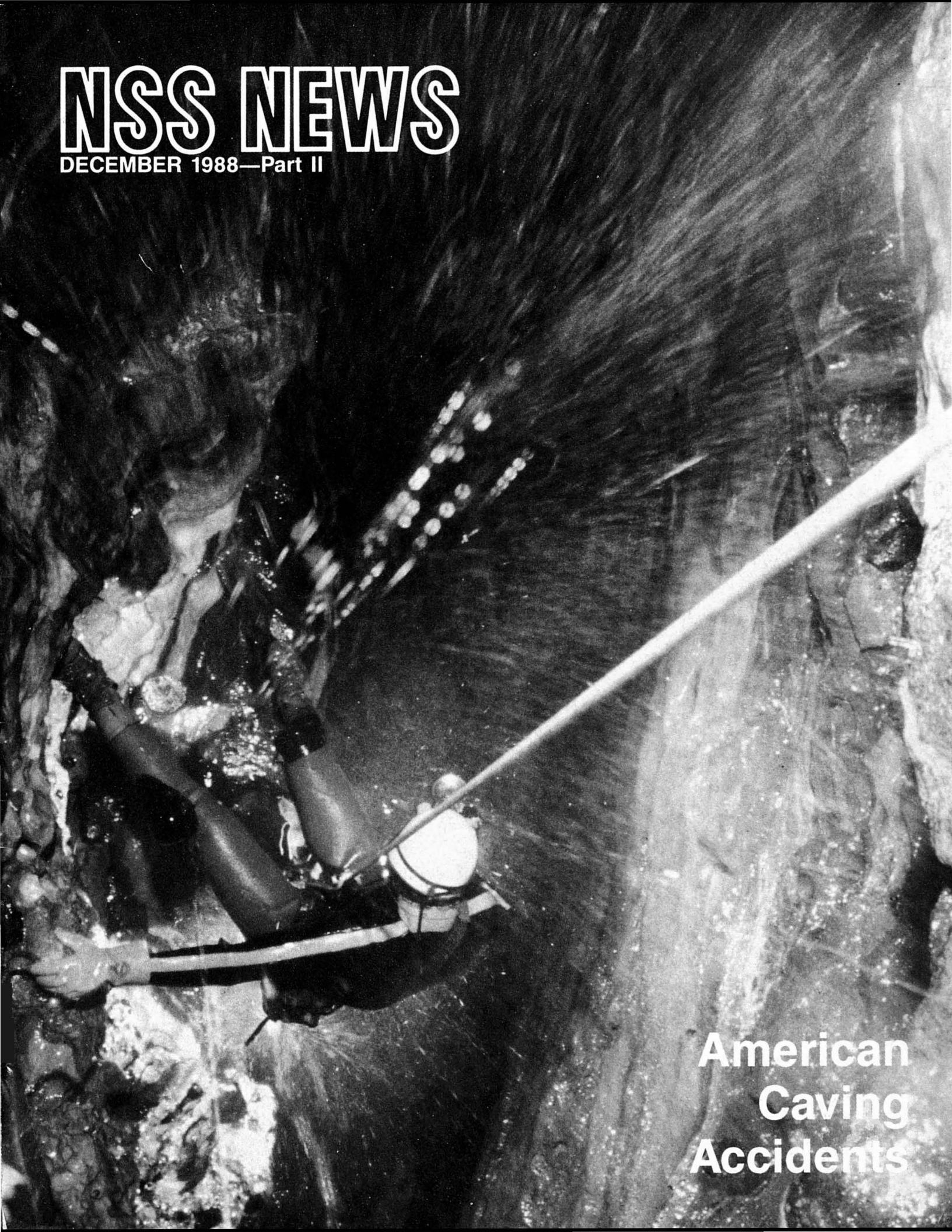


NSS NEWS

DECEMBER 1988—Part II



American
Caving
Accidents

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American Caving Accidents

GETTING THE EDGE....

by Steve Knutson

Cave exploration is a hazardous activity. No one can argue against this—there are obviously many potential dangers waiting for you in a cave. But how dangerous is it? How likely are we to be involved in an accident?

In caving there are some 60 reported incidents per year in North America. Let us for a moment assume that there are 3000 "active" cavers, taking, say, 20 cave trips per year involving 10 hours in the cave per trip. Thus there are only 60 incidents per year per 600,000 caver-hours, or one incident per 10,000 caver-hours. If an "active" caver's career (some "cavers" have no career) is ten years, that equates to 2,000 hours of caving. We can readily see that, statistically speaking, only **one** caver in **five** would have an accident in the course of his career.

However this sounds to you, whether you consider this to be safe or dangerous, is irrelevant, in my opinion. Statistics can usually be finessed to say whatever we want. The real question here is **who** is to be that one caver in five? ...and why do some cavers have more than one incident? Why does an accident occur to one caver and not to another in the same party?

If we make the decision to go caving, we will find that some accidents are truly an act of Nature or fate — they are not predictable. This could include encountering bad air, a storm not in the forecast, illness, some equipment failures, some rockfall, failure of a tested handhold, etc. Yet other accidents are the obvious consequence of **decisions** we have made: to go in a water cave in bad weather, not to replace gear that shows wear, to continue into unstable rock, to climb an exposed pitch when a belay is not available, and so on.

The question then becomes, what causes us to make poor (risky) decisions? And most important, can we manipulate any of these causes and affect our own fate?

1) Body Chemistry. Studies have shown that sensation seekers tend to have higher levels of sex hormones, particularly testosterone. They have also been shown to have lower levels of mono amine oxidase, an

enzyme regulating brain activity. We probably shouldn't manipulate body chemistry, but recognizing a sensation seeker can at least allow one to avoid that person. The knowledge that body chemistry is a factor may also allow us to realize that our own urge to do something risky may have no rational basis.

2) Perception of Risk. In a study done at the University of California at San Francisco, teenagers tended to see the risk of drug addiction and unplanned pregnancy as becoming **less** likely with the repetition of the act over time. This is the same as getting "heads" several times in a row when you flip a coin and believing that the chances of getting "tails" is thus decreasing. In risk taking, it is the same as believing that successfully climbing without a belay once makes it safer the next time. This is false.

3) Peer Pressure. To be accepted, to be part of a group or a society is a strong urge and this alone will sometimes dictate what we will do and how we will do it. Thus a person will attempt something extremely risky rather than face social or group rejection. We should try neither to exert nor to yield to peer pressure in making decisions on safety, but it will be there nonetheless. Keep it in mind.

4) The Leader-Follower Syndrome. Leadership is not just something assigned or named. In any group, even ones that profess to be without a leader, someone will lead; others will then follow. The roles are not necessarily fixed, they can be assumed or played by some as required. Even if one is fixed in a role, knowing the liabilities of that role will enable him to perhaps evaluate situations.

The **leader** has the great advantage that he is more aware. He is more aware because he is going first, both choosing the way and trying difficult moves first. Note that if one caver is leading and another tries a difficulty first, then at that moment their roles have reversed—remember that we are talking about assumed roles, not assigned roles.

The leader's big disadvantage is that if there is some hazard hiding along the way, he will encounter it first. A loose rock, badly rigged rope, crumbly holds, etc.

The **follower** has the opposite advantages and disadvantages. In following others, he will be less aware of what is going on. The pace will not be his and he is not required to find the way or make choices—his mind is free to drift. He is not likely to test holds and rigging like the leader would, or should. Some hazard the leader notices, and avoids, may not be noticed by the followers if the leader does not point it out.

Similarly, the follower will not have to try difficulties first—ideally he can watch those ahead of him do something tricky and learn.

Yet, if the leader (usually a person of greater ability) makes a difficult move, he may know exactly what he is doing and be quite safe whereas the follower may not have any idea whether he is capable of this and will do it just because he is expected to follow.

This is a complex concept but understanding it will be beneficial when it comes to making safety decisions.

5) Pity the Poor Novice. In the late 60's I was involved in mountain rescue in Oregon. One Monday morning in March we were called out to search for a party of six lost on Saturday in a storm on Mt. Hood. We found them when the storm broke, shortly after dawn. They had no food or dry clothes with them when trapped and were in bad shape, immobile, with dangerously lowered body temperatures. They all would have died soon, but one was already dead, having died Sunday night. He was the novice of the group.

The novice in caving is in a similar position. He will be anxious when experienced people are at ease; he will not have the right equipment, the proper clothes; he will expend more energy making the myriad body movements necessary in caving. He will be most likely to make a mistake. All other things being equal, he will be the most likely to succumb to hypothermia, as in the mountaineering situation I observed.

Keep this in mind when you take a novice caving and when you yourself are the novice—when you do your first sump dive, cave SCUBA dive, vertical caving, cave climbing, or alpine caving.

6) The Macho Mystique. Caving is a physical activity and it is wonderful to revel in our exertions, in the overcoming of obstacles, in success in a difficult environment... to survive, to conquer, and not to yield.

Yet as in any physical activity you will encounter people who are not satisfied with reaching a goal or completing a job. They want to show how good they are—especially in comparison to someone else. Thus a companion may come under pressure to show that he is not inferior, and do something not because he thinks he can do it, but because he feels compelled to do it. Amongst males we would say that his "manhood" is in question.

Every person has limitations and should only be expected to perform within them. Beware of macho cavers, they may be your undoing.

Perhaps it would help to hold in mind that a caver's exploration doesn't convey greatness on the caver—he just happens to be there. What his exploration reveals is the greatness of the cave.

7) The Solo Caver... The common concept is that solo caving is exceedingly dangerous and foolhardy. Yet solo caving has always been with us and there are very few instances of solo cavers in trouble. Indeed, on the face of the evidence, cave diving is much more foolhardy.

There are two types of solo cavers. One is the caver who operates independently from companions in the same cave or area. His companions are aware of his "solo" efforts and will send help if needed. The other is the true solo caver, who tells no one of his intentions and is thus entirely on his own, truly solo.

Is it really more dangerous than group caving? Except for the possibility of the loss of light, the same hazards are present as in party caving. But most important, just as the leader should be more aware than the follower, the solo caver should be more aware than the normal leader. He cannot allow himself the luxury of complacency that comes on us in group caving.

In a different vein, there are accidents that occur because you are in a group—rocks dislodged by a caver strike a companion, a leader makes a poor decision for a group, or one caver does a poor job of rigging a rope, as examples.

Thus, within the context of greater awareness, the solo caver is safer than the same caver in a group.

The problem comes when something does happen—the act of "Fate"). So many incidents are solved by help from the potential victim's companions. But this is a question of rescue, not of caver safety.

Note that followers in caving do benefit from group caving—they are shown the way, what holds to use, the rope may be rigged better than they could do it, etc. But a true follower is incapable of solo caving.

Since there are more followers than leaders in this world, it is thus unlikely that solo caving will be widely practiced.

Awareness. Just as a mugger on the street will pick as potential victims those that seem to be unaware, so accidents will come to the unaware caver. Pay no attention to loose rocks, the solidity of holds, the footing at the edge of a pit, or the weather when you go water caving, and you are setting yourself up.

But can we control awareness, or are we limited to what we are born with? Training in defensive driving is nothing more than training yourself to be more aware of what other drivers are doing and compensating for it. The same can be done in caving.

Indeed, in this noisy, complicated world many people train themselves to be unaware. You see it every day—the woman with the screaming infant who seems not to hear; people walking down the street who look neither right nor left and would walk right into us if we didn't step aside. They shut themselves off from irritations but also from warnings of potential hazards.

Obviously, our awareness is also affected by environmental factors on a day-to-day basis—our state of physical and mental health, diet, proper sleep, and so on.

The changing of awareness may be automatic. I have noticed a marked increase in my own alertness in going from traveling in the middle of a group, to leading the group, to going solo. I didn't intend the changes but on reflection they were obvious. This is especially true of solo caving. It is hard to believe how aware you can be until you try it.

CONCLUSION:

Accidents are of two types—predictable and unpredictable. Decisions affect the occurrence of predictable accidents. A number of factors affect our decisions; most of these are reflections of our attitudes. Some potentially controllable ones are as follows:

- 1) Do we perceive risks properly?
- 2) Do we exert or allow ourselves to be affected by peer pressure?
- 3) Are we a leader or a follower?
- 4) Are we a novice?
- 5) Are we macho or allow ourselves to be affected by macho behavior?
- 6) Are we as aware as possible?

So try to see risks in proper perspective, don't express or yield to peer pressure or macho behavior, and try to combine the awareness of a solo caver with the security of thoughtful companions, and with some luck in Fate, you'll go through your caving career safely.

AMERICAN CAVING ACCIDENTS — 1987

We have again used the same classification scheme for incidents:

1. Result of Incident (non-Scuba)

	1986	1987
AA Fatality (body evacuation)	4	3
A Injury with evacuation or aid necessary	10	15
B Evacuation or aid necessary—no injury	21	12
C Injury—no evacuation or aid	10	14
D No injury—no evacuation or aid	19	15
Total	64	59
Total AA, A, B, C	45	44

2. Cause of Incident

a acetylene explosion	3	0
b bad air	3	2
c caver fall	4	14
d drowning	1	2
e equipment failure or lack	14	14
f flood	1	2
h hypothermia	1	2

illness	0	0
I losing the way	8	4
r rockfall	12	16
s stuck caver	2	1
x exhaustion	0	1
o other	3	3

3. Scuba	9	7
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SCUBA incidents are again in a separate category. There are 7 incidents reported here, including 2 without a fatality.

In ordinary caving the year was very similar to 1986 as can be seen in the categorical breakdown. There were three incidents of **fatality**, involving four deaths. Two were killed trying to ascend a shaft with a waterfall in flood (2-28), one drowned while diving a sump with a snorkle (12-20), and one caver fell from the end of a rope too short for the pit while descending hand-over-hand (12-26).

The cause of incidents experienced a shift from 1986 with three categories comprising the majority of incidents; the third category in 1986 jumping to first in 1987. The categories are **rockfall** (16), **caver fall** (15), and **equipment failure** (13).

1. Rockfall

These were largely caused by cavers climbing on loose rock (4-4, 5-24-A, 10-10), rigging a rope or cable ladder so that rock is dislodged while climbing (1-5, Winter 86/87-A, 2-13, 5-2, 5-6, 7-18, 7-19, 9-8) or by dislodging a rock while free climbing on apparently solid rock (1-4, 5-23). A couple (or more) may have been spontaneous (Aug.-A, Winter 86/76-C). The effects ranged from fright and damaged equipment to injuries as serious as a broken leg (1-4). The latter required an evacuation from deep in Ellison's Cave, probably the most technical rescue yet undertaken in the United States. A rock shifting, pinning a caver's hand resulted in the loss of parts of two fingers (Aug.-A). Another caver was temporarily trapped when a boulder he sat on rolled over onto him.

2. Caver Fall

Most of these were short falls in situations where a belay would not normally be used (1-3, Jan., 3-7, 5-16, 5-30, Summer-C, 7-17, 7-18-C, Fall-B, 12-12). One certainly should have been belayed (8-1) and one was belayed, resulting in a lesser injury (4-11). Shoulder dislocation (7-18-B) and a broken leg (Fall-B) seem to be the most serious injuries. Please note that last year I included out of control rappels in this category although they are due to misuse of equipment and should have been in that category.

3. Equipment Failure or Lack

This interesting category includes three instances of being unable to climb a rope hand-over-hand, one knotted (1-10), one tied to a grappling hook (Feb.), and one, a fatality, in descending a pit (12-26). There were poor lights (7-30), a broken rope ladder (7-28), hair caught in a rack (1-1), too little friction with a rack (June), broken webbing on a foot Gibbs in a 400 foot pit (2-15), a problem with a climbing pole (4-19), a handline slipping off a boulder (10-17), a broken "cable" being used to lower someone down a pit (Winter 87/88), and a fall while trying to use an etrier (aider) for down-climbing. There were also two non-fatal SCUBA incidents where equipment was the problem.

The **lost way** reports had three incidents resulting from attempted cross-over trips (8-13, 11-7, and 11-15-A) and one where rescuers got lost while searching for lost cavers (11-8).

Other categories include **bad air** (Summer-B, Fall-A), **drowning** (a sump dive, 12-20; and ascending in a waterfall, 2-28), **hypothermia** resulting in an evacuation (5-23) and a death while ascending (2-28), **stuck caver** produced a need for aid when one couldn't negotiate a narrow canyon (5-24), and **exhaustion** when a caver couldn't climb a cable ladder (Aug.-B).

The **other** category had reports of carbide burns (Summer-A), animal traps in a cave (Winter 86/87-D), and a walking "fatality" who was talked out of continuing (11-15-B).

In past years, **Mike Dyas** has been a big help to the production of ACA

by forwarding accident references he found in the course of doing the "Dyas Digest" for the **NSS News**. I certainly appreciated this and hope that this service can be carried on by Ray Hardcastle. It would help greatly if newsletter editors could spot accidents or incidents in their own publications and make a point to send me a copy. Some do already—Thanks.

Send all info to:

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Oregon City, OR 97045

I would like to receive photos to use on the ACA cover—if you have a good, dangerous-looking action shot, send me a good dupe. I also want to include a few pictures of rescues in progress—have any?

CAVING INCIDENT REPORTS—1987

PREVIOUSLY UNREPORTED

CODE—CAVE NAME	LOCATION	DATE
Ac—Pettijohn Cave	Georgia	2-26-86
Cs—Arritt Mill Tunnel Cave	Virginia	7-28-86

1987 Incidents

CODE—CAVE NAME	LOCATION	DATE
Be—Sawmill Well	Tennessee	1-1
Cc—Cueva del Borrego	Mexico	1-3
Ar—Ellison's Cave	Georgia	1-4
Cr—Ellison's Cave	Georgia	1-5
Be—Rocky Hollow Cave	Virginia	1-10
Cc—Coldwater Cave	Iowa	January
Dr—Canyon Cavern	Colorado	Winter 86/87-A
Do—Beartrap Cave	Utah	Winter 86/87-B
Dr—Massanutton Caverns	Virginia	Winter 86/87-C
Ao—Wolff Cave	Alabama	Winter 86/87-D
De—Coldwater Cave	Iowa	February
Ar—Canoe Creek Mine Cave	Pennsylvania	2-13
De—Fern Cave	Alabama	2-15
Bf—Fisher Cave	Tennessee	2-28A
AAfdh—Miller Cave	Iowa	2-28B
Bc—Tumbling Rock Cave	Alabama	3-7
Dr—Virgin Cave	New Mexico	4-4
Cc—Grindstaff Cave	Tennessee	4-11
De—Mystery Cave	Missouri	4-19
Ar—Fisher Ridge Cave	Kentucky	5-2
Cr—Thunder Dome Cave	Tennessee	5-6
Ac—Stinging Nettle Cave	Tennessee	5-16
Bh—Lowe's Cave	Virginia	5-23A
Ar—Luddington's Cave	W. Virginia	5-23B
Br—Un-named Cave	California	5-24A
Dr—Lowe's Cave	Virginia	5-24B
As—Butler Cave	Virginia	5-24C
Cc—Elm Tree Cave	Kansas	5-30
Ce—Natural Trap Cave	Wyoming	June
Cc—Cristal Caverns	New Mexico	7-17
Dr—Pink Panther Cave	New Mexico	7-18A
Ae—McFail's Cave	New York	7-18B
Ac—Crowbar Cave	New Mexico	7-18C
Cc—Millerton Lakes Cave	California	7-18D
Ar—Unspecified Cave	Virginia	7-19
Ae—House Springs Cave	Missouri	7-28

Be—Alabaster Caverns	Oklahoma	7-30
Co—Doghill-Donahue Cave	Indiana	Summer-A
Db—Un-named Cave	California	Summer-B
Cc—Tongue River Cave	Wyoming	Summer-C
Ac—Coon Cave	Indiana	8-1
Bl—Bowden Cave	W. Virginia	8-13
Cr—Coley Cave	Kentucky	August-A
Bx—Gargantua Cave	Canada	August-B
Ar—Un-named Pit	W. Virginia	9-8
Db—Honey Creek Cave	Texas	Fall-A
Ac—Tumbling Rock Cave	Alabama	Fall-B
Cr—Lechuguilla Cave	New Mexico	10-10
Ce—Neff's Canyon Cave	Utah	10-17
Bl—Sloan's Valley System	Kentucky	11-7
Di—Sloan's Valley System	Kentucky	11-8
Bl—Clarksville Cave	New York	11-15A
Do—Clarksville Cave	New York	11-15B
Be—Ashcamp Cave	Kentucky	Winter 87/88
Ac—Widow Cave	Oklahoma	12-12
AAd—Waikapala'e Wet Cave	Hawaii	12-20
AAec—Copperhead Pit	Indiana	12-26

SCUBA:

Previously Unreported

CODE—CAVE NAME	LOCATION	DATE
Be—Orange Grove Sink	Florida	12-7-85

1987 Incidents

CODE—CAVE NAME	LOCATION	DATE
AA—Unspecified Cave	Mexico	Spring
De—Castleguard Cave	Canada	4-7
AA—Bonnet Spring	Florida	6-13
AA—The Elevator Shaft	Hawaii	7-13
AA—Jenkins Creek Cave	Florida	7-21
AA—Blue Spring	Florida	9-28
De—Wild Well	Iowa	11-15

PREVIOUSLY UNREPORTED

A-caver fall February 26, 1986
Pettyjohn Cave, Georgia

On February 26, four cavers were exploring in Pettyjohn Cave, Walker County, Georgia. At 7:15 p.m., Wilson Mann (19) was climbing a chimney when he slipped and fell about 35 feet. The initial diagnosis was a possible broken back; his companions went for help.

The Walker County Rescue squad was notified and at about 10 p.m. called Dogwood City Grotto Cave Rescue and over 30 cavers responded. Mann was placed in a litter and lifted up the chimney. He was highlined across two steep breakdown slopes and exited the cave at 1:15 am (the 27th). At a hospital he was found to have contusions but no major injuries.

Reference: K.W. Huffines "Rescue Brief's" **Georgia Underground** (Dogwood City Grotto), December 1986, p 23.

Analysis: As I have said many times, if you can't take a fall without obvious risk of injury, you should be using a belay.

* * * * *

C-stuck caver
Arritt Mill Tunnel Cave, Virginia

September 28, 1986

On September 28, five cavers entered the Arritt Mill Tunnel and the cave opening off it, in Alleghany County, Virginia. They intended to survey and do some photography, so they split up with three starting a survey of west-trending leads off the main passage. A low slit, trending upward, allowed only two of the three to pass and soon became too tight for even the smallest of the surveyors. Tom Spina, one of the two remaining, backed out feet first, apparently having some difficulty. He presumably was aware of a problem and left the cave "in a fair amount of discomfort." He had suffered two cracked ribs exiting the squeezeway. (Tom Spina, **Personal Communication** August 1988).

* * * * *

1987 CAVING INCIDENTS

B-equipment failure January 1, 1987
Sawmill Well, Tennessee

On January 1, four cavers went to Sawmill Cave in Marion County, Tennessee. The well is a "nice 155 foot pit with several waterfalls. The first is right at the top... and falls harmlessly down the center. A second is encountered about 50 feet from the floor." This falls 20 feet to a ledge where it sprays widely. Mike Sunderman rigged the pit and Steve Reesman (23) went down first. He looked down and let the others know it would indeed be wet. At the bottom he found an overhang where he could observe the next rappeller.

Angie Manon (21) descended smoothly to the ledge where she pushed away and made a quarter turn; after passing the ledge she swung back into the wall sideways. At that point she screamed and yelled down that her hair was caught in her rack. She asked for a bottom belay but this only pulled her into the main waterfall.

Reesman ascended to the victim, who's head was now completely against the rack. He attached a Jumar and sling to her seat harness and to the main line above the rack. Reesman descended and got off rope. Manon was then able to de-rig her rack. It took her some time to attach her own ascenders and free the now-jammed Jumar; she soon backed down the rope to the bottom.

Reesman was soaked and after some discussion it was decided that he would leave while Manon rested. Manon then exited under her own power.

Reference: Steve Reesman "An Incident at Sawmill Well" **The Michigan Caver** Vol XIV, February 1987, p 30.

Analysis: The cavers involved were experienced and had practiced with their vertical gear, giving this the appearance of a minor incident. Yet it was a serious situation with hypothermia a life-threatening possibility.

Anything that is loose on the upper part of a caver's person—shirt sleeve, hair, helmet strap, harness strap, etc.,—can get caught in the rappel device. This seems a triviality, but the consequences can be serious.

* * * * *

C-caver fall
Cueva del Borrego, Mexico

January 3, 1987

On January 3, a team of cavers was surveying in Cueva del Borrego near Conrado Castillo in northern Mexico. Pat Kambesis (34) was at a station trying to get a shot with compass or clinometer when she slipped backwards. One foot went into a hole in the floor and she fell, injuring a knee. She was able to exit under her own power. The knee was painful for several weeks. (Rick Rhinehart "Caving People" **Rocky Mountain Caving** Spring, 1987 p 6; Pat Kambesis **Personal Communication** July 1988).

* * * * *

A-rockfall**Ellison's Cave, Georgia**

At 10 am on January 4, Joe Orr and Bill Putnam (27) entered Ellison's Cave on Pigeon Mountain near Lafayette, Georgia. Their objective was to map a route from the Attic down to the Stream Junction. They descended the 125 foot Warm-up Pit and did the canyon traverse to the Attic. Past 586 foot Fantastic Pit, they crawled along a narrow ledge into the All-In-One Room.

A 650 foot rope was rigged by them to a large boulder. They began surveying, proceeding down a 40 foot drop and the next drop, 374 feet, on the one rope. This brought them to a breakdown room overlooking the south end of TAG Hall where they began searching the breakdown for the route to the Stream Junction.

They knew the route involved chimneying down and concentrated their search on the walls of the room. At about 3 p.m., Putnam located the chimney but found it a bit wide for his taste. Looking for an alternate route, he descended a narrow, adjacent slot to where a large breakdown slab was wedged. He tested this by "kicking and pushing on it vigorously." It seemed solid so he descended onto it, to a kneeling position. At one corner of the slab was a "football sized" rock that appeared loose and to be a danger to further descent. He reached over and "tested" it. When he moved it, the slab fell away from under him.

Six feet down, the slab bounced off the right wall and jammed against the left wall, pinning Putnam's right foot against the left wall. His inertia carried him over the edge of the slab, twisting and fracturing his lower right leg, leaving him hanging, upside-down, from the injured limb.

Orr was nearby and responded to the rockfall noise and Putnam's calls, reaching him within seconds. He was able to lift the slab, freeing Putnam's foot. There was no place to lie down at the bottom of the chimney so they decided to try to move to the top of the chimney. Compresses were applied to control bleeding and Putnam's extra-long rack was used as a splint with a cave pack for padding. The splint was tied in place with pieces of survey tape. Putnam was then belayed and assisted up the 12 foot climb. The victim was then 1,000 feet horizontally from and 580 feet below the entrance.

After Putnam had been made comfortable and treated for shock, they discussed the alternatives. Self rescue seemed out of the question due to the lack of personnel and difficult traverses and pits on the route out. A rescue call-out list was in their truck. Putnam was supplied with food, water and warm clothing; at 4 p.m. Orr headed out to call for help. He exited without incident and notified the Walker County Sheriff's Office in Lafayette. The Walker County Cave Rescue Squad was called and support from the Georgia Department of Natural Resources was requested.

At 9:30 p.m. the first rescuers came within voice contact with Putnam. He quickly reminded them of the connection to TAG Hall and the "easier" evacuation route up Fantastic Pit. This avoided the unstable rock and tricky traverses of the victim's route.

At 10 p.m. a rescuer reached Putnam and helped him into an exposure bag and added heat packs. The make-shift splint was replaced with a proper one; Putnam was then assisted over the breakdown to the lip of the drop into TAG Hall. He was lowered without incident.

An EMT and evacuation team were waiting for him. He was helped to a place relatively safe from rockfall and examined. During this, rockfall occurred and the victim was shielded by rescuers using a SKED. Two rescuers suffered hand injuries. The victim was fitted to the SKED and transported to the base of Fantastic Pit.

There was a 15 minute delay while sufficient rope was rigged; Putnam was then attached by both the rope and SKED and raised up the pit by counter-balance. Ten feet below the Balcony Ledge a "grab-loop" at the head of the SKED snagged on a projection. Putnam informed those above and a line was rigged and a rescuer descended to free the SKED. The lift continued but was soon halted as the haul line tangled with the communications wire. The wire was released at the bottom and the lift continued. Some rockfall occurred but no one was hit.

At the top, the victim was moved to a flat area and allowed to rest. More hot packs were placed in the exposure bag as Putnam had become chilled from the spray during the lift.

The victim was transported down a 30 foot drop, across breakdown to

January 4, 1987

the Warm-Up Room, and up the Warm-Up Pit. The SKED was placed in a Stokes litter and Putnam was transported thus to the entrance, some 800 feet away. At this point, the SKED was removed from the Stokes. The narrow entrance required some tricky maneuvering and caused some pain to the victim; who nevertheless reached the surface at 7:15 am (Monday). There were 54 in-cave rescuers.

The victim had suffered multiple open fractures of the tibia and fibula of his right leg.

References:

- 1) Tom Vines "'Impossible' Rescue Successfully Performed" **Birmingham Grotto Newsletter** 18(5) May 1987; also in **RASS Register** July 1987, p 9-10, and **Response!** March/April 1987, p 7-8.
- 2) Bill Putnam "Accident and Rescue in Ellison's Cave, Georgia—the Victim's Perspective" **Georgia Underground** (Dogwood City Grotto) June 1987, p 6-11.
- 3) John Harmon "Man saved after caving accident" **The Atlanta Constitution** Tuesday, January 6, 1987.
- 4) John Harmon "Injured explorer spends all night in mountain cave" **The Atlanta Journal** Monday, January 5, 1987.

Analysis: Putnam states that "caving with a party of two...precluded any attempt at self rescue." Indeed, I think that the smaller the party size, the more ready one must be to attempt a self rescue.

The big mistake, as Putnam admits, is in moving something that even might be a chockstone. But once the accident occurred, the cavers certainly seem to have done the right things and the victim's positive attitude must have helped. Ellison's is cold (59 degree F) and an accident victim could easily slip into hypothermia.

Putnam complains about the lack of administration of a pain killer, yet refused percodan when it was offered. From his description of the rescue, however, it is apparent that his pain was not excruciating and rescuers would probably do well not to complicate a medical emergency (accident) with the off-hand administration of drugs. The same goes for food and drink if there is any chance of internal injuries.

Putnam points out that it was not possible to get him completely into the exposure bag due to the pain of his leg, and suggests that some other design is necessary. He also suggests goggles for the victim to keep dirt and debris out of his eyes.

The description of the rescue makes the "impossible" rescue seem easy. Surely this is entirely a tribute to the expertise and energy of the rescuers. I wonder how this rescue would have gone in 1975?

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C-rockfall**Ellison's Cave, Georgia**

January 5, 1987

On January 4 a caver was injured in a rockfall near TAG Hall in Ellison's Cave in Georgia. While being evaluated by rescuers, some additional rockfall occurred, and the rescuers had to use a SKED to shield the victim. A "plate-sized" rock hit Beth Elliot on the hand and another rescuer suffered a cut finger. (Bill Putnam "Accident and Rescue in Ellison's Cave, Georgia: The Victim's Perspective" **Georgia Underground** June 1987, p 7-8.)

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B-equipment failure**Rocky Hollow Cave, Virginia**

January 10, 1987

On January 10, a group of four young men (18 to 21) entered the 55 foot entrance pit on a knotted polypropylene rope. They explored for a while.

To make their exit, they attempted to climb, hand-over-hand, the knotted rope, but could only make it to a ledge about 30 feet up. At 5:30 p.m., they lay down to await help.

Later, authorities were alerted and rescuers, including three rescue squads and C.A.V.E.S. Region cavers, responded. The group was found asleep on the ledge at 5:15 am the following morning. They were fitted with climbing rigs and given instruction in the use of the ascending gear.

They then left the cave under their own power.

Reference: Ed. "Four rescued from Rocky Hollow" **Caves and Cavers** (CAVES Region Newsletter) March 1987.

Analysis: This sort of thing is probably doomed to continue. The knotted rope for vertical caving is a well-established myth outside the caving community.

C-caver fall January 1987
Coldwater Cave, Iowa

On a trip into Coldwater Cave, Don Smith "stumbled and fell, injuring his knee." He was able to exit under his own power. (Anon. "Coldwater Cave News" **N.C.R. News** undated (mid 1987), p 20.

D-rockfall Winter-A 1986-87
Canyon Cavern, Colorado

In Canyon Cavern, Fremont County, Colorado, a caver was ascending a drop when a "rock the size of an engine block" was dislodged by only "a slight nudge of his elbow." The excess rope on the bottom was nearly severed when the rock hit. (Bob Fordon, **Rocky Mountain Caving** Spring, 1987).

D-other Winter-B 1986-87
Bear Trap Cave, Utah

Dave Herron entered a new cave through a crawl tube. Ten feet in, he came to a room containing large specimens of dried animal dung. While backing out, he was suddenly attacked as "jaws of steel" clamped onto his knee. He pried the beast off and threw it against the wall. Another was "killed" with a stick. The animal traps had been hidden under the dirt of the floor. (Dave Herron "Cavers Beware" **The Underground News** 14(1) (Timpanogos Grotto) Jan-March 1987, p 7).

D-rockfall Winter-C 1986-87
Massanutten Caverns, Virginia

During renovation work on the cave, Brad Cobb, the owner, was working on re-wiring the lighting system with some student volunteers. At one point on the tour path, Cobb was knocked to one side when a portion of the wall collapsed onto one of his legs. One student received a glancing blow on his helmet. Cobb was freed and found to be uninjured. (Brad Cobb **Groundhog** (Shenandoah Valley Grotto) June/July 1987, p 3).

A-other (unknown) Winter-D 1986-87
Wolff Cave, Alabama

A caver with a shoulder injury was rescued from Wolff Cave in Alabama by Brindley Mountain Fire Department volunteers. It was reported that the one hour rescue was completed in a scant six hours. (Ed. "Trip Reports" **Huntsville Grotto Newsletter** 29(3) March 1987).

D-caver fall February 1987
Coldwater Cave, Iowa

At the Waterfall Room, beyond Mud Canyon, Wanda's Walkway, the Pig Trough and Cascade Passage, three cavers were attempting to climb the waterfall to an obvious lead at the top. They had a "folding grappling hook" and after a couple of tosses, the hook, with a caving rope attached, became lodged at the lip of the falls. Using this as a handline, one caver

attempted to free-climb the "roaring" falls. Part way up, his numbed hands lost their grip and he fell/slid an unspecified distance. He suffered only a bruise on his right ankle. (Anon. "Coldwater Cave News" **N.C.R. News** undated (mid 1987), p 21.

A-rockfall
Cave in the Canoe Creek Mine, Pennsylvania

February 13, 1987

At about 1:30 p.m. on Friday, February 13, a group of bat specialists, led by Jim Kennedy, entered a cave intersected by the Canoe Creek Mine (no natural entrance). At about 3:30, Kennedy was standing on a steep talus slope including three rocks of 300 pounds or so. Suddenly the slope collapsed, carrying Kennedy over the edge of a pit. He apparently didn't fall very far, but was obviously injured and in great pain.

It took little time to get help and within an hour the local fire department had arrived and placed the victim on a litter with hot packs to prevent hypothermia. Nittany Grotto rescuers soon arrived and spent three hours rigging and lifting the victim up 60 feet to a small opening that led down to a mine passage. Kennedy was carried out of the mine by 10:30 p.m. and evacuated by helicopter to Altoona hospital for stabilization before being taken to West Virginia Medical Center at Morgantown. He had suffered a fracture on both sides of his pelvis.

Reference: G. C. "Caving Accident" **Cave Hunter** (Huntingdon County) April 1987.

Analysis: Rockfall can occur in situations from the apparently stable to the obviously unstable. Perhaps we should regard any obvious instability as something desiring to do us harm and treat it accordingly.

D-equipment failure
Fern Cave, Alabama

February 15, 1987

On February 15, a group of three cavers was doing 400+ foot Surprise Pit in Alabama. They decided to ascend in tandem as a "triple." About 170 feet up, Philip Moss, the second in ascent, suffered an equipment failure when the webbing attaching his foot Gibbs to his foot stirrup broke. He had noticed a fray in the webbing on earlier trips but had not been moved to replace it; now he felt it was time. The good news was that his chicken loop was long enough to tie the Gibbs to his stirrup and still go around his ankle. The bad news was that he had left his third ascender, a Jumar, in the truck, so he had to hang from one ascender while making the repair. (Philip Moss "Fern Cave" **Crawlway Courier** Spring 1987, p 4).

B-flood
Fisher Cave, Tennessee

February 28, 1987

On Sunday, February 28, four people went exploring in Fisher Cave, about 50 miles southeast of Nashville. Rain raised the water level in the cave and trapped the group. When they failed to return home at 6 p.m., as scheduled, relatives notified the authorities. The Cannon County Rescue Squad responded and sent a diver into the flooded cave. The four were found in an air filled room; until the water level dropped to release them, they were taken supplies in waterproof bags. (Ed. "Four Rescued in Tennessee" **The Texas Caver** June 1987, p 66).

AA-flood; drowning, hypothermia
Miller Cave, Iowa

February 28, 1987

At about 12:30 p.m. on Saturday, February 28, a group of cavers from Grinnell College entered Miller Cave near Postville in Allamakee County, Iowa. This trip was sponsored by the Grinnell Outdoor Recreation Program. The five students were led by Kathy Mccluskey, assistant

professor of geology and physical education, and Mike Price, a technical assistant in Computer Services. Rain was in the forecast and the skies were overcast as they rappelled the 110 foot, mostly free entrance drop. This entrance pit is in a ravine with a normally dry streambed leading to it.

A little before 2:00 p.m., a soft rain began to fall; this increased at 4:30 and by 5:30 had become both steady and heavy. Later in the evening it turned to snow, yielding a 4 to 6 inch accumulation.

The group finished their explorations and began to exit. One student reached the surface when water began flooding down the streambed and cascading into the pit. The second up got wet, and the third was soaked as the water flow increased. The rope apparently could not be isolated from the flow.

Mike Price (29) attempted to ascend but had trouble part way up and could not proceed. A second rope (either rigged then or at the time of their entry) was utilized by Kathy McKluskey (38) to ascend to Price in an attempt to help. She, too, ran into difficulties part way up and could neither proceed nor descend.

Meanwhile, Richard Bart and Matt Stone found a side passage for shelter from the spray and waited for help.

At 9:00 p.m. the Iowa Grotto was called and mobilized rescuers to work with the law enforcement agencies already on the scene. The stream flowing into the cave was diverted using earth moving equipment and sand bags; haul systems were set up. Price was found dead from hypothermia 60 feet above the floor and McKluskey dead from drowning 40 feet below him. Bart and Stone were found cold and weak and were hauled to the surface.

References:

- 1) Editor "A Tragic Milestone" **Intercom** 23(1) Jan/Feb, 1987, p 4-5.2)
- Editor "Tragic Cave Accident Results in 2 Deaths" **North Country Region News** March, 1987, p 20.
- 3) Editor "Campus Mourns Deaths of McKlusky and Price" **The Grinnell Magazine** 19(3), p 2.

Analysis: Even tragedies like this must be analyzed for the sake of the living. Surely those who die would want it so. In this fatality there are several clear messages:

The first is the failure to heed the weather. Any cave is potentially affected by bad weather, but one with a streambed leading to a pit entrance should be avoided.

Second is the decision to proceed out when water began cascading down. In unexpected circumstances, it is normal to panic a bit and believe that the situation will be resolved if you can just get out. What you need to realize is that in some cases, it is not possible to get out—if you "go for it," you may pay for it. To wait it out is a difficult decision to come to, but at times it must be done.

Last but not least, is the business of the winter season. Caving in winter must be looked upon quite differently from caving in summer. The water in this cave was near freezing—to ascend in it without very specialized clothing and gear is virtually suicide. To ascend in a cool summer flood would be dicey—to do so in freezing winter water was almost certain death.

B-caver fall

Tumbling Rock Cave, Alabama

On Saturday, March 7, a group of seven visited Tumbling Rock Cave (AL 171) in Jackson County Alabama, entering at about 8:30 am. They "were well-equipped," with one flashlight per person and well-hydrated, several having been drinking the night before and shortly before entering.

At 9:30 am, Thomas Grady Webb (23) was following a friend climbing a 6-foot boulder when he slipped, falling back about six feet. He landed "on his back with his right leg bent under him and also struck his head." He was unconscious for about one and a half hours. About the time he came to, a group from Huntsville Grotto encountered the victim's party.

The victim insisted on trying to walk out, but collapsed after 100 feet. He was covered with a space blanket, warmed with carbide lamps and a caver was sent for help. At 1:30 p.m., a litter arrived and the victim was

transported out of the cave, still somewhat intoxicated. He had suffered no injuries. (Ed. "Rescue" **Huntsville Grotto Newsletter** 29(3) March 1987).

D-rockfall

Virgin Cave, New Mexico

April 4, 1987

As Pat Kambesis was climbing on rope up a drop in Virgin Cave, Eddy County, New Mexico, a rock from a talus slope she was on fell and cut the sheath of the excess rope at the bottom of the drop. (Pat Kambesis "Virgin Cave" **SW Cavers** May-June 1987).

C-caver fall

Grindstaff Cave, Tennessee

April 11, 1987

Three cavers entered Grindstaff cave, Carter County, Tennessee, at about 11 a.m. They proceeded to a dome with a lead about 25 feet above the floor. From the lead issued a small waterfall. At about noon, Mike Hobbs (20) tried unsuccessfully to climb to the lead. Then he and Greg Kramer went to a ledge about 18 feet up and set up a belay. From there Hobbs was able to climb to the lead.

He checked it out and was climbing down when a handhold broke and he fell; the belay stopped him three feet from the floor, but he pendulummed into the wall, the force of this being taken by his buttocks and battery pack. He had a painful bruise but exited under his own power.

Reference: Greg Kramer "Caving Accident Report" **Bat Times** Vol 7, 1987, p 7.

Analysis: Not much of an incident but that is the point—the use of a belay possibly prevented serious injury, death, rescue, obituaries, etc. Falling is no sin—falling without a belay is.

D-equipment failure

Mystery Cave, Missouri

April 19, 1987

On April 19, five cavers entered Mystery Cave, Perry County, Missouri, to do climbing pole leads. They tried one that didn't go, then headed to Spider Pit. One caver had gone out, so Joe Slivinski, George DeSaegher, Philip Moss and Charlie Paine proceeded with the setup. They found it difficult with only four, but got the pole three-fourths erected when it jammed on an outcrop. Moss and Slivinski were holding the base about four feet off the ground while DeSaegher held the guy line and Paine fitted on sections. They lowered the pole, but the top section was not bolted, lifted out of its sleeve and fell. Fortunately it missed them.

They cited lack of manpower as a factor as well as Perlon guy lines that stretched a lot more than the one-inch webbing used previously and allowed less control, but the real problem was the lack of a bolt to keep the sections from separating. (Charlie Paine "Crevice 'Cave'" **Crawlway Courier** Spring, 1987).

A-rockfall

Fisher Ridge Cave System, Kentucky

May 2, 1987

On May 2, two cavers were exploring in the Fisher Ridge Cave System, near Mammoth Cave in Kentucky. Bob Anderson did a difficult free climb into a lead and found that it seemed to go. They rigged a cable ladder and Keith Ortiz started to climb up. He was only two or three steps up when a "small flake" fell from above. He bounded left on the ladder to get out of the way only to dislodge a 100 pound rock. He jumped off the ladder backwards, landing on his behind on a boulder, his body continuing back until his head bounced off the edge of the boulder. Ortiz was not seriously injured but had to be helped from the cave by Anderson.

It is surprising, as Ortiz says, that the wall did not show signs of instability during the free-climb, but "on closer inspection (it) was a

fractured mess." (Keith Ortiz "Another Fisher Ridge Accident Report" DUG Scoops October, 1987 p 7).

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C-rockfall

Thunderdome Cave, Tennessee

On May 6, three cavers were pushing a new cave in Fentress County, Tennessee. They proceeded down four drops to the bottom but found no leads. Mike Russell was first to start out and was 15 feet off the floor when several baseball-sized rocks fell from near the top of the 54 foot drop. One struck Russell on the helmet, knocking his Wheat lamp off. Another hit Mike Rogers on the forearm as he provided rope tension to get Russell's rope walker rig going.

Russell had a sore neck and Rogers a large bruise. They proceeded out without further incident.

The top of the drop was in the St. Louis limestone, a crumbly formation. It is especially important in new descents to clear loose rock before descending. (Mike Rogers "Thunderdome Cave Accident Report" undated, 3 pages).

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A-caver fall

May 16, 1987

Stinging Nettle Cave, Tennessee

On May 16, a group of cavers from the Highland Grotto were exploring in Stinging Nettle Cave, west of Jamestown, Tennessee. At about 2 p.m. Gether Russell (50+) fell about 10 feet, injuring his right hip and side. He was able to walk for about 500 feet to the start of the crawls and climbs of the last 300 feet to the entrance. His companions fetched a sleeping bag (they were having a campout in the entrance) and hot food and drink. One went to a phone and called for assistance.

The East Tennessee Grotto responded and began to arrive at 10 p.m. The entrance was too small for a Ferno-Washington litter, so the victim was secured in a drag-litter (a piece of conveyor belt with handles). Three hauling systems were rigged and the entrance was enlarged and stabilized. Russell was out by 3 a.m. He had suffered only bruises. (Patricia Daugherty "Stinging Nettle" undated, 1 page).

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B-hypothermia

May 23-A, 1987

Lowe's (Fritz-Breathing) Cave, Virginia

On Saturday evening, May 23, six cavers entered Lowe's Cave, Washington County, Virginia. This required descent of a "45 foot compound scree slope," 18 feet to a ledge, then a 25 foot slope curving to the left. They caved for some time.

As they started back from the end, Jeanie London started feeling cold and her "vision started to blur." At the pit (about 4 a.m.), she felt "very weak and cold" and was unable to climb out. Cavers on the surface were alerted and a hauling system rigging was begun. Meanwhile warm clothes, food and drinks were brought to the victim. At 7 a.m. London was hauled up the pit.

References:

- 1) Jeanie London "Lowe's Cave" RASS Register July 1987, p 11.
- 2) Betty McCauley "CAVES Region Fieldhouse" *ibid.* p 10-11.
- 3) Anthony McGee "NSS Accident Report" undated.

Analysis: Your energy level will usually be lowest in the wee hours of the morning. Moreover, the victim had had a tiring day and little supper.

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A-rockfall

May 23-B, 1987

Luddington's Cave, West Virginia

In the afternoon of Saturday, May 23, four cavers, Bill Balfour, Jim and Darlene Borden, and George Dasher, were attempting to enter the Bell

entrance of Luddington's Cave in Greenbrier County, West Virginia. This entrance had suffered a collapse some 10 years before but was still open. They could feel cold air and bats were occasionally flying out.

A short chimney down led through the collapsed area; just beyond was a low crawlway. Balfour, Jim Borden, and Dasher descended the chimney. Balfour tried the crawlway but couldn't make it through an especially low place, even with his helmet off. He turned back while Borden, also in the crawl, handed Balfour's helmet and light to Dasher who passed it up to Darlene Borden. At about 6 p.m. Dasher started up the chimney.

When he put his foot against the back wall, it dislodged a slab of rock about one and a half by two by four feet that was tapered, one end much larger than the other. This fell three to four feet, landing on Jim Borden (31) who was exiting the crawl. The small end of the slab landed on his right shoulder, back and head while the heavy end hit an elevated part of the floor, just in front of him. A piece of the slab broke off, hitting Borden's right knee and landing in front of Balfour's face.

Dasher immediately climbed back down and pivoted the block off of Borden. A few seconds later, Borden moaned; soon he was able to converse and after a couple of minutes he was able to get up and climb up the chimney, out of the cave. He had suffered only bruises.

References:

- 1) George Dasher *West Virginia Caver* 5(3), June 1987, p 14.
- 2) George Dasher *Personal Communication* May 27, 1987.

Analysis: Borden, wearing a Joe Brown helmet, was reportedly lucky the rock fell just the way it did.

One thing seems clear from the reports of recent years—rock fall is one of the prime hazards in caves and is much more common than once thought to be the case. It can probably happen anywhere, but in areas of obvious instability it is well to be a bit paranoid of your movements and those of your companions.

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B-rockfall

May 24-A, 1987

Un-named Cave, California

On the morning of May 24, a group of four teenagers was caving at Lava Beds National Monument, in California across the border from (south of) Klamath Falls, Oregon. These were Kevin and Mike Smith, Kevin Atkinson (16), and John Adams (14). There are numerous ungated lava caves in the monument and tourists as well as cavers are encouraged to explore.

Kevin and Mike Smith entered Skull Cave while Atkinson and Adams poked around in a collapse hole a short distance from the wilderness trail from the Skull Cave parking lot, just beyond the trail register.

At around 10 a.m., Atkinson found a hole leading down into the breakdown and entered. This led to a small chamber. Adams, meanwhile, was clambering around the hole when the sides collapsed, trapping both cavers.

The other two soon exited Skull Cave and went to the trail register, looking for their companions. They heard yelling from the nearby hole and soon learned what had happened. Kevin Smith headed for the visitor center at the Indian Wells Headquarters and at 10:20 a.m. reported the incident.

A number of Park Service personnel were dispatched to the scene and the situation, two trapped with a possible injury, was soon assessed. It was obvious that a lot of rock would have to be moved; one victim was complaining of numbness in his extremities and possibly had a crushed leg.

Assistance was requested of the California Highway Patrol and Sheriff's Office and an ambulance and fire engine were called from the nearby town of Tulelake. They began moving rocks, assisted by four "well-equipped" cavers from the San Francisco Bay Chapter, N.S.S., who coincidentally were at the scene.

At 10:45 a helicopter was requested in case quick medical evacuation proved necessary. The nearest, a California Department of Forestry craft, responded from Bieber.

When CHP and Sheriff's personnel arrived, the Skull Cave parking lot

was cleared of cars to make it available as a helicopter landing pad. CDF copter 202 arrived at 11:30. An EMT from the copter stationed herself near the collapse and communicated with Adams to help keep up his morale.

Meanwhile Park Service personnel placed themselves in very hazardous positions in moving rocks and stabilizing the walls of the hole with wood braces. One climbed in the unstable hole to take measurements which were passed to others above who would cut the required length brace with a chain saw; this would be passed down and hammered into place. Jacks were also used. Gradually the walls were stabilized and a portapower could be used to move the rocks trapping the victims.

At 12:55 Atkinson was freed. He appeared to suffer from shock, but had only minor abrasions otherwise. He was placed on a backboard and removed from the hole. At 1 p.m. he was flown to Merle West Medical Center in Klamath Falls.

At about 1:15 p.m. Lassen County rescue was placed on standby in case collapse occurred and rescuers were trapped.

At 2 p.m. Adams was freed, removed on a backboard and also flown to Klamath Falls, Oregon. He was also in shock but had no broken bones.

References:

- 1) Ken Hay **Untitled Incident Report** Lava Beds National Monument, 3 pp.
- 2) Ken Miller **SBFC Newsletter** June 1987.

Analysis: The two had been caving for over a year but showed poor judgement in climbing down into unstable rocks. Such things are dangerous even if you kick each one for stability on the way down. The one that proves to be unstable may be one at the bottom, supporting all those above. Kick it, and the roof falls in.

Atkinson had bought a helmet at the visitor center—it is still in the hole, wedged between rocks.

D-rockfall

May 24-B, 1987

Lowe's Cave, Virginia

On a trip to Lowe's Cave, Washington County, Virginia, a group of six was descending a 45 foot scree slope when a 400 pound rock was dislodged. Everyone shouted "Rock!" and no one was hit. (Jeannie London "Lowe's Cave" **RASS Register** July 1987, p 11).

A-stuck caver

May 24-C, 1987

Butler Cave, Virginia

On Sunday, May 24, a party of four was surveying in Butler Cave, Bath County, Virginia. A fissure was found with an hourglass shaped stream passage at the bottom. Gary Haynes (23) chimneied down to assess it for a survey.

He proceeded for a short way, his body in the upper, wide part of the hourglass and his legs in the slot. The going was difficult and when he relaxed to rest, he became wedged. Apparently in communication with those above, he struggled for 10 to 20 minutes, without success. Toni Williams climbed down to help. Haynes' carbide lamp was out, being jammed with mud.

The lamp was fixed and a half-hour of cooperative struggle got Haynes into a position where he could get one leg free of projections restraining his movement. Then by pushing with his arms against the sloping walls, above the slot, and with one foot against a wall projection, he got free.

He was very fatigued but after a rest he got back up the chimney and was able to make the several mile trip back to the entrance. He had bruised and strained a knee.

Reference: Toni Williams "Self-Rescue, Butler Cave" unpublished report, undated, 1 page.

Analysis: Toni Williams states: "... a narrowing crevice, one of the most treacherous types of passage and the most difficult to rescue someone from. His initial struggles apparently only wedged him further."

"Considering the exact shape and dimensions of the outcropping passage, and the location far into the cave through several very tight passages, a full-scale rescue would have been extremely difficult and quite possibly unsuccessful." Haynes' "calm presence of mind, patience, and determination" may have saved him.

C-caver fall

May 30, 1987

Elm Tree Cave, Kansas

Hillary Racker, part of a party of eight in Elm Tree Cave, Comanche County, Kansas, apparently slipped and cut her forehead on sharp gypsum. The cut required stitches to close it. (J. Young "Trip Reports" **Kansas Caver 4(4)** July 1981, p 6).

C-equipment failure

June 1987

Natural Trap Cave, Wyoming

While rappelling into the pit entrance of Natural Trap Cave in the northern Bighorn Mountains of Wyoming, a caver went to take off a bar from his rappel rack. A couple more popped off, putting the rappeller into free fall. He fell 30-40 feet, but landed on plywood covering an excavation. The plywood sheet acted to break the fall. There were no serious injuries. (Bill Holmes **Personnel Communication** June 1988).

C-caver fall

July 17, 1987

Cristal Caverns, New Mexico

A group of three entered Cristal Caverns in New Mexico after 9 p.m. for an evening "tourist trip." One caver, while climbing close to the floor, had a handhold break, lost his footing and fell about eight feet. His helmet was knocked off in the process and he received a head wound and a bruised hip. The bleeding was stopped with pressure on the wound and one companion went for help. Before rescuers could enter, he exited under his own power. The wound required five stitches. (Ray Keeler "Gypcap, N.M. Project Weekend" **Arizona Caver** August 1987).

D-rock fall

July 18, 1987

Pink Panther Cave, New Mexico

A group of eight was exploring in Pink Panther Cave in the Guadalupe Mountains in New Mexico on July 18. At a 50 foot pit they apparently failed to clean the edge of the drop of loose rocks. One dislodged and fell, destroying a camera flash unit. (Jim Nance "Pink Panther, Pink Palette, Den Caves" **PPSS Spylunk 4(5)** undated).

A-equipment failure, caver fall

July 18A, 1987

McFail's Cave, New York

At 9:30 a.m. on July 18, a group of cavers led by John Schwelen entered McFail's Cave by the Hall's Hole entrance. They descended Coeyman's Dome and went through the crawl to the first drop. It had been rigged with two etriers. One caver went down but didn't stick around.

Jill McMahon (30) descended but had trouble getting her toes into the foot loops since they did not hang open. She was forced to hang on with one hand, lean down, hold the loop open and insert a foot—and this procedure for each step.

As she got below the overhanging portion, one foot slipped out of its stirrup unexpectedly, dropping her four to five feet into the shallow pool at the bottom. This sprained her right ankle. She got up and "walked it off" but at the next drop she fell again when her left knee "gave out" as she was chimneying down.

This fall was also short resulting in no further injury but now when she got up, things were "shifting and popping" in her knee. She could continue only by "stepping carefully." She convinced herself that things

were OK and proceeded.

The pain and instability remained, however, and the knee gave out five or six times more. She continued on under her own power, carrying the lightest bag of dive gear on the way out. Dick Desjardins accompanied her out, providing needed assistance on the two short drops.

References:

- 1) Jill McMahon "McFail's Cave Accident" **Northeast Caver** 18(3) 1987, p 83.
- 2) Jill McMahon **NSS Accident Report**, December 11, 1987, 2 pages.

Analysis: McMahon has been diagnosed as having permanent cartilage and ligament damage in the injured knee, resulting in permanent instability. She continues caving but has to wear a brace and move carefully.

McMahon admits to denying her problem in the cave and continuing. Yet victims of accidents often insist they are all right—it is up to the leader of a group like this to make a judgement. Were none of her falls observed? What were her companions doing?

An etrier left for descent of a work-route is nonsense. Such a thing is OK for the first descent, if that is all you have and want to push on. But when a route becomes well-traveled, such mickey-mouse rigging should be replaced. At McFail's this has now been done, but only after someone was badly injured. It is surprising that there was no lawsuit.

In short climbs like this, it is always useful for a companion to "spot" a climber—to be prepared to break their fall if they get in trouble. This assumes, of course, that the group is using a Buddy System ... that there is even someone around.

A-caver fall

Crowbar Cave, New Mexico

July 18-B, 1987

On Saturday morning, July 18, two groups of cavers were looking at some newly accessible caves in New Mexico. Diamond Cave was found to indeed be blasted shut, but was enterable for a short distance. "Crowbar" Cave pinched out and appeared to not be that cave, which was supposed to go.

The group had broken up into teams and finally the real Crowbar Cave was found—big passage with a breeze. One team of three cavers was surveying Diamond. Two teams of three began surveying Crowbar, leap-frog style. One team was Ray Keeler, Duke McMullen and Linda Starr, the other was Dave Belski, John Holbrook and Jay -. They were soon joined by the Diamond Cave team.

The survey went slowly with short traverse legs. When the Ray Keeler team came to a lake with one to two feet of air space as far as they could see, they turned back.

One hundred feet back was a large room where they took a few photos. At 6 p.m. McMullen suggested that Linda Starr climb up on a ledge next to a dome, to provide scale for a photo. As she stood balanced there, she decided to change her footing. As she moved, she slipped. Starr reached out "suddenly and automatically" to catch herself. There followed "a sharp and absolute pain" in her upper left arm or shoulder. She could hardly lower it to her side.

She was guided into the Big Room, out of the breeze, with a possibly broken, but more likely a dislocated, shoulder. A small ensolite pad was provided for her to sit on and a sweater for warmth.

Starr was in great pain but the group had no pain medication. Keeler went for help in case she could not make it out on her own. There was a couple of climbs, a crawl and 2,000 feet of passage to negotiate.

Help began to arrive in just an hour; a little later more cavers came, bringing a codeine pain-killer. They made two unsuccessful attempts to relocate the shoulder, then bound it to her body with webbing and the victim started out.

Human ladders helped her up the climbs; the crawl went well, and about 80 minutes later she was out. At the hospital she had to wait until 3:30 a.m. for treatment to begin.

References:

- 1) Linda Starr "Cave Bloopers" **Southwestern Cavers** Sept-Oct 1987, p 8-9.
- 2) Ray Keeler "Gypcap, N.M. Project Weekend" **Arizona Caver** August 1987; additional info *ibid*. September 1987.

Analysis: How easy it seems to happen—a joint dislocation and a caver is incapacitated. What could one do to prevent this? If you have a history of dislocations, you must train yourself not to catch a fall with the weak limb. Also recognize that having the proper reflex to falls is very important. If you don't have it, try martial arts training—proper falling reflex is part of it.

C-caver fall

Millerton Lake Caves, California

July 18-C, 1987

A large group of cavers was visiting the Millerton Lake talus stream-cave system in Fresno County on July 18. A group was making its way through the Middle Cave, when one caver took a fall, receiving only "nasty bruises." The fall may have occurred while trying to climb around pools in order to keep dry. (Dave Bunnell "Millerton Trip Report: Biggest yet" **Better Caves and Sinkholes Summer 1987**, p 15).

A-rockfall

Un-Named Pit, Virginia

July 19, 1987

On Sunday, July 19, cavers were exploring a new cave in Virginia, consisting of a series of offset vertical drops. The first drop (entrance pit) is 70 feet to an offset, then a 47 foot drop takes one to a ledge. The sequence of events is not exactly clear, but at about 6 p.m. Greg McCoy (31) was standing on the edge when a caver below him did something on rope that caused the rope (which reached to the surface) to move out of a notch just below the offset. There was reportedly some mud and rocks on the slopes, and a five pound rock was dislodged.

The rock fell some 40 feet, struck McCoy on his Petzel Ecrin helmet, then deflected, striking his shoulder. McCoy was incapacitated with a "shoulder trauma" and "bruised, compressed cervical spine."

Companions went for help and CAVES Region and Triangle Rescue Group responded. An EMT descended and evaluated the victim, calling for a hauling system. McCoy was hauled out on a 3:1 "Z" system (two directionals) and transported to a hospital by private vehicle. He is reportedly caving again with no complications.

Reference: Anthony McGee **NSS Accident Report**, undated, 2 pages.

Analysis: The rope, going past offsets, was padded but one must recognize that it may touch surfaces with loose rock that the rappeller is unable to clear on the way down—it may be better to re-anchor the rope at offsets.

The rock struck McCoy's helmet off-center by about two inches, leaving a dent.

A-equipment failure

Cave in House Springs, Missouri

July 28, 1987

In the evening of Tuesday, July 28, a group of six teenagers was exploring in a cave near Highway MM in House Springs, Missouri. They descended a 35 foot entrance drop on a rope ladder and explored for some time.

When they tried to exit, only three made it up the rope ladder. Two more, Lester Wilcut (18) and Eddie Hanks, were on the ladder when it broke, dropping them about 20 feet. Those on the surface ran to a nearby residence and phone for help. The High Ridge Fire Department and Big River Ambulance Service responded, hauling the three stranded

cavers to safety two hours later. Wilcut was treated for minor leg and back injuries at the hospital in Kirkwood; Hanks also had only minor injuries.

Reference: Liz Irwin "Kids fall as Rope Breaks Inside Cave" **Meramec Journal** Friday, July 31, 1987.

Analysis: Rope ladder? Perhaps they represented a society for anachronistic caving. The NSS might eliminate such crudities if we went public with modern caving techniques.

B-equipment failure

Alabaster Caverns, Oklahoma

On Thursday afternoon, July 30, two boys, Tommy (13) and Travis (10) Meritt, went caving at Alabaster Caverns State Park in western Oklahoma. They had one flashlight each. They apparently entered the Lower Water Exit and explored for some distance but soon lost one light as well as one of Tommy's tennis shoes. The remaining light quickly became too dim to be of much use. They had followed some old string but it was not continuous and they became lost. Mud marks they had made on the rocks on the way in were no longer visible. They sat, huddled together, waiting for help.

The boys were reported missing to the Park Manager by their mother at 5:40 p.m. Cavers were mobilized and a team entered the Lower Water Exit at 10:26 p.m., encountering the lost cavers at 11 p.m., cold and shivering. They were given a few dry clothes and warmed up a bit by application of warm bodies. After ten minutes, they left under their own power (11:25 p.m.).

Reference: Editor "Rescue at Alabaster Caverns State Park" **C.O.G.Nizance** (Central Oklahoma Grotto) August 7, 1987, p 2.

Analysis: Another incident from the "old school" of spelunking.

C-other (carbide burns)

Doghill-Donahue Cave, Indiana

One summer day a group was doing a cross-over trip in the Doghill-Donahue Cave System in southern Indiana. Wendy Wall carried her spent carbide in a plastic bag in her pocket. In the course of crawling, the bag ruptured resulting in second degree chemical burns on her thigh. (Wendy Wall "The Sport of Caving: It's Dangerous, Dirty, Damp—and Popular" **Wall Street Journal** September —, 1987.

D-bad air

Un-named Cave, California

Cavers were pushing a new cave southeast of Sacramento, California, when they suddenly realized the air was bad. Reportedly it was like knowing you would soon die if you did not get out immediately—you could not catch a breath. They got out immediately. Since then the bad air has been found to wax and wane; the cave is still under study. (Paul Greaves **Personal Communication** June 1988).

C-caver fall

Tongue River Cave, Wyoming

A group of Girl Scouts had been given a varied program on caving and cave science by Hole-in-the-Wall Grotto members. The following day they visited Tongue River Cave in the northern Bighorn Mountains. One girl suffered minor injuries from a short fall and another suffered briefly from claustrophobia. ("Grotto Notes" **The Outlaw** Fall, 1987).

A-caver fall

Coon Cave, Indiana

On Saturday, August 1, a group of ten cavers decided to visit Coon Cave, Monroe County, Indiana. They were met at the Buckner Cave parking lot by Mike Miessen, one of the custodians of Coon Cave, owned by the Indiana Karst Conservancy. He heard their intentions, assessed their lack of vertical gear for the entrance drop, and denied them permission. They said they would go to Brinegar Cave.

Later that day, the group did go to Coon Cave. One of the group tried to free climb a log in the entrance drop and fell, suffering a broken back. Miessen was called by the group and initiated a call-out. The injured caver was evacuated by 3 a.m. without further incident.

Reference: Keith Dunlap "Coon Cave Accident" **IKC Update** (Indiana Karst Conservancy) September 1987, p 18.

Analysis: The group was described as "novices" and "horizontally well-equipped." The injured caver reportedly suffered no permanent neurological damage.

B-losing the way

Bowden Cave, West Virginia

At 11 a.m. on Thursday, August 13, a group of three people entered Bowden Cave, Randolph County, West Virginia, for a cross-over trip from the Main Entrance to the Third Entrance. These were Doug, Brian and Steve, experienced rock climbers with almost no caving experience—the latter two had been in Bowden main trunk passage once before. A camper at Seneca Rocks had told them of the cross-over trip—they thus knew the route only through vague, second-hand description. They had a flashlight each and, though they had them, brought no extra batteries into the cave.

Past the Pendant Room, they encountered the Back Section Maze where they had to follow the main stream to a passage that goes to the Third Entrance. Unfortunately, the cave was experiencing very low water conditions and the stream had sunk into its bed.

They wandered through the low crawls for three hours until their lights began growing dim. They decided to leave Doug there while the other two went out for fresh batteries. Brian and Steve found their way out of the maze and back into the Main Trunk.

At 2 p.m. they encountered Greg and John Springer, experienced cavers, in the Main Trunk. Brian and Steve exited and proceeded around to Bickle Hollow to the Third Entrance. They entered but could not find Doug, though they found the spot where they had left him. They returned to the Main Entrance, where they again encountered the Springers.

At 4 p.m. it was decided to notify the local rescue squad while Greg Springer and Brian returned to the maze with extra lights and dry clothes to search. They gradually retraced the path of Brian and Steve's exit and finally encountered Doug, though at first voice-contact it was difficult to locate him due to echoes. He was in a low crawl, very wet, wearing jeans and a tee-shirt. The three exited the Main Entrance at 7:15 p.m. The Elkins Volunteer Fire Department rescue squad was about to enter.

Reference: Greg Springer **Accident Report** December 23, 1987, 5 pages.

Analysis: Surely this is "spelunking" at its finest. Doug escaped hypothermia by being in very good physical condition and moving around while lost. At the same time, the latter prevented his being found by his companions when they entered the Third Entrance.

A good question is why Doug was left in the first place. Apparently the idea was to finish the cross-over trip by fetching the extra batteries.

C-rock fall

Coley Cave, Kentucky

In late August, a small group of cavers was exploring in Coley Cave, Warren County, Kentucky. At the back of the cave is a constricted lead. Bob Nadich had climbed about ten feet off the floor to attack this

August 1, 1987

constriction with a hammer. He apparently was holding himself with his right hand while hammering when a "huge rock, thought to be part of the bedrock, moved sideways about an inch," pinning and partly crushing the fingers of that hand.

Nadich, in extreme pain, wedged a hand sledge into a crack to keep the rock from moving further while he used a brick hammer to chisel away the rock he had been grasping for a handhold.

When he got his hand free, "he found the last digit of the small finger gone and two digits of the ring finger precariously attached." He had not been wearing gloves so the wounds were jammed with mud. He exited under his own power and rushed to a Nashville hospital. The ring finger may be saved, but they couldn't clean all the mud out.

Reference: Joe Saunders, excerpt from **Personal Communication** to Mike Dyas, September 7, 1987.

Analysis: Nadich was well above the floor and facing into a constriction so it would have been very difficult for anyone to assist him. Apparently the only alternative to him chiseling himself free would have been to use a hydraulic jack.

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B-exhaustion August-B, 1987
Gargantua Cave, Alberta, Canada

In August of 1987 a group of cavers from Canada, the U.S. and Europe was at the Crowsnest Pass caving area in Alberta, Canada. Exploration and survey was carried out in various caves.

As one group exited Gargantua Cave, a caver with an "injured arm" was unable to climb a cable ladder at the 17 meter drop. A rescue team of six cavers was assembled at camp and entered Gargantua. A pulley system was rigged, but when the victim was hoisted, a knot jammed under an overhang.

The victim was lowered and the pulley system was eliminated; the victim was raised by a straight pull at a different angle and was raised at "spectacular speed." He exited without further difficulty. (Jon Rollins "1987 Speleofest" **Canadian Caver** Spring, 1988).

* * * * *

A-rockfall September 8, 1987
Un-named Pit, West Virginia

Shortly after 6 p.m. on September 8, Bill Liebman and Barry Baumgardner were checking a 60 foot pit near Laneville, West Virginia.

A tree at the edge of the sink was used for a rig point. The rope passed down a ten foot slope and on down the relatively free drop of the thirteen foot diameter pit. They had gotten wet from a rainstorm on the hike to the pit. Both rappelled in but no leads were found so they prepared to exit. They were getting chilled by this time.

Liebman started up after flipping the rope to a new position. When he got about ten feet up, he heard the sound of rocks falling. "Without looking up, I instinctively leaned toward the wall and raised my left arm up over my head." This shifted his body to the left. He was struck on the right shoulder by a two to three hundred pound rock, which continued on to shatter on the floor.

It was several minutes before Liebman could answer his companion's inquiries. He was soon able to back down the rope, operating his Jumars with one hand. Baumgardner exited to see if the landowner had a horse that could be used to hoist the victim. On the surface, Baumgardner got a space blanket and waterproof jacket and lowered them to Liebman.

There was a horse available, but when the horse tried to pull, the rope cut into the ground and friction became too great. A call was made to the local fire department rescue squad; cavers were called also, but put on standby.

The rescue squad soon arrived; Liebman was hauled up by direct pull, guiding himself around ledges. He was out by 7:30 p.m. He had suffered a severely broken shoulder.

References:

- 1) George Dasher "The Rocking Chair" **The West Virginia Caver** 5(5) October 1987, p 11.
- 2) Barry Baumgardner **Personal Communication** (Hot Tub) June 30, 1988.
- 3) Bill Liebman "Accident in a West Virginia Cave" **The Explorer** December 1987, p 156-157.

Analysis: One must advise against doing anything with the position of the rope after one has rappelled. The rappel enables you to clear or clean the drop, as much as feasible. Once you have cleared it, don't move the rope to a place you haven't cleared. In other words, if rocks fall when you ascend, you probably have done something wrong...

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D-bad air
Honey Creek Cave, Texas

Fall-A, 1987

In May and June of 1987, record-breaking rains fell in the area of Honey Creek Cave in Texas. This cave is normally a very extensive horizontal system, with most passage partly filled with water. The heavy rains sumped nearly every passage. It was mid-July before a trip into the cave was possible; the lack of air flow while the cave was sumped had raised carbon dioxide levels. For those who free-dove the remaining sumps, this was a sufficient problem that no surveying was done.

The water levels were down to normal by August, but bad air plagued surveyors until the end of 1987, (Peter Sprouse "Honey Creek Cave" **NSS News** May 1988, p. 118).

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A-caver fall
Tumbling Rock Cave, Alabama

Fall-B 1987

On Saturday afternoon, the weekend of the TAG Fall Cave-In, a group of cavers was exploring in Tumbling Rock Cave in Alabama. This is a big, easy, "walking" cave that is very popular. Still, one of the group managed to fall and break a leg.

One of the group went for help, notifying the Scottsboro-Jackson County Rescue squad and Sequoia Caverns, where the Cave-In was being held. The head of Walker County Cave Rescue was at the Cave-In and informed Scottsboro-Jackson of the manpower and expertise available, only an hour away. Scottsboro-Jackson declined. The victim was removed from the cave at around 10 p.m., and flown by helicopter to a hospital in Huntsville. (Ken Huffines "Cave Rescue Callout" letter to the Editor, **NSS News** March 1988, p 55-56).

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C-rockfall
Lechuguilla Cave, New Mexico

October 10, 1987

On Saturday, October 10, a team of four cavers was surveying in a newly-discovered room near the Western Borehole in Lechuguilla Cave in Carlsbad Caverns National Park in New Mexico. Mike Goar (28), the lead tapeman, set a station on a breakdown boulder. When he sat on the edge of the rock to read the distance of the last traverse leg, the rock rolled over. Goar slipped off the tipping rock into a crack in the floor and was pinned there when the rock rolled onto him. A companion, Terry Bolger, was able to push the boulder over and free Goar. He suffered bruised ribs but was able to make the long trip out under his own power. (Pat Kambesis **Personal Communication** July 1988).

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C-equipment failure
Neff's Canyon Cave, Utah

October 17, 1987

On Wednesday, October 17, a party of four cavers, Dave Ursin, Jim Nicholls, Dave Shurtz and Glenn Shurtz, entered Neff's Canyon Cave in the Wasatch Mountains east of Salt Lake City, Utah. They were experienced vertical cavers. Neff's is 1170 feet deep and mostly vertical, with 800 feet of rope drops. It had been left rigged from a trip on October

14. Only the ten foot handline near the entrance had been removed for fear of rat damage.

Dave and Glenn Shurtz went in first to re-rig the handline, then proceed down the Great Pit to wait for the other two. The handline, a length of nylon webbing, was duly rigged to a boulder.

Jim Nicholls was last to go in. He attached his rack to the webbing handline and gave a tug. It slipped some; after "several more tugs there seemed to be no more slippage." When he backed over the edge, the webbing slipped off the boulder. Nicholls fell backwards head over heels for ten feet, then slid another five feet, coming to a stop at the edge of a second 15 foot drop.

Nicholls called to Ursin, who returned and secured Nicholls and determined that he was unhurt except for bruises and lacerations to his hands.

Ursin free-climbed the drop, re-attached the webbing to the boulder and added two back-up anchors. He then helped Nicholls out of the cave.

Reference: Dave Shurtz NSS Accident Report undated, 2 pages).

Analysis: Shurtz says: "The original mistake was made by the original rigger of the handline by not backing up his anchor. An additional mistake was made by each successive user for not checking the anchor, and the last mistake was, when after an obvious warning, Jim (Nicholls) failed to check the anchor."

I would add that nylon webbing is a very poor substitute for kernmantle rope—its abrasion resistance is extremely poor. Any line to be used repeatedly should be static kernmantle caving rope.

B-losing the way

Sloan's Valley Cave System, Kentucky

November 7, 1987

At 1 p.m. on Saturday, November 7, a group of three cavers, Gary Wahoff, Pete Yalch, and Chris Frank, entered the Screaming Willies Entrance of Sloan's Valley Cave System, Pulaski County, Kentucky. They left a note on the Miami Valley Grotto fieldhouse sign-out board that they intended to do a cross-over, coming out the Garbage Pit Entrance. This is a two to six hour trip. They had one light source each.

They rappelled the 56 foot, three-drop descent at Screaming Willies, and entered the Grand Central Spaghetti area, a three-dimensional maze. They soon became lost. After eight hours of searching they sat down in a side lead near the White Grotto to wait for help.

At noon the following day cavers on the scene formed three teams to search for the overdue group. Other cavers in Lexington were put on standby.

One team entered the Scowling Tom Entrance, headed to the Spaghetti area and soon located the three missing cavers, only 300 feet from the Screaming Willies Entrance. They were cold and hungry but otherwise all right. They were led out the Garbage Pit Entrance 40 minutes later.

References:

- 1) Doug Stecko NSS Accident Report undated, 2 pages.
- 2) Doug Stecko "Cave Rescue in Sloan's Valley" **The Cave Cricket Gazette** 13(1) January 1988.

Analysis: These unaffiliated cavers were unfamiliar with this section of the cave. A lack of experience will commonly lead to an overestimation of one's abilities, or an underestimation of difficulties to be encountered.

They took ascending gear so that they could go back out Screaming Willies but could not find their way back from the maze.

It was noticed late on Saturday that their car was still there and their rope still in the pit, but a number of cavers were on hand and the confusion masked the plight of the three until Sunday morning.

D-losing the way

Sloan's Valley Cave System, Kentucky

November 8, 1987

On Sunday, November 8, cavers at the Miami Valley Grotto Fieldhouse

at Sloan's Valley Cave in Kentucky discovered that a group of three had not returned from a cross-over trip from Screaming Willie's to Garbage Pit. One of the rescue teams that formed was Mark Turner and Randy Hare. They went into the Minton Hollow Entrance to check out the Big and Caramel Passages.

When they found no one in their assigned area, they proceeded to the Grand Central Spaghetti Maze. Unfortunately they got lost and it was seven or eight hours before they found their way back to the Big Passage and out the Minton entrance. A second rescue was almost necessary. (Doug Stecko "Cave Rescue in Sloan's Valley" **The Cave Cricket Gazette** 13(1) January 1988).

B-losing the way

Clarksville (Ward-Gregory) Cave, New York

November 15-A, 1987

On the afternoon of Sunday, November 15, a group from the Berkshire Community College Outing Club was exploring in Clarksville (Ward-Gregory) Cave in New York State. Two of the group, Steve Link and Larry Ward, free dove Brinley's Sump. They explored on downstream, now in the Gregory section of the cave, but were unable to find the entrance. They returned to the sump but at the pool, they weren't sure of the route back. They sat down to wait.

When the two didn't reappear by 4 p.m., an agreed-upon time, their companions went for help, calling the Albany County Sheriff's Office. The sheriff called cavers and a rescue was initiated.

A team of three cavers entered the Ward's Entrance and arrived at the sump at 6:15 p.m. A rope was attached to a chert projection at the bottom of one of the Chutes and one rescuer started through the sump, feet first.

As soon as the rescuer's boot appeared on the other side, the victims realized the route, grabbed the boot and, one at a time, pulled themselves through, using the rescuer as their guideline. They were escorted from the cave at 6:40 p.m. (Thom Engel "Rescue in Clarksville Cave" **Northeastern Caver** 18(4) 1987, p 94).

D-other (accident waiting to happen)

Clarksville (Ward-Gregory) Cave, New York

November 15-B, 1987

On November 15, a team of three rescuers had just assisted two lost cavers through Brinley's Sump in Clarksville Cave, Albany County, New York. They were exiting when, at the Slickenside Block Room, they met Chris Giordano. He was dressed in a wet suit under flannel shirt and blue jeans, and had a face mask, no helmet and one 2-AA cell flashlight. His intention was to go through Brinley's Sump, the Gregory section, and out the Gregory Entrance, then sumped. The rescuers smelled "alcohol on his breath." He was aware of the two sumps. After a lengthy discussion, they persuaded him to turn back. (Thom Engel "Rescue in Clarksville Cave" **Northeastern Caver** 18(4) 1987).

B-equipment failure

Cave near Ashcamp, Kentucky

Winter 1987-88

On a Wednesday a group of cavers visited a cave on a cliff near Ashcamp, Kentucky (six miles southwest of Elkhorn City). They explored to a 40 foot pit where they attempted to descend with a "cable." Allen Tackett went down first and was stranded, unharmed, at the bottom when the cable broke.

At 5 p.m. Tackett's companions went for help and summoned the Pike County Rescue Squad. Tackett was hauled from the pit unharmed five hours later. Unfortunately one rescue squad member suffered a broken kneecap and another a broken ankle in falls on the slippery snow-covered rocks on the way out of the hollow leading to the cave. (Tricia Miller "Man trapped in cave escapes unharmed," in newsclipping of "Regional Roundup," source unspecified).

A-caver fall**Widow Cave, Oklahoma**

At about 11:15 a.m. on Saturday, December 12, a group of nine entered the Corkscrew Entrance of Widow Cave, Major County, Oklahoma. After climbing down the 21 foot entrance drop, two started taking photos while the rest explored on. About 300 feet from the entrance, at about noon, Janet Gregor slipped on a muddy slope and suffered a painful ankle injury. It was incapacitating and appeared to be broken.

She was stabilized, with a jacket to lie on and a blanket and space blanket tent over her with a carbide lamp for warmth. Two Tylenol were given for pain. The ankle was immobilized with a stiff notebook for a splint, held in place with masking tape and later with duct tape. One caver headed for Enid, to get the Grotto's rescue equipment, just in case.

About 1:15 they started carrying her to the entrance drop which was being rigged with a rope. At the drop she was fitted with a harness; at 2:40 the haul was commenced with cavers free-climbing alongside. Gregor was out by 3 p.m. and soon on her way to a hospital where X-rays showed no broken bones. (Bruce Baker NSS Accident Report undated, 3 pages).

December 12, 1987

AA-drowning (sump dive)**Waikapala'e Wet Cave, Hawaii**

On Sunday, December 20, a group of four people visited Waikapala'e Wet Cave in Ha'ena, Kauai, Hawaii. This is a lava tube adjacent to the ocean and partly filled with water. Most of the cave is accessible by wading but the Blue Room usually requires diving a short sump. During very dry spells it is sometimes possible to enter this room without diving but on the 20th the cave was under "normal" conditions.

They entered the tube, some eight to ten feet in diameter with about three feet of air space, reportedly equipped with snorkels. Leighton Ho (36) attempted to reach the Blue Room by diving the sump. When he failed to reappear, his companions left and called the police.

The Kauai Fire Department Rescue One divers recovered the body at about 9 a.m. Monday.

References:

- 1) Ed. "Kauai divers recover body of teacher" **Honolulu Advertiser** December 22, 1987.
- 2) Ed. "Man dies in Ha'ena Wet Cave" **The Garden Island** December 21, 1987, p1.

Analysis: The water was apparently murky, so Ho may have lost his way. A safety line might have helped.

December 20, 1987

AA-equipment failure - caver fall**Copperhead Pit, Indiana**

On Saturday, December 26, a group of eight people were in Harrison-Crawford State Forest, near Wyandotte Cave, looking for caves to explore.

"We didn't know exactly what we were looking for, but after about an hour we found this hole that had maybe a 60 foot drop to the first level," said Kenny Elder, one of the group. He admitted that they had never seen one "that went straight down." The hole they had found, about two feet square, was Copperhead Pit, a shaft of about 100 feet depth.

They tied a 30 foot rope to a tree and Christopher Elder (24) started down, apparently hand-over-hand. He reached a ledge about 20 feet down, then continued until at about 4:30 p.m. he went off the end of the rope. He fell about 80 feet, landing on two boulders, wedged across the pit.

Two companions went to call for help. Others fetched more rope. This was still too short, but "we got a flashlight to him, and he hugged it. When we pulled it back up, it had blood all over it, so we knew he was hurt pretty bad."

The English and Leavenworth Fire Departments and two Crawford County ambulance EMT's arrived. Caver rescue teams were put on alert

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but the nearest one, from Bloomington, arrived after the evacuation.

A technician was lowered down the shaft to find Elder unconscious and bleeding, with a slow pulse and low blood pressure. The victim was stabilized on a backboard and at 7:30 p.m. pulled up. A carry with some vehicle transport four miles through the woods was necessary to reach a spot where the helicopter could land. He was flown by helicopter to Humana Hospital (University of Louisville) where he was pronounced dead at 9:11 p.m.

References:

- 1) Carla Harris "Man, 24, plunges 80 feet to death in cave shaft" **Louisville Courier-Journal** Monday, December 28, 1987.
- 2) L. R. McCarty "Indiana Pit Rescue Callout," unpublished report, 1 page.
- 3) Lynne Hansen "Georgetown man dies after falling 90 feet in cave" **Corydon Democrat** December 30, 1987, p 1.

Analysis: Doing a 100 foot shaft on a 30 foot rope—and hand-over-hand as well. How sporting.

December 7, 1985

B-equipment failure**Orange Cove Sink, Florida**

A large group of newly-certified divers went to Orange Cove Sink on December 7, 1985 to take part in an "apology" dive of the University of Florida Underwater Education Program due to poor visibility conditions on several open-water qualification dives they had been on.

They buddied up and entered the water at 10 a.m. An instructor, Milledge Murphrey, paired with a student, Robert Knox. Murphrey was testing a Poseidon 300 regulator which had been rebuilt two weeks before. He did not bother to add an octopus for this single dive, but he checked to see that Knox had one.

The water was extremely clear as they descended and at 67 feet, Murphrey signalled that he would like to look just inside the entrance to the cavern zone. Knox was already using his small handheld light. They continued down to about 90 feet.

"At this point, Robert was about three meters below me and four meters behind me, when upon inhaling, I was unpleasantly surprised by a 100% water intake through my mouthpiece."

Not believing he was out of air, he attempted a shallow breath and again got water. He was now on the verge of a choking cough, nearly gagging with water in his epiglottis.

He decided that a free ascent with no ability to exhale would be hazardous, so he headed for Knox, making the out-of-air signal. When he reached Knox, he was on the verge of uncontrollable cough and beginning to "grey-out."

Knox saw the signal as Murphrey arrived and removed his primary second stage and placed it in Murphrey's mouth. As Murphrey coughed out the water, Knox picked up his octopus and began breathing it. When Murphrey got control, he signalled "OK" and "UP" and they surfaced without further incident.

Reference: Milledge Murphrey "The 'Apology' Dive: A Near Miss" **Underwater Speleology** 14(4) August 1987, p 7.

Analysis: Apparently, after the regulator rebuild, the repair people had "failed to put a new plastic tie around the mouthpiece/second-stage orifice junction and, more importantly, (Murphrey) hadn't checked the tie placement when (he) had surface checked the regulator following the service."

Murphrey decided, on the basis of this critical experience, that in situations like this, one should give away the five foot hose to one in

trouble, retaining the short hose. The best configuration would be a "5-foot hose with first and second stage mounted on the outside manifold post with the hose routed under the diver's right arm, around the diver's neck and into the diver's mouth as the primary."

"The second stage should then be mounted on the inner or center post, routed over the right shoulder, and held at the base of the wearer's throat with a rubber neck band. Mounted on the safe-second regulator's first stage should be inflator hose(s) and pressure gauge, plus the safe second stage regulator."

This minimizes entanglements when sharing, eliminates excess bungee cords, and puts the safe second at the throat where it can be accessed easily.

Lastly, Murphrey obtained a "renewed belief in absolute rigid adherence to all safety considerations" taught in diving... "Why would anyone ever dive without an octopus—even in open-water...?"

AA-silting

Spring 1987

Unspecified Cave, Mexico

Three divers reportedly entered a cave somewhere in Mexico using two scooters. The first scooter towed a 13 year old boy who had only five minutes of SCUBA instruction. Their only lights were the scooter headlights.

The first scooter apparently got too close to a sand bank and stirred up silt. The second scooter, with the single diver, saw this and retreated. The first continued and the divers drowned when their air was exhausted.

Reference: Ed. "Scooter Fatality in Mexico" **Underwater Speleology** May 1987.

D-equipment failure

April 7, 1987

Castleguard Cave, Alberta, Canada

During the week of April 4-11, a group of cavers was attempting a dive in Castleguard Cave in Alberta, Canada. Most of the group acted as Sherpas, ferrying diving and caving gear in to the sump, 1.1 km into the cave.

The sump is a rift two by six meters with the water level about 2 meters below the lip. The near end was a rubble slope leading down to the water. The visibility in the water looked good as they prepared to dive, but a large rock was perched precariously over the pool; when it was purposely dislodged, silt was stirred up and visibility went to nothing.

One diver swam over to a fixed shot-line and followed it down. Visibility was indeed zero so he came back up, having descended 12 meters.

They waited for an hour for the silt to settle and Keith Sawatsky went in. He descended to 14 meters, where a passage seemed to go off. Visibility was still almost zero, and he turned back. When he did so, the line-reel jammed and he lost contact with the wall. When he increased his buoyancy and ascended, he could only hope that he would come up in the same rift he had descended—he did. (Keith Sawatsky "Diving in Castleguard" **The Canadian Caver** Fall, 1987)

AA-silting, no guideline, etc.

June 13, 1987

Bonnet Spring, Florida

On June 13, two divers, a husband and wife, entered Bonnet Spring, near Peacock Spring in Florida. In fact, the divers thought they were in Peacock Spring. Both were open-water certified with no cave diving training. Almost immediately they stirred up "serious" silt. The wife was frightened by this and turned back not far in from the entrance, exiting successfully. The husband continued on, lost his way and died when his air ran out.

Reference: Ed. "Open-Water Diver Dies in Bonnet Springs" **Underwater Speleology** 14(4) August 1987, p 4.

Analysis: The body recovery team was Mark Leonard and Ron Menke. Ron reports that it was "a completely typical, textbook-type open-water diver cave-diving accident, with all cave diving rules except the depth rule having been broken."

AA-silting, no guideline, etc.

July 3, 1987

The Elevator Shaft, Oahu, Hawaii

On the third of July a group of four Marines geared up for a dive at the Elevator Shaft at Sharks Cove on the north coast of Oahu Island, Hawaii. Lance Corporal Ron Redd wanted to cash a check and waited at a store until it opened at 9 a.m. The others, Corporal William Sides, Jr. (22), Corporal Joseph Hennion (22) and Lance Corporal Rickie Will (21), proceeded to the cove at 8 a.m. Sides had been certified "open-water" for two years, the others for two months. Their training came at a dive shop that stressed the dangers of cave or wreck diving.

The Elevator Shaft is an opening to the sea that has at least three lava tubes leading from it. One leads to a small cove and across this is the entrance to a longer lava cave complex with a number of side passages.

The three apparently had one tank and regulator each. They swam into the longer lava tube and proceeded for about 150 to 200 yards, where they got into difficulty, perhaps from low visibility, or lack of light.

At 11 a.m., Redd arrived at Shark's Cove. He put on his gear and entered the water. The seas were rough and there was no sign of the others. He searched the cave entrances until 12:30 p.m. when he exited the water and returned to the cars. There was no sign that his friends had been to their vehicles while he had been in the water, so he proceeded to Aaron's Dive Shop.

Redd returned to the cove with an instructor and searched for another hour. They found nothing and at 2:30 p.m. they called the Fire Department Rescue Squad. Divers located the bodies, together, at about 5:30 p.m.

References:

- 1) AP "Three Marines die while scuba diving through lava tubes" **The Tribune** (San Diego) July 4, 1987.
- 2) N. P. DeCarlo **Personal Communication** to Mike Dyas, January 19, 1988 (Sketch map of cave).
- 3) G. L. Cates **Investigative Report** U. S. Marine Corps, September 18, 1987, 4 pages.
- 4) C. H. Ellis **Investigative Report** U. S. Marine Corps, July 23, 1987, 6 pages.

Analysis: Apparently the four were unaware of the complexity of the caves. In any case they were quite unprepared for a cave dive and broke all the rules.

A Marine recreational diver and Corporal Redd were the ones to find the bodies and had to retreat because of low visibility. They followed an old rope out of the cave.

The group had made a "rudimentary dive plan" at the barracks the night before, but did not follow it. The Marine Corps investigation also cited the strong wave surge from the rough seas as contributory. Only one flashlight was recovered with their equipment. An autopsy showed death due to drowning.

AA-silting

July 21, 1987

Jenkins Creek Cave, Florida

On Tuesday morning, July 21, a group of three teenagers arrived at a spring in Jenkins Creek, near Weeki Wachee, Florida. Benson Cusmano and Jason Tuskes (17) proceeded to dive the spring, despite a sign saying "No Diving."

Cusmano led, carrying the reel laying the guide line. They got about 50 to 60 feet down and 170 feet along the narrow passage when Cusmano finally became deterred by the silt they were kicking up. Thinking Tuskes had already turned back, Cusmano retreated, taking in the line. When he got to the surface, Tuskes was not there.

Apparently Tuskes had lost track of the guide line and became

disoriented in the silt. When his air got down to just a few minutes, he took off his tank and scratched "I love you Mom, Dad and Christian" on it with his dive knife. It was his mother's birthday. His body was recovered by rescue divers later that afternoon 57 feet down.

References:

- 1) Ed. "Drowning boy leaves message" **Tallahassee Democrat** July 24, 1987.
- 2) Ed. "Doomed teen scrawls note" **San Angelo Standard Times** July 24, 1987.
- 3) Dick Donovan "Trapped Diver Scratches Out Farewell Note to Parents" **Weekly World News** August 25, 1987.

Analysis: Tuskes had been open water certified since February and done 100 dives. He was signed up for a cave diving course but apparently thought to get a head start on it. He was described as "fearless" by his father. Perhaps "fearless" is not a very good attitude, especially for a cave diver.

To scratch a farewell note in an asphyxiating situation, a very unpleasant way to die, must take tremendous presence of mind.

* * * * *

**AA-current entrapment
Blue Springs, Florida**

September 28, 1987

On Tuesday, September 28, two divers, James Thomason (22) and Joseph Cowart III (25) went diving in Blue Springs, at Blue Springs State Park, Valusia County, Florida. Cowart had reportedly been certified as a cave diver a week earlier at Ginnie Springs. He had been diving for a year.

The pair had dropped off three extra tanks at points along the course of the dive, and Cowart hoped to penetrate deeper and farther than anyone had done previously. When they began their dive he had 30 minutes of air in his tank.

When they got 120 feet down, they encountered a powerful current that pinned Cowart against a rock. His regulator became tangled and he drowned. Thomason apparently surfaced too fast and was airlifted to

Shands Hospital in Gainesville, where he received decompression treatment. Cowart's body was recovered the following day by a team from the Valusia County Sheriff's Office.

Reference: AP "Diver drowns in current at spring mouth" **Tallahassee Democrat** Friday, October 2, 1987.

Analysis: The lead body recovery diver, Carl Clifford, noted that the stashed extra tanks did Cowart no good when he became trapped—he should have had a spare regulator and tank with him. According to Clifford, "no one—not even experienced cave divers—should attempt to dive through the powerful currents of the spring like Cowart did."

* * * * *

D-equipment failure

November 15, 1987

Wild Well, Iowa

On Sunday, November 15, a group of cavers did preliminary dives in Wild Well in Iowa. They intended to do short, one-reel (300 foot), solo dives to look for old lines and other hazards. They each had Y-valve tanks with an extra tank and regulator, three lights and an extra mask and reel.

Doug Schmuecker proceeded. The water was very clear and he passed two air-filled rifts and passed what he thought was the end of the old line. Five minutes had passed when his back tank worked loose and fell. Schmuecker changed to his long hose and dropped to the bottom.

The water now became silted and the safety line was wrapped around his regulator. After a few minutes Schmuecker tied off the reel and left it, following his line out, carrying the loose tank.

Reference: Mike Nelson and Doug Schmuecker "Wild Well Project, Iowa" **Underwater Speleology**, 15(3) May/June 1988, p 13.

Analysis: Schmuecker says "if you follow all safety rules, you can take care of a major problem—and end up with only your feelings hurt."

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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