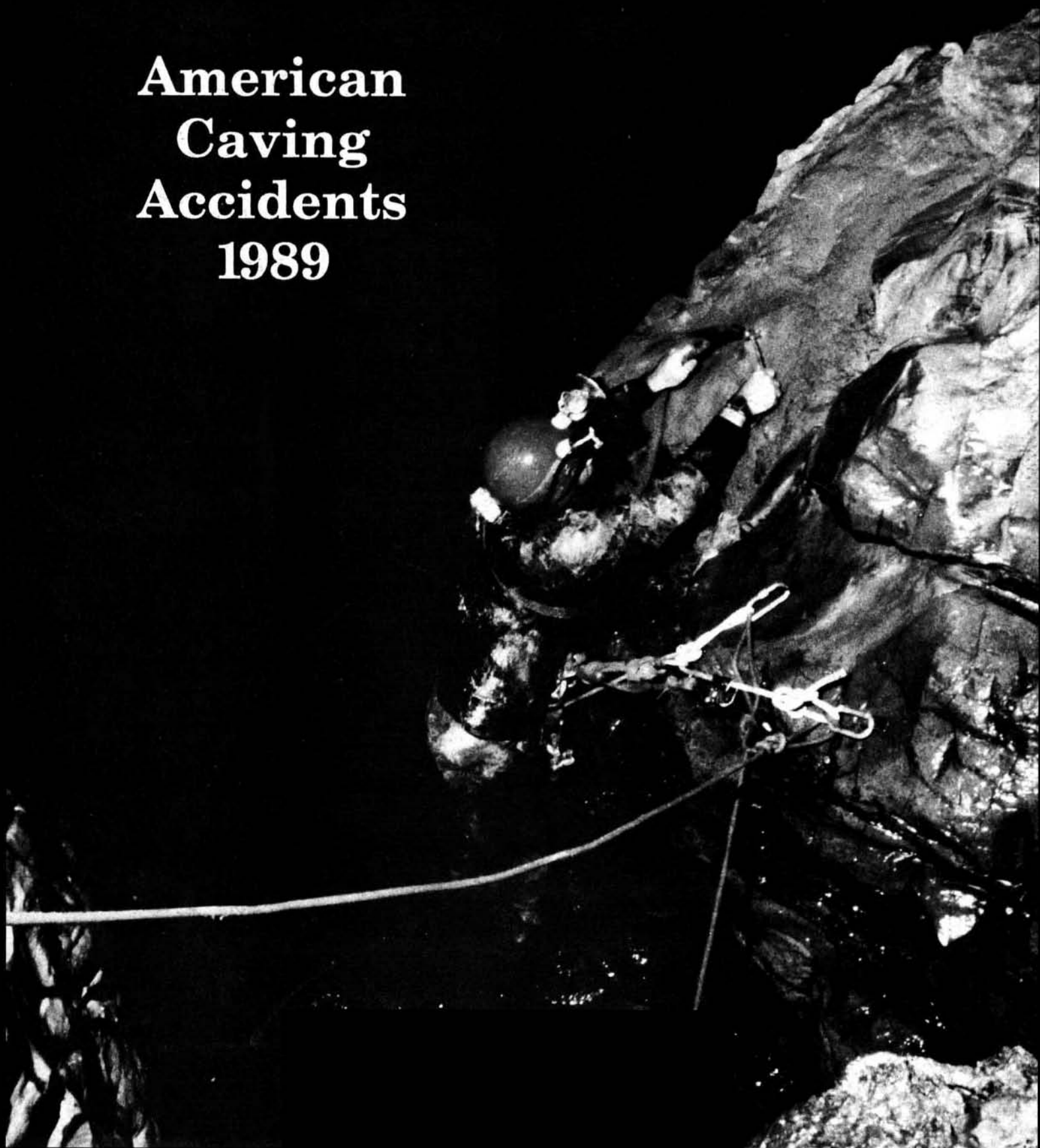


NSS NEWS

DECEMBER 1990 — Part II

American Caving Accidents 1989



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1990 American Caving Accidents

RAPPEL DEVICES — SOME OBSERVATIONS

By Steve Knutson

1. Carabiner-Brake Bar

John Ganter sent me some reports last Spring describing the failure of carabiner-brake bar devices in rappel situations. In the first (1), in a practice session, a kink in the rope apparently caused the bar to shift off the gate opening; the gate partly opened and bent sideways, reducing friction greatly. In the second (2), a caver backed over an edge in Hellhole on his stomach; the rappel device also scraped over the edge and the gate partly opened. The bar then came off and the rappeller was saved by his second biner-bar and a bottom belay. The third (3) was in 147 foot Cemetery Pit and again the gate got open, bent sideways, and the bar escaped. The rest of the drop was safely negotiated on one biner-bar. The two in-cave incidents happened in 1966 and 1967, while the practice incident occurred in 1971.

A photo in the 1971 reference clearly shows a steel oval biner with a solid aluminum brake bar. The other references are old enough that steel biners may be involved. Steel carabiners are a bad choice. The typical steel oval has a very small overlap at the gate end and the stock from which it is made is smaller than an aluminum oval and it thus mates poorly with an aluminum brake bar. The resulting "slop" is probably what allows the gate to open and bend sideways when in use. Moreover, in a test result I saw some years ago, of all biners then sold by REI, the steel oval was weakest, testing at 1700-1800 lbs.

I believe these examples of carabiner-brake bar failure are due to such carabiner-bar mismatches. One should never use steel ovals, but many of today's aluminum ovals are unsuitable as well, having bumps on the gate end of the body of the biner. These bumps prevent the bar from sliding up and securing the gate in use.

The tests done in the early 70's which concluded carabiner-brake bars were safe for rappels (testing at around 1800 lbs) used the standard aluminum oval (no bumps) and aluminum brake bars. These have been used for decades with no documented rappel fatalities. The device is thus a good one for situations where lightness and small size are required. The problem with this device is that you only have two friction levels that can be applied — one biner/bar or two.

2. The Rack

The rack is, in my opinion, the best rappel device there is. Yet, there are potential problems. First, there are bars made specifically for racks, with smaller holes than standard bars. These bars will not slide around the curve of the rack and thus must stay on the nut side. If the nut comes off, off go the bars, and this actually has happened in caves (see ACA 88). The rack is also easier to thread and unthread with bars on the back side.

It is possible to thread a rack backwards (see 11-11A, this issue) with potentially disastrous results. One would think this just wouldn't happen, but, also, I once did it. It was on a broad ledge at the top of a 150 foot drop; I rigged in and the rope refused to run—I looked down and discovered the error. The new U-shape hollow steel bars look as if they would eliminate this problem.

3. The Petzl Descender

I have no experience with this device. It is widely used by Europeans, but this is with relatively short drops in the European rebelay style. A new Australian device is similar to the Petzl, but has a brake that activates whether you squeeze or release it.

4. Figure-8

The figure-8 has no moving parts and is small and light, but you have to detach it from yourself to rig and de-rig it. In my opinion this is a fatal flaw. In serious caving there are many situations where if something is dropped, it is gone forever. There is a figure-8 that doesn't have this flaw—the CMI Rescue 8 (with ears). This has a third hole, in the waist of the device, through which a biner can be inserted. This "8" is left on the harness, a bight of the rope is passed through the big hole and then through the biner. It is de-rigged by unclipping it from the biner.

Someone pointed out that the problem of detachment loss could be eliminated by having a carabiner attached to your harness on the side, clipping the big end of the 8 to this, then thread the rope, clip the small end to your main biner, unclip from the side biner and descend. To de-rig, clip to the side biner, unthread the rope, and carry the 8 clipped to the side biner.

The ears on some 8's are for another potential problem—the loops of rope getting all to the outer end of the 8, as could happen when you take tension off it, to produce a knot.

The problems with an 8 are compounded if you are rappelling into or rigging for descent from a swim.

5. Body Rappel

A few weeks ago I had occasion to want to do a belayed climb in a cave when my vertical gear had been left at the entrance pit. We had a bolt kit and a couple of biners. I did the climb and definitely did not want to downclimb it. So I put in a bolt, doubled the rope for pull down, and did a body rappel.

The body rappel is looked on with disdain these days, but I don't think you are a complete vertical caver if you don't know how to do one. In an emergency it can be very useful. And let's face it, it is much less complicated than any of the others. Try it—you'll hate it, but it just might come in handy sometime.

Conclusion:

Most problems with rappel devices seem to come from too little friction, rigging wrong, or a poorly set up device. I make it a habit of rigging in, then putting real stress on the anchor in a direction that won't put me over the edge if something is wrong. Even if the rope is rigged so it goes pretty much straight down the drop, this can be done. If your device isn't giving proper friction, you'll know it.

All these devices will do the job if you learn to use them properly.

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Job Blakely placing a bolt, top of 140M drop Pozo de Sepalao, Guatemala.

"Rock!" Photo of a common occurrence in caving.

AMERICAN CAVING ACCIDENTS - 1989

This is the 1989 issue of the annual compendium of safety incidents in North American caving. Considering that a few reports are usually yet to arrive, the volume and distribution of incidents seems to fit rather well with the past three years.

1. RESULT OF INCIDENT

	1986	1987	1988	1989
Code — Result				
AA Fatality (body evacuation)	4	3	4	1
A Injury (requiring aid or evacuation)	10	15	11	16
B Evacuation or other aid (no injury)	21	14	20	19
C Injury (no aid required)	10	15	14	12
D No injury or aid required	19	16	12	20
Total	66	65	64	68
Total AA, A, B, C	47	48	50	48

2. Cause of Incident

Code — Cause				
a acetylene explosion	3	0	1	1
b bad air	3	2	1	1
c caver fall	25	14	20	19
d drowning	1	2	0	2
e equipment failure	14	17	20	16
f flood	1	3	3	4
h hypothermia	1	2	0	4
i illness	0	0	2	2
l losing the way	8	5	3	9
r rockfall	12	17	7	11
s stuck	3	1	0	1
t trapped	-not used-			7
x exhaustion	0	1	1	3
o other	3	3	8	6
3. SCUBA	9	7	10	5

1989 INCIDENT SUMMARY

The totals for 1989 are comparable in all categories to the previous three years. There was only one fatality (7-23A) and this is certainly an improvement.

There were three main causes of incidents, **caver fall**, **equipment failure** and **rock fall**, followed closely by **losing the way** and being **trapped**, though those two are usually compounded by other causes, especially equipment failure (spelled f-l-a-s-h-l-i-g-h-t).

Of **caver falls** there were the usual bunch where a hold broke (3-11, 3-17, 8-6, 9-18C), the climber slipped (Spring A), was pulled by a pack (3-5A) or fell from unknown causes (1-12, 5-16, Summer H, 11-18A). These, of course, were unbelayed climbs. There was a belayed fall (2-28) where the pitons pulled out but took enough of the force of the fall to prevent serious injury. Other, less common causes, were floor collapse (Summer G), collapse of an old wooden ladder (3-25), climbing hand-over-hand when the rope broke (1-3), a partial fall running from a flood (Fall), an actor in a video not being told about a pit he would encounter (Sept A), a large group following in line each stepping across a hole until finally someone is not paying attention (8-26), a caver jerked off holds by someone testing the handline (May C), an instructor helping ferry kids across an exposed slope with a handline, falling down the drop himself (11-11C), and a caver who headed for the top of a rope, slipped and ended up hanging by his foot over the drop (Summer A). Happily, none of these were fatal.

Note that the March 28 incident in last years ACA actually happened in 1989 and should have been in this issue.

Under **equipment failure**, we have the usual light failures (2-5, 332 NSS News December1990

3-24, 7-15, 9-8) and inability to climb a rope hand-over-hand (July). In another example of the latter, the rope broke causing injury (1-3). Another group was using a single set of Jumars and couldn't make it (8-27). A Gibbs ascender had a worn cam and slipped (4-19), while another failed to lock but the caver was saved from a heel hang by a seat safety ((Summer D). Another wasn't so well-equipped and nearly died (May A). A rack was threaded wrong (11-11A), an old wooden ladder collapsed (3-25), a bolt bent and stripped (9-28), a glove caught in a figure-8 (9-18A) and a rope sheath wore, exposing the core (9-5).

Rockfall incidents were the usual sort of someone climbing above someone else (1-5, 1-14, March, 6-16, Summer E, September B) and shifting boulders (2-11A, 3-4, 12-22) as well as the odd floor collapse (4-29), dislodging a rock with a wheelbarrow (7-25) and a cut lip from a pivoting rock in a crawlway (11-11B).

Losing the way was common with most due to light failure or poor lights (2-5, 3-24, 9-8, 10-22, 11-12), but others resulted from bad communication (7-23), and confusion (7-15, Summer B).

There were no really serious **floods** but several flood scares (Winter, 8-30, 11-19, Fall). Flooding contributed to the only fatality in 1989 (7-23A), by **drowning**. There was another such incident, this time a near-drowning (2-22).

Hypothermia cases are all potentially serious, but this year there were no fatalities (Winter, 4-15, Summer F), though, again, hypothermia contributed to the only fatality (7-23A).

Of course, there was the typical carbide dump in an ammo box resulting in an **acetylene** explosion (12-29). **Bad air** created an illness, a near fatality from metabolic alkalosis (6-4). There was only one case of exhaustion (May B).

Cavers were **trapped** by inability to get past a rebelay (3-5B), losing the way on a thru-trip (4-15), inability to climb hand-over-hand (July), inability to Jumar (8-27), by flooding (8-30), having a rope break (1-3), and by a boulder on the leg (12-22).

The **Other** category includes the really bizarre, the unusual: a wave in a sea cave smashing one kayaker against another (Spring B); a caver injured because he jumped into shallow water (Spring C); a second degree carbide burn (8-1); kneecaps spontaneously dislocating (2-11B, 11-18B); and getting poked in the eye (11-23).

Note that I am using the analysis of those on the scene as much as possible. Please address any criticisms, new comments, or information on any new incident to:

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This publication is only as good and complete as the reports received allow it to be. This is **your** publication, cavers, please contribute. I want to thank those who sent publications or reports—this has definitely improved over the years.

It should be noted that these incidents are less than the real total. This was demonstrated one evening last Summer when I sat down with three of the more active West Coast cavers and learned of a number of incidents that would have gone unreported otherwise.

INCIDENT CHRONOLOGY, 1989

Previously Unreported:

Dr	Sticky Wicket Cave	CA	10-87
AAi	Tongue River Cave	WY	2-20-88
Do	Stephens Gap Pit	AL	5-15-88
Ae	Unspecified Pit	TN	Summer 88

1989 Incidents:

Atce	Unnamed Pit	TN	1-3
Dr	Lechuguilla Cave	NM	1-5

Ac	Johnson Cave	TN	1-12
Dr	Onyx Cave	AZ	1-14
Bh	Practice Cave	CA	Winter
Ble	Airplane Cave	TN	2-5
Dr	Paxton's Cave	WV	2-11 A
Ao	Scott Hollow Cave	WV	2-11 B
Bd	Sistema Agua Blanca, Tab.	MEX	2-22
Dc	Sistema Agua Blanca, Tab.	MEX	2-28
Dr	Cueva Cheve, Oax.	MEX	3-4
Ac	Cueva Cheve, Oax.	MEX	3-5 A
Bt	Cueva Cheve, Oax.	MEX	3-5 B
Cc	Rimstone Falls Cave	WV	3-11
Ac	Cueva del Tecalote, Tam.	MEX	3-17
Ble	Anvil Cave	AL	3-24
Cce	McCart's Pit	IN	3-25
Ao	Unspecified Sea Cave	CA	Spring B
Ao	Corredor Cave	Costa Rica	Spring C
Btlxh	Pine Hill Cave	KY	4-15
De	Cemetery Pit	GA	4-1
Cr	Climax Cave	GA	4-2
Ac	Saltpeter Cave	TN	5-16
Be	Lechuguilla Cave	NM	May A
Bx	Lechuguilla Cave	NM	May B
Cc	Lechuguilla Cave	NM	May C
Do	Lechuguilla Cave	NM	May D
Cbi	Dragon's Breath Cave	CA	6-4
Ar	Mammoth Cave	KY	6-16
Be	Greenhorn Cave	CA	Summer A
Dlcx	Greenhorn Cave	CA	Summer B
Bt	Hoaches Cave	OH	Summer C
De	Bigfoot Cave	CA	Summer D
Dr	Bigfoot Cave	CA	Summer E
Bh	Unspecified Cave	CA	Summer F
Dc	Unspecified Cave	CA	Summer G
Dc	Un-named Cave	CA	Summer H
Bte	Unspecified Cave	TN	July
Bel	Rehoboth Church Cave	WV	7-15
AAdhf	My Cave	WV	7-23 A
Bl	Tumbling Rock Cave	AL	7-23 B
Cr	Great Onyx Cave	KY	7-25
Co	Sinking Cove Cave	TN	8-1
Ac	Doghill-Donnehue Cave	IN	8-6
Ac	Sharer's Cave	PA	8-26
Ate	Ludington's Cave	WV	8-27
Bft	Snail Cave	AL	8-30
Dc	Bigfoot Cave	CA	Sept A
Dr	Lechuguilla Cave	NM	Sept B
De	Lechuguilla Cave	NM	9-5
Ble	Cave near Bowling Green	KY	9-8
De	Nielson's Well	UT	9-18 A
Bs	Nielson's Well	UT	9-18 B
Cc	Nielson's Well	UT	9-28 A
De	Nielson's Well	UT	9-28 B
Da	Ashmore Spring Cave	AL	10-21
Bl	Wind Cave	SD	10-22
Def	Falling Springs Cave	AL	Fall
Ce	Ellison's Cave	GA	11-11 A
Cr	Ashmore Spring Cave	AL	11-11 B
Ac	Crooked Creek Ice Cave	KY	11-11 C
Bl	Cueva del Diablo	MEX	11-12
Ac	Clark's Cave	VA	11-18 A
Ao	Ellison's Cave	GA	11-18 B
Df	Onesquethaw Cave	NY	11-19
Co	Cueva Cuchillo	MEX	11-23
Art	Cave near Austin	TX	12-22
Bi	Sotano de Cepillo	MEX	12-29

Diving:

AAd	Blue Grotto	FL	1-29
AAd	Morrison Spring	FL	3-4
Do	Gilmore Springs	AL	3-18
AAd	Vortex Springs	FL	3-19
AAd	Cenote Bolom Chojol, Yucatan	MEX	9-10

PREVIOUSLY UNREPORTED INCIDENTS

Dr - Sticky Wicket Cave, California

October 1987

In Sticky Wicket Cave near Santa Cruz, California, a caver was exploring solo, at night. He was wearing a wetsuit; at one point he entered a wet crawlway, feet first. He bumped against a granite cobble wedged in the ceiling, but got past it. However, when he wiggled it, the side and ceiling collapsed in a shower of decomposed granite sand and cobbles plus a 75 pound limestone rock. The caver let everything settle for a few minutes, then dug out the debris on top of the 75 pound slab and crawled by without further incident.

Reference: Dan Clardy *Personal Communication* June 1990.

* * * * *

AAI - Tongue River Cave, Wyoming

2-20-88

At about noon on Saturday, February 20, Mike Hogue (25), his wife, and at least one other companion entered Tongue River Cave in the Bighorn Mountains near Sheridan, Wyoming.

Hogue had recently had surgery and still had a tube for medication in his chest. He weighed well over 200 pounds, but was "apparently in good physical condition." They proceeded to the "Rain Room" and at some point Hogue suffered a seizure and collapsed. Companions went for help and the Sheridan County Sheriff's Office dispatched ambulance and rescue teams. Rescuers soon located Hogue but extensive resuscitation efforts were unsuccessful, and he was pronounced dead at 5:40 p.m. He was then placed in a litter and transported from the cave.

References:

1) Scott Stackpole "Story man dies in Tongue River Cave..." *The Sheridan Press* Feb. 22, 1988, p.1.

2) Bob Montgomery *Personal Communication* Jan. 15, 1990.

Analysis: There was reportedly the use of cocaine involved in this fatality.

* * * * *

Do - Stephen's Gap Pit, Alabama

5-15-88

On Sunday, May 15, 1988, four cavers visited Stephen's Gap Pit in Alabama. There were "several large, dead, precariously perched trees or logs in the entrance area." They rigged the highest drop possible (160 to 165 feet) and Mark Jancin (33) started down as a large second group of cavers and bystanders arrived. Jancin reached the bottom and got off rope and out of the rockfall zone. For the next 5 to 10 minutes "many small rocks" were heard hitting the bottom of the drop; this apparently was brought under control above, so Rod Willard (27) started down. He was inexperienced in long drops, so Jancin bottom-belayed him, keeping within 2 to 3 feet of a protective alcove.

When Willard was about one-third of the way down, Jancin glanced up and saw a "sprawling, dendritic shadow" falling past Willard—he jumped for the alcove and at the same time put tension on the rope. A second later, a 25 foot section of tree hit the bottom, the tip within 5 to 6 feet of Jancin. Its maximum limb size was 6 to 8 inches in diameter. Willard was not hit and continued down. The rest of the pit trip was completed without further incident. Witnesses reported that the tree-fall was spontaneous—not human-caused.

Reference: Mark Jancin "Incident Report" 5-19-89, unpub. 1 p.

Ae - Unspecified Pit, Tennessee

Summer 1988

It is reported that at least one person of a caving group was unable to get out of a 50 foot pit in east Tennessee. The authorities were called and the local Rescue Squad responded. An EMT descended and checked the victim. Rescuers then pulled him up using a manila rope. About 25 or 30 feet up, the rope broke. The victim fell back to the bottom, breaking a leg and the arm of the EMT, who was standing below him. (Jeff Cooper **Personal Communication** July 11, 1989).

1989 INCIDENT REPORTS

Atce caver fall - Unnamed Pit, Tennessee

1-3-89

On Tuesday, January 3, six teenagers visited a cave on Whiteoak Mountain near Ooltewah, Tennessee. They entered in the afternoon, using a rope as a handline to aid the descent of the pit entrance.

Three had difficulty climbing out, so they had the last three hold the rope while they were pulled out, as a group, by the others. They got part way up when the rope broke. Chad Hardin (14) and Shawn Aikens (15) landed on a ledge, but Justin Hulsey (13) fell 30 feet to the bottom, breaking a leg.

Help was summoned and police called the cliff/pit/cave rescue team of the Chattanooga-Hamilton County Rescue Service, as well as paramedics and a fire department. A rope was rigged and a rescuer descended to the ledge while a haul system was rigged. The two on the ledge were hauled up while Hulsey's leg was splinted. Hulsey was then hauled up. A helicopter was available, but was not needed.

References:

- 1) Beth Elliott, **NSS Accident Report** undated, 2 pp.
- 2) Ed. "Ooltewah teen is injured in cave accident" **The Chattanooga Times** Jan. 4, 1989, p B1, 4.

Dr rockfall - Lechuguilla Cave, New Mexico

1-5-89

On Thursday, January 5, four cavers were doing the first ascent of Apricot Dome, near Apricot Pit in Lechuguilla Cave, Eddy County, New Mexico. At a "70 degree, ascending, ramplike passage," two cavers remained at the bottom while Mark Champagne free-climbed, ascending some 60 feet while traversing about 100 feet. This got him to a room and boulder choke at the foot of a 90 degree pitch.

Some rocks were apparently dislodged and a warning shout was made. Kent Wilson (29) was one of the two at the bottom of the chute. He dove for an alcove 5 feet to the left, but was struck a glancing blow on the right side of his polyethylene, construction-type hard hat. The impact knocked him down and his carbide lamp went flying as did his eyeglasses, even though they were secured with an elastic "Croakies" strap. The helmet was not damaged and Wilson seemed to be alright, so they continued. The only result was a stiff neck that lasted several months.

Reference: Kent Wilson **NSS Accident Report** undated, 2 pp.

Analysis: It may be that those at the bottom should have been in the alcove already — let's face it, "Rock!" happens.

Ac caver fall - Johnson Cave, Tennessee

1-12-89

On January 12, a caver was exploring solo in Johnson Cave in Tennessee. In the "Hall of the Mountain King" he fell and suffered a broken leg. Apparently he had left word of what he was up to, for a search and rescue soon occurred. The victim was found "sitting up

against a rock and having a bite to eat, by the light of his carbide lamp (... on its last charge)."

Reference: Ed. "Editorial Remarks" **Speleonews** Feb. 1989, p 3.

Dr rockfall - Onyx Cave, Arizona

1-14-89

On January 14, a group of cavers was executing the last portion of an Escabrosa Grotto training program — a descent and ascent of 165 foot Hell Hole in Onyx Cave, Arizona. They entered at 8 a.m. and proceeded several hundred feet to the pit. This contained an offset halfway down and a very tight place below that called the "Selector Window." The leader descended to the offset and re-rigged the rope for the last portion of the drop as the others descended. It was discovered that a main-rigging carabiner had been left unlocked at the top, but this was corrected.

The leader descended to the Selector Window, but could not fit through. He chose to remain there and the others completed the descent. Another unlocked 'biner was "corrected" at the landing. The leader was exposed to rockfall, but nothing large enough to cause injury came down. The rope apparently was just barely long enough.

Reference: Marion Vittetoe **Personal Communication** 12-14-89; Terry Sweet **Personal Communications** 11-15, 12-15-89.

Analysis: This is not much of an incident, but deserves some comment. First, it is hard to see the point of deliberately exposing oneself to rockfall, especially in a training exercise where one should be teaching safe caving. Rockfall is a leading cause of cave accidents. Second, the really unsafe practice here seems to be caving where the participants are not getting along; personality conflicts and attitude problems which were reportedly present are anathema to safe caving. In a situation where such obviously exists, all participants are guilty. Call it off.

Regarding the unlocked locking 'biners, most pit rigging is probably done with non-locking 'biners which are more than adequate for the job. So if the 'biners aren't locked, don't panic. If the rigging is in flowing water, or where a flood might reach it, use locking 'biners and lock them.

Bh hypothermia - Practice Cave, California

Winter 1989

A group of cavers spent a long time exploring in Practice Cave, near Santa Cruz, California. By the time they had exited, one caver had slipped into hypothermia, but this was not noticed by the others. They walked back in the rain to one caver's house, doing a 900 foot elevation gain. There, the hypothermia was discovered when the affected caver proved more incoherent than usual. He was put in a hot shower and soon recovered. It should be remembered that a hypothermia victim has essentially stopped producing body heat and can actually continue to walk or whatever until he drops dead, having used the last of his energy.

Reference: Bob Richardson **Personal Communication** June 1989.

Ble lost, poor lights - Airplane Cave, Tennessee

2-5-89

At about 4:30 p.m. on Sunday afternoon, February 5, four men went exploring in Airplane Cave, a well-known cave in Tipton, Tennessee. These were George Beason (21), Clayton Waller (22), Manuel Watson (22) and Steve Brooks (22). Only one of them had been in the cave before. They were without hard hats, and had only one flashlight each. After eight hours, they were trying to get to the "Clay Room" when they realized they were lost. They attempted to follow arrows on the wall, but these were inconsistent. Two flashlights

were lost when they were dropped down inaccessible cracks. Finally, three decided to stay where they were while one, Manuel Watson, continued to search for the way out; it was around midnight.

Friends or relatives notified the Hamilton County Rescue Squad around 7:30 a.m. Their cave team proceeded to the cave and encountered Watson at 8:30 as he exited. Fifteen minutes after entering, the rescue team heard the lost crew yelling for help; they found them in a dry area of belly-crawl maze-like passages. They were cold, hungry and thirsty, but uninjured. They had been in the cave for 16 hours.

References:

1) Kenny Sloan "4 Cavers Lost for 16 Hours" **Chattanooga News-Free Press** Feb. 6, 1989, p 1,2.

2) Ed. "4 Men are found after 16 hours in Tiftonia's Airplane Cave" **The Chattanooga Times** Feb. 7, 1989.

3) Beth Elliott **NSS Accident Report** undated, 3 pp.

Analysis: After the lost cavers were heard yelling, they had to be located in the 3-D maze. This occurred when a rescuer started down a tube and "smelled a strong odor of alcohol." They admitted to "only having 4 to 5 beers each" before entering the cave...but at least they got their pictures in the papers.

Apparently lost-caver rescues occur several times a year at Airplane Cave.

* * * * *

Dr rockfall - Paxton's Cave, Virginia

2-11-89

"On Saturday, February 11, 1989, a group of twelve cavers from Frederick Grotto were on a sport trip through Paxton's Cave in Virginia. Two cavers had visited the cave previously. Conditions were just a bit wetter than the previous trip three months before. All members were experienced cavers."

"Tom Lupp (33) was leading the group as they headed for the main formation room. Approximately one hour into the trip the group was looking for the proper route in a breakdown area. Lupp climbed on a large rock slab, about 5 by 5 feet, to tie his boot lace. He sat there and talked to a companion for a minute when the rock suddenly began to slide. It moved about five feet and came to rest against another rock, with Lupp ending up between the two rocks. His only injury was a bruised left forearm."

"Approximately one-half hour later, Tim Folmar (22) was climbing over some wedged chockstones. Most of the group had already climbed over, and as Tim pulled himself up, the rock fell down about 3 feet. He jumped to another chockstone only to have it fall away. He finally landed on a solid rock. Due to the presence of marks in the mud, it was obvious that the rock had been climbed over many times. Three and one-half hours into the trip, several members went through the gate which is near the back of the cave. Peggy Hurley (21) and Jeff Brandenburg (23) were standing near a wall. Hurley leaned against the wall and a rock slab came loose, falling to the floor near her heel and almost hitting Brandenburg's foot."

"The group exited the cave without further incident."

Reference: Thomas Lupp **NSS Accident Report** undated, 2 pp.

Analysis: Lupp had heard no reports of loose rocks in this cave before. Furthermore, there were no signs of unusual weather or temperature conditions.

* * * * *

As other, knee dislocated - Scott Hollow Cave, WV

2-11-89 B

On Saturday, February 11, a group of cavers entered Scott Hollow Cave, Monroe County, West Virginia, on a biology/hydrology scientific trip. About 1000 to 1500 feet into the cave, the group was walking down the main passage when Bill Jones' (40) kneecap suddenly popped out of joint. A paramedic was in the group but the

dislocated kneecap, a very painful condition, refused to yield. The victim attempted to walk but could not. Assistance was requested and Jones was evacuated on a Stokes litter. It was six weeks before he could put weight on the injured leg.

Reference: George Dasher "Rockin' Chair" **The West Virginia Caver** 7(2), April 1989, p 8.

Analysis: One of the rescuers left Jones at the hospital, went home, changed clothes, and proceeded to a pizza place; the victim was already there, eating pizza!

* * * * *

Bd near drowning - Sistema Agua Blanca, Tab., Mexico 2-22-89

On February 22, three cavers were surveying in Sistema Blanca in the State of Tabasco, Mexico. These were Warren Netherton, Jim Pisarowicz and David Dayer. This was apparently a pick-up crew, since Dayer could speak only French but they could communicate since Pisarowicz managed "some broken French." They managed the survey with Dayer holding the "dumb" end of the tape.

They mapped down a slope in a huge passage to the edge of a lake. Dayer could not swim, and on previous trips he had passed such water obstacles on a fixed line by pulling himself along.

Pisarowicz swam ahead and found the lake to be over 100 meters long and nearly all swimming depth. Along one margin, however, were sufficient holds that one could pull oneself along, except for two 25 meter sections. Dayer crossed using a fixed line as before.

In the extremely muddy passage beyond, Dayer's Petzl carbide lamp and generator became so mud-packed that it ceased to function and he was left with only his Petzl electric. By the time they returned to the lake the electric had also stopped working. Netherton gave Dayer a spare mini-maglite and this was attached to Dayer's helmet. Netherton then swam across the lake towing everyone's packs.

Dayer headed back across the lake, with Pisarowicz swimming alongside. About ten meters out, Dayer began "flailing around." Pisarowicz tried talking to calm him down but he panicked, let go of the rope and "sank like a rock."

Pisarowicz swam to that point and dove underwater, where he managed to get hold of the collar of Dayer's coveralls. He pulled Dayer up to the surface where he was able, though "coughing and retching," to grasp the rope again. The only light now was the mini-maglite on Dayer's helmet, and Netherton's light at the other side of the lake. Pisarowicz then got Dayer back to shore.

Dayer soon "regained his composure" so Pisarowicz swam the lake and got an electric lamp, fixing it to his helmet. He conferred with Netherton and it was decided to re-rig the rope so that the attachment point at the far (Dayer's) end would be high, keeping Dayer well out of the water for half the distance across.

Once the rope was re-rigged, Dayer indicated he knew what to do and they again started across. About halfway, he again began to panic; Pisarowicz grabbed Dayer's collar and towed him the rest of the way.

Reference: Jim Pisarowicz "Cave Incident Report," unpublished, undated, 3 pp.

Analysis: Pisarowicz feels that "this entire incident would not have happened if all cavers would learn to swim." If you do not swim, carry some sort of personal flotation device with you.

There were several factors that contributed to the problem. Dayer had only two light sources, Pisarowicz had only one helmet light source, no one had a flotation aid, and cavers in the party did not speak the same language. Of course, the overriding factor is that Dayer couldn't swim and thus had no business continuing into the swim environment. Even swimmers drown—Dayer should not have been allowed to continue. Lucky for him Pisarowicz is a former lifeguard.

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**Dc caver fall, aid climb - Sistema Agua Blanca,
Tabasco, Mexico**

2-28-89

On Tuesday, February 28, Warren Netherton and Jim Pisarowicz (37) entered Sistema Agua Blanca in Tabasco, Mexico to do an aid climb. Two days before they had found an important lead and had surveyed to a vertical flowstone cascade with a continuation at the top.

Pisarowicz was the more experienced climber and so started up, placing pitons in the crack between flowstone and bedrock. He got up about 5 meters with two pitons and put in a third, commenting about how solid it sounded. He placed a fourth pin, attached an etrier and stepped on it, reaching up to place a fifth piton. At this point, the fourth "popped without warning," as did each piton in line after each took some of the load. He fell 6 meters, hit the steep slope at the bottom and rolled down it, uninjured.

Reference: Jim Pisarowicz "Cave Incident Report" unpublished, undated, 2 pp.

Analysis: The protection "unzipped" but did its job, slowing the fall. In doing aid climbs with chocks or pitons, the best thing to do is place an occasional bolt for security. Beware of flowstone.

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Dr rockfall, trapped foot - Cueva Cheve, Oaxaca, Mexico

3-4-89

On the Spring expedition to Cueva Cheve in Oaxaca, Mexico, Peter Quick was on his way to camp in the cave for a ten day stay. In the Giant's Staircase, a huge descending, boulder-floored passage, a large rock rotated as he stepped on it, pinning his foot. The rock was too heavy to move in his awkward position and he was alone. He was able to untie the boot and slip his foot out. It was then possible to roll the boulder over and retrieve the boot.

Reference: Peter Quick "Proyecto Papalo Trip Report" **DUG Scoops** April 1989, Pg. 3.

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Ac caver fall - Cueva Cheve, Oaxaca, Mexico

3-5-89

Early in March a group of cavers assembled at Llano Cheve, at 2700 meters elevation in the State of Oaxaca, Mexico. The expedition planned to push Cueva Cheve, already 1100 meters deep, from a camp at -900 m, some 6 km into the cave. The first ten-day camp would include Jim Smith, Don Coons, Bill Farr, Carol Veseley, Peter Bosted, Steve Knutson, and Peter Quick.

The route to camp consisted of essentially dry passage with numerous short to medium drops down to Saknussem's Well, a 120 m drop with several re-belays to keep one out of a now-augmented, entrance-stream cascade. At the bottom the stream was followed, easy at first, then through a series of short falls and grind holes (the Turbines) with complex bypass rigging, to easier stream work. The route then took a dry overflow bypass through spacious passage to the drop into the East Gorge, a river passage that leads down a major waterfall drop, to the climb to camp in a dry, sandy-floored overflow. The cave is cold, with temperatures varying from 47 in the upper part to the low 50's at camp.

At about noon on Saturday, Farr, Veseley, Quick, Bosted, Coons and Knutson entered. Some camp gear had already been stashed at the top of Saknussem's Well. The cave was rigged European style, with numerous re-belays. Packs were on the order of 50 pounds. Later, Jim Smith and Bill Stone entered, Smith to head for camp and Stone to ferry in some rope.

After 11 hours, the crew was all past Saknussem's Well and the Turbines. At this point the faster ones continued on to camp, another 5 hours; Knutson, whose pack had leaked and become wet and much heavier, and Veseley, who was getting tired, were now going slowly. Farr stayed to shepherd them to a bivouac at the dry

overflows before the East Gorge.

The next morning, Sunday, March 5, they continued toward camp. In a large, breakdown-floored hall a short way from the drop to East Gorge they encountered Don Coons, who had returned to see how they were doing. After he left, Farr, the only one of the three who had been to camp, could not find the way. After scouting around for several minutes, he announced to the other two that he had found a way.

With packs on, Knutson and Veseley followed Farr to a three meter climbdown in breakdown, and into a hands and knees crawl. Ahead, Knutson could see Farr disappearing into a turn, dragging his pack behind him. At the turn, the crawl downsloped, then leveled out as far ahead as one could see, a belly crawl with the pack on. Knutson left the pack on and slid down the smooth floor one body-length. Unfortunately, the pack rode up over his left shoulder and was now upside-down, bottom against the ceiling and top on the floor. Knutson was stable, feet hooked into a depression, but could not see anything, his face being pinned against the floor. His immediate worry was that he could not see where the pack would go if he pushed forward, allowing it to continue on over—he was still attached to it by the shoulder straps.

At this point Knutson called to Farr, saying that he was in trouble. Farr was apparently a short distance away and replied that he couldn't come over. Knutson asked if anything would happen if he released the pack and received an indication to go ahead.

Releasing his feet, Knutson nudged forward and the pack cleared the ceiling, toppling directly into a pit—Knutson, still in the shoulder straps, went after it. The pit was only a few meters deep, but his side struck a projection. After he hit the bottom, the first breath he took produced a grating of broken ribs on his lower right side.

Veseley quickly came up and learned of the injury. There was little pain so the victim got out of his pack straps, chimneyed out of the hole, re-negotiated the crawlway and climbed back into the spacious room where they had lost the way. As he sat down to rest, excruciating pain set in and there was no position he could assume that was comfortable. Coons returned and the victim was walked to a flat area that would serve as a bivouac site. The victim was obviously mobile but at -800 m plus and 5 to 6 km from the entrance, he would have to recuperate if he was to make it out under his own power. A bivouac was set up while Farr went to camp to alert the cavers there; he returned and, with Veseley, spent Sunday night with the victim while Coons returned to camp.

On Monday morning Knutson felt much better; Smith arrived at the bivouac, examined the injury, and at 11 am headed for the surface. They had devised a plan as follows: Knutson would self-rescue in three stages, with two more bivouacs, one on the rough ledge-bypass above the Fuel Injector (the worst of the Turbines), and the other at the old Camp I, above Saknussem's Well. One caver would accompany Knutson to physically help him at difficult places and several others would carry the bivouac gear. Peter Bosted volunteered to stay with the victim at the bivouacs. The camp cavers would execute the first move, and surface cavers would manage the other two. Meanwhile, a doctor would be sought from the United States and rescue teams there would be put on stand-by in case Knutson couldn't make it out on his own. The big fear was that another fall or climbing move might puncture a lung, turning the self-rescue into a body retrieval.

At 1 pm, Knutson, escorted by Coons, headed for the Turbine bivouac. This move traversed relatively easy stream passage with only a 20 meter rope pitch at the end, up to the bivouac ledge. Knutson made this OK, moving steadily—he found that if the body was held rigidly upright, pain was minimal. Since the injury, only low order pain killers were administered: Ibuprofen and/or acetaminophen with codeine. If the victim was too drugged, it would increase the danger of a fall on a move and complicate matters. He arrived at the bivouac site at 5 pm. At 7 pm the sleeping bag and air mattress arrived and Knutson, now very cold, was helped into it. At 8 pm Coons and the others headed for camp and Bosted was left with the

victim. Knutson had gone to bed with a Farmer-John wetsuit on since he was too cold to take it off. He was also wearing a Quallofil jacket inside his sleeping bag. The victim shivered almost constantly until about 4 am, when he finally warmed up. Bosted then helped him out of the wetsuit. Wearing wet thinsulate thermal bottoms, the victim took pain killers and finally got to sleep.

Jim Smith arrived on the surface at about 4 pm Monday and organized the plan. Jeb Blakely and Bob Benedict had arrived and headed for Huautla, a 20 hour round trip drive, to get a rescue litter. Bill Stone drove out and called the U.S., putting rescuers there on stand-by and reaching Dr. Noel Sloan, a caver doctor, who dropped everything and flew down with equipment to save a lung-punctured victim.

On Tuesday morning at 11 am, Bosted made breakfast and Knutson felt better, walking the seven meters to the stove site. At 3 pm Smith, Bill Stone, Ron Simmons, and Bob Benedict entered, bringing several short ropes, a bolt kit and pulleys. It was time for the move up the Turbines and Saknussem's Well, and there was doubt that the victim could make it. They arrived at the bivouac at 7 pm.

At 8 pm, Knutson headed up, wearing full wetsuit and regular Mitchell climbing rig, escorted by Smith. A shoulder Gibbs was brought, but the broken ribs were low on the right side and Knutson's Alpine chest box harness produced no extraordinary pain. He reached the next bivouac at 1 am and got into dry clothes and sleeping bag. Bosted fixed a meal and they turned in at 3:30 am.

At 11 am on Wednesday, Bosted fixed soup and headed for the surface to delay the next crew and get more drugs. He returned by 7:30 pm. That night the sleeping bag had actually dried out and the victim got too hot, waking up and pulling down the bag. At 5 am, the victim was awakened by Bosted who was just checking to see if he was still alive—for the first time the victim's breathing was unlabored and could not be heard.

Thursday morning saw Mark Minton, Rolf Adams and Noel Sloan arrive at the bivouac. Sloan examined the injury, re-taped the ribs and pronounced the victim fit. They headed for the surface (450 vertical meters, but dry) at 1 pm and arrived about 4 pm. The self-rescue had taken a full four days.

References:

- 1) Peter Quick "Proyecto Papalo Trip Report" **DUG Scoops** April 1989, p 3-6.
- 2) Peter Bosted "Rescue from -850 Meters in a Mexican Cave" Part 2, **SFBC Newsletter** May 1989.
- 3) Peter Bosted **Personal Communication** 4-1-89.
- 4) Steve Knutson **Personal Communication** 7-28-90.
- 5) Don Coons "Cheve 89 - Accident Report" unpublished, 4-15-89, 6 pp.

Analysis: Several things apparently contributed to the accident. Knutson's pack was not totally waterproof and his sleeping bag and extra clothing gradually picked up water and the pack became heavier and harder to handle. This may be why he did not follow Farr's example and drag the pack through the crawl after him.

Several participants suggested that no one go to an underground camp without knowing the way; familiarization trips should be a prelude to going for a camp stay. If the group had not been lost, they would not have been in the crawlway in the first place.

Whatever he was doing at the time, Farr should not have ignored the request for help; the victim could have been told to stay where he was until Farr could see what he was talking about.

Regarding the rescue, the failure of the bivouac gear to reach the first bivouac ahead of the victim seems the most serious problem. The air mattress was very beneficial, allowing comfort and rest on the very uneven surface at the first bivouac.

A victim of an accident is fortunate indeed to be caving with such a capable crew and to get response like Noel Sloan's arrival at the cave in southern Mexico only 30 hours after he was called in Indiana and asked to help...and they say doctors won't make house calls!

Bo trapped, rebelay - Cueva Cheve, Oaxaca, Mexico

3-5-89 B

On Saturday, March 5, a crew headed into Cueva Cheve for a ten-day camp. At Saknussem's Well, Carol Veseley rappelled to a rebelay and switched over to the line continuing down, but couldn't unclip the last Jumar from the upper line—the loop one is supposed to stand in to give slack was too short. Peter Bosted Jumared down after 15 to 20 minutes and unclipped the Jumar while Veseley used both hands to take her weight off it.

Later, at the Fuel Injector bypass, Veseley rappelled to the bottom but failed to keep her pack, tethered below her, from hanging on projections. Eventually, Peter Quick was forced to climb up and free the pack.

A re-directional, consisting of a chock in a rotten-rock crack, pulled out twice, leaving the rope it was directing hanging in a waterfall. Clearly, a bolt was in order.

References:

- 1) Peter Bosted **Personal Communication** 4-1-89.
- 2) Steve Knutson **Personal Communication** 7-28-90.

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Cc caver fall, ledge broke - Rimstone Falls Cave, West Virginia

3-11-89

On March 11, George Dasher (36) was part of a group surveying in Rimstone Falls Cave, Greenbrier County, West Virginia. It had been a long day and they finally decided to end the survey. Dasher did a flowstone climb and went on to see if the lead continued. In so doing, he traversed a hole in the floor on a ledge, only to have the ledge break, dropping him six feet to another ledge; the fall could have been greater. He landed on his left knee, resulting in a bad bruise and a cut with some bleeding. Dasher acknowledges that he was mentally tired and should have paid more attention to what he was doing.

Reference: George Dasher **Personal Communication** 3-30-88

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Ac caver fall, handhold broke - Cueva del Tecolote, Tamaulipas, Mexico

3-17-89

In March a group of 14 cavers was camped inside Tecolote Cave near Victoria in Tamaulipas State, Mexico. The camp was about 1700 meters horizontally and 200 meters below the entrance.

On the third day, Peter Sprouse was working with Dave Bunnell and Ramon Espinasa. At about 9:30 p.m. they had finished mapping leads off the bottom of the Fantasia Abyss, a wide, free-climbable chasm in the Fantasia Borehole, extending south from camp.

Espinasa completed the climb, with Sprouse behind him. Sprouse traversed three meters to a vertical step of 1.5 meters. He grabbed a handhold and tried to haul himself up, but it broke. He fell backwards 5 to 7 meters, "bouncing at least once," breaking the fall with his left hand once, landing on his rear and "coming to rest flat on his back."

Bunnell came to Sprouse, but Espinasa stayed up, not wanting to risk rockfall. Sprouse had injured a lower left rib and his left arm—the hand was already swollen and cocked at a funny angle. After 20 minutes he was able to stand without dizziness, so they fashioned a sling for the left arm and proceeded back to camp, aiding Sprouse at each climb. There he took Ibuprofen and got a night's sleep.

Early the next morning Sprouse headed out of the cave accompanied by several cavers and reached the entrance in four and a half hours, having negotiated "5 rope drops and various climbs." He had suffered a broken radius and a cracked or bruised rib.

Reference: Peter Sprouse "Accident Report" **The Texas Caver** April 1989, p 34.

Analysis: Sprouse feels that his accident "was largely unprevent-

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able, in that it was no more risky than a hundred other routine moves done on an expedition such as this. The climb I was on was easy, and I would do it again unbelayed without a second thought. My mistake was in misjudging a handhold that I thought was strong enough, but which failed."

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Ble lost, poor lights - Anvil Cave, Alabama

3-24-89

At about 8 p.m. on Friday, March 24, four teenagers, Mike Haskins (19), Adam Landman (18), Allison Wilson (17), and Michelle Rogers (17), entered Anvil Cave, Morgan County, Alabama. They were equipped with three hand lights and no map, and Anvil is a maze cave. After a while they became lost; one light was dropped down a crack and the other two grew dim. They sat down to wait.

Eventually, the kids' parents called the Sheriff's Office and they called the Cave Rescue Unit Chief who called cavers.

A party of four searchers entered the cave at 2 a.m. Saturday and did a sweep, calling out, along the standard route to Entrance 1. A second team was put on standby. It looked like an extended, sector by sector, search would be necessary. They then entered Sink 7 and headed into Main Street where there was an answer to their calls. The four were found "in a passage about 3 rows north of Main Street, about 3 intersections east of Station 70." They were led out at 3 a.m.

Reference: Bill Varnadoe "Anvil Cave Rescue" **Huntsville Grotto Newsletter**, 31(4) May-June 1989, p 29.

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Cce caver fall, broken ladder - McCart's Pit Cave, Indiana

3-25-89

On Saturday, March 25, four cavers—Charles Bugh (20), Toby King, Trent King, and Anmar Mirza—entered McCart's Pit near Bloomington, Indiana. They were all experienced vertical cavers. They rigged the climbable entrance slope, just to be safe, and descended that and the following 12 foot drop which had an old wooden ladder, one person at a time. Bugh was taking photos and went last. At about 2 p.m., with the cameras in an ammo box, he proceeded down the slope using the rope as a handline; he inquired if everyone had actually used the ladder and was told that they had. When he stepped on it, however, there was a loud "crack!" and he was falling, breaking each rung in turn as he hit it. Apparently there was considerable slack in the rope.

He was stopped momentarily about two feet from the bottom when his camera box caught on a projection, swung up and hit him in the mouth. He then landed on his feet at the bottom of the drop. His lip was cut and part of a front tooth was missing, but he was otherwise OK. The rope prevented his continuing down a 60 foot slope of jagged breakdown. Bugh feels he should have just rappelled down.

Reference: Charles Bugh **NSS Accident Report** 5 pp, undated.

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Cr rockfall - Osto de Puente Natural, Oaxaca, Mexico

March 1989

Mark Minton was reportedly injured when struck in the face by shrapnel from a falling rock when he was below someone climbing in Osto de Puente Natural, a cave now connected to Cueva Cheve, in Oaxaca State, Mexico. (Dale Pate, "Mexico News" **The Texas Caver** April 1989, p 33.

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Ao other - hit by wave - Unspecified Sea Cave, CA

Spring 1989 B

Early in 1989 a married couple was kayaking off the California

coast. They paddled into a sea cave in apparently calm seas and were "surprised by a freak three-foot wave." The wife smashed against her husband's kayak, suffering a broken jaw and unconsciousness. The man grabbed her and paddled to safety. The recommendation was that motocross chest/shoulder pads, knee and elbow pads, as well as helmets be worn, and that cave kayakers be experienced in surf, rolling and paddling, and be strong swimmers. It should also be noted that there really is no such thing as a freak wave. Ocean waves are initiated far away by a variety of causes and the occasional larger wave should be expected.

Reference: Bill Klimack "In the Media" **NSS News** July 1990.

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Ao other - jumped into shallow water - Corredor Cave, Costa Rica

Spring 1989 C

During part of the NSS Expedition to Costa Rica, cavers were surveying and exploring in Corredor Cave. One group took a bypass passage to the main stream passage. When it rejoined the main passage, there was a 7 foot drop to the water. A local caver, "Carlos," who knew the cave demonstrated how to get down by jumping—unfortunately, a recent hurricane flood had lessened the water depth from three feet to one foot. Landing short, Carlos injured a foot or ankle. This was examined and it was decided that a splint and evacuation was necessary. A local was sent to camp to get help and the injured man was assisted down the cave, hopping on one foot, and down the river to the end of the road where a taxi was waiting to take him to the local hospital.

Reference: Scott Fee "1989 Costa Rican Expedition, Chapter 4 'The Rescue'" **CIG Newsletter** May 1989, p 45-46.

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Btlxh trapped, lost, exhausted - Pine Hill Cave, Kentucky

4-15-89

On Saturday morning, April 15, three boy scouts and three adult advisors from Troop 75 of Bellbrook, Ohio, rappelled into a 125 foot pit entrance to Pine Hill Cave in Rockcastle County, Kentucky. Other members of the troop were to meet them by going in a different entrance. Unfortunately the six in the pit could not find the small crevice that led to the main body of the cave. Dave Trich, one of the adults, tried to ascend the wet, drafty, 58 degree shaft but hypothermia and hand cramps forced him to seek refuge on a ledge partway up.

Scouts from the rest of the troop summoned help and got it from the Sheriff's Office, fire departments and "professional spelunkers." The cavers lowered Trich back down the shaft and gave the scouts food and garbage bags to ward off hypothermia; the group was then led out the other entrance.

References:

1) Amy Brooks Baber "Adventurous Cave Explorers Cause Quite a Scare" **Herald-Ledger** (Lexington, KY) April 17, 1989, p B1.

2) Ryan DuBosar "Students Rescue Scouts from Cave" **The Student** April 21, 1989, reprinted in **Indiana Caver** 1(2) Sept. 1989, pp 18-19.

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De equipment failure-slipping Gibbs - Cemetery Pit, Georgia

4-19-89

On Wednesday, April 19, two cavers, Mark Jancin (34) and Dave Clark were exploring in Cemetery Pit in Georgia. At around 4:30 p.m. they were heading out. Jancin went first up the 155 foot entrance drop. He had a ropewalker with chest box and a third Gibbs floating just above the knee. The foot and knee Gibbs were 18 years old and showed considerable shell and cam wear. About halfway up he noticed the foot Gibbs start to slip. When his 235 pounds was on that

ascender alone, it would slip up to "6 to 8 inches per second." He attached a seat connected Jumar above the upper Gibbs and continued up using a combination of modified Texas and semi-ropewalker.

Reference: Mark Jancin "Incident Report" 5-19, 5-30-89, unpublished, 2 pp.

Analysis: Jancin had used the same setup in a tree-supported pulley-fed practice climb the day before, with no problem. Still, he had the foresight to equip himself as he always did, with extra ascending capability. He had seen wear on the 7th cam tooth before, but after the climb there was new, though minor "polishing" on both the 8th and 9th teeth. Beware—check ascenders for wear.

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Cr rockfall, floor collapse - Climax Cave, Georgia 4-29-89

On Saturday, April 29, Mark Jancin (34) and Beth Alston were exploring in Climax Cave in Georgia. They got out to the Lost Cord Room in the northern part of the cave and then headed back for the entrance. At "Da Lakes" they stopped and Jancin posed for a picture, sitting on and straddling a large prong of bedrock "that apparently connected with the surrounding floor and wall."

When Jancin stood up again, there was a loud crashing sound as "the floor and adjacent rock mass collapsed downward." The dimensions of collapse were about 7-10 ft by 3 ft by 6 ft; Jancin rode the collapse downward with his legs getting "enmeshed in the shifting, tumbling mass," but only for 8 feet laterally and 6 feet vertically, as the mass came to rest in a pool. Jancin's toes were in the water, but he was not trapped. He climbed back up slope and they examined the damage. He had suffered a twisted left ankle, a puncture wound and contusion to the inner, lower left shin, a scraped right shin and a nasty-looking contusion to the back of the right knee. He was able to move normally and so they left the cave. X-rays showed no additional problems.

Reference: Mark Jancin "Accident Report" unpub., 5-19-89, 2 pp.

Analysis: In two years of exploration in Climax, Jancin reports experiencing about a dozen examples of minor rock collapse. The water table in the cave at the time of the incident was at a 20 year low and it is possible that this exposed some instability. Jancin's weight added little to the collapsing mass which might have collapsed under its own weight. Nevertheless, one must always be suspicious in a cave—nothing lasts forever.

Jancin's injuries could easily have been much worse, with crushed legs and/or being trapped underwater. Constrictions between them and the entrance would have made evacuation difficult.

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Ac caver fall, slipped - Saltpeter Cave, Tennessee 5-16-89

On Tuesday morning, May 16, seven teenagers entered Saltpeter Cave in Cumberland County, Tennessee. They proceeded to explore and reached a point "two miles" into the cave. At 9:30 a.m. Charles Ferrerio (17), an exchange student from Spain, "lost his footing on muddy rocks and fell 20 feet," landing on his back, on a ledge.

Two companions stayed with Ferrerio while others went for help. Outside, they had to walk a mile to reach a telephone. At 11:09 the Sheriff's Office was called; the first rescue units arrived at 11:38 a.m. Workers from a nearby logging operation cut a makeshift road through the woods but rescuers still had to climb three-fourths of a mile up the side of Brady Mountain to reach the entrance.

A little after noon a team entered, reaching the victim in about an hour. Two rescuers rappelled down to the victim and secured him with rope. He was determined to have shoulder and chest injuries; they started an IV, applied a cervical collar, and covered him with a blanket. The cave was cool (52 degrees) and very wet from spring runoff, and hypothermia was a potential problem.

Because of the narrow passages, a conventional stretcher or board couldn't be used, so they managed to tie a rope stretcher. The evacuation took over four hours, working the victim through the narrow tunnels and up over ledges. Ferrerio also had to be hoisted up the 65 foot "Hell Hole." The victim was out by 7 p.m. He was later determined to have a fractured left shoulder and fractured rib.

Reference: Scott Burgess "Rescuers free teen from Saltpeter Cave" **EMS Messenger** July/Aug, 1989, p 3.

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Be equipment failure - Lechuguilla Cave, New Mexico May 1989 A

On the Memorial Day expedition to Lechuguilla Cave in New Mexico, Ted Lappin was ascending Apricot Pit and suffered some sort of gear failure. Apparently the locking carabiner attaching one ascender to his seat harness unscrewed and the ascender sling slipped out; the other sling was not safetied to the seat harness. He ended up hanging upside-down from one foot by a chicken loop. By the time Dan Clardy had ascended to the victim, his face was almost black and he was possibly near death. He was helped upright, soon recovered, and left the cave under his own power.

Reference: Dan Clardy **Personal Communication** June 1990.

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Bx exhausted on long trip - Lechuguilla Cave, NM May 1989 B

On the Memorial Day expedition to Lechuguilla Cave, a caver was on a 70 hour trip. In the course of this she became so cold and tired that she lay down in the mud and fell asleep. She was carried to a dry site to sleep.

In Lechuguilla the U.S. Park Service has a rule against camping in the cave, so camping is called "bivouac-ing;" yet there are numerous reports of cavers caving without sufficient sleep—this is asking for trouble.

Reference: Dan Clardy **Personal Communication** June 1990.

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Cc caver fall, slipped - Lechuguilla Cave, New Mexico May 1990 C

On the Memorial Day expedition to Lechuguilla Cave in New Mexico, one caver ended up going head-over-heels down a slope, suffering gashes on his back. Another was doing a traverse over a chasm, holding a handline, when a Swiss caver jerked on the line from one end, to see if someone was on it. The caver was jerked from his holds and was saved by the handline.

Reference: Dan Clardy **Personal Communication** June 1990; Scott Linn FT17 **Personal Communication** July 1990.

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Do other - late on timed trip - Lechuguilla Cave, NM May 1989 D

On the Memorial Day expedition, Don Davis was on a trip in the cave. At Lechuguilla there is a grace period of six hours in returning to the surface beyond the specified time for a party, before the whole expedition is suspended and a rescue is called out. Davis was delayed so he told an exiting caver to extend his time in the log book. That caver forgot and six hours after the specified time, the rescue was formed. Fortunately, they met Davis at the entrance, as he exited. This was doubly fortunate, for Davis and crew had been in a different part of the cave than the rescuers expected.

Reference: Scott Linn, Dan Clardy **Personal Communications** June-July 1990.

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Cbl bad air, metabolic alkalosis - Dragon's Breath Cave, California 6-4-89

On Sunday, June 4, eight cavers visited Dragon's Breath Cave in the Mother Lode country southeast of Sacramento, California. This cave and others in that area have been found to contain high levels of carbon dioxide and have been under study for this phenomenon. Part of the work involves monitoring carbon dioxide, oxygen, temperature and relative humidity.

The group entered Dragon's Breath Cave, rappelling the 80 foot entrance drop. After this there is a series of three squeezes and a 110 foot pit; four cavers went through the squeezes and two went down the pit. The carbon dioxide level is 1.5% near the third squeeze and up to 4.5% at the bottom of the 110.

After exiting the cave, Phalin Klusman felt sick and rested while some of the others visited two other caves. At first, Klusman seemed to recover but later appeared to go into shock. He felt cold, his skin was pale and clammy, his pupils were constricted and his pulse irregular. His companions took him as quickly as possible to the nearest hospital, in San Andreas.

His blood pH was found to be greater than 7.5, a dangerously high level; he was given fluids intravenously and a few hours later was released.

References:

- 1) Jim Hildebrand "Bad Air Caving: A Trip to the Rock Pile Caves" **Devil's Advocate** 22(7) July 1989, p 69-70.
- 2) Butch Fralia "Bad Air Detection" **Texas Caver** April 1989.

Analysis: "Apparently Klusman had gone into **metabolic alkalosis**. The most likely explanation for what happened seems to be the following. The body has two mechanisms for maintaining pH near an optimum of 7.4: respiration and renal (kidney) function. Carbon dioxide is an acidic gas; as levels of carbon dioxide in the body increase, the resulting carbonic acid made by the reaction of carbon dioxide with water stimulates the kidneys to release mildly basic bicarbonate ion to maintain body pH in the desired range. A sudden increase in the body's load of carbon dioxide, such as can result from breathing air enriched with carbon dioxide, can lead to respiratory acidosis. The kidneys respond to this situation by releasing bicarbonate to bring body pH back into balance. One symptom of respiratory acidosis is nausea, and the affected caver did throw up. Unfortunately, the loss of stomach acid has several bad effects: a reservoir of body acid is lost, and the dehydration resulting from the loss of fluid reduces the kidney's ability to function. When the caver exited the cave, normal breathing quickly removed the excess carbon dioxide from his body; under normal circumstances, his kidneys would have responded by absorbing bicarbonate to maintain a pH balance."

"However, due to the loss of gastric acid and dehydration, his kidneys were unable to function properly, and his body pH went alkaline. As to what can be done to minimize the effects of this problem, several things come to mind. Probably the most important is to exit the cave at the first indication of a problem: headache, nausea and the like. Also, it is important to stay hydrated for proper kidney function; liquids containing electrolytes such as Gatorade should be kept nearby, especially if someone throws up after being in a high carbon dioxide cave. Of course, this only can be done if the individual can hold down liquids, and certainly not if they are already in shock."

Apparently a simple test for bad air is a butane lighter; as oxygen percent drops from the normal 21%, the lighter begins to flicker at 18.5% and there appears a noticeable gap of about one inch between the jet and the flame, but the lighter can be re-lit if extinguished. At 17% and lower, a lighter goes out and cannot be re-lit. Apparently a carbide lamp will burn at oxygen levels that a person cannot tolerate.

Ar rockfall - Mammoth Cave, Kentucky

6-16-89

On Friday, June 16, a group entered Mammoth Cave in Mammoth Cave National Park, Kentucky, as part of the Karst Geology course at Western Kentucky University. Before entering the cave, the hazards were explained and emphasized; this was repeated at Brucker's Breakdown in the cave. The group assumed a 5 to 6 foot separation between cavers while climbing the breakdown pile. As Nestor Rivera (26), from Puerto Rico, started to ascend, the person just ahead of him dislodged a "square-shaped" rock some 2x2x2 feet in size, which slid 8 to 10 feet. Rivera was prevented from moving back by people just behind him, waiting their turn to climb, so he caught the rock with his left hand. Another student helped him with the rock and Rivera continued his climb. Later he began to feel pain, but felt able, so he continued for an hour until the tour started back. The leader inquired as to his welfare several times.

On the return, the pain had increased, so the wrist was splinted; his pack was carried by a companion and he was watched over. Rivera completed the exit, through some crawls and over slippery mud, under his own power.

X-rays disclosed no fracture, and the wrist has completely recovered.

Reference: Nestor Rivera **NSS Accident Report** undated, 3 pp.

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Bc caver fall, heel hang - Greenhorn Caves, CA Summer 1989 A

In the summer a group of five cavers was attempting to traverse from the Upper Entrance to the Upper Middle Entrance in Greenhorn Caves, a talus stream cave in the Sierra foothills.

On the hike to the Upper Entrance they had stopped and rigged a cable ladder to facilitate getting out the lower entrance on their through-trip. The group consisted of Jose Razo, Don and Lisa DeLucia, Scott Schmitz, Mark Tillman and Carl Diaz. Two of them had explored in Greenhorn before, but it had been two years and the memory had faded.

They proceeded down climbs and stream passage, finally coming to a drop that was 30 feet or so and didn't appear climbable. No bypass could be found, so at a ledge 6 feet down, they rigged a 60 foot 6-mm rope, doubled so that it could be pulled down and brought with them. Two descended but as Schmitz lowered himself to the ledge, his pack caught on the projecting rock roof. He twisted to free it and it came free, but as he leaned back to get it, it pulled him over the edge.

He screamed but almost immediately stopped falling—the heel of his left boot had caught in a crack and he was suspended over the edge, hanging by one heel.

Schmitz, with great presence of mind, grabbed for his figure-8, already attached to his seat harness; as he did this, someone clipped him into webbing hanging down the first step. Thus belayed, he clipped the figure-8 into the rappel line, was lifted a bit by those above so the heel would come free, pivoted around and rappelled down. "He collapsed into a bowl of jello that couldn't be moved for ten minutes."

Reference: Scott Schmitz "A Nightmare Trip Through Greenhorn" **The Explorer** Oct. 1989, p 108-111.

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Dlcx lost, caver fall, exhaustion - Greenhorn Cave, CA Summer 1989 B

In the course of the previously mentioned trip into Greenhorn Cave, a carbide lamp was lost in a pool, Don DeLucia had lost a contact lens and was proceeding with one good eye, Mark Tillman was bruised from a 6 foot fall onto jagged rocks in a blind pit, while route-finding, as well as the already described heel-hang by Scott

Schmitz. The route proved to be elusive and the ordinarily 8-hour trip had become nearly twice that long. At one point the group sat shivering under a space blanket for two hours while Tillman and Diaz searched for the route. When they finally reached the ladder, Schmitz's strength gave out at the lip and he had to be helped up it.
Reference: Scott Schmitz "A Nightmare Trip Through Greenhorn" *The Explorer* Oct. 1989, p 108-111.

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Bt trapped, foot in toilet - Hoaches Cave, Ohio Summer 1989 C

In the summer of 1989, four cavers tried to visit Hoaches Cave near Twinsburg in Ohio. At the scene, the ravine containing the entrance was found to be filled with trash. As they tunneled through this to reach the entrance, Floyd Herold's foot became stuck in the trap of an old toilet. They had to bash the toilet to free him, and never found the entrance. (Is this real??? Ed.)

Reference: Bob Nadich "The Lost Hole Of Hoaches" *Cleve-O-Grotto News* 35(7) July 1989.

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De equipment failure - Bigfoot Cave, California Summer 1989 D

A group of cavers was exiting Bigfoot Cave, California, via the Discovery Entrance. Jim Wolff was just below the constriction at the top of the upper drop, when he stopped ascending to adjust his gear. He opened his chest box to facilitate passing a ledge, then moved the lower ascender up. When he raised the upper ascender, a non-self-locking Gibbs, it failed to set and he fell backwards. He was saved from going completely upside down to a foot hang by the safety from his lower ascender to his seat harness. He was able to get upright and continue.

Reference: Jim Wolff *Personal Communication* June 1990.

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Dr rockfall, near miss - Bigfoot Cave, California Summer E

A small group of cavers was exiting Bigfoot Cave in Siskiyou County, California, using the usual route, the Discovery Entrance. This entrance begins with a sink, with vertical walls on two sides and a steep 30 foot slope on the other sides leading to a narrow cleft at the bottom. This descends rapidly for 20 feet to the edge of a 75 foot drop with two steep, loose rock ledges about 10 feet wide making the complete drop somewhat diagonal. The whole affair is 10 feet wide at most and any rocks dislodged at the top are likely to hit anyone on rope. Standard practice is to ascend, call "off rope" and get up and out of the sinkhole as fast as possible. The person waiting to come up next waits two minutes after hearing "off rope" and then goes up. The bottom of the 75 is a narrow ledge that drops another 65 feet free to one of the main passages of the cave.

Mark Fritzke ascended and called "off rope," then moved out of the cave. He hesitated on the sinkhole slope but on a part that led to a protective lip at the entrance cleft. Steve Knutson waited the two minutes and started up. Above, Fritzke was stepping over the lip of the sink when his foot dislodged a football-sized rock which bounded down the slope, over the protective lip and into the entrance.

Below, Knutson heard the rock coming and shoved off, grabbing projections on the side of the first step, conforming amoeba-like to the surface. The rock went humming harmlessly by.

Reference: Mark Fritzke *Personal Communication* July 1990.

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Bh hypothermia - Unspecified Cave, California Summer 1989 F

In the summer a group of cavers were pursuing various tasks in a 54 degree cave in the western Sierras of California. At the back of the cave, part of the group surveyed while one member descended to a sump pool and swam around to see if there was a continuation. Derek Hoyle was videotaping these operations. This apparently didn't require a lot of movement and he gradually became cold. Afterwards, everyone but Hoyle went to survey in another part of the cave. Hoyle had something to eat and suffered a "hypoglycemic crash" and fell asleep. He was wearing a PVC caving suit over polypropylene thermal underwear.

Eventually another caver returned, woke Hoyle to let him know they were still surveying, and went back to the survey area. Hoyle soon discovered he was very cold and started to look for the others, shivering uncontrollably and teeth chattering. He climbed down into a room where, because of the hypothermia, he forgot what the problem was and began walking in circles around the room.

Two cavers were surveying in an adjoining room and saw him go by, calling to him on three revolutions. After he had gone by six times they realized something was wrong. Hoyle was made to sit down and was given food and water; his wet clothes were taken off and his wetsuit was put on him. The other survey party showed up and he was escorted out of the cave.

Reference: Derek Hoyle *Personal Communication* June 1990.

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Dc caver fall - Unspecified Cave, CA Summer 1989 G

In the summer, a group of cavers was surveying in a cave in the western slopes of the Sierra Nevada Mountains. After a long session the tired cavers headed for the entrance. At the point where the stream entered a lower level, they proceeded along the narrow canyon passage. The last caver in line, Derek Hoyle, was walking along when, without warning, the floor collapsed. He caught himself at chest level with his arms, preventing a fall down a narrow crevice to the stream, 35 feet below.

Reference: Derek Hoyle *Personal Communication* June 1990.

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Dc near-caver-fall - Un-named Cave, CA Summer 1989 H

At the entrance of a cave high on the face of a rock quarry in Santa Cruz County, California, cavers were moving rock in an effort to gain entrance. They had traversed out a ledge to get to the site and were over 50 feet above the floor of the quarry. One caver bent into the entrance hole and pulled hard on a jammed rock. The rock suddenly came free and the caver was very nearly propelled over the edge.

Reference: Derek Hoyle *Personal Communication* June 1990.

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Bte trapped - Unspecified Cave, Tennessee July 1989

In July, two people descended a 30 foot pit entrance to a cave in Grainger County, Tennessee. They were unable to climb hand-over-hand back up their ski rope so the authorities were notified. A rescue squad as well as local cavers were called out. The rescue squad arrived quickly and pulled the two out "using the ski rope and a tractor."

Reference: Jeff Cooper *Personal Communication* July 11, 1989.

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Bel lost, light failure - Rehoboth Church Cave, WV 7-15-89

On Sunday, July 15, two cavers entered Rehoboth Church Cave in eastern Monroe County, West Virginia. These were a man and a

boy, with hand-held lights, wearing tee-shirts, jeans and tennis shoes. They visited the Long Room, but became lost when they tried to retrace their steps. They wandered until they reached the top of a breakdown pile only a few hundred feet from the entrance. Here their lights failed so they sat down to await rescue.

At 8 p.m. relatives of the lost pair called the Union Volunteer Fire Department, who in turn called two local cavers. They arrived at the cave at 9 p.m. and found the victims a short time after entering. They were shaken but unhurt and were escorted out.

Reference: Jim Tompkins "Rescue at Rehoboth Church Cave" *The West Virginia Caver* 7(5) Oct. 1989, p. 5.

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AAhdf drowning, couldn't swim - My Cave, West Virginia 7-23-89 A

On Sunday, July 23, four cavers, Aaron Bird, Jarrod Leland, Bonnie Flanagan (21) and Sean Flanagan, planned on a cross-over trip in My Cave in Pocahontas County, West Virginia. This would be a short trip, going in the Elk River Entrance, through the large, upper-level, mud passage, down the Outhouse Drop, upward through the Dune Room, and out the Dry Branch Entrance. All four had been in My Cave before and were familiar with the route, though none had done Outhouse Drop. All had experience with 40 to 60 foot drops. Bird, the trip leader, had visited the cave ten times and had been to both the top and bottom of the drop. They had three packs, two "huge, well-stocked horizontal packs and a vertical pack."

On the approach to the cave, although it apparently had not rained recently, the "normally dry" Elk River was flowing. They forded it twice, three getting wet only to their knees but Bonnie Flanagan fell in up to her chest.

Just before 10 a.m. they entered the cave and took their time moving down the trunk passage, pausing to check a side lead and look at sodastraws.

At Outhouse Drop it was obvious that things were not normal—a waterfall below the drop was roaring and it was "very, very noisy." The drop is a long, slippery mud slope of maybe 20 degrees for 60 to 80 feet followed by an 80 foot, partly free, section to a steep mud slope at the edge of a cave stream, an Elk River tributary.

The rope was rigged to a boulder in the crawlway before the drop, by Bird who intended to go back out the Elk River Entrance, do some ridge walking, and meet his companions at the Dry Branch Entrance.

Leland descended slowly, untangling the rope as he went. When he reached the bottom he found, instead of the normal trickle of water, a deep pool, of swimming depth. He got off the rope, yelled "off rope!" and was understood. He had descended without his ascending gear, however, and, though he wanted to ascend, could not and needed someone to bring the vertical pack down. He yelled up for Bird and the vertical gear, but this was not understood. Bonnie Flanagan descended with the vertical pack, landing in waist-deep water on the mud slope.

Leland did not realize she had the vertical pack—he thought it was a "horizontal" pack—and decided she should go to the other side of the flooded stream to wait. Even with the vertical gear present, he doubted that she could climb the drop. The only difficulty was that she was "already hypothermic" and "he knew Bonnie could not swim."

Bonnie de-rigged from her figure-8, took off the pack, and asked if it would float. Thinking it was the "horizontal" pack, Leland said that it would, and warned her that the water was over her head.

Wearing cotton coveralls and her vertical gear, she started across the 30 foot gap "half-floating, dog-paddling," with the pack on one arm. At the halfway point she went under.

Leland had a webbing handline but had not thought to tie it to the victim, and did not now think to throw it to her. He did jump in, grabbing at her shoulders, trying to find a pack strap. They floundered about; Leland, exhausted, also was drowning. Somehow he caught the knot at the end of the rope and pulled himself up,

caught a breath and got to shore.

The two above had not heard Bonnie yell "off rope!" but it went slack so they assumed she was off. After a minute or two, Leland began to shout. It was obvious something was very wrong, so Bird sent Sean Flanagan, Bonnie's brother, out to get help while he rigged in and started down.

While still on the mud slope, Bird realized he had neither of the packs; he tried to climb back up to get them but the mud was too slippery. He continued down; at the vertical portion, he had to wrap the rope around his leg for friction—the muddy rope was too fast for the figure-8.

At the bottom he found Leland in waist-deep water on the mud bank shouting, "She's in the water! She's in the water!" Bird ordered him out of the water and told him to shut up and calm down. When he tried to walk along the mud bank, he slipped and got completely wet. Both were wearing poly-pro and wool thermals under a nylon over-suit, but the water was very cold. Leland was already hypothermic and had only a mini-maglite going.

Leland related what had happened and they agreed that Flanagan was dead. They got across the water, half-swimming, half-floating, and climbed upward, toward the Dune Room. Leland could not get his main lamp to re-light.

At the muddy slope that rises to the Dune Room, Bird had to scoop steps with Leland's lamp reflector so they could climb it. Bird's carbide light had flooded at one point and soon went out; they had only the mini-maglite. They climbed high in the Dune Room, almost to the Junction Room, and sat down and huddled together, to wait for rescue.

The rescue was well-manned and elaborate but only served to find the two in the Dune Room, four hours after they sat down to wait. The body was found by cave divers late the next afternoon, ten to twenty feet from the bottom of the rope, minus the pack and the caver's helmet.

References:

1) George Dasher "The My Cave Rescue" *The West Virginia Caver* 7(5) Oct. 1989, p. 6-9.

2) Ed. "Caver Drowns" *The Pocahontas Times* July 27, 1989.

Analysis: What was done wrong?

1) At the Elk River crossings it was obvious that something had gone badly wrong, weather-wise, and that the cave, a tributary of Elk River, would be affected.

2) Bonnie Flanagan got wet in the crossings, yet they did not hurry on their cave trip, even though to go slow is to invite hypothermia.

3) At the drop, the water noise should have alerted them, yet the victim, already becoming hypothermic, was allowed to descend.

4) A caver descended a drop without ascending gear, and worse, it was into what were obviously potentially hazardous conditions.

5) They had pooled their gear so that no one had an individual pack—no one had backup lights and vertical gear.

6) The leader did not descend first.

7) Bonnie Flanagan was allowed to try for the other side without a line and not knowing how to swim. With a handline and rappel line present, something might have been rigged.

It is stated that Aaron Bird "hoped to wean his three friends from their dependence on his vertical expertise." Except for the unexpected weather, it may have happened. The lesson to take home is that several decisions made here were not good ones yet are typical of decisions commonly made by cavers. The difference is that here an unusual and/or unexpected condition (the flood) made those decisions fatal. The hard thing is to see something like this developing—harder still is making a decision to abort the trip.

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BI lost cavers - Tumbling Rock Cave, Alabama

7-23-89 B

On July 23 a group of thirteen cavers went to Tumbling Rock Cave, Jackson County, Alabama. This was a "mixed bag" of cavers,

unfamiliar with each other and without a clear objective or trip leader. A number of them were unfamiliar with the cave.

They headed back to the King's Shower where the group split, some going to the Pillar of Fire, some returning to the entrance, taking pictures, and some were undecided.

One group of nine cavers proceeded to the Christmas Tree. They went through the Suicide Passage where there were only seven. The last person in the party said two had headed for the entrance. They proceeded to the Pillar of Fire.

One of the missing two had turned back because he had left his pack at the King's Shower and his carbide lamp was running out. Unfortunately, he could not find the way back and sat down to wait for help—his backup flashlight was low on power. As his group headed for the entrance, about two hours later, they heard him calling from the lower levels. He had missed a turn and was definitely lost. The other had met up with another party and exited safely.

References:

1) Tom Moss "Incident in Tumbling Rock" Unpublished report, 9-18-89, 3 pp.

2) **Huntsville Grotto Newsletter** 31(6), p 44-45.

Analysis: Tom Moss admits that his impatience in getting the group split before everyone had really made a decision contributed greatly to the confusion. This is another of the minor incidents that could have been serious with just a little bad luck.

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Cr rockfall, speed kills - Great Onyx Cave, Kentucky 7-25-89

On Tuesday, July 25, a crew of volunteer cavers was working in Great Onyx Cave in Mammoth Cave National Park in Kentucky. They were assisting in the removal of trash from the cave. The afternoon of the 25th saw them moving debris from a pit in the cave three-quarters of a mile to the entrance with wheelbarrows. British cavers had joined the team that afternoon and when it was explained that it took 30 minutes to get to the entrance with a wheelbarrow, they took up the challenge and did it in 7 minutes, 26 seconds. Unfortunately, in the course of this, at about 3:45 p.m., David Irving, at the base of the stairs, was struck on the left cheek by a dislodged rock. The resulting laceration took several stitches to close.

Reference: Larry Reece "NSS Restoration Field Camp - 1989" **CIG Newsletter** Oct. 1989, p 125.

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Co other - carbide burn - Sinking Cove Cave, Tennessee 8-1-89

On August 1, three cavers went to caves in the Sinking Cove area of Tennessee as part of the Guidebook tours of the annual NSS Convention. They entered the lower entrance to Sinking Cove Cave, planning to do a crossover, leaving the Waterfall (upper) Entrance. Geoffrey Frasz (41) carried his and another caver's spent carbide in a plastic ziploc bag. They had already been in waist-deep water in another cave earlier that day. The dump sack was in a Lost Creek pack worn over-the-shoulder, with the pack under his left arm. They got into chest-deep water but there was no problem with the pack since it had drain holes, and the water would just drain down his left leg. He was wearing jeans and a denim jacket.

Halfway through the cave he began to feel an irritation on his upper left thigh. He figured it was just some sand that had entered and was rubbing, or the jeans were too tight. By the time they exited the cave, however, it was very irritating. He lowered his pants to reveal a hot red patch of skin on the upper thigh. He walked back to the car slowly, with his jeans undone, and drank some water that tasted of carbide, from a bottle in his pack. At the car the pain was such that he became nauseous and vomited. The following morning blisters had appeared and broken ones were oozing. It was diagnosed as second degree burns.

Reference: Geoffrey Frasz **Personal Communication** 8/10/89.

Analysis: The spent carbide caused the burn and also weakened the fabric of the jeans so that they later tore at the point of the burn. It is important to take note of this capability of "spent" carbide, for one often carries vertical gear or lines in the pack with spent carbide.

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Ac caver fall, holds failed - Doghill-Donnehue Cave, Indiana 8-6-89

A CIG trip was scheduled for the weekend of August 5-6, to Doghill-Donnehue Cave near Bedford in Lawrence County, Indiana. The group of 20 cavers was led by Scott Fee and entered the cave at 10 a.m. on Sunday, August 6. Fee initially tried to keep the group together, but this proved difficult, so they split up.

The main group got through Berg's Squeeze but were moving slowly enough that two were getting cold. One gets wet because of the "Bathtubs," two crawl sections with low air space. They decided to split the party further, Fee and the cold cavers going out the culvert entrance, two going back and collecting the ones still at the squeeze and going out the Boat Club entrance after the main group used that entrance. Back at the squeeze, Bill Bunting got stuck for 45 minutes so the group of three there, Bill and Betty Bunting, and John Hartman, headed back for the Doghill entrance.

Very quickly they came to a ledge traverse/climb that they had negotiated on the way in with the help of another's handline. That was no longer available but there were two old, knotted ropes that were present; these were tied on the end toward the squeeze, but not on the other. The ledge was crumbly, dry clay over rock.

They talked it over and did not want to climb without a safety line so they used the old ropes. Betty Bunting was the youngest, smallest, lightest and a "good technical climber," so she volunteered to go first and rig the rope at the other end, to the natural bridge.

There were two ropes so she used them both, lowering herself slowly and smoothly—soon she was over the ledge and got some toe holds to take some of the weight off the ropes. It was undercut below the break-over so she could not yet get any handholds. As she released the ropes to move her hold on them, the toe holds failed and she fell about 15 feet to the first level, landing on her feet with knees bent, but her right leg broke on impact. It was 3 p.m.

She informed the two above of this and that the leg needed a splint for her to be able to move. Hartman did the climb without a safety, checked on her condition, then headed for the entrance. Short of the Doghill entrance he met two cavers coming in to check on them. They went back out, got supplies and re-entered via the Culvert Entrance which was closer to the scene of the accident, though on the other side of the squeeze. The victim was wrapped up for warmth and one caver, an RN, stayed with the victim until the rescue arrived. The other got Bill Bunting across the ledge and took him out the Doghill Entrance. The callout produced the required manpower and equipment—a Ferno-Washington stretcher was remembered to be hanging on a wall in the Bedford Fire Department Office and the Bedford Water Works was persuaded to cease all filter flushing since it would affect the water levels in the "Bathtubs" in the cave.

Before the evacuation began, a spare sleeping bag was positioned on the dry side of the bathtubs, to allow re-packaging of the victim after getting soaked while traversing those pools. There was no trouble with public agencies who were content to offer assistance and backup and let the cavers take care of it. This they did, by all accounts most efficiently, and the victim was out about 1 a.m. Monday morning.

References:

1) Betty Bunting **NSS Accident Report** 5 pp, undated.

2) Will Ott **Cave Incident Information Form** 8-7-89, 12 pp.

3) Laura Lane "Injured Woman rescued from Bedford cave" **The Herald-Times** Tuesday, Aug. 8, 1989.

4) Scott Fee "Just Another Routine Grotto Trip" **CIG Newsletter** Oct. 1989, p 119-120.

5) Betty Bunting "CIG Doghill-Donnehue Trip From the Injured Party's View"

Analysis: Bunting believes that her "cotton gloves did not give an adequate grip," and contributed to the fall. The primary problem, however, is clearly that the traverse/climb was left without proper rigging, and thus there was no provision for retreat which could be necessary in any party. The old ropes should not have been left there if they were weak—to do so is to invite an accident.

The rescue apparently took far less time than expected because Bunting was able to pull herself along through the low air-space pools. At a hospital it was found that both lower leg bones were broken. The left one was surgically set with a metal plate and eight screws.

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Ac caver fall - unseen hole, following a leader - Sharer's Cave, Pennsylvania 8-26-89

On Saturday, August 26, a group of Boy Scouts was being led through Sharer's Cave, near Centre Hall in Pennsylvania. Cavers Gary Danmire and Craig Arble were leading three scout troop leaders and seventeen boy scouts.

The group was proceeding down a passage of stooping height when suddenly Brian McMahon (11), the seventh scout (and 12th overall) in line, fell through a hole in the floor, 23 feet to the floor of a room below, breaking his pelvis.

Help was called, including the Nittany Grotto. Initial rescuers lowered an EMT through the hole and he attended the victim who was placed in a harness, raised back to the passage above, and strapped into a soft-sided litter with a built-in backboard. Rescue squad members and cavers then transported the injured boy to the entrance room. The litter was then lifted up the large breakdown blocks at the bottom of the room and to the entrance. An ambulance was waiting.

Reference: Keith Wheeland "Rescue in Sharer's Cave" *Nittany Grotto News* 36(5) Fall, 1989, p 16-17.

Analysis: The leaders warn of the hole and word is passed back but at some point, say twelfth, someone is talking to friends, not paying attention—surprise!

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Ao trapped - Ludington's Cave, West Virginia 8-27-89

On Sunday, August 27, two young cavers were exploring in Ludington's Cave in Greenbrier County, West Virginia. These were James Patton and his cousin, Kevin Patton. When they headed for the entrance, they came to the 40 foot climb about 800 feet from the entrance. James was able to ascend the rope with Jumars. When Kevin tried he reportedly injured a knee and was unable to continue. James exited the cave and called the Sheriff's Office which in turn called out cavers.

Cavers arrived at the cave in the afternoon; a crew entered and rigged a second rope with a rescuer ascending alongside Kevin, to encourage him, to no avail. A second crew entered and set up a mechanical advantage haul system: a rope attached at the top of the drop, then through a pulley attached to Kevin's harness, then through a pulley at the top of the drop. With a belay and safety Jumar, the victim was hauled up. Once up, Kevin Patton "practically ran" for the entrance. Rescuers speculated that when the single set of Jumars was dropped down the rope from James to Kevin, one Jumar struck him in the knee, resulting in the call-out.

Reference: Patty Daw "Here we go again— The Ludington's Cave Rescue" *The West Virginia Caver* 7(5) Oct. 1989, p 5.

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Bft trapped by flooding - Snail Cave, Alabama

8-30-89

On Wednesday, August 30, three cavers entered Snail Cave, in Morgan County, Alabama. The entrance to the cave is in a streambed; under normal conditions the stream sinks upstream of the entrance, only entering it at times of heavy rain. After they had entered, it began to rain heavily.

"The cave has a crawlway/stoopway for about 150 feet, then a 12 foot climb down, then a 30 foot pit. A very low but wide crawl leads off at the bottom." The three went through the crawl but shortly after water began to pour through. Two got through the crawl but Mike Martin was trapped on the other side. In fact the crawl was soon two feet under water.

One of the two exited the cave and called the authorities. The usual agencies responded and caver rescuers were called out. When rescuers got to the entrance side of the crawl, there was 5 to 6 inches of air space there, but part of it was still sumped. Martin dug at the far end to help lower the water level. He was soon able to get through and exited the cave under his own power.

Reference: Bill Varnadoe "Snail Cave Rescue" *Huntsville Grotto Newsletter* 31(7) p 50-51.

Analysis: Varnadoe has a couple of criticisms:

- 1) "Not to enter low wet caves in the teeth of expected rains!"
- 2) The rescuers were delayed and confused as to equipment required by lack of a cave name. Anyone involved in a rescue should emphasize this to the Sheriff's Office involved.

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Dc caver near-fall, unseen pit - Bigfoot Cave, CA September 1989 A

On a trip into Bigfoot Cave, Siskiyou County, California, a group of cavers were videotaping. They started at the Discovery Entrance, with two cameras, one manned by Derek Hoyle and the other by Bob Richardson.

The Discovery Entrance pit series is only two drops. The first is a 75 with two broad, sloping ledges. The landing for this drop is a 3 to 5 foot wide ledge that leads partway around the second, 65 foot free drop. The first pit is located 25 feet inside the cave, down a narrow, windy crevice. For safety and communication purposes, groups do one drop at a time, assembling at the intervening ledge until everyone has done one drop.

One caver descended to the ledge with flood lights. Richardson came next; Hoyle taped the start of Bob's descent and asked how deep the drop was; Hoyle had not been in that entrance before. Richardson told him the depth of the first drop but did not elaborate that there were two drops. He proceeded to the ledge.

With Richardson taping and the other caver holding the lights, Hoyle descended. He reached the bottom of the drop, got off rope, and, with the camera rolling, turned around and all but stepped over the edge of the unsuspected second pit!

Reference: Steve Knutson *Personal Communication* September 1989.

Analysis: Ordinarily, a caver descending the first drop would be warned to get off rope and stay on the ledge. Because of the videotaping, however, everyone was being silent, forgetting that Hoyle was unaware of the second drop. A new hazard in caving and a near-fatality.

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Dr rockfall, spontaneous - Lechuguilla Cave, NM Sept. 1989 B

At Lechuguilla Cave a group was exiting. As Ray Keeler crossed over the top lip at Boulder Falls, a "microwave-sized rock" fell, missing the other four members of the team, who were all "in

appropriate safety zones." Everyone acknowledged OK so he completed the climb. After he reached the top a second rockfall "broke loose of its own accord." The rope was pulled up and found to have no damage. Keeler then rappelled back down, cleaning ledges of debris. Ray Keeler "Lechuguilla Cave Project" **D.C. Speleograph** Nov. 1989, p 12-13.

until the glove disintegrated, allowing him to rappel normally.
Reference: David Herron "The Nielson's Well Nightmares" **The Utah Caver** 2(1), Jan. 1990, p 8.
Analysis: In a cave such as this, that everyone regards as a "serious" cave, it is more important than usual for parties to stay together.

De equipment failure, worn rope - Lechuguilla Cave, NM 9-5-89

On Tuesday of the Labor Day week expedition to Lechuguilla Cave in New Mexico, two teams were to come out from a survey in the east part of the cave and two to pass them. One of the Easter Borehole teams reached the Aragonitemare descent and proceeded down. Ann Bosted was the last of her team of four. Thirty feet down she discovered an inch and a half sheath separation. She continued 20 feet further to a ledge; there she was able to re-anchor the rope and continue the remaining 150 foot descent. They left a note for the incoming camp crews.

When the second outgoing camp team got to the drop, the first one down found the separation to be 7 inches; he stopped, tied a knot and continued, passing the knot. With the knot and re-anchor in the rope, there was little slack at the re-anchor causing some difficulty. Another rope was retrieved from further back in the cave. The problem caused the team to be 9 hours late, resulting in a rescue callout which was aborted when they were discovered heading out. The rope was caving rope but the drop had obviously been poorly rigged.

Reference: Ray Keeler "Lechuguilla Cave Project" **D.C. Speleograph** Nov. 1989, p 12.

Bs stuck in crack - Nielson's Well, Utah 9-18-89 B

On a trip into Nielson's Well, a caver decided to try getting through Doubleback Crack, even though everyone was convinced he could not make it and he was warned not to try. He became "seriously stuck." Dave Shurtz grabbed his boots and pulled but this did no good. The caver began to panic, tensed up and started breathing erratically. It was feared that he might pass out and he fought to control it, with soothing words being spoken around him. Gradually he relaxed and was pulled out. Had he passed out, he would have slid downward into an "impossible" position and trapped Glenn Shurtz on the side away from the entrance.

Reference: David Herron, *ibid.*, p 8.

Cc caver fall, hold broke - Nielson's Well, Utah 9-28-89 C

On a September 28th trip to Nielson's Well, Dave Shurtz was climbing Barrier Pit to an obvious higher lead. He decided to free climb as high as possible before putting in a bolt, to save time. He got about to the top and, of course, was not in a position to put in a bolt, so instead of coming back down and starting an aid climb with the bolts, tried to "go-for-it." He stood on a tiny flake which disintegrated and he fell 20 feet, landing hard on a cobble floor. As a reflex (he didn't remember it) he pushed off from the wall and flipped over as he fell. This kept him away from jagged rocks and allowed him to "break his wrist instead of his head or back." He was able to exit under his own power.

Reference: David Herron *ibid.* p. 8.

Ble lost, light failure - Cave near Bowling Green, Kentucky 9-8-89

At 10:30 p.m., Friday, September 8, Greg Herschel (22), David Pieroni (19) and Josh Pierpont (15) entered a cave near the apartment complex where they lived, on the outskirts of Bowling Green, Kentucky. They became trapped when they "lost their flashlights." They were only 5 or 10 minutes into the cave but without light were unable to find their way out.

The following morning they were reported missing and an hour later they emerged muddy and cold, 13 and one-half hours after entering. Pierpont said, "If I would have been down there a couple of days, then I would have started to worry."

Reference: Ed. "3 rescued after 13 1/2 hours in cave near Bowling Green" **Lexington Herald-Leader** Monday, Sept. 11, 1989.

De equipment failure, bolt bent - Nielson's Well, Utah 9-28-89

After Dave Shurtz's fall, a bolt was placed on the wall of Barrier Pit to facilitate further exploration. It was, however, of "inferior quality" and bent under weight and then stripped its threads when tightened. Luckily it did not fail when someone was climbing on it.

Reference: David Herron *ibid.*, p. 9.

Analysis: One must watch the "hardness" of bolts to be used in climbing by marks on the head. A suitable hardness is "Rockwell 5," indicated by 3 dashes radiating from the center of the head, on top. It is possible to obtain bolts of extreme softness at hardware stores these days and some stores are unaware of the hardness quality.

De equipment failure, glove caught - Nielson's Well, Utah 9-18-89 A

Nielson's Well, in the mountains of Utah, is regarded as a cave from which rescue would be very difficult. The cave has a 315 foot entrance drop, has an hour and a half hike and 30 minute drive to reach the nearest town, and so far is nothing but narrow slots and pits to reach the bottom at -647 feet. The cave is 39 degrees with drafts and wetness.

On September 18, David Herron was rappelling the entrance pit when a glove was "sucked" into his figure-8 so fast that one finger was hopelessly trapped and very painful. His ascenders were not where they could be reached one-handed. He was forced, despite the pain, to force the rope through the descender until he reached a 2 foot ledge 10 feet lower, where he could take some of his weight off the rope and ease the pain. He was unable to get free and no one heard his cries for help—he had told everyone else to go ahead, that he would catch up. He continued down, feeding the rope through

Da acetylene explosion - Ashmore Spring Cave, Alabama 10-21-89

On October 21, a group of three cavers was surveying in Ashmore Spring Cave in Alabama. Ed Kilgore was apparently using an ammo box for a pack. At one point the box suddenly exploded—spent carbide inside apparently had built up sufficient pressure to force the lid open. The can then exploded, upon ignition from a flame 3 feet away. No one was injured but the can was badly bent by the explosion. One could imagine that this could easily have had disastrous results. Don't put carbide in rigid containers.

Reference: Tim Stickley "The Ashmore Cave Saga" **Huntsville**

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BI lost caver - incompetent - Wind Cave, South Dakota 10-22-89

In October of 1989, the National Outdoor Leadership School (NOLS) spent 8 days at Wind Cave National Park, teaching caving techniques to students. On October 22, NOLS students entered the cave to conduct a mock rescue. They apparently assigned an instructor to be the "victim" and gave the victim time to get lost; then the students searched in teams.

At about noon, one of the students, Rachel Cox (18) had problems with her light and traded with another student. She then entered the Room Draculum/Cataract Room with Scott Smalley, searching for the victim. She left her pack, with her extra lights and water, in that room. They searched the Cataract Room where they split up to search smaller side leads. After a bit, her lamp ran out of water and ceased to function.

After waiting in the dark for Smalley for a while, she began to crawl around. After a bit, she urinated in her lamp to get it going and moved on, now in unfamiliar passage.

NOLS eventually realized she was missing, presumably when Smalley could no longer find her at the Room Draculum area, called off their rescue and began to look for her. After an hour and a half of this, they informed the Park Service that she was missing. The Park Service initiated incident command procedures, called in local cavers, employees with cave experience, and more NOLS people.

The first official search was by Park employees and a search dog, for an hour and a half. This was followed by five teams of mixed origin. These left the cave at 8:15 Sunday and were replaced by four more teams. The teams were staged from the Post Office Room in the cave, where telephone communication was available. Teams searched by sectors, the findings of teams being added to a master map. Others were assigned to be monitors on the tour route in case she was wandering and showed up there. By 9 p.m., 50 cavers were involved in the search.

Cox meanwhile had proceeded out of the search area, going down the Overland Trail and the AU survey. At some point her light went out again but she continued to crawl on in the dark and lost her lamp and hard hat down a fissure. She ended up passing down through a fissure to a lower, unmapped level below the Overland Trail route.

The call went out for more caver/searchers and teams were fed, rested and rotated as they searched the area where she disappeared, a 3-D maze, into Monday morning.

On Monday the search area was widened and crews searched new areas, concentrating on main passages, shouting for Cox. At about 10:15 Monday night, voice contact was made with Cox from the main level above her and after the fissure was cleared of boxwork, she was able to exit, under her own power, at about 2:30 a.m., Tuesday morning. She was treated at a hospital for dehydration and a "form of hypothermia."

References:

- 1) Paul Berger "The Rescue Review" **Rocky Mtn. Caving** Winter, 1990, p. 8.
- 2) Ed LaRock "The Search for Rachel Cox—More on the Wind Cave Rescue" *ibid.* p. 9.
- 3) Garry Petrie "How to Get Free Passes to Evan's Plunge" *ibid.* Autumn, 1989.
- 4) Cheryl Brandner "Area Cave specialist helps find lost woman" **Tribune** (Spring Valley, Minn.), Nov. 1, 1989, p. 3.

Analysis: This accident would not have happened if NOLS were not giving caving courses.

It is stated that "a total of 110 searchers for 1,800 man-hours and about \$30,000 were spent in the search." If she had not been found when she was, "between 200 and 300 people would have been involved in the search by the next morning." One can hope that the bill for this was sent to NOLS.

It is difficult to believe that someone who had just completed a caving course could behave so poorly and so irresponsibly. One has to think that either the course was very poor, or Cox was incompetent, in which case the instructors should have taken note and not let her go off on her own, unsupervised. In either case the responsibility belongs to NOLS.

Cox's faults are obvious—she went off by herself with only one light. When that light went out, she did not stay put.

Pisarowicz says "Cox would never have been found except she had been hitting a rock against a rock wall and the search party heard the sound. If Cox had been sleeping or unconscious when the search party had gone by, she probably never would have been found." The passage she was in was not on the map.

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Dcf caver fall, running from flood - Falling Springs Cave, Arkansas Fall 1989

In Falling Springs Cave, a group of cavers was exploring when they began to get the impression that there was an increase in water flow. They finally decided it had increased and started back downstream, hurriedly, but not in full rout.

At the Unsafe Underpass, Richard O'Hara was climbing down from a breakdown room. Twenty-five feet above the canyon floor he sat on a very steeply-sloping rock and set his camera down. He looked for holds to use in descent and suddenly his camera started sliding. He reached for it, and began sliding down the slab. Thinking fast, he got his feet under him, and leaped across the eight foot gap, to a four foot ledge. He then climbed down and tried to collect his wits. A companion joined him and helped him calm down—after all, the cave was flooding.

They continued on and safely exited with the water flow "at least twenty to thirty times" what it had been.

Reference: Richard O'Hara "High Tide at Falling Springs Cave" **Huntsville Grotto Newsletter** 31(8) p 59-60.

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Ce equipment failure, rack threaded backwards - Ellison's Cave, Georgia 11-11-89 A

On November 11, a group of nine cavers entered the New Entrance of Ellison's Cave on Pigeon Mountain in Georgia. They intended to do Fantastic Pit and tour the bottom of the cave to the foot of Incredible Pit.

At the Warm-Up Pit (125 ft free), seven descended. Rick Haley prepared to go down by turning down the flame on his carbide light. He then fixed his rack to the rope. The rack had rusty tubular steel bars and in the dim light they "blended in with the color of the surroundings." Consequently, he skipped using the third bar. When he started back over the lip, the bottom four bars, rigged backwards, popped off.

Fortunately the top two bars kept Haley attached to the rope and he was able to wrap the rope around his leg enough to get friction to slow the fall. This happened just before the bottom and he still "landed pretty hard" in a flat area of gravel and water.

His three-layer leather gloves were worn through to "raw flesh" and he had suffered rope burns as well as some trauma. Thus educated, he continued on to do Fantastic Pit and the rest of the trip without further incident.

Reference: Jay Reeves "Cave Accident" Unpublished report, July 9, 1990.

Analysis: Reeves states that Haley is an experienced mountaineer but had not done much vertical caving. He points out that a safety of some sort above the rack should have prevented the incident, and that stainless steel or aluminum bars, or the newer sheet stainless steel bars or "C" shaped bars would have made the mis-rigging

unlikely.

I must state that I once rigged a rack with bright, shiny bars totally backwards, but I have developed the habit of putting my weight on the set-up (in a direction other than the edge of the drop) before going over the edge and so can tell you about it. A good habit.

Haley must be commended for his presence of mind in using leg wraps to slow the fall. Regarding the dim light, remember that it is novice cavers that burn themselves; one obviously should turn lights up, not down, when going down a pit.

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Cr rockfall - the old rake trick - Ashmore Spring Cave, Alabama 11-11-89 B

On November 11, a crew of cavers was working in Ashmore Spring Cave, on Gunter's Mountain in Alabama. One team was surveying when Tim Stickley noticed a lead in breakdown. He moved some rocks and crawled in. As he put his weight on one long stone, the other end flew up and hit him in the mouth, cutting his lip.

Reference: Tim Stickley "The Ashmore Spring Cave Saga" *Huntsville Grotto Newsletter* 32(2) p 17.

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Ac caver fall - Crooked Creek Ice Cave, Kentucky 11-11-89 C

At about 11 a.m. on Saturday, November 11, a group of boy and girl scouts plus scout leaders was guided into Crooked Creek Ice Cave in Rockcastle County, Kentucky by Tom and Brett Karaus of the East Tennessee Grotto, NSS.

They entered the horizontal entrance leading to the two lower levels of the cave. They went through a short crevice and belly-crawl and did a climbdown into a large room. Across this they did a short climb-up, chimney and then a 20 foot climb up a slope to reach a small room on the third level. A short crawl leads around breakdown and overhangs the second level at a wide crevice. Forty feet past this is a 30 foot dome pit with a tricky traverse along the left wall; the first five feet is sloped at a thirty degree angle toward the pit, the rest is only a foot wide, but is flat.

Brett Karaus went to the far side of the pit and secured a 7/16 PMI. With this handline set, a scoutmaster, Pat Evans (45), positioned about halfway across. Each scout then traversed wearing a "chest harness and crotch strap" and safetied to the line with a carabiner.

After several had gone across, Evans turned toward Tom Karaus, on the near side, took a few steps, and lost his holds. He fell for 16 to 20 feet, striking a ledge 8 feet down that turned him so that he landed on his back, on a "relatively flat" slab of breakdown. A backpack may have taken some of the impact as did a canteen which burst at the seam on impact.

Tom Karaus yelled down, found that Evans was conscious and told him to stay put. They reached him in about three minutes. He had suffered injuries to his left foot and had pain in his right side. They decided to allow him to self-rescue.

The pit entrance to the cave was only 60 feet from the start of the traverse, so they started the rest of the group out that entrance while bringing the others back across the traverse. Other scout leaders helped Evans to the bottom of the entrance pit.

Soon the scouts were all out and Evans and assistants were at the pit. Apparently this pit is climbable so they put him in the chest harness and crotch strap and belayed him up with all the adults helping. He was transported to a vehicle on a make-shift stretcher.

Reference: Tom Karaus *NSS Accident Report* undated, 4 pp.

Analysis: The victim had a broken bone in his left foot, two badly sprained fingers on his left hand, and bruising on his right side and back.

As Karaus points out, the victim fell on a slope where several others had crossed. If he had been more careful, he probably

wouldn't have fallen. But there is no excuse at all for not holding the handline. Better still would be to wear a harness and clip on or tie to the line. Sounds like the scouts were learning better than the scout master.

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Bl lost, light failure - Cueva Del Diablo, Naucalpan, Mex. 11-12-89

On Sunday, November 12, a group of boy scouts was exploring in the mountains of Montezuma and Cristo Rey in Naucalpan, Mexico. Four of them became lost when they went exploring in the Cueva del Diablo. They were found by searchers on Wednesday, 70 hours after becoming lost. One has to suspect that they had insufficient lighting.

References:

1) L. Tapia, M. Lino, and E. Hacho "Rescaten Vivos a los 4 Jovenes Extraviados en Cavernas de Atizapan" *Excelsior* Thursday, Nov. 19, 1989, p1.

2) E. Hacho, M. Lino "Aun Perdidos, 4 ninos, en Cerros de Naucalpan" *ibid.* Wednesday, Nov. 15, 1989, p 1, 4.

3) Luis Romero *Personal Communication* Nov. 17, 1989.

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Ac caver fall - Clark's Cave, Virginia 11-18-89 A

On Saturday, November 18, a boy scout troop was camped on a farm in the Millboro District of Bath County, Virginia. The troop went exploring in nearby Clark's Cave. They proceeded some distance into the cave before one of the scouts, age 11, fell 30 to 40 feet, breaking his right arm. The authorities were called and at 2 p.m. fire department and rescue squad personnel responded. The boy was 15 minutes into the cave, but it took three and a half to four hours to evacuate him through the "narrow passages requiring them to crawl or even inch along on their sides for much of the way." While still in the cave, they were unsure of the extent of his injuries.

Reference: "Boy Scout Receives Injuries from Falling in a Cave" *Covington Virginian* undated.

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Ao other - dislocated kneecap - Ellison's Cave, Georgia 11-18-89 B

On November 18 at about 9 a.m., Heath Many (16) and Lewis Puckett (26) began a cross-over trip in Ellison's Cave on Pigeon Mountain near Lafayette, Georgia. They had rigged the pits on a previous trip. They entered the Stairstep Entrance, descended the 120, 90, and 440 foot drops, and proceeded through the one mile of main passage toward 586 foot Fantastic Pit.

They were at a chimney climb between the Stream Passage and TAG Hall. Puckett ascended the chimney but when Many got three-fourths of the way up, he suddenly felt severe pain in his left leg. He retreated to the bottom; Puckett got webbing from his pack, tied to a boulder at the top of the drop and descended to Many. Many's left kneecap was dislocated, rotated laterally left. He was in severe pain and experiencing nausea.

They knew a procedure for relocation and, though a painful process, used it—the only alternative would be a protracted and difficult rescue. Many gradually and painfully worked strength back into the joint. After 45 minutes, Many was able to stand on Puckett's back and using his good leg and the webbing, climb the pitch.

At Fantastic Pit, he climbed top tandem with a rope walker, with a switch to a Texas possible if the bad leg proved unusable. At the top, Puckett got on a ledge to take his weight off the rope to allow Many less difficulty in getting over the lip. They proceeded out slowly with no further problems. A visit to a doctor revealed no bone fragments but a splint, then a cast, followed by physical therapy were in order.

Reference: Lewis Puckett *NSS Accident Report* undated, 4 pp.

Analysis: Puckett states that the dislocation was not caused by a fall but by a bad position while chimneying. There was no history of such dislocations with the victim, who had been caving for three years and was on his eleventh trip to Ellison's.

Frankly, anytime a self rescue is managed, it is something to be proud of.

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Df flood - Onesquathaw Cave, New York

11-19-89

At about 11:15 a.m. on Sunday, November 19, eight people visited Onesquathaw Cave in New York. The main passage is a streambed but is walking for about 400 feet to where the single side lead, an upper level, takes off. The main passage continues with a right turn as a duck-under about two feet high for about 50 feet; it then continues walking and crawl for 1000 feet to a sump. It was a clear day when they entered.

At the high lead they took it, rigging a rope as a handline. A little way in they heard a strange sound. At the end of the lead, where it has doubled back near the entrance, it was louder. They headed back and when they neared the main passage, the sound was clearly that of rushing water. There was now a foot of water in the main passage. They decided to exit and did so, some getting wet nearly to the waist. Outside it was slightly overcast with no sign that it had rained.

They investigated and found, three miles up the road, a swampy area covered with a layer of ice six inches above the ground. Hunter tracks were in the area. The cavers speculate that hunters may have breached a beaver dam to drain the area for hunting. Two hours later the Onesquathaw streambed was dry. If they had gone into the main passage crawlways, it could have been a serious situation.

Reference: Gail Jackson **Personal Communication** undated.

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Co other - poked in eye - Cueva Cuchillo, Mexico

11-23-89

Late in the evening of November 23, David Locklear and another caver were standing above the first drop into Cueva Cuchillo in northern Mexico, when they happened to turn towards each other and the other caver's Petzl lamp poked Locklear in the eye. The other caver poured some water in the eye and then Locklear left the cave. The other caver stayed because there was someone on rope who could not be left alone.

Five minutes later, severe pain set in and Locklear became unsure he could find the trucks, parked near Pozo de Montemayor, down the road, because he was having trouble staying on the road. At the trucks, he found no one and began yelling. Someone was asleep in a truck; he poured water over Locklear's face. Another caver showed up and drove Locklear down to camp while giving him ice to put on his eye.

At camp, the pain had reached a peak and he was held down while water was poured into the eye. A doctor was in the group, examined the eye and pronounced it to be OK. Locklear spent a night in great pain and when he finally got to Laredo and saw an eye doctor, the doctor pronounced the eye OK and charged \$40. Locklear actually had a heavy-duty pain killer at camp, but was too dizzy and distracted to remember. He thinks if this had happened at Montemayor it would have been fatal since he wouldn't have found the trucks and would have died of hypothermia.

Reference: David Locklear "Accident Report" **The Texas Caver** December 1989, p 126-127.

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Art rockfall, trapped - Un-named Cave near Austin, Texas

On Friday, December 22, three or four cavers entered a cave near Barton Creek on the outskirts of Austin, Texas. The group explored for some time and were heading out at around 7 p.m. As they neared the entrance, where the cave spirals in twisting, narrow fashion up to the surface, a 4,000 pound rock dislodged and shifted, trapping the legs of Charlie Savvas (31) and leaving him in a "standing" position in the small passage. His companions tried to free him but could not and went for help.

Among various agencies who responded was "Texas Cave Rescue." An EMT first crawled ten minutes to reach the victim and administer a morphine injection. Using boards and a hydraulic jack, the rock was lifted and at around 10:15 p.m., Savvas was free. His right leg was splinted and he was evacuated from the cave.

Reference: Lydia Lum and John Bryant "Austinite freed after being pinned in Cave" **Austin American-Statesman** Dec. 23, 1989, pp A1, A9.

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Bi illness, unable to ascend - Sotano de Cepillo, Mexico

12-29-89

On Friday, December 29, 1989, a group of 10-plus cavers visited Sotano de Cepillo, near Tamapatz in Mexico. They arrived at the 120 meter (394 foot) blind pit at 2:20 p.m. The rope was rigged so that it fell free from the edge. All descended.

Part of the group was British/Canadian and they ascended first. The last of them became ill part way up and had to be hoisted the rest of the way. This was done directly by use of the available manpower.

Reference: Alejandro Villagomez "Sotano de Cepillo" **The Texas Caver** February 1990, p 6-7.

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CAVE DIVING ACCIDENTS

AAd - Blue Grotto, Florida

1-29-89

On the morning of Sunday, January 29, two divers entered Blue Grotto, at Williston, Florida. They explored around and were in the daylight zone at an area known as "Peace Rock." One diver, Josh Petterson, signaled his partner to join him at the surface inside an air bell. When he did not appear, Petterson went to look for him but could not find him. He assumed he had misunderstood and surfaced. Petterson surfaced, failed to find him and told three divers already in the water that he was missing. They searched but were unsuccessful as was a slightly later attempt by a management diver. At 12:35 Lloyd Phillips and J. C. Deen entered the water and searched, especially in a silted-out area. They then searched the entire cavern area, surfacing at 1:40 p.m. At 2:20 p.m. they entered again and searched all logical places in the Peace Rock area. At 3:45 two other teams entered the water and found the body in a breakdown area at a depth of about 70 feet, below Peace Rock. The body was tightly wedged between rocks. Only after deflating the BC and removing the weight belt could they dislodge and remove the body. The tank was out of air, regulator in working condition, both of his lights were working.

Reference: Lloyd Phillips and Joe Harrell "Fatality at Blue Grotto" **Underwater Speleology** 16(2) March/April 1989, p 19-20.

Analysis: The victim went off on his own, became silted out or trapped and drowned, even though he had a buddy. Why did he disregard the safety of his buddy? Lloyd Phillips says "It is my opinion that he was playing 'hide and seek' and became trapped."

The victim was open-water certified and going into the deeper part of the cavern, in a silty area, 40 feet from the guideline, was an obvious mistake, as was "failure to exit with 2/3 of starting air, failure

to maintain a continuous line, failure to be properly trained, and failure to maintain contact with his buddy."

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AAd - Morrison Spring, Florida

3-4-89

Late Saturday afternoon, March 4, two open-water certified divers, Tom Clark (32) and Mark Jebeles (29), entered Morrison Spring in Walton County, Florida. Conditions were described as clear, but "dark river water was flooding the cavern entrance." They apparently followed the line, but it was close enough to the entrance that they may have been forced into open water by the current. Their bodies were recovered by divers on the scene. One had 1500 psi and the other 800 psi left. Their lights were still working. Their equipment had no apparent problem after inspection at a Panama City dive shop. Autopsies found that "both divers had a lot of silt in their lungs and stomachs." It was speculated that they may have stirred up silt and panicked.

Reference: Wayne McKinnon "Fatality at Morrison" **Underwater Speleology** 16(2) March/April 1989, p 19.

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Do - Gilmore Springs, Alabama

3-18-89

On March 18, a group of people, including Dr. Jim Dobie of Auburn University, were at Gilmore Springs, in Clarke County, Alabama. They were interested in learning if the spring contained any Pleistocene fossils.

Carl Rossell, a cave diver, went in and found the vent of the spring in bedrock at only 25 foot depth. The vent was "a turbulent sand boil of near zero visibility." He came up and reported that it was almost impossible to enter and very dangerous. The professor asked if he would take down a wire basket and get a sample of bottom sediments as well as rock samples. This was agreed to and Rossell descended. He ended up going "unintentionally" about 18 feet into the cave, got turned around by the poor visibility and treacherous currents, and "slammed his head on the ceiling." The basket was left there, stuck on the ceiling by the force of the current. He still had the rope attached to it, but all of them pulling couldn't budge it.

Reference: Steven Carey "Gilmore Springs" **Huntsville Grotto Newsletter** 32(1), p 6.

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AAd - Vortex Springs, Florida

3-19-89

At about 7:45 a.m. on Sunday, March 19, five divers including Dale Kitchen and Drew Morrison, both open-water certified, entered Vortex Spring in Holmes County, Florida. They were apparently checking out the site for some sort of open-water training. The three not named went into the cave zone while Kitchen and Morrison remained in the cavern, near the entrance.

Flow conditions were described as normal—a slight outward push but the spring had just been re-opened after dredging to remove silt and there was more silt than usual at the entrance. The cave zone is tighter than the cavern but has a sandy floor.

When the three returned from the cave, they found, at the surface, that the other two had not returned. Divers from the Vortex management went down and found the bodies about 20 feet into the cave at a depth of about 48 feet. Both were on the floor and wearing dive computers. Kitchen had 2500 psi left while Morrison had 1800 psi; both had stage tanks. Their gear was disassembled at the site by recovery divers.

Reference: Wayne McKinnon "Fatality at Vortex" **Underwater Speleology** 16(2) March/April, 1989.

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AAd - Cenote Bolom Chojol, Yucatan, Mexico

9-10-89

On Sunday, September 10, four divers went to Cenote Bolom Chojol near Merida in the State of Yucatan in Mexico. Two of them were novices, being taught cave diving by two friends. One novice was making his first open-water dive, the other had less than two years of diving experience. The four went to a depth of 90 feet, penetrating about 210 feet. This included the 90 foot pit about 120 feet from the entrance of the cave.

As they ascended the pit, one of the students had a light problem. This was corrected and the two experienced divers left the cave, expecting the others to follow. They did not appear. A search commenced but was unsuccessful.

The bodies were found several days later. They appear to have left the line in confusion and headed deeper, into unexplored cave at -120 feet. They did not have wetsuits, weight belts, BCD's, octopuses, or depth gauges. They had only one SPG and one light each.

Reference: Jim Coke "Cave Death in the Yucatan" **Underwater Speleology** 16(6) Nov/Dec, 1989, p 15.

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NATIONAL SPELEOLOGICAL SOCIETY
Accident Report Form

Date of Accident: _____ 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

- ☐ 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.

Rescue

- ☐ Actions following accident.
☐ 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.

National Speleological Society
Cave Avenue
Huntsville, Alabama 35810

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