides for greater protection while climbing vertical walls that have minimal hand and foot holds.

## APE CAVE, WA

*August A*

### **Ac — caver fall**

Ape Cave is a developed, self-guided tour cave on the south slope of Mt. St Helens in southern Washington. This two mile lava tube has more than one entrance. In August a YMCA group was visiting the cave. One youth from their group was climbing at the edge of the "skylight" near the Upper Entrance when he slipped and fell some 45 feet. He landed on his feet but suffered injury and was unconscious when others reached him. Park Service personnel evacuated him and in less than an hour he was on his way to a hospital.

**Reference:**

Jim Nieland *Speleograph*, December, 1991.

## BIGFOOT CAVE, CA

*August B*

### **Dc — caver fall**

In August several cavers were helping Adrian Sears (23), a geomorphology student from San Francisco State University, in a hydrology project in Marble Valley. One day they entered Bigfoot Cave via the Discovery Entrance and proceeded downstream, stopping occasionally to collect water samples. A short section of the main passage is very constricted and it is necessary to climb up about 15 feet, negotiate a crawlway and then descend when the passage opens up. It is deceptive at the climbdown, for the way to go is a small pit to one side, a little back from the lip, which is overhung and loose.

As the party reached this point, Sears was in the lead and headed for the overhang. The others quickly warned him — he replied, "Don't worry, I'm a rock climber!" and started over the edge. There was instantly a scrabble and he disappeared. The others rushed down the little pit and came out at the base of the drop. Sears lay sprawled on his back, a little distance from the edge. He apparently had landed on his feet and rolled down a little slope. After lying on the floor a few moments, he suddenly came to life, declared that he was okay, and got up. They continued without further incident.

**Reference:**

Bill Kenney, Personal Communication, September, 1992.

## BIG RIDGE CAVE, PA

*August 17*

### **Cr — rock fall**

On Saturday, August 17, a group of six cavers entered Big Ridge Cave in Pennsylvania. They rigged the first drop, a 125-foot pit, and Bob Prowel went first. He found the rope ended 20 feet above the floor. He was able to get off rope on a small, exposed ledge. Since he wasn't familiar with the cave, a second caver, Pat Minnick, descended to the ledge. It was decided the rope needed to be re-rigged to provide more length, and this was communicated to those at the top. Then a caver coming through the gate near the top of the pit dislodged a small rock which went down the pit, hitting Minnick on one shoulder. Minnick suffered a bruise and was in "a lot of pain" but continued with the trip.

**Reference:**

Barry Duncan "Grotto goes to Big Ridge" *The Loyalhanna Troglodyte*, (5)1, Fall, 1991, p 20.

## CLARKSVILLE CAVE, NY

*September 2*

### **Bs — stuck caver**

At around 2:30 p.m. on Monday, September 2, a group of three cavers, Gary Lau, Mark McNiff and Beverly Schwartz (30), entered Clarksville Cave in Albany County, New York. The first two had many years of caving experience; the last had two, including an NCRC workshop earlier that summer. On a previous trip, a dig site with airflow had been found adjacent to the Twinkle Room in the Ward section of the cave. These three intended to pursue that dig and proceeded to the site.

The dig was located at the end of a passage extending north from the Twinkle Room for about 30 feet. For most of its length it is too narrow, about three feet wide and 18 inches high, for two cavers to pass. It then makes a 90 degree bend to the right, and slopes down at about 20 degrees for the last ten feet which are too tight to allow one to turn around. They took turns working on it to keep anyone from becoming chilled in the 45 degree F, damp cave. In the dig passage there was a "slight breeze." Schwartz went third and worked on the dig for a while.

At 4 p.m. she reached the end of her shift, but when she tried to back out found she could not get her hips past a tight place. After an hour and a half and numerous attempts, it was decided her clothes might be binding up. A companion was able to help her remove her boots, nylon coveralls and Polar Fleece thermal bottoms. Schwartz took off her P F top, leaving her wearing a layer of polypropylene. She was still unable to back out.

Schwartz then moved forward a bit and tried to turn around, thinking it might be easier to go through the constriction head-first. At 5:50 p.m., as she struggled to contort herself to accomplish the turn-around, her "left foot became

wedged in a vertical crack between two rocks." She was on her left side with her back against the left wall and her right shoulder about an inch from the ceiling. Her left leg was fully extended between her torso and the right wall; her right leg was extended normally.

Her companions discussed the situation and decided to seek outside help. McNiff stayed with the victim, wrapping a garbage bag around her and hugging her leg to provide some warmth. Lau took only about 12 minutes to exit the cave; at a convenience store he tried to call the rescue number he had written inside his helmet, but the phone would not accept his credit card. The clerk suggested a local caver and the rescue alert went out.

Lau got some hot coffee and candy bars and returned to the incident site. The victim by that time was shivering hard and was unable to move or speak. Her head was out of reach so Lau placed the jug of coffee against her abdomen and took a shift at hugging her.

McNiff went to the entrance where rescuers were beginning to arrive and requested a tube in order to administer hot drinks to the victim. He then went with one rescuer to check on the possibility of using a very small entrance only 50 feet from the Twinkle Room for access, and as a route for wires from a generator to provide heat to the victim. An EMT entered with a scissors jack, space blankets, a tube and a hot drink. The jack was used to free her foot and attempts were made to enlarge the constriction with a pneumatic hammer. This was ineffective, since only one person could be at the victim at one time and efforts were also necessary to keep her condition from getting worse. Phone lines and a doctor arrived and power lines were run in.

They were able to administer some glucose solution and applied heat with a heat lamp and a hair dryer. The dryer quickly quit working, but the heater was placed near the victim's back with a space blanket to reflect the heat to her. Her condition soon stabilized and they were able to work on freeing her. Gravel and mud was excavated from beneath Schwartz until there was sufficient space for her to be pulled back far enough to get her left leg back out. With help the victim was able to crawl to the Twinkle Room. She was helped to the Lake Room where she was secured in a SKED and carried from the cave. She arrived at the entrance at 3:40 a.m. Tuesday, having been trapped some eight hours. Her core temperature was reported to be 95 degrees F.

#### References:

1. Kevin Dumont "Rescue at Clarksville" *Northeastern Caver*, (22)3, September, 1991, pp 72-73.
2. Gary Lau "Accident Report for incident in Clarksville Cave," unpublished report, undated, three pages.

#### Analysis:

This is a wonderful example of doing all the right things and saving someone who could easily have died.

Lau feels a factor in the entrapment was that the victim was overweight and out of shape. He realizes the removal of her thermals left her ripe

for hypothermia, but this seems to be what most cavers try when faced with a constriction that is just a little too tight. The solution, he feels, is to know your companions' capabilities and limitations.

I must point out that getting stuck is potentially lethal, and the adage that goes "if you can get in through a constriction you can get back out," is just not true. There are cavers who pride themselves on jamming their bodies through tight places. This is very dangerous. What is worse is talking someone else into trying it. It is best to learn your limitations in practice crawls at home and back off if you start to exceed them in a cave. Rock climbers who don't use belays must, if they are going to survive, learn to look at a pitch and know whether or not they can do it. Cavers might develop the same skill regarding constrictions.

## ROADSIDE PIT, WV

*September A*

*Dc — caver fall*

On Labor Day weekend, three cavers did Roadside Pit near Beverly, West Virginia. They dropped the 60-foot entrance pit and explored a bit. Steve McKenna tried to climb to a lead 30 feet above the floor. He got part of the way up before falling. Luckily he suffered no injury and they exited, having to wade through a crowd of ten cavers at the bottom and 20 at the top, of the entrance pit. It was Old Timers Reunion weekend, being held that year at Beverly. Eight ropes were rigged in the pit, only two feet wide at the top. Climbing out was described as "like trying to pick out a single strand of spaghetti on a plate."

#### Reference:

Kirk Holzapfel "Roadside Pit and Bowden Cave" *Commander Cody Chronicle*, (11)3, Fall, 1991, p 7.

## (UNSPECIFIED) PIT, MO

*September B*

*Dre — rock fall*

On a Saturday in September a group of five cavers were doing a 70-foot pit near St Louis, Missouri. The tight opening of the pit leads to a free drop to a floor some 12 feet in diameter. The cave does not continue and only a small alcove at the bottom provides shelter for anyone at the bottom while someone is on rope. Three descended and then started back out. Nick Gurin was ascending and had hung his rack and that of one of the others to a loop on his commercially made seat harness. The loop had a buckle on it and he assumed it was there for that purpose. As he wormed up through the tight place at the top, this buckle came undone and two racks joined by a carabiner went humming back down the pit. Luckily the two at the bottom were in the alcove and were not hit.

#### Reference:

Nick Gurin "Incident Report," unpublished report, undated, 1 page.

#### Analysis:

Gurin relates how bad he felt when the racks fell, endangering his companions. This is something to think about — how bad you'll feel in a rockfall incident if you are the cause and someone is hit.

## ENDLESS CAVE, NM

*September C*

*Ar — rock fall*

On Labor Day weekend, a group of four cavers obtained a permit and visited Endless Cave in the Guadalupe Mountains of southeast New Mexico. At one point, a large rock David Anderson was using as a handhold came loose and fell, hitting him on the left leg. It apparently was quite heavy and pointed where it struck him. He suffered a puncture wound that apparently went clear to the bone, possibly chipping the tibia. Companions left and called the Carlsbad Police Department and New Mexico State Police. BLM rescue resources arrived on their own and got authorized. As it turned out this was fortunate as all the manpower was needed to evacuate the victim.

#### Reference:

Editor "Watch Those Handholds" *D.C. Speleograph*, (47)9, October, 1991, p 16.

## TRENTON WELL, AL

*September 8*

*Ace — caver fall*

On Sunday, September 8, a group of four or five experienced cavers visited Trenton Well near Trenton, Alabama. They rigged the 218 foot pit with a new rope, and Chris Pratt fed the rope through his rack, ready to go down. Unfortunately, he only used four of the hollow steel bars, and as soon as he went over the edge, he was falling, out of control. He grabbed the rope with his left hand and got a wrap around one leg to provide more friction.

About 15 or 20 feet from the bottom, his helmet, a Petzl Ecrin, caught on an overhang. It was reportedly knocked askew and then off. He landed upright, suffering a compression fracture to his left leg and rope burns on his right knee. Some of his companions came down and performed basic first aid and put him in a sleeping bag to prevent hypothermia. One at least made the several mile hike down the mountainside and drove to a phone to call 911.

There was a good response to the call-out, and Pratt was hauled from the pit and taken by helicopter to a hospital in Huntsville.

#### Reference:

Editor "Trenton Well Rescue" *Muddy Litter Letter*, No. 14, July-December, 1991, p 9.

## **MCFERRIN BREAKDOWN CAVE, WV**

**September 15**

### **Drc — rock fall**

On Sunday, September 15, three cavers were surveying in McFerrin Breakdown Cave in West Virginia. At one point George Dasher was checking in a breakdown area for the proper route, and came to a 15-foot pit. He started to ease over the edge of this to climb down but an "immense" boulder moved under him and he jumped to one side. The huge rock went into the pit with a "terrifying boom." Dasher had just enough time to yell "I'm all right!" before he slipped into the pit as well. He landed on his rear end and luckily was unhurt. They continued the survey.

#### **Reference:**

George Dasher "McFerrin Breakdown Cave" *The West Virginia Caver*, (9)5, October, 1991, p 9-10.

## **SKYLIGHT CAVERN, MO**

**September 30**

### **Be — lack of light**

At about 6 p.m. on Monday, September 30, a group of six very inexperienced cavers entered Skylight Cavern southwest of Ash Grove, near Springfield, Missouri. They were Shannon Rogers (19), Indya Ables (19), Juli Bilsland (18), Shanon Smeaya (21), Jeffery Hickman (22) and James Piker (18). They were equipped with two flashlights, but one had been broken on the drive to the cave. The other went dead "about 150 yards" inside the cave and they were stranded. Relatives and/or acquaintances knew of their destination and they were eventually missed. They were found, hungry and cold, at about 3 p.m. on Tuesday after a three hour search in the cave by Ash Grove and Greene County personnel. They had been in the cave for 21 hours.

#### **Reference:**

Robert Keyes "Light lost in cave; 6 saved" *The News Leader*, Wednesday, October 2, 1991, pp 1, 8A.

## **MORGAN'S PIT, KY**

**Fall A**

### **Cb — bad air**

On a Fall weekend, Chris Anderson and Jim Jones set out to do some caves. One they visited was Morgan's Pit, about 1500 feet off Stringtown Road near Highway 60 near Louisville, Kentucky. The pit opening is in a sinkhole and they found this jammed with flood debris. It looked totally blocked, but when they kicked at it, most of it fell down the 60-foot shaft. A stump remained and they were able to tie the rope around it and pull it out. It was late so they decided to wait until the next day.

On Sunday, they rigged the pit and Jones descended first, signalling off rope and remarking that it was hot at the bottom. Anderson thought that odd but they were wearing wetsuits. He went down arriving at the bottom a little out of breath. It did feel hot, and they drank some water and removed their vertical gear. The bottom was spacious, with several connecting domes, all with flood debris showing up the sides. Anderson lit his Petzl carbide lamp but only got a small orange flame. He fiddled with it for a moment but figured it just needed to generate for a while longer and turned on his electric backup.

They set off from the pit bottom; a ten-foot crawl led to a large room with a stream flowing across the floor. They were "huffing and puffing" as they "stumbled down into the room" and sat down to catch their breath. They couldn't. Horrified, they realized the air was bad. They made a rush back to the rope. Anderson's head was pounding and he couldn't feel his hands.

At the rope, they had to put on their vertical gear. This was difficult — it was hard to think. Anderson tried putting his seat harness around his chest. He couldn't tell one ascender from another. Still, they managed to do it — they had to. Jones used a ropewalker and Anderson a frog. Jones got on rope and started up; Anderson soon rigged on and followed in tandem. He had tied excess gear to the bottom of the rope to provide some tension and make ascending easier. In his confusion he forgot to allow for stretch — with his weight on the rope, the excess gear was sitting on the floor and he had to pull the rope through his rig at every step.

Ascending was a "respiratory nightmare." After 30 feet, Anderson felt exhausted. Jones got to the top but couldn't get off rope — his foot Gibbs had jammed. He called for some slack so Anderson reached down and pulled up some rope. No, wait, that won't work — his weight was still on the rope. He put on a spurt and got himself to the top. They were both able to get off rope, but only when they got completely out of the shaft did they experience good air again. The nightmare was over.

#### **Reference:**

Chris Anderson "Incident at Morgan's Pit" *The Karst Window*, (27)2, December 91/January 92, pp 9-12.

### **Analysis: (Anderson)**

Carbon dioxide, carbon monoxide and methane are the three gases that are most likely to cause problems to cavers. Methane can form in caves through the decomposition of detrital material. Carbon monoxide is a product of combustion and does not form naturally in cave but could enter from a fire outside. Carbon dioxide is the real threat as it easily forms in caves with large amounts of flood debris. This is apparently the gas we encountered in Morgan's Pit. The cheapest and easiest test for bad air in caves is a candle. A carbide lamp will continue to burn in dangerously low oxygen levels.

Anderson suggests always descending a pit with your ascending gear ready to go and think about air quality before you take your gear off. It may be that drought conditions had led to the

buildup of bad air in the pit; any flood that filled the shaft, as seemed to happen regularly under normal conditions if we judge by the flood debris on the walls, would flush the air in the pit.

## **ONYX CAVE, AZ**

**Fall B**

### **Ao — knee dislocation**

A group of cavers was in Onyx Cave near Sonoita, Arizona. The cave contains numerous climbs with some exposure, and surfaces can be slick. They proceeded well into the cave. Finally, as Don Dunn crouched to negotiate a low ceiling, a knee dislocated and he collapsed. Some companions were sent for help while others assisted Dunn toward the entrance. He was able to progress horizontally by scooting along in a sitting position. Outside rescue personnel arrived, from a local grotto, a rescue squad and the county Sheriff's Office. He was helped up climbs and carried to the vehicles.

#### **Reference:**

Don Dunn *Devil's Advocate*, December, 1991.

## **URIN HEAVEN CAVE, CA**

**October 13**

### **Cc — caver fall**

On Sunday, October 13, Steve Knutson, Bob Richardson and Dr. Bill Brickle were scouting a marble bench below the lip of hanging Sky High Valley, adjacent to Marble Valley in northern California, Richardson spotted a streambed leading to a small entrance. Knutson told him it had been checked before, but Richardson crawled in anyway, and soon his voice came back from the crawl within, saying there was a pit.

This was not supposed to be there, so Knutson crawled in and belly-crawled past an excited Richardson, who opined that it would need a rope. Knutson stuck his head over the edge and was looking down into what he knew was virgin passage. The drop was only 10-12 feet and looked climbable. He stated as much and started down, having to bridge out over the drop with his upper body to get his legs and feet over the edge. The ceiling was still very low. As he got his legs down, he was supported at the narrow lip only by his forearms, resting on the smooth, sloping surface above the lip. Below the lip it belled out. A point of rock a few feet down offered a foothold and he got one foot on it and put his weight on and started to move his body down.

Suddenly his foot shot off the apparently slick rock and he fell, landing on his lower back. He was stunned for a moment and in some pain but was uninjured. He was able to climb back up and leave the cave under his own power but was sufficiently bruised that he could not go caving for several days, despite a week-long speleocamp in progress.

## References:

1. Steve Knutson, Personal Communication, October, 1991.
2. Steve Knutson "KMCTF Marble Valley Project-1991" *Underground Express*, (12)1, Winter, 1992, pp 3-6.

## ARCTOMYS CAVE, BRITISH COLUMBIA, CANADA

October 17

### AAr — rock fall

On Thursday, October 17, a group of four cavers prepared to visit Arctomys Cave in Mount Robson Provincial Park in the interior of British Columbia, Canada. They were Rick Blak (32), Ron Lacelle, Hugo Mulyk and Chris Zimmerman. Arctomys is a vertically-oriented stream cave with a surveyed length and depth of 3,496 and 536 meters, respectively, making it the deepest cave in Canada. The entrance is at an elevation of 1980 meters in a hanging valley high in the Canadian Rockies. Blak and Lacelle each had ten year's caving experience and had been in Arctomys before, Black three and Lacelle four times. Mulyk had less experience and Zimmerman was a novice, though both were experienced rock climbers and mountaineers.

At around noon they helicoptered the 20 kilometers from the Trans-Canada Highway to the hanging valley. Blak and Zimmerman entered the cave at 2 p.m. Thursday; the other two entered at about 5 p.m. At about 11 p.m. the second team met the first near the Straw Gallery at -430 meters and 1.5 kilometers from the entrance, the first team having just turned back for lack of rope. To avoid waiting at a waterfall pitch, the second team delayed 45 minutes before following the first back up the cave.

At about 11:30 p.m. Blak was climbing a three meter pitch just below The Elbow at -404 m. To keep out of a waterfall, he was using a handline. Suddenly the bedrock projection serving as an anchor for the handline broke loose and this 400 kg (880 lbs) slab came sliding down, passing over Blak as he fell. Blak was left unconscious, his pelvis broken. By the time the second team encountered the incident site, Blak had regained consciousness and was in great pain; he could not move his right leg and his speech was slurred. They had basic first aid kits and Lacelle was trained in industrial first aid, but they had nothing to prevent hypothermia — no space blankets or trash bags and the only carbide lamp in the group wasn't working properly.

It was decided self rescue was the best option and they got the victim moving. It took 40 minutes to get him to The Elbow; at that point they realized they needed outside help. At about 12:30 a.m. Friday, Lacelle and Mulyk started for the entrance. The plan was for Mulyk to continue on and seek help while Lacelle returned to the victim site with two sleeping bags and other supplies.

At about 5:30 a.m., having had trouble with their lights, they reached the entrance to find 25

cm (10 inches) of new snow. They had a VHF radio that operated on the Parks Department frequency but no one responded to their calls. After assessing their battery supply, it became apparent that it would not be possible for Lacelle to return to the victim. While they ate and tried to warm themselves they decided both would walk out to get help. At dawn (8 a.m.) they left, finally reaching a phone on the highway at around 5 p.m., some 8.5 hours later. By 5:15 they had contacted the Royal Canadian Mounted Police and the local Parks Department manager.

The rescue would necessitate moving a victim-laden stretcher 405 m (about 1300 feet) vertically and one km horizontally through a cave where many sections were narrow fissures and there were numerous rigged drops. Since a fast trip in to the victim and back out would take eight hours, a single team would not be able to work long moving the victim without being in danger of exhaustion. Many teams would be required. Caver and rescue resources were mobilized.

On Saturday morning at about 9 a.m. a helicopter airlift of rescue personnel and supplies to the cave entrance began. An initial first aid party went in almost immediately, followed by several rigging teams, a phone line team, and a stretcher crew. An elaborate tent camp was set up outside while the weather deteriorated as the day progressed.

The initial team encountered Zimmerman at around 9:30 a.m. in the "somewhat confusing" passages only a few hundred meters from the entrance. He reported that at some point on Friday he and Blak had agreed that Zimmerman should leave the cave to avoid hypothermia. Having a failing light and being unfamiliar with the cave, he became lost. He was escorted out while the rest of the team carried on. They found Blak where he had been left, dead. At 3:30 p.m. they reached the surface with the news. The other teams were recalled for the night but not before one of them had put the victim into the stretcher and moved it up-cave to just above The Refresher, a very wet pitch. The body evacuation continued the next day and it was completed by 12:30 p.m. on Monday.

## Reference:

- Phil Whitfield "Fatal Accident Report, Arctomys Cave ..." *British Columbia Cave Rescue*, November 17, 1991, eight pages.

## Analysis:

This was the second open air caver fatality in Canada, and the rescue/body recovery was the largest and most expensive yet done, involving 109 signed-up personnel and an estimated cost of more than \$100,000.

Whitfield states that the incident itself was not foreseeable and that Blak's companions responded appropriately. They should have carried hypothermia gear and had their lighting in better shape, but he feels this would not have changed the outcome of the accident. He suggests that cavers operating in such remote locations arrange a backup party capable of immediate response to news of an incident. The radio which failed to be of help had been in-

tended as a test, to see if it could be used for such a call. The rescuers had to set up a portable repeater to make calls from the cave.

## ARCTOMYS CAVE, BRITISH COLUMBIA, CANADA

October 19 A

### Bl — lost caver

At 11:30 p.m. on Thursday, October 17, an accident occurred in Arctomys Cave in the Canadian Rockies of British Columbia, Canada (see account for Arctomys Cave, October 17). Chris Zimmerman stayed with the injured victim at about -400 meters while his other two companions went out, one to go for help and the other to get survival gear and return to the incident site. No one showed up. Zimmerman finally became chilled and he and the victim agreed it would be better if he headed out rather than becoming another victim. He did so, but was having trouble with his light and was unfamiliar with the cave. Near the entrance is an area of confusing passages where he became lost. He was found at 9:30 a.m. on Saturday by the first rescuers to enter the cave, and was escorted to the surface shortly after. He was cold and shaken but in good condition considering his 43 hour stay in a freezing, alpine cave.

## Reference:

- Phil Whitfield "Fatal Accident Report, Arctomys Cave ..." *British Columbia Cave Rescue*, November 17, 1991, eight pages.

## SLOAN'S VALLEY CAVE, KY

October 19 B

### Ach — caver fall, hypothermia

On Saturday, October 19, a large group of around 12 cavers visited Sloan's Valley Cave via the Garbage Pit Entrance. They were apparently recreating in the mud and water at the Mud Slide when one of the group, Nathan Smith, lost control and fell hard enough to break an ankle. The leader of the group started alternately helping the victim hobble on one foot or carrying him out of the cave, but became tired at the base of Garbage Pit Hill and sent his daughter to get some assistance. She went to the landowner's house and got them to call 911, assuring them that a stretcher evacuation was necessary. The landowner was asked by the dispatcher to wait at the road turnoff to direct rescuers, so she took her video camera and entertained herself.

Soon to arrive were the police, sheriff's department, rescue squad, ambulances, and five fire trucks, 22 vehicles in all. She then proceeded to the entrance where the leader of the group told her the injury wasn't serious, and with an inflatable splint Smith would be able to walk up GP Hill by himself. Unfortunately the rescue had assumed a life of its own.

The victim, wet and muddy, was strapped into a stretcher. A portable generator was set up and lights were strung into the cave. This took an hour. Meanwhile some rescuers in the cave reportedly argued for an hour and a half about how to tie a bowline knot. The victim was carried from the cave three and one-half hours after being placed in the stretcher. At least one on the scene felt him fortunate to have survived the 911 call.

#### Reference:

Cathy Crockett "Rescue No. 1 — Injury in Garbage Pit" *Cave Cricket Gazette*, (16)7, November-December, 1991, p 7.

### CASCADE CAVE, WA

**October 20**

#### **Ac — caver fall**

At about 10:30 a.m. on Sunday, October 20, a group of four cavers entered Cascade Cave on Cave Ridge above Snoqualmie Pass in the Cascade Mountains of Washington. They were Jon Turnidge, Wendel Pound, Mike Pahl and Scott Davis (28). The cave area is reached via a one mile hike and 2,000 foot elevation gain from the pass. Three had a little caving experience, while one, Pahl, was a novice. The cave contains a lot of twists and turns, crawlways and short drops but requires no rope work. After just a few minutes inside, Pahl decided he didn't like the tight crawls and exited.

The other three continued. After some 40 minutes of small passage, they entered a more spacious chamber. While two were placing a flag to mark the point of entering the larger passage, Davis continued to a dropoff a little way further, still within sight of his companions. He squatted down on the sloping edge and looked over, seeing a ledge ten feet below and the bottom another 15 feet down. Suddenly he slipped and fell, striking the ledge and coming to rest at the bottom.

His companions heard the sound of "a slight brush of clothing against some rock," turned and saw that he was gone. They had seen him squatting by the drop. They rushed over, saw him below and quickly climbed down. He lay on a pile of breakdown, making a "cat-like sound." His helmet was behind his head, with the strap around the front of his neck. He was wearing skateboard-style knee pads with padding covered by a high impact plastic shell. The right one had been "demolished" to the extent of suffering a scratch to the knee.

They examined him for injuries and decided they could safely move him. This allowed them to put a sweater on him, lay him on packs for insulation and cover him with a trash bag. His clothes were wet, mainly from sweat, and he began to shake or shiver, either from cold or shock or both. The cave has a temperature in the high 30s (F). After twenty minutes he became coherent and insisted he was well enough to crawl out of the cave. With Pound in front, pulling, and Turnbridge behind, pushing, Davis was indeed able to make his way out. This took about two

hours. At a hospital he was examined and diagnosed as having a sprained left wrist, which was splinted, torn muscles in his right arm, which was put in a sling, and several badly bruised ribs.

#### Reference:

Chuck Crandell "Cascade Cave, Cave Ridge, Washington" unpublished report, undated, three pages.

#### Analysis:

Crandell sees three possible contributors to the fall. First, Davis was out of shape and tired from the climb up the mountain. Second, he exposed himself to a vertical drop without three points of support, or indeed even one handhold. Third, he admitted to having a dim light. It may be he was trying to climb down and figured if he fell, he would be stopped by the ledge only ten feet below. It is common in cave climbing to figure what you can climb by how far you will fall and how you will land.

I must say it is important to have a helmet that stays put in a fall. Elastic or loose chinstraps are really asking for trouble. Also, it is obvious that Davis was very lucky he was wearing heavy kneepads.

There wasn't much alternative to self-rescue. The nearest sleeping bag was in a car at the pass and the only help available was three cavers in nearby Newton Cave who weren't due out for another five hours. Alpine caving is a very serious matter. Even a simple problem can be fatal if it forces you to remain immobile in the cave.

### SLOAN'S VALLEY CAVE, KY

**October 26**

#### **Ax — exhaustion**

On Saturday, October 26, a group of cavers entered the Post Office Entrance of Sloan's Valley Cave in Kentucky. They proceeded to the Big Room where one elderly (60+) caver became nauseated and disoriented, presumably from overexertion and being overdressed. Two of the party exited the cave and approached the landowner to call 911. It was first determined that the stricken caver would probably be able to self-rescue with a little help, so local cavers were called instead. They geared up, entered via the Great Rock Sink Entrance, and reached the Big Room in about seven minutes.

Meanwhile, members of the victim's party had already started out with the victim, and they successfully exited the Garbage Pit Entrance. Two other cavers were sent in to head off the rescuers at the Big Room.

#### Reference:

Debbie Moore "Rescue No. 2 — Illness in the Big Room Rescue ..." *Cave Cricket Gazette*, (16)7, November-December, 1991, p 7.

### SLOAN'S VALLEY CAVE,

KY

**October 27**

#### **Be — lack of light**

On Sunday, October 27, A group of three cavers (20s) entered the Minton Entrance of Sloan's Valley Cave in Kentucky. They had a map of the cave and headed via the Duckunder for the Big Room to see some big passage. They had no helmets, were dressed in flannel shirts and jeans, and had only flashlights for light. At the Big Room, these gave out and they were stranded. The next day, they were reported overdue to 911 and a rescue was initiated.

Fortunately a local caver involved himself. After talking with the father of one of the victims, he deduced the victims' destination in the cave. With some difficulty he was able to steer the official rescuers to the Big Room where the lost cavers were indeed found, little the worse for their 34 hour stay underground.

#### Reference:

Debbie Moore "Rescue No. 3 — Lost in Minton Rescue" *Cave Cricket Gazette*, (16)7, November-December, 1991, pp 7-8.

### MYSTERY FALLS, TN

**November 8**

#### **Be — equipment failure**

On Friday, November 8, a group of cavers visited Mystery Falls, a cave with a 281-foot entrance pit in Hamilton County, Tennessee. They were trained fire fighters or rescue personnel. Doing the pit, which takes a stream, can be a wet affair. Not long before they entered they were twice warned of the difficulties of the pit.

A small dam and catchment basin exists to allow dry access to the pit. The group borrowed a plug for the dam and used the "wet" rigging point. The plug leaked and the drop was "quite wet." A portion of the group went down and back up without incident. The remaining three then descended successfully.

The first of this group to try to go up was Scott \_\_\_\_\_, a firefighter whose only ascending experience had been on a rope and pulley in a fire station. He was using a "Butt-Strap" style ropewalker system. He got about 50 feet up when his system quit working. He was unable to change over and descend and was stranded. His companions, both paramedics, were able to pull the victim out of the waterfall using the rope, but were unable to do more.

The situation was communicated to the top, and the others went for help, quickly notifying the Park Service. A rescue squad was called in at 7 p.m. They rigged the rope in place to an anchored rack and lowered the victim to the bottom where he could be assisted by the two paramedics. Two rescuers descended with warm clothing, medical supplies and a thermos of hot coffee. His sub-lingual temperature was 95 degrees F.

A better plug was placed in the dam, and the two companions ascended under their own power. A haul system was set up and the victim was brought up the pit. Difficulty was experienced by the rescuers due to a lack of solid anchors at the top of the pit.

#### Reference:

Roger Ling "Deja Vu at Mystery Falls" *Speleonews*, (35)3, June, 1991, page 16.

#### Analysis:

I agree with Ling that the victim's companions should have exercised some judgement and not let a companion with so little experience place himself in such a hazardous situation. Waterfall pits are exceedingly dangerous and are not the place for one's first pit experience. The difficulty with the vertical rig was apparently the disengagement of the victim's foot Gibbs. If the pin is not quite in it can come out by itself. The ball of a quick-release pin can also jam so that there is nothing holding it in place. Ling points out if the victim had gotten higher on the rope, it might not have been possible for his companions to pull him sideways out of the flow, and this might then have become a fatality.

### CAVE DISAPPOINTMENT, NY

November 10

#### Be — lack of gear

On Sunday, November 10, three teenagers attempted to explore Cave Disappointment, a cave in Carlisle, Schoharie County, New York. The property containing the cave is owned by the National Speleological Society and is well marked with "No Trespassing" signs. The three did not have permission. They rigged the 55-foot entrance pit with a "frayed, sunbleached", laid-construction, polypropylene rope and Mike Funk (15) went down, hand-over-hand.

He was unable to climb out. At about 2 p.m. an anonymous caller informed the property managers, who went to the site to find the two on the surface trying to lower an extension ladder of 25 feet extended length to the victim. A proper rope was rigged and a caver descended and equipped the victim with an ascending rig. He was able to exit under his own power, about three hours after the phone call.

#### References:

1. Emily Davis Mobley, personal communication, November 12, 1991, 1 page.
2. Brad Tripp "Youth, 15, pulled from Carlisle cave" *Monday Editor*, (Cobleskill, NY) Monday, November 11, 1991, p 1.
3. Bill Egger "Schoharie spelunker rescues boy from cave" *The Times Union*, (Albany, NY) Monday, November 11, 1991, p B-6.

### NICKWACKETT BAT CAVE, VT

November 17

#### Cr — injury moving rocks

On Sunday, November 17, a group of three cavers entered Nickwackett Bat Cave in Vermont. They commenced working on a dig site. After they had dug down about five feet, they encountered a 300-400 pound rock. Rodney Pingree (38) was helping roll this up out of the hole when a sudden shift in the rock brought much of the weight of it onto his right hand, forcing it back, and a "pop" was felt in the wrist. He suffered only momentary discomfort and they continued digging for another three hours. A little later, on the drive home, the wrist began to swell and severe pain was experienced. The victim was unable to continue driving. X-rays later showed that the wrist had suffered a dislocation.

#### Reference:

Rod Pingree "Incident Report" unpublished report, undated, one page.

#### Analysis:

Pingree makes the point that moving large rocks is dangerous. He suggests a hoist system or reducing large rocks to smaller ones.

### (UNNAMED) CAVE, BRITISH COLUMBIA, CANADA

November 24

#### Co — fire

On Sunday, November 24, a group of three cavers visited a blowing hole near the junction of Slesse Creek and Chilliwack River in British Columbia, Canada. They were John Clardy, Tim Martin (37) and Buff Martin (32). The cave was a 30 meter crawlway ending in a dig. The younger Martin brother worked at the entrance, disposing of rocks that the other two pushed out. At about 2 p.m. there was little to do at the entrance, so Buff Martin built a small fire just inside. Sparks from this fell into a deep crack packed with dry wood debris. Alarmed, he tried to put it out with water from his canteen, then urine and finally soil, to no avail. Embarrassed, he said nothing to the others but despite the outward flow, the air in the crawl soon became smoky.

The other two went to the entrance to be confronted by a "jet of flame" and were trapped. Luckily, most of the heat and "lung wracking" smoke were carried out by the breeze. The three rolled and slid a wide, thin slab of rock over the crack. With flames licking up on either side the two inside quickly scrambled over this "make-shift griddle" and rolled around outside to put out their smoldering clothing. Tim Martin vomited, and all were dazed with shock. Buff Martin

had suffered blistered hands. The cave continued to gush white smoke as they hiked away.

#### Reference:

John Clardy, personal communication, January 1, 1992, one page.

### CREVICE CAVE, MO

November 26 A

#### De — vertical gear

On a trip to Crevice Cave, Perry County, Missouri, a caver was on rope ascending when the tie-on point for the pulley operating his double-bungee system failed. He could see no way to reattach it so he continued, keeping tension on the bungee with one hand while operating his handled ascender with the other. The continued climb was very tiring but without further incident.

The caver grapevine says the attachment that failed was a trash bag plastic tie.

#### Reference:

Aaron Addison "Trip to Eternity and Back" *The Crawlway Courier*, (26)1, Winter/Spring 1992, p 10.

### SOTANO DE LATEVIO, SAN LUIS POTOSI, MEXICO

November 26 B

#### Dc — caver fall

On Tuesday, November 26, a group of seven cavers entered Sotano de Latevío in the Xilitla area of San Luis Potosí, Mexico. The cave as far as they had explored was vertically oriented, with a known pit series of 190, 19, 56, 19, 18 and 48 feet. They carried a lot of rope and pushed on, down pits of 65, 58, 83, 26, 11, 47, 10 and 33 feet. At this point they dropped into a room with incoming water flow. The rock was thinly bedded and contained one- to three-inch chert interbeds which they had found to be quite crumbly.

A pit led on, appearing to be about 25 feet with a ledge 11 feet down. The edge of the pit was a suspicious chert ledge. A nine mm rope was rigged to a small formation, some seven inches high and two inches thick. John Stembel put his rack on the rope and moved out to the edge to find something additional to rig to. The portion he was standing on suddenly collapsed and he disappeared from view, swinging free under the remainder of the chert ledge which was extremely undercut. He rappelled to the ledge below and the rope was rerigged.

The trip continued without further incident. It was felt that having the rack on the rope instead of a direct tieoff absorbed some of the shock and load of the fall, allowing the little formation to hold. The cave passages tended to be narrow and a rescue would have been a huge undertaking.

**Reference:**

Andrew Porter, *NSS Accident Report*, undated, three pages.

**SOTANO DE LAS  
GOLONDRINAS, S.L.P.,  
MEXICO**

**November 27**

**De — vertical gear**

On Wednesday, November 27, two groups visited Sotano de las Golondrinas in San Luis Potosi, Mexico to do the 1,100 foot entrance pit. One caver, Richard Walk (38), was on the bottom as the day drew to a close, having only a Petzl mini headlight and a two-C-cell flashlight. As he got on rope, he was distracted as he helped another caver with his rig, and failed to check the foot harness and chicken loops of his own ropewalker system.

About a third of the way up his foot stirrup had twisted, forcing his ankle into a painful position. He corrected this, a loose chicken loop, and a small, triangle-shaped quick link on his Petzl jammer that had rotated so the nut was toward the rope.

Thirty steps upward his right foot suddenly popped free. The quick link on the foot harness had its threads stripped and was bent straight. He substituted a locking carabiner and continued without further incident.

**Reference:**

Richard Walk, *NSS Accident Report*, undated, two pages.

**Analysis:**

Walk admits he shouldn't have allowed himself to become distracted and should have had normal cave lighting. Quick links come in all sizes, and the smaller ones really aren't very strong.

**VISTA CAVE, KS**

**December 14**

**AAc — caver fall**

On Saturday, December 14, Susan Downey (43), from Joplin, Missouri, climbed the 20 feet to Vista Cave in Shermerhorn Park in Glena, Cherokee County, Kansas. The cave proved to be only 30 feet long, but when Downey tried to exit, she fell. She was apparently knocked unconscious by the fall and drowned in Shoal Creek at the base of the cliff. A hiker found her body the next day. Even solo cavers should use belays.

**Reference:**

James Potts "Accident Report" unpublished report, undated, one page.

**JOHN BROWN CAVE, WV**

**December 15 A**

**Ce — lack of light**

On Sunday, December 15, two teenagers entered John Brown Cave near Harpers Ferry, West Virginia. They had been in the cave several times before but were carrying only flashlights for light. They explored for a couple of hours and started out when their lights grew dim. When these failed they were left using their backup, a cigarette lighter. When this ran out of fuel they tried to continue using the striker but this gave insufficient light.

Another group was in the cave and soon encountered the mud-encrusted pair. They were a little shaken up but otherwise okay. They were given lights and led out of the cave.

**References:**

1. George Dasher "Rockin' Chair" *The West Virginia Caver*, (10)2, April, 1992, p 13.
2. Paul Gillis "John Browns Cave: to the End, Almost" *D.C. Speleograph*, (47)11, December, 1991, p 5.

**PORTER POTTY CAVE,  
TN**

**December 15 B**

**Dr — log fall**

On Saturday, December 15, A group of cavers was ridgewalking at Rogers Cove in Warren County, Tennessee. At one point they encountered a new pit, about 15 feet in diameter. It was rigged and Andrew Porter (22) rappelled in, past two eight inch logs about 20-25 feet long. The 38-foot drop had no continuation, so Porter went to the rope and started to rig himself for ascent. In so doing he bumped one of the logs which wobbled and then broke. Porter threw himself out of the way and was nearly hit by a 10-foot piece. One section was left wedged between the wall and the other log, 15 feet above the floor. To stabilize the situation, Porter shook the bottom of the remaining log, bringing the whole affair down.

Porter again got ready to ascend and discovered that his lower ascender was missing. He found it under the log that nearly hit him. This Petzl Croll had suffered a bit — the safety catch had been snapped off. Porter was forced to ascend using his thumb to keep the cam in place so the ascender wouldn't come off each time it was pulled up.

**Reference:**

Andrew Porter, *NSS Accident Report*, undated, three pages.

**(UNNAMED) CAVE, OR**

**December 24**

**Cc — caver fall**

On Christmas Eve, Tuesday, December 24, Lyle Zimmerman (16) was walking across the site of a county landfill when the ground collapsed beneath him and he fell some 15 feet into a cavity lined and presumably formed by burning garbage. He was able to scramble out of this "hell-hole" but suffered third-degree burns on his hands and burns on 30 percent of his body.

**Reference:**

Editor, "Teen injured in fall down burning sinkhole," newsclipping, December 28, 1991.

**(UNNAMED) CAVE, UT**

**December 28**

**Cec — rappel**

On Saturday, December 28, a group of eight were on a trip to visit a new cave in the same mine shaft as Mine Shaft Cave. Two rappelled partway down the 280-foot shaft and got off in the new passage. John Flacker got on rope next, using only four bars. He also had a spacer between the first two bars, limiting their ability to provide friction. One of the others saw this and called to those below to put on a bottom belay.

When Flacker started down, there came "that unmistakable high pitched whine" — the rappel was out of control. The bottom belay was successful, though Flacker fell 110 feet and smashed into the wall of the passage when he came to a stop. He was presumably bruised but otherwise was uninjured.

**Reference:**

Wayne Bodily "Hell Yes, They're Free Aren't They" *The Utah Caver*, (3)6, December, 1991, pp 143-144.

**Analysis:**

This appears to be a "D" where the incident involves no aid or injury, and I class other normally-belayed falls as such. Indeed, Bodily was critical of having to ask twice for a bottom belay for Flacker. Still, I feel a bottom belay should not be considered standard practice since it often will expose the belayer to rockfall danger, so I classed this as a "C." I think any caver who requests a bottom belay before starting a rappel should not go down, but should exit the cave and get his/her gear and techniques in order.

Bodily recommends putting on more bars than you think you'll need — you can always take one off. Once out of control, any solution is difficult for the victim. Flacker says he jammed the bars together and just kept accelerating. One should try to sit back on the rack before going over the edge, to check the friction, but sometimes the rigging of the rope doesn't allow this.

# 1991 INCIDENTS IN PRACTICE SESSIONS

## SADDLE BUTTE STATE PARK, OR

**February 9**

### ***De — lack of gear***

On Saturday, February 9, a group of three cavers visited Saddle Butte in the Coast Range of Oregon, to practice long rappels. The west face of the butte is a steep, 500+ foot drop and a trail leads to the summit. A 400 foot rope was rigged and Mike Loomis rappelled down, soon disappearing over the curve of the slope. The idea was to be deliberately short-rope and practice the necessary change-over. Unfortunately, when Loomis got near the end of the rope and stopped to change-over, he found he had left his ascending gear at the top. Still, he had a safety Jumar and slid that along as he free-climbed the face. At sections too sheer to climb, he continued using a leg-wrap as a second ascender.

#### **Reference:**

Mike DeChaine "Near Accident at Saddle Butte" *Cavers Forum*, computer bulletin board, February 12, 1991, two pages.

## RAVEN'S ROOST, VA

**May 12**

### ***Ace — rappel out of control***

On Sunday, May 12, the James River Grotto was holding a vertical practice session at Ravens Roost in Virginia. The rappel in question used the highest anchor point and two experienced cavers descended with no problem. Kitty McGann (40) went next. She had been to two prior sessions and felt she knew enough to decline an offered bottom-belay.

At the edge her rack was giving too much friction and she loosened two bars. At the same time she stumbled on the rope pads at the edge and went over the edge. The rack now gave almost no friction and she was in a near free-fall. She froze and did nothing to stop the fall. The victim struck a ledge partway down and then the bottom, a fall of over 100 feet. She suffered broken foot and ankle, dislocated toes, three fractured vertebrae and bruised ribs and sternum. She was transported by foot, vehicle and helicopter to a hospital.

#### **Reference:**

Kitty McGann, *NSS Accident Report*, January 18, 1992.

# 1991 CAVE DIVING INCIDENTS

## BRADT SINK CAVE, NY

**February**

### **De — regulator**

Sometime in the middle part of February John Schweyen entered a sump in Bradt Sink Cave, Schoharie County, New York. About ten feet down he found a narrow, tubular continuation, but declined to explore it — "the water was so cold that his regulators were threatening to malfunction."

#### **Reference:**

Wolfram von Kiparski "The Elusive Jack Patrick Cave System" *Northeastern Caver*, (22)4, December, 1991, pp 104-117.

## PEACOCK SPRING, FL

**Summer A**

### **Do — lightning**

A cave diving class and its instructor, Mark Eyring, were in the tunnel connecting Peacock #1 with Pothole at a depth of about 65 feet when all were momentarily incapacitated by an electrical discharge. Everyone quickly recovered and the dive continued without further incident. A storm was in progress and it was assumed that lightning hit a tree above the cave and was conducted down to the cave via the tree roots. The effect "lasted about half a second and felt like sticking your finger in a 220 volt socket."

#### **Reference:**

Harris W. Martin "Divers get jolted by Lightning in underwater Florida Cave" *The National Association for Cave Diving Journal*, (23)4, 4th Quarter, 1991, p 68.

## SCORPION SPRING, FL

**Summer B**

### **Do — alligator**

Scorpion Spring is near McBride's Spring in Wakulla County, Florida. During the summer Steve Irving and Tim Norkus were exploring when they encountered a five-foot-long alligator. There apparently was no interaction.

#### **Reference:**

Steve Gerrard "No Silt News!" *NACD Journal*, (23)4, 4th Quarter, 1991, pp 64-66.

## (UNNAMED) CAVE, FL

**Summer C**

### **Dr — rock fall**

Three cave divers were visiting an underwater cave near Orlando, Florida. Two of them had penetrated to the end the week before. As they approached the final room, the last in line suddenly found his legs seized "with great strength." He looked back through a cloud of silt to find his legs pinned by rockfall which was still occurring — "rocks were falling like rain." He pulled hard and freed himself. He joined the others in the last room where they were gazing in surprise at a rock "the size of a large van" on the floor. Above it was a white limestone dome in the otherwise black ceiling—the rock had fallen since the trip a week before. They exited without further incident.

#### **Reference:**

Edward Stoner "A Sinkhole Cave In" *Underwater Speleology*, (18)6, November/December, 1991, pp 8-9.

## OLD RUSS PILE SPRING, TN

**June 1**

### **AAdi — drowning**

In the evening of Saturday, June 1, a group of four cavers visited Old Russ Pile Spring, a water-filled entrance in the Wolf River area of Fentress County, Tennessee. The water-filled portion reportedly extends for some 250 feet where it opens into a large air-filled cave. Two remained on the surface while Bob Nadich (66) and Dan Molter (42) geared up and entered the sump. Neither was Cave or Cavern certified but Nadich at least had considerable sump diving experience.

They estimated they would be down for 45 to 60 minutes. When they failed to return in that time one companion followed their guide line and found the two about 30 feet inside, tangled in the line. He went back out and reported this, then returned and was able to free the victims and bring them out. CPR was applied to no avail. They had drowned.

#### **References:**

1. Joe Saunders, personal communication, April 28, 1992.
2. Editor "Ohio Divers Die In Cave Accident" *Fentress Courier*, Wednesday, June 5, 1991, p 1.

3. Editor "Untrained Divers Drown in Missouri and Tennessee" *Underwater Speleology*, (18)3, May/June, 1991, p 4.

#### **Analysis:**

The drowned divers were found with their face masks off, tangled in the line with a good supply of air in their tanks. The air was analyzed and contained no carbon monoxide. In trying to administer CPR and later by hospital personnel, it was noticed that Nadich's windpipe was swollen shut. Nadich had a history of occasional asthma attacks. Saunders consulted a doctor of sports medicine who had treated a swimmer whose asthma attacks were brought on by cold water. Thus it is supposed that the cold water precipitated an attack which was interpreted by Molter and maybe Nadich as well as an equipment failure. They apparently got together to buddy-breathe and became tangled when Nadich went into spasms of suffocation.

Saunders points out—if you have respiratory problems, you should not be cave diving.

## SPOUT CAVE, WV

**June**

### **Di — silting**

In late June, a two-man diving team, Bob Flenner and Dave Chaney, continued exploration in the Spout-Hanna Cave System in West Virginia. They had been working on this for some 16 months, gradually uncovering a complex underwater area. On this trip, they found the visibility to be six feet. A light was placed at the start and they proceeded through known passage. The objective was a small lead that seemed to be headed for Hanna Cave.

They entered the lead and saw silt stir. By the time they were both well into the passage, visibility was zero. They moved a little further and things cleared a bit, again giving six-foot visibility. Cheney, coming last, suddenly discovered he was fouled in the guide line, and signalled with his light that he had a problem. Flenner turned around and helped him untangle the line. In looking back the way they had come, he could see a cloud of zero visibility slowly following. They looked at each other and simultaneously signalled to abort the dive. As they turned to go, visibility dropped to one-foot, then zero.

They proceeded by feel—lights now had no effect. As Flenner, now last, neared the exit hole, he ran into solid rock. No hole, just wall, all around the line. Cheney was out but stayed at the hole, shining his light back toward Flenner. Flenner realized the line must have got into a fissure so he got up to the face and worked the line to get it free. Moving it down did the trick and

after a few feet it was free. When he tried to go through, he hit rock with his tanks — he didn't seem to fit. Was it the correct hole? It had to be. He pulled the line tight, exhaled and lunged forward — he passed through. The remaining 80 feet to the start of the sump was done without further incident. The two decided to quit cave diving after this experience.

#### Reference:

Bob Flenner "Spout Cave 1991" *The West Virginia Caver*, (10)2, April, 1992, p 14.

## DEL RIITO DE ACARITE, FALCON, VENEZUELA

**July 13**

### ***BI — silting***

At about 8 p.m. on Saturday, July 13, two divers, Gustavo Badillo (31) and Eduardo Wallis, entered the Riito de Acarite, a spring in dense jungle at the base of a mountain about 60 miles south of Coro, Falcon, Venezuela. The water is 67 degrees F as the entrance is at about 2400 feet elevation. It was the end of the dry season and flow was down, creating conditions ripe for silting and potential low visibility. Both were very experienced divers but had no cave diving training and no experience in the proper techniques.

They did not run a guideline but carried a spool containing 100 feet of rope. Each was using a single 80 cu ft tank, jacket style BC, one regulator with pressure gauge and three lights. There was no alternate air source. Badillo was wearing a full wetsuit while Wallis had a dry suit. They also had an orange ball float attached to a chest harness by a 15 foot rope.

At first the visibility was ten feet, and they followed a wall and soon found a small air bell. Visibility was now zero and they realized they were in trouble. One groped about and found a second air chamber where they could converse. By feel, Wallis searched blindly and finally made his way back out. He then made several fruitless attempts to find his companion. He and some friends waited all night at the entrance. At dawn they traveled back to Coro and phoned diving friends in Caracas to get help. The divers in Caracas called diving friends in Florida and arranged for a private jet to fly Steve Gerrard and John Orlowski to Venezuela, to rescue the lost diver. At 10:45 p.m., they got on the plane.

They arrived at Coro Airport at 5:30 a.m. and proceeded to the cave by jeep — a helicopter had been arranged but was grounded by fog. A terrifying drive of an hour and a quarter over a 6,000 foot pass brought them to the cave. They geared up and entered the muddy, brown water. They were convinced this was a body recovery. They swam a long distance and encountered an air chamber. In that was the orange float. They looked at each other and Gerrard yelled, "This is nuts! This is ludicrous." They admit to thinking they could sit there a couple hours, go out and say they found nothing ...

They pressed on. Finally Orlowski, in the lead, encountered a large air chamber, some 25 feet long and 15 feet high. He and Gerrard sur-

faced, and there was a speechless Badillo, stumbling forward to embrace them. He had first thought the bright lights were angels, coming to collect him. He was very cold but otherwise okay. Gerrard exited and returned, bringing a bottle of glucose solution. Badillo downed this and the three exited with Badillo breathing from Orlowski's spare hose regulator. His own tank still had some air and this served as a backup. They were soon at the entrance. He had been in the cave some 37 hours. Badillo was placed on a stretcher and driven to a place where he could be picked up by a helicopter. A truly amazing sequence of events.

#### Reference:

Steve Gerrard "Cave Diving Rescue in Venezuela" unpublished report, undated, six pages.

## INDIAN SPRINGS, FL

**November 17**

### ***AAdr — rock fall, drowning***

On Sunday, November 17, a group of very experienced cave divers visited Indian Springs in Florida. This dive was the first in a series that had been in planning for two years. Special decompression tables had been generated to account for the unique profile of the cave and the extreme depth of the proposed exploration. Two divers, Parker Turner and Bill Gavin, would go deep, supported by the others at lesser depths and on the surface. The plan involved "a 40 minute transit at 140 FSW while breathing a 73/27 nitrox mix, a descent and exploration transit at 300 FSW while breathing a 44/42/14 HeN2O2 mix, and another 40 minute transit at 140 FSW" on the way out of the cave. The deep transit was expected to last 20-25 minutes. The stops at 140 FSW would be served by two 80 cu ft staged bottles and the deep portion would use back-mounted 104s. They started in at 10:29 a.m.

The trip into the cave went well, and the deep exploration was done in the Wakulla Room where they checked three sides, but found no leads and felt no suspicious flows. Sixty-three minutes into the dive they started out. At that time Gavin had 2300 psig in his tanks and Turner presumably the same. Two or three minutes later they had reached the Nitrox bottles at the top of the room and began using them. They continued and picked up their second stage bottle; Turner signalled to Gavin that his Diver Propulsion Vehicle seemed to be running slow. They linked up using a tow-strap, and Gavin increased his vehicle's setting to maximum. They were only about 1,500 feet from the entrance.

At a little after 11 a.m., there occurred some sort of major underwater collapse. The resulting current changes caused silting that affected other divers operating in Indian Spring and lowered the surface level of the spring about one foot. Miles away, a swimmer in another spring noticed a sudden reversal of current.

At the upstream/downstream junction there is a distinctive arrow, and as this came into view Gavin estimated their bottom time would total 105-110 minutes. They made the left turn at the junction and were only 500 feet from the en-

trance. Immediately it was apparent that the visibility had decreased. The floor was already obscured by clouds of silt but the line was still in clear water. The further they went the worse it got. Finally, they had to stop using the DPV and swam, keeping line contact. When they got to about where the Squaw's Restriction should be, the line disappeared into the sand on the floor. They continued, pulling the line out of the sand as they went, but soon reached a point where it was too deeply buried. Visibility was down to a foot or less. Gavin heard Turner shout into his regulator, "What's this?"

They backed out of the low area and removed their stage bottles and scooters. At that time the second bottle that Gavin had been using ran out, and he switched back to his doubles which still had about 2,000 psig. There were two parallel lines in this part of the cave, and they soon found that the other disappeared into the sand as well.

Gavin secured the end of the reel line they were carrying to the main line where it went into the sand and tried to search for the way out. The restriction ahead seemed completely blocked by sand and perhaps rock, but visibility was so poor that they were no longer sure of their location. There was flow but there seemed no way through. Gavin began to think they must have made a wrong turn. While Turner continued to search the restriction, Gavin retreated back into the cave for 300 feet and again came to the upstream/downstream junction. They had gone the right way. He returned to where they had stashed their scooters and bottles and met Turner there.

They tried for another 45 minutes to follow the buried line, to no avail. At one point Turner pointed to his pressure gauge — it showed 400 psig. On his slate he wrote, "What do we do?" Gavin had no miracle ideas and replied, "Hold on — I'll go look." He searched ahead yet again using the reel line, sweeping left and right, but again finding no passage.

After five minutes he returned to the cache but Turner was not there. Gavin took his second stage bottle, found it still had 600 psig, and began using that. What could he do? As he tried to think of something that would save the day, that bottle ran out so he switched back to his doubles. These now had less than 300 psig. He decided to have one last attempt.

He soon found another line that had been "T'd" into the main line. Where did this come from? He followed it and came to a point where the cave seemed to open up and saw something hanging down, at the edge of his vision. He went over and found it was the second stage of a scuba regulator. As he passed, with his tanks almost empty and his regulator beginning to offer resistance to breathing, his manifold caught on the hanging regulator and he rolled to free it. This made him look up and he saw the permanent line go up steeply. He suddenly realized he had cleared the restriction and knew where he was. He raced to the decompression bottles, hung at 100 foot depth, and immediately made use of one, there being essentially no air in his tanks at that point.

As he decompressed, he realized that Turner must have drowned. The regulator that had

caught on his was Turner's, and he must have removed it to get through the restriction just behind. Visibility was less than two feet. His companions found him there and were able to tell him what little they knew about the mysterious collapse. Despite his unscheduled activities Gavin did not suffer decompression sickness. Turner's body was found later, after visibility had greatly increased.

#### References:

1. Bill Gavin "Diving Accident at Indian Springs" *NACD Journal*, (23)4, 4th Quarter, 1991, pp 75-76.
2. Steve Irving "Account of Surface Personnel" *ibid.*, p 77.
3. Editor "Geologic Cataclysm takes Cave Diver's Life" *Underwater Speleology*, (18)6, November/December, 1991, p 3.
4. Milledge Murphey "November 17, 1991" *NACD Journal*, (24)1, Winter, 1992, pp 4-5.

#### Analysis:

It is assumed Turner found he could not wait for Gavin, T'd in his reel line and, dragging his tanks, made his way through the restriction. In so doing, he made the opening large enough for Gavin to pass through later with his tanks on. Turner must have run out of gas just short of the decompression tanks. When he lost consciousness, he let go of the tanks and floated to the ceiling. His tanks then fell, landing on the main line, and stayed there. These final acts are miraculously what just barely allowed Gavin to reach the decompression tanks and live ...

# National Speleological Society Accident/Incident Report Form

Date of Accident/Incident: \_\_\_\_\_ Day of Week: \_\_\_\_\_ Time: \_\_\_\_\_

Cave: \_\_\_\_\_ State: \_\_\_\_\_

Reported by:

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Name(s) of Person(s) Involved	Age	Sex	Experience	Affiliation	Injuries or Comments

Describe the accident as completely as possible on the back of this form or on a separate sheet. If possible obtain information from those involved. Use additional sheets if necessary. A report in the style of "American Caving Accidents" is ideal. The following checklist is suggested as a guide for information to be included:

( ) Events leading to accident. Location and conditions in cave.

#### The Accident/Incident

- ( ) Description of how it occurred.
- ( ) Nature of injuries sustained.
- ( ) Analysis of main cause.
- ( ) Contributory causes (physical condition of caver, weather, equipment, clothing, etc.).
- ( ) What might have been done to prevent the accident/incident.

#### Rescue

- ( ) Actions following accident/incident.
- ( ) Persons contacted for help. A flowchart may be helpful.
- ( ) Details of rescue procedures.

Further details were reported in:

- ( ) Newspapers    ( ) Grotto newsletter    ( ) Other
- (Please enclose copies if possible.)

Please return completed report to the NSS as soon as possible after the accident.

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