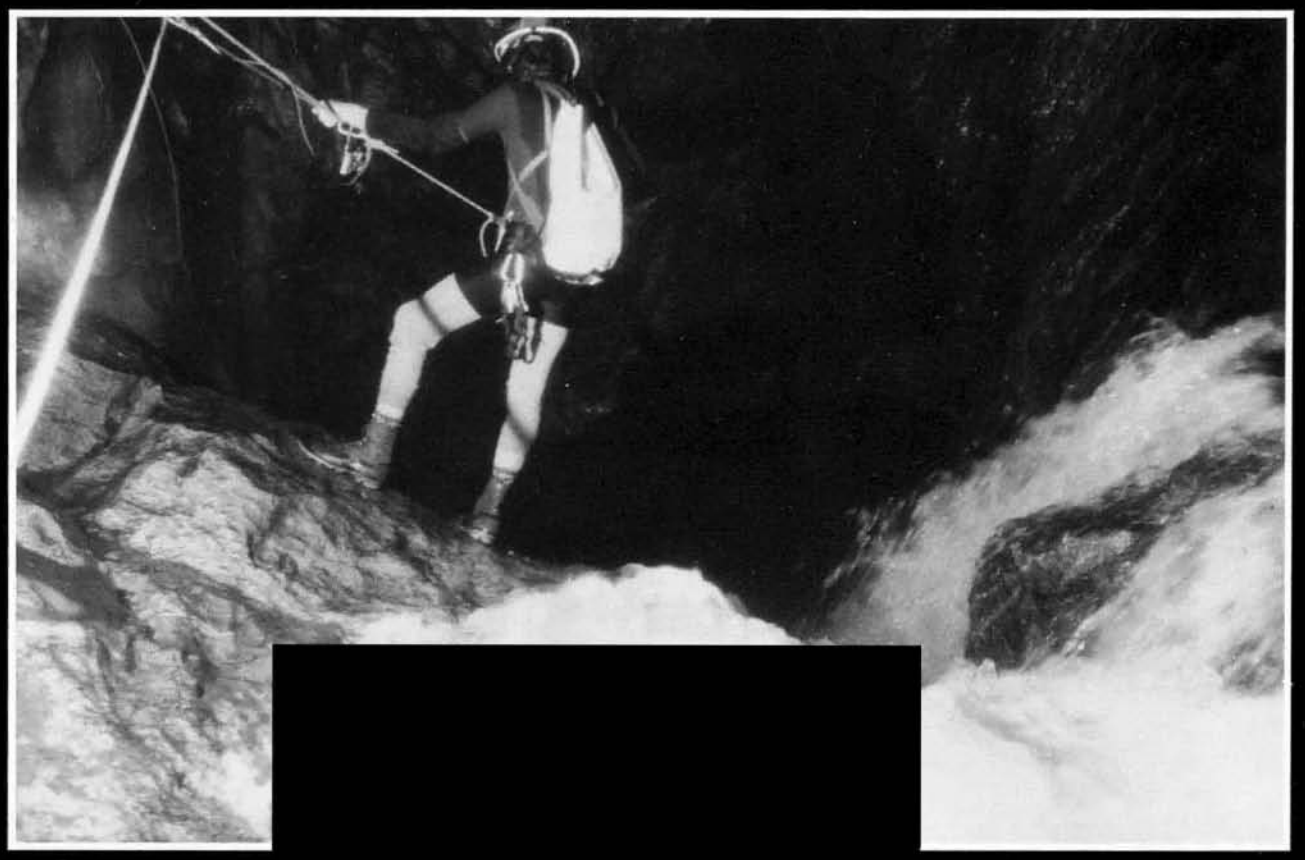
NSS NEWS

DECEMBER 1993 PART II



American Caving Accidents

AMERICAN CAVING ACCIDENTS — 1992

This is the 1992 issue of the National Speleological Society annual report on safety incidents resulting from cave exploration in the Americas. These range from no consequence to fatalities. The analyses offered are not intended to be the final conclusions, but more as additional food for thought. It is your reflection on these incidents that can make you a safer caver. If you read these incidents, you may come away with a greater safety awareness.

I would like to thank all those who sent reports, news clippings or grotto publications. This publication would not exist without them. Still, some grotto publications are not received; I would greatly appreciate it if publication editors would watch for issues containing a safety incident and make a point of sending me one.

Send any information on any incident to:
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Communication in Difficult Situations

BY STEVE KNUTSON

One of the most troublesome situations in caving is that of impossible communications—the resonant chamber, the pit with a waterfall, the river passage, whatever ... I suspect everyone has been there. Your buddy is on rope, a ways up or down and suddenly you hear an exclamation, "Rummm rummm rummm!", from in the pit. You are suddenly alert — there must be a problem! You reply "What?"

There is a pause and your companion yells "*RUMMM RUMMM RUMMM!*" You still can't make it out and yell "WHAT?" as loud as you can. The reply comes "*RUMMM! RUMMM! RUMMM!*" Damn, still can't get it but this goes on until frustration sets in. Your buddy reaches the top/bottom and you follow, now with a lot of trepidation for you have no idea what danger lurks. At the top/bottom you learn that your buddy was saying "What great flowstone!"

The above scenario is just frustration. Think how serious it would be if there *were* a problem ...

In the future it seems clear that we will eventually have radio communications between cavers in a party. Radio Shack right now sells an FM radio with an earplug microphone/headphone — that is, the plug in your ear works as the microphone as well as the device that produces the sound. Maybe someday we'll all have one of these. Moreover, technicians tell me that by using the right frequency or whatever, that communication throughout a cave may eventually be possible. Great, but until we are all radio equipped, what can be done?

Cavers all seem to have adopted the climber signals for directing a belayed climb and many cavers will yell "On rappel" before starting down and "Off rope" when they have unrigged at the bottom. This is fine when communication is easy but in a difficult situation you may as well yell "Rummm! Rummm!" — no one will be able to tell the difference.

There is, however, a signal system that works. I first noticed this when Bill Stone wrote something on it in the *NEWS* years ago. I've used it in river caves and it covers a lot of situations. The assumption of course is that the caver will be equipped to make a loud noise—either naturally, by hooting, yelling or whistling, or artificially, with a whistle, boat horn or whatever. Then you simply make one or a series of two, three, or four loud noises in a row and this is the signal. The meanings are as follows:

1 — **Stop**. As a command: stop going up, going down or whatever you are doing. As information: you are stopping and the others need to know it.

2 — **Up**. As a command: go up, come back up. As information: you are going up and the others need to know it.

3 — **Down**. As a command: go down, come back down. As information: you are going down and the others need to know it.

4 — **Off**. As a command: Get off rope. As information: you are now off rope.

5 — **HELP**! A continuous blast, scream, yell, hoot ... As information: you are in BIG trouble.

One important factor in communication is to avoid anything your companions can hear that is *not* necessary. The caver who yells about flowstone while rappelling needs education. But it is also important not to signal when it is not necessary.

There is obviously some redundancy or possible double interpretation of these signals. Your buddy signals "2" — is he going up, does he want you to come up, or is he perhaps signalling to a third member of your party? Circumstances should tell you. You must be thinking, what is happening?, what are my companions doing?, and where are they relative to me?

It is also important to space the signal series — if a series of three hoots is done too fast, with little space between hoots, in a resonant chamber this will sound like one continuous sound.

Try it, it works; and its easy to remember: S-U-D-O.

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NSS NEWS
AMERICAN CAVING ACCIDENTS

DECEMBER 1993, PART 2 VOLUME 51 NUMBER 12

FEATURES

FRONT COVER

"The River Cave" by Steve Knutson. California caver Matt Oliphant is at the brink of "The Waterfall," deep within Semuc Champey, the river cave of the Rio Cahabon, Altaverapaz, Guatemala.The waterfall is 15 meters high and flows approximately 500 CFS.

BACK COVER

"Whitewater" by Steve Knutson. Colorado caver Mike Frazier ascends over the whitewater of the Rio Cahabon inside Guatemala's Semuc Champey.

REPORTED CAVING ACCIDENTS —- 1992

REPORTS PRIOR TO 1992, PREVIOUSLY UNREPORTED

CODE	CAVE NAME	LOCATION	SYNOPSIS	DATE
Be	Eagle Cave	New York	equipment	10-18-90
Be	Carter Cave	Missouri	rope failure	5-12-91
Bix	Ellison's Cave	Georgia	ill	October-91
De	Harper's Pit	W. Virginia	heel hang	12-28-91

REPORTS FROM 1992

Dh	Tarkiln Cave	Kentucky	hypothermia	January-A
Bl	Carter Caves	Kentucky	lost	January-B
Dr	Smith Cave	Pennsylvania	rockfall	January-C
Cr	New Paris Sinks	Pennsylvania	rockfall	January-D
Be	Unspecified Cave	Kentucky	equipment	January 3
Br	Big Four Ice Caves	Washington	avalanche	January 4-A
AAd	Anacapa Isl Sea Cave	California	drowned	January 4-B
Ac	Wind Cave	South Dakota	caver fall	January 11
Cr	Carlsbad Cavern	New Mexico	rockfall	January 18
Ar	Booty City Cave	Tennessee	rockfall	January 25
Ac	Warrens Cave	Florida	caver fall	January 31
Be	Capshaw Cave	Tennessee	lights	February 1-A
Co	Mt. Anthony Cave	Vermont	dig	February 1-B
AAd	Underwater cave	Hawaii	drowning	February 21
Bl	Cueva Cheve	Mexico	lost	February 29
De	Cueva Palomitas	Mexico	equipment	March-A
Ce	Cueva Cheve	Mexico	equipment	March-B
AAc	King's Bowl S. Cave	Idaho	caver fall	March 28
De	River Styx Cave	Texas	equipment	April 6
Ac	Shelta Cave	Alabama	caver fall	April 15
Do	San Ramon Cave	Guatemala	encounter	April-A
Co	San Ramon Cave	Guatemala	infection	April-B
Ar	Diamond Cave	New Mexico	rockfall	April 18
Ac	Valhalla Cave	Alabama	caver fall	April 26
Be	Clarksville Cave	New York	equipment	April 29
Be	Cave Disappointment	Alabama	equipment	Spring-A
Cc	J-4 Cave	Pennsylvania	caver fall	Spring-B
Dc	Con Cave	Pennsylvania	caver fall	Spring-C
Bs	Clarksville Cave	New York	stuck	May 3
Ce	Cemetery Pit	Alabama	equipment	May 9
Dr	Marshall's Cave	Virginia	rockfall	May 16
Bcs	Unspecified Cave	Missouri	stuck	May 20
Ac	Corkscrew Cave	Arkansas	caver fall	May 24
Be	Waynesville Cave	Missouri	equipment	May 24-25
Ac	Brammer Cave	W. Virginia	caver fall	May 25
Bs	Killiansburg Cave	W. Virginia	stuck	June
Bhx	Sloan's Valley Cave	Kentucky	exhaustion	June 13
Ac	Camp's Gulf Cave	Tennessee	caver fall	June 20
Ac	McBrides Cave	Alabama	caver fall	June 28
Be	J-4 Cave	Pennsylvania	equipment	July 4
Ace	Cathedral Cave	Arizona	wooden ladder	July 5-A
Bhx	McFails Cave	New York	exhaustion	July 5-B
Cc	High Water Cave	Kentucky	caver fall	July 5-C

A Look at the Statistics

BY STEVE KNUTSON

If you look at the statistical table you can see that the total of incidents of consequence, the AA, A, B and C, is 56, showing a 24% increase since 1986. Note that in that same period there has been a 55% increase in the total membership of the National Speleological Society. Perhaps all the NCRC, grotto and convention training sessions have produced this effect. If so, Excellent!

As in the past, caver fall, equipment problems and rockfall are the major causes of our caving incidents. The following is a brief walk-through using dates to reference the incidents:

a) *Acetylene Explosions* — None. There has been a gradual change to electric light sources.

b) *Bad Air* — One incident, September 25, where two teenagers died from carbon monoxide from a smoldering campfire in a cave.

c) *Caver Fall* — Twenty-one incidents. Eight were short falls resulting in broken bones (Jan 11, April 26, May 24, Summer, June 28, July 5-A, July 18-B and August 14), lesser injuries (April 15, Spring-B, Spring-C, May 25, May 31, June 20, July 22, October 24, October 26 and Nov 14) and greater injuries (December 19), includ-

Cr	Beaver Falls Cave	Alaska	rockfall	July 6
Dr	Pull the Plug Cave	Alaska	rockfall	July 9
De	Hurt Tree Pit	Alabama	rappel gear	July 18-A
Ac	Church Cave	California	caver fall	July 18-B
Be	Espey Cave	Tennessee	light problems	July 19
Dc	Carol's Crack	W. Virginia	caver fall	July 22
Be	Sloan's Valley Cave	Kentucky	equipment	July 25-A
Be	Sloan's Valley Cave	Kentucky	equipment	July 25-B
Dr	Fat Man Filter Cave	Alaska	rockfall	July 26
Dr	Goose Chase Cave	Alaska	rockfall	July 28
Dr	Spike Cave	Alaska	rockfall	July 29-A
Bx	Sharps Cave	W. Virginia	exhaustion	July 29-B
De	El Capitan Cave	Alaska	scaling pole	July
Ac	Spanish Cave	Colorado	caver fall	August 14
Dr	Lost World Cave	W. Virginia	log fall	August 22
Bxh	Sites Cave	W. Virginia	exhaustion	September 4
AAb	Cave in St Paul	Minnesota	bad air	September 25
Aco	Gene Lambert Cave	Alabama	caver fall	October 2
Be	Mystery Hole	Tennessee	vertical	October 9
Ac	Wool Hollow Cave	California	caver fall	October 24
Acr	Portal Cave	W. Virginia	caver fall	October 26
Drc	Fletchers Cave	W. Virginia	collapse	November 14
Be	Bourbillon Cave	Mexico	rappel	November-A
Bo	Bobcat Cave	Vermont	encounter	November-B
AAe	Banshee Hole	Tennessee	ascending	November-C
Bel	Organ Cave	W. Virginia	lost	December 18
Ac	Schofer's Cave	Pennsylvania	caver fall	December 19

INCIDENTS IN OUTSIDE SESSIONS

AAec	El Capitan	California	rappel	September

CAVE DIVING INCIDENTS

B	Cenote on Cozumel Isl	Mexico	line trap	June
AA	Alachua Sink	Florida	lost the line	July
B	Nickajack Cave	Tennessee	stranded	August 15
AA	Hole in the Wall	Florida	regulator	Summer-A
AA	Devil's Eye	Florida	convulsion?	Summer-B
AA	Blue Springs	Florida	untrained	October 1
AA	Roubidoux Springs	Missouri	unknown	Fall

Incidents and Accidents 1986—1992

BY STEVE KNUTSON

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

RESULT OF INCIDENT

CODE-RESULT	1986	1987	1988	1989	1990	1991	1992
AA-Fatality	4	3	4	1	4	6	5
A—Injury and Aid	10	15	11	16	18	16	16
B—Aid (no injury)	21	15	20	20	23	20	24
C—Injury (no aid)	10	15	14	14	10	12	10
D—no consequence	19	16	12	21	9	12	16
Total:	64	64	61	72	64	66	72
Total AA, A, B, C:	45	48	49	51	55	54	56

CAUSE OF INCIDENT

CODE-CAUSE	1986	1987	1988	1989	1990	1991	1992
a-acetylene explosion	3	0	1	1	0	0	0
b-bad air	3	2	1	1	1	2	1
c-caver fall	25	14	20	19	22	22	21
d-drowning	1	2	0	2	2	2	2
e-equipment problems	14	17	20	20	23	21	20
f-flood	1	3	3	4	2	2	0
h-hypothermia	1	2	0	5	0	2	4
i-illness	0	0	2	3	2	1	0
l-lost	8	5	3	9	4	3	4
r-rockfall	12	17	7	11	11	12	15
s-stuck	3	1	0	1	1	3	3
x-exhaustion	0	1	1	3	0	2	4
o-other	3	4	8	6	8	4	5
OUTSIDE INCIDENTS	-	-	-	-	-	2	1
CAVE DIVING	9	7	10	5	9	8	6

CAVER POPULATION

AT END OF YEAR	NSS MEMBERSHIP	TOTAL INCIDENTS
1986	6811	45
1987	7298	48
1988	7986	49
1989	8469	51
1990	9056	55
1991	9823	54
1992	10544	56
1993	11164	?

National Speleological Society caver population statistics courtesy Tom Rea.

ing a fatality from a 70 foot fall (March 28). There were two dislocated shoulders (January 31 and October 2) from falls, and broken ribs/collapsed lung from a rappel (July 5-C). One fall jammed a caver into a tight place (May 20), and a wooden ladder collapsed yielding a broken leg (July 5-A). As usual, belays or handlines undoubtedly would have prevented some of these, but a belayed fall still resulted in a dislocated shoulder (January 31), and a fall holding a handline yielded an injured shoulder (October 24).

d) *Drowning* — Two incidents, both where a swimmer drowned in a sea cave (January 4-B and February 21).

e) *Equipment Problems* — Twenty incidents. There were three attempts to go hand-over-hand in a pit (January 3, Spring-A and May 23-25); the first two left someone trapped while the last produced a heel-hang. There were the usual spelunker light failures (April 29, July 4 and July 19) and lack of sufficient light helped cavers get lost (December 18). A wooden ladder broke producing a broken leg (July 5-A). A cave camp yielded a scalding when a ziploc bag broke (March B) and a battery shorted (April 6). On the vertical side, a harness came apart (October 9), a scaling pole collapsed without injury to the climber (July), a locking carabiner was found to be jammed open partway into a rappel (November-A), a caver descended a virgin pit with 120 meters of rope without ascending gear, luckily finding the pit to be 110 meters (March-A), a rappeller clipped his rack to his battery belt (July 18-A), and a fatality occurred when a caver hanging for some time in his harness died from compression syndrome (November-C).

f) *Flooding* — None.

h) *Hypothermia* — Four examples, from ordinary (January-A), to the more serious where cavers became cold and exhausted but still had a pool to swim across (June 13), beginner wetsuit cavers became cold and tired (July 5-B) and a caver ascending a waterfall pit got hung up (September 4). Hypothermia is always potentially serious.

i) *Illness* — None.

l) *Lost* — Four. One may just be a light failure (February 1-A). But there was confusion amongst kids in a large group (January-B), a caver lost her way while returning to camp in the cave alone (February 29) and cavers in a large, complex cave took a wrong turn (December 18).

r) *Rockfall* — Fifteen. Rockfall may be the worst hazard in caving. It often seems to occur spontaneously as in Jan 4-A, April

18, January-C and January-D, but is always lurking for the unwary, as in January 18, January 25, May 16, July 6, July 9, July 26, July 28, July 29-A, August 22 and November 14. Two of these were the collapse of an alluvial wall (July 26) and an alluvial bridge (November 14) and one was a log fall (August 22). I don't believe any occurrence of rockfall resulted in serious injury.

s) *Stuck* — Three. Tight passage situations are taken lightly by many cavers but have in the past resulted in fatalities. All of these were got out in no more than four hours—(May 3, May 20 and June).

x) *Exhausted* — Four. Three of these (June 13, July 5-B and September 4) are mentioned above, going hand-in-hand with hypothermia. Another (July 29-B) involved an out-of-shape caver trying to get up a vertical fissure to the entrance.

o) *Other* — Five. This included a cut hand in a dig (February 1-B), a snake encounter (April-A), bear encounter (November-B), infections (April-B) and a dislocated shoulder (October 2).

Some Words on Short Loop Rebelays

BY DAN CLARDY

People should not expect all rebelays to have a loop you can use to put your knee or foot into. The rope may be too short, it may have shrunk or be rigged with a small or horizontal loop for some other reason. You should be prepared to cope with this as you would a knot. You should not have to take gear out of your pack.

You should never hang by only one safety. Aside from rappelling you should always have two or more points of attachment. When descending past a rebelay with a short loop you may need a safety ascender above your rack and a second safety to back it up. You may need a way to raise up and remove your upper ascender after reattaching your rack. I like using one of the ascenders in my climbing rig to do this. On a tight angled rebelay loop you may need two safeties, one on either side of your rack, to pull slack to remove your rack.

Advanced climbing techniques are not always easy. You should practice outside the cave before you do advanced vertical in the cave.

Harness-Induced Pathology

BY STEVE KNUTSON

The following is a paraphrase of a translation from a narrative in French that is on a video tape put out by Petzl and produced by the French Federation of Speleology (Federation Francaise de Speleologie). This was kindly supplied to me by Steve Hudson of Pigeon Mountain Industries.

The piece begins by saying that in recent years (In Europe) there has appeared a new type of incident—death due to hypothermic exhaustion. Some of these occurred on rope to cavers using the "Frog" system for ascent. Fifteen such deaths were attributed to hypothermic exhaustion.

A 1983 study, however, seemed to indicate that a quite different cause may be at work in such incidents. The cause suspected is simply the act of *hanging in a seat harness*. They tested their suspicions indoors. Two volunteers were used; one hung, apparently inert, for only six minutes before fainting, the other apparently a little longer, and both experienced serious difficulties afterward. The tests were terminated as being too dangerous and it was concluded that "even a healthy caver could die very quickly on rope if left hanging 'totally inert' (without muscular movements) in a sit-harness". It was thus suspected that previous cases of death attributed to exhaustion, since there was no other obvious cause, may be more properly attributed to this "harness syndrome" (my words).

The serious implications of such conclusions led to further research, but this time in a hospital with medical control and supervision. The "controlled parameters" were:

- pulse
- blood pressure
- electrocardiogram
- electroencephalogram
- several blood controls

("control" may mean that these functions were monitored)

Resuscitation equipment is available but they set things up to allow a "quick release" of the harness of each volunteer in case of difficulty. Three scenarios were used:

1) Totally inert, with head in hyper-extension and legs hanging below heart level (the most realistic for an unconscious victim).

2) With head upright, supported by a brace. The legs dangled as in 1.

3) With feet in a footloop (of the Frog system) that keeps the legs in a horizontal position. The head is hyper-extended as in 1.

Viewing the video shows that an inert victim in a typical Frog harness hangs with the body horizontal, facing up, with the head hanging back and down in "hyperextension"; the legs hang down but really just from the knees down.

All three produced "considerable difficulties" after 12-13 minutes of hanging. Despite the medical controls and monitoring, one volunteer fainted. The other two apparently were released before this could occur.

The hyper-extension of the head was described as very painful, leading to a quicker faintness. A manual relief of the head at the onset of faintness lessened the

feeling but pulse and blood pressure accelerated again within five minutes with a second onset of faintness.

The process is apparently similar in all; in the case of 1) "the volunteer feels faint after 10 minutes. In the beginning the pulse is a normal 80. Progressively, it will increase until faintness. Concurrently, the blood pressure, normal at first with 12/8, will increase abnormally to reach 18/12."

"Faintness with hot flushes, paleness, abundant sweat and breathlessness take place during a more intense pulse and blood pressure acceleration." Apparently without a release from the experiment at this point even the faintness "can be very serious".

"The physical mechanism of faintness is complex, but can be described as follows: perturbation of the cardiovascular system, leading to head blood failure, quickly followed by death. Apparently this all occurs while the victim is hanging; release produces the effect of "Discomfort due to blood return... , quite low in the feet, is higher in the hands and neck, where venous dilation is obvious."

They tried having the victim in situation 3 move his legs but this apparently helped "only for a short time, after which difficulties worsen rapidly."

They concluded first that this "harness syndrome" (my words) was what had occurred in all fatalities previously explained as due to exhaustion. Second, "Whatever the type of harness, motionless suspension leads to very serious blood problems. It seems useless to try to invent a preventative harness."

These produced the following advice:

1) "A caver in difficulty on a rope, due to exhaustion or to technical problems, must be helped very quickly."

2) "A caver hanging completely inert must be unhooked with all speed by other team members."

3) "A team shall never let one of its members begin a rope ascent alone, even if he is in very good shape."

4) "A tired caver should refuse to begin a long and difficult rope ascent, especially in a wet pit, without recovering first. He must carry and use properly his survival food and shelter."

One must now refer to the November, 1992 (this issue) incident in Banshee Hole, Tennessee. The details are scant but another condition, referred to as "Compression" or "Crush" Syndrome has been invoked to explain this harness-hang fatality. This syndrome was reportedly discovered in World War II when victims trapped in bombing debris would be fine until they were dug out; the victim then would, in some cases, suddenly die. Basically it causes death upon release from compression or blood circulation limitation (like hanging in a harness) *after* release, due to the change in blood chemistry on the part of the blood held from circulation. When this blood reaches the rest of the body death from shock apparently can result.

This can be counteracted by the use of drugs and intravenous normal saline at the time of release and must be planned for by rescue squads. Apparently, if the hanging in the harness doesn't kill you and you have hung for a long time period, your release must be done with medical supervision. In any case be aware that a *harness hang is a life-threatening situation* and is best dealt with very quickly. If someone has hung for a long period of time the situation must still be to be life-threatening and must be treated by medical personnel equipped for such a syndrome.

Handlines, Belays and Etriers

BY STEVE KNUTSON

When cavers are put in a situation of having to climb or traverse above exposure they react to it in different ways, sometimes applying various equipment and techniques. Here is a brief look at some of this.

1) *No protection* It is quite common to see cavers free climbing where they could obviously fall with a high probability of injury. There are probably several reasons for this. A caver exploring doesn't know what he will run into. When he comes upon a climb he may not have proper gear and may choose to proceed anyway. Many cavers have never received training in proper protection techniques and simply don't know what to do but aren't going to turn back. Others seem to think that doing a hairy climb without a belay is part of caving. All in all, there is little to excuse exposed climbing without some sort of protection.

2) *Etriers* These are a device for aid climbing that helps a climber hang from an anchor, where there are no holds, while the climber attempts to place another anchor a bit higher or further on. An etrier can be a little rope ladder with actual rungs, or a length of webbing tied so that when it is hung from an anchor there is a length hanging down with foot loops projecting from the sides at intervals. Unfortunately they have been used by cavers to rig short drops as a little ladder. The climber goes up holding higher foot loops and stepping in lower ones. Unless this is protected by a separate belay, this is a misuse of equipment. As with a cable ladder, which once were in common use, the climber is not attached to anything and must be belayed. It is also fair to say that any such ladder is harder to use than it may appear. I think any short drop that needs to be rigged should be rigged with a rope and each climber use ascenders to get up.

3) *Handlines* Handlines are in quite common use. Typically they are used where the climb or traverse is judged to be easy but the exposure is significant. Many of these are dangerous. For one thing, it is sometimes the case that climbers are relying on simply holding on with their hands in case of a fall. This may not be possible. Sometimes an ascender is slid along the line as the climber moves along, with the result that there may be significant slack which could be a problem in a fall. Also, when sliding the ascender the climber often must use both hands.

Often a climber will clip into a horizontal traverse handline with a carabiner attached to his/her seat harness. This seems very secure, but if the traverse is a long one, and the line is fairly tight, a fall in the middle of the traverse will produce vector forces on the end anchors much greater than the body weight times two or three generated by the fall itself. The problem comes because cavers seem to judge a handline to require less strength than a free-hanging pit rope, so inferior ropes are sometimes used. In fact it is easier to generate heavier forces

in handline use than in proper pit descending/ascending. Stronger lines, not weaker, should be used for handlines.

4) *Belays* It has always appeared to me that a caver from a rock climbing or mountaineering background is at a significant advantage compared to other cavers. A trained climber knows how to set up a belay and how to make use of one. He/she knows what a belayer needs to be properly protected and the signals that will keep a belay running smoothly. Such a caver is probably more likely to be ready to set up a belay and more likely to actually use one. Many cavers climbing with a handline for protection would be far safer with an actual belay, not to mention the times they do an exposed climb with no protection.

It appears to me that cavers could do a lot to improve the protection they afford to climbs in caves. The worst scenario, which I have witnessed repeatedly, is someone of ability who manages an exposed move or climb and then expects a companion of known lesser ability to do it. In general, I think most cavers would benefit from mountaineering or rock climbing training.

PREVIOUSLY UNREPORTED INCIDENTS

EAGLE CAVE, NEW YORK

August 18, 1990
Be — equipment lack

At noon on Saturday, August 18, two men, William Garrity (21) and Joe Gannon, entered Eagle Cave on Chimney Mountain in Hamilton County, New York. This is reportedly a difficult cave with several levels and a total of 300-400 feet of passage. It is also cold, containing perennial ice.

At about 2 p.m. the two went down a 60 foot pit, apparently hand-over-hand, and only Gannon could climb back up. He went for help, and a Boy Scout who was familiar with the cave returned with others and fashioned a rope ladder which Garrity was able to climb. He was then led out a more convenient second entrance, getting out at 2 a.m. on Sunday.

References:

1) Jack Leadley, Jr "Scout rescues man from Chimney Mountain cave" *Hamilton County News* August 28, 1990, p 1.

2) Joel Cadbury *Personnel Communication* January 23, 1993, 6 pages.

CARTER CAVE, MISSOURI

May 12, 1991
Be — rope failure

At about 12:30 p.m. on Sunday, May 12, a group of four entered Carter Cave near the Mark Twain National Forest in Missouri. They were reportedly testing "homemade 'caving' equipment." The cave is very muddy and 90 feet horizontally from the entrance is a 100-foot drop. The cavers had reportedly been in the cave five or six times previously on mapping and exploration trips. The pit was rigged with a hemp rope and two, Kelly Nelson (31) and Bill Collins (27), descended using home-made figure-8's.

They immediately attempted the ascent, to test home-made ascending devices. They had only one set, and the report makes it sound like they were both rigged in with the one set. Reportedly they reached a point 50 feet up when one ascender broke or failed in some way and they were stranded. They tried to free-climb out and then to have their friends above pull them out, to no avail. Exhausted, they got on a ledge and, at about 8:15 p.m., sent their companions for help.

The nearest farmhouse was some distance away and it was 9 p.m. before authorities were called. Rescue squads responded. Initially a fireman without ascending equipment did a body rappel to bring the trapped men some food. After a while all three started getting cold. A rescue rope was rigged and a rescuer descended, equipping the victims with harnesses. They were then hauled up, exiting the cave at about 2 a.m.

References:

1) Mark Clippinger "Incident Report" Beaver Lake Park, State of Arkansas Department of Parks and Tourism, January 31, 1992, 4 pages.

2) Ritta Martin "Local team aids in cave rescue" *Morning News* (NW Arkansas) May 15, 1991.

3) Editor "County rescue team saves two from cave" *Benton County Daily Record* May 13, 1991.

Comments: The vertical gear was described as having been cut out of flat stock and appeared rusted and had sharp edges. Their rope was described as hemp, very large in diameter (the rescuers describing this were using 7/16 and 1/2 inch ropes). Man, this sounds like the way I started vertical caving ...

ELLISON'S CAVE, GEORGIA

October, 1991
Bix — ill, dehydrated

On a Friday in October, 1991, Richard Walk (37) and five companions did Ellison's Cave in Georgia. This was part of the annual TAG Fall "Cave-in," and at least one other group was in the cave at the same time. They went in the Fantastic Entrance, proceeded to Incredible Pit and returned out Fantastic.

At the climb down to Incredible Pit, Walk became lightheaded and suffered from blurred vision. He was apparently suffering from a combination of under-nourishment, a lack of sleep, dehydration and fatigue. He drank some Gatoraid, ate lunch, including a Power Bar, and felt better. Halfway back to Fantastic Pit he became nauseated with blurred vision. From there out he had a lot of trouble, but his friends were patient and helped him by carrying some of his gear. At the Balcony and Warmup Pits, he would take 8-10 ascending steps and dry-heave. He eventually made it out.

Reference: Richard Walk *NSS Accident Report* undated, 4 pages.

Comments: Hasn't everyone either experienced this or had a companion who over did it? There is, however, no excuse. If you are exhausted, don't go caving! This is a serious accident waiting to happen ...

HARPER'S PIT, WEST VIRGINIA

December 28, 1991
De — heel hang

On December 28 a group of four cavers visited Harper's Pit in Pendleton County, Pennsylvania. The cave has an 80 foot entrance drop and two 20-foot, in-cave drops. These were rigged and done and the group spent time pushing leads

near the end of the cave. One caver did not have vertical gear and had been given the rig of a companion; the companion (27) had for himself improvised a Texas rig using short Petzl "Jammer" ascenders.

Three got out the entrance drop without incident, but when the improvised rig was used the caver had difficulty — the sling lengths were wrong and mud now coated everything. During a sit-stand cycle his gloved hand accidently unhooked the top ascender, leaving the caver hanging from one foot, 15 feet below the top of the 80 foot drop. He was able to right himself and continued without further problem. Apparently the glove had caught in the ascender, not allowing it to grip but with it still on the rope. Having the ascender still on the rope would have made recovery much easier.

Reference: Anon. untitled accident report, undated, 1 page.

1992 REPORTS

TARKILN CAVE, KENTUCKY

January-A
Dh — hypothermia

On a trip to Tarkiln Cave one caver (a teenager) apparently slipped into a pool and became completely soaked. This led to hypothermia and a space blanket was applied. The victim was helped from the cave and to a warm environment.

Reference: Editor *Esso Bee* (Esso Grotto, NSS) February, 1992, pp 2-3.

CARTER CAVES, KENTUCKY

January-B
Dl — lost

In a group caving event called the "Crawlathon," two groups were combined but then split into two cave trips with the result that one trip now had all the juveniles, except for the leader, and the other all the adults. Part of the juvenile group apparently lost communication with the leader part way through their trip and stopped, not knowing the way. They were retrieved a little later.

Reference: Editor *ibid.* p 2.

SMITH CAVE, PENNSYLVANIA

January-C
Dr — rock fall

In January a group of four visited Smith Cave, Blair County, Pennsylvania. The 2-1/2 foot entrance, the top of a 50-foot pit, had been covered by a sheet of metal and several inches of leaves had accumulated. The debris was removed and the sheet set aside; debris was also removed from a several-foot radius around the pit, including a few loose rocks. They descended without incident.

On leaving one went up, signalled "off rope" and left to search the hillside for other caves. About 15 minutes later, Steve Shimayzki (19) started up. He was only a few feet up when a rock fell, hitting squarely on his helmet, a Petzl Ecrin. The trip continued without further incident. Later inspection showed that a quarter-inch sized chip had been removed from the helmet.

Reference: John Chenger *NSS Accident Report* undated, 2 pages.

NEW PARIS SINKS, PENNSYLVANIA

January-D
Cr — rock fall

The New Paris Sinks consist of several short vertical caves that are closed to casual caving. In January, cavers visited these caves as part of a Pennsylvania Game Commission Bat Survey. The first pit done was about a 40-foot drop with the rope laying against a wall of the pit. These pits are seldom visited and the weather just prior to this trip was a series of freeze-thaw cycles. Thus it was expected that there might be loose material at the edge and upper sides of the pits.

Two cavers descended, clearing some loose debris in the process. Jim Hart (35) was ascending and was about ten feet off the floor when he was struck on a shoulder by "a chunk of mud or other debris." This was painful but he was able to continue using his ropewalker system.

Reference: John Chenger *NSS Accident Report* undated, 2 pages.

UNSPECIFIED CAVE, KENTUCKY

January 3
Be — equipment

On Friday, January 3, a group of three were exploring in a cave close to Wash Gunn Road near Russellville in Logan County. At least one of the men, Scott Foster (20), had descended a drop using a rope. When he tried to climb out he was unable to do so as the rope was now wet and muddy.

This was apparently the entrance drop so when his companions were unable to pull him out, they went for help. The Logan County Civil Defense Rescue Squad was called and the victim was hauled out at about 7 p.m.

Reference: Editor "Rescue squad frees man after trapped three hours in cave" *Daily News* (Bowling Green, Kentucky) January 5, 1992, p 6-A.

BIG FOUR ICE CAVES, WASHINGTON

January 4-A
Br — avalanche

On Saturday afternoon, January 4, a group of three entered the Big four Ice Caves, a set of glacier caves in the Cascade Mountains about 40 miles east of Everett. The wife, pregnant seven months, of one of the cavers apparently waited outside. The group was about 500 feet inside one cave when a snow avalanche occurred, blocking the entrance and carrying the wife some 300 feet down the glacier.

It was still possible to see out a small opening. The trapped cavers were able to free themselves by chipping and digging at this using a pocketknife. After getting an opening it took them about 30 minutes to help each other squeeze through.

Reference: "Three men trapped in cave by avalanche use knife to dig out" *Seattle Times* January 6, 1992.

ANACAPA ISLAND SEA CAVE, CALIFORNIA

January 4-B
AAd — drowning

On Saturday afternoon two brothers, Brian and Monty Bolton (22 and 27), left the sailboat "Catrina" in an eight-foot dinghy to explore caves on Anacapa Island, off the California coast. They failed to return and the Coast Guard was notified. The body of one of them was found underwater inside Cathedral Cave at about 3 p.m.

Reference: Associated Press "Coast Guard finds body" *San Diego Union* January 6, p A-3.

WIND CAVE, SOUTH DAKOTA

January 11
Ac — caver fall

On Saturday, January 11, a group of Colorado Grotto cavers were in Wind Cave doing inventory work. In the historic zone of the cave they spotted a possible lead above a pit. Pat Jablonsky started climbing toward the lead. She was near the top of a short chimney next to the pit when a foothold broke and she fell.

Her right, lower jaw struck a ledge and when her fall was stopped by the ledge next to the top of the pit, her momentum slammed the left side of her face into the wall, striking a projection with her jaw. She suffered a brief blackout followed by a wave of nausea, but this passed "in a matter of seconds." After assessing the injury, a broken jaw (left ascending ramus), the victim left the cave with assistance from a companion.

Reference: Pat Jablonsky *Accident Report* undated, 1 page.

CARLSBAD CAVERN, NEW MEXICO

January 18
Cr — rock fall

On Saturday, January 18 a team of cavers was in the Remarkable Crack section of Carlsbad Cavern to check and survey leads. To reach the area of the leads, they had to descend a 28-foot pit, with the complication that the only suitable rig points were on a higher level, causing the actual rig to be much longer than 28 feet. On the way out, one caver ascended and dislodged a small rock. This struck a projection and bounded off line, striking Dave Modisette on the face, cutting his cheek. This bled profusely for a bit but didn't prevent him from exiting under his own power.

Reference: Bill Heath "Trip Report: Carlsbad Caverns, New Mexico" *Windy Passages* (Pajarito Grotto) 5:2, February, 1992, pp 5-6.

BOOTY CITY CAVE, TENNESSEE

January 25
Ar — rock fall

On Saturday, January 25, a group of eight cavers entered Booty City Cave in Grundy County, Tennessee. The entrance is a seven-foot climb down to intersect a passage. The entrance fissure continues down but is a little too narrow for a caver. The passage goes 15 feet to two climb downs with an inflowing stream. These lead to a wet, 34-foot pit that is directly below the entrance. Over a mile of cave lies beyond this.

On this day, the cave was very wet so two cavers went ahead to see if a low place was sumped. Joe Douglas (32) was at the top of the wet pit and had clipped his safety ascender to the rope before lowering the end of a survey tape to measure the pit. At that time some of the party was still coming in the entrance. A football-sized rock was dislodged there and fell 20 feet down the fissure, hitting Douglas in the back, just above the hip and next to the spine. He was knocked down but held by his ascender. The pain was intense and he was pulled from the edge of the pit and helped out of the cave by his companions. He had suffered only severe bruises but these took three months to heal.

Reference: Joe Douglas *NSS Accident Report* undated, 3 pages.

Comments: A subtle point is that although there was no human passage, those at the pit were exposed to rock fall from above and seemed to be quite unaware of it. Be aware. Also, a lot of cavers wouldn't have bothered with a safety ascender at the pit, but it certainly saved Douglas from greater injury.

WARRENS CAVE, FLORIDA

January 31
Ac — caver fall

On Friday, January 31, Dead Cavers Society Grotto, NSS, had an outing to Warrens Cave, Alachua County, Florida. The entrance leads to a 40-foot climbable pitch that is done free, using a belay. On the way out Tracy McLaughlin was ten feet up when one of her shoulders dislocated and she fell.

It must be suspected that the loss of a foothold brought strain on the joint, but this is not stated in the report. The fall was taken by the belay and she was lowered to the floor. She tried to relocate the joint but she was tired, the muscles were experiencing spasms and the pain was too great. It was decided to try and let the joint relocate by itself, by letting her rest and the muscles relax. She was made as comfortable as possible lying on the floor of the cave but after several hours the joint was still dislocated. Another attempt was made to manually relocate the joint without success. Meanwhile a haul system had been set up so they "packaged" her upper body as much as possible to immobilize the joint and hauled her up. The shoulder was relieved and repaired by surgery at a hospital in Gainsville.

Reference: David Zymowski "Warrens Cave Rescue" *The Rigormortis Report* (DCS Grotto, NSS) 1:1, March, 1992, p8.

CAPSHAW CAVE, TENNESSEE

February 1-A
Be — poor lights

On Saturday morning, February 1, four teenagers entered Capshaw Cave, a several-mile-long cave underlying much of southeast Cookville, Tennessee. They were Jeff Byrd, Mike Dieringer, Asher Christianson and Bobby Faulhaber. They were equipped with helmets, some food and water, three flashlights and backup candles; they intended to be out by 4 p.m. At about 3:30 they started out, but only one light was working well by that time. When its owner tripped and fell, it went out. They tried to continue with dim lights but got turned around and were truly lost. At about 10 p.m. they sat down and waited for rescue.

When the boys failed to show up for supper, one of the parents searched the neighborhood and found Asher's car on South Maple Avenue, next to an obscure entrance to the cave. The authorities were called at about 6:30 p.m. At 7 p.m. a team entered and searched one main fork of the cave. The cave is wet and contains numerous drop offs so there was the possibility of victims immobilized by hypothermia and/or injury. A number of teams from other parts of the state were put on standby for this contingency. When the first team emerged unsuccessful, a second was sent in to search the other major fork. The four were found about 1-1/2 miles from the entrance at about 1 a.m. Sunday. They were cold and tired but otherwise in good condition. They were escorted from the cave.

Reference: Brett Howell "Cookville boys found in cave, all four safe" *Herald-Citizen* (Cookville?) February 3, 1992. In *Subterranean Times* (Cumberland Valley Grotto, NSS) March, 1992, pp 3-4.

MT. ANTHONY CAVE, VERMONT

February 1-B
Co — dig injury

On Saturday, February 1, three cavers returned to a dig on Mt Anthony near Bennington, Vermont. After two hours of work, they opened a passable hole to a 15-foot drop. They rigged a handline and descended to a room ten feet high, 20 feet long and ten feet wide, but there were no passable leads. They did find two small holes through which they could see another room, so they set about to enlarge them. Dave Milkey managed to cut his hand on a sharp edge; this was bad enough that he exited the cave to attend to it.

Reference: Dave Milkey and Bob Dion "There's Holes in Them There Hills: Mount Anthony Cave" *Northeastern Caver* December, 1992, pp 118-119.

UNDERWATER CAVE AT PORTLOCK, HAWAII

February 21
AAd — drowning

Bruce Chan (20) reportedly developed cramps and drowned in an underwater cave at Portlock in Hawaii on Friday, February 21.

Reference: AP "Kailua man says gun was for shark" unspecified Hawaiian newspaper, February 27, 1992, p 3C.

CUEVA CHEVE, OAXACA, MEXICO

February 29
Bl — lost

On February 29 a party of cavers was camped at about -1000 meters in Systema Cheve in the northern part of the State of Oaxaca in Mexico. That day the main part of the group proceeded to the sump, about 1.5 km distant, to check leads, while Matt Oliphant and another caver did a leader climb near Wet Dreams, part way to the sump. When the sump party finished their work they headed back. Louise Hose elected to stay behind and study the geology. When she did head for camp she lost her way in the complicated area near the upper end of Wet Dreams.

Shortly after this, Oliphant and Meyers finished their climb and went to a pool in that area to wash the mud off. Hose heard them and moved in their direction but did not find them before they headed to camp. At camp, everyone realized Hose was missing so they fixed dinner. After a meal, they teamed up and went back to find her. She was found near the upper end of Wet Dreams, two to three hours after she first lost her way.

Reference: Matt Oliphant, Nancy Pistole *Personal Communication* April 1993.

Comments: Hose was asked why she didn't try to communicate to the climbing party when she heard them. She professed embarrassment.

CUEVA PALOMITAS, OAXACA, MEXICO

March-A
De — equipment problems

Cueva Palomitas is located above Sistema Cheve at about 10,000 feet elevation in the northern end of the state of Oaxaca in Mexico. Dan Clardy and Stan Allison proceeded to the end of known cave and rigged a waterfall drop. With water showering down it apparently was not possible to sound the pit, but they assumed it to be short like other pits in the area. Clardy started down, feeding the rope from a rope bag containing 120 meters of 8mm PMI. He also took the reel end of a 30 meter survey tape. Feeling sure of the shortness of the drop, he had no ascending gear handy. When he reached the end of the tape, he was still in free space, spinning in a shower of 47 degree water. Allison dropped the end of the tape, which ended up wrapped around Clardy and his rack. He managed to unwrap the rack but was himself looped about with the tape. He continued down and finally reached bottom with only a "handful" of rope remaining.

Reference: Dan Clardy "Cueva Palomitas" unpublished report, undated, 1 page.

Comments: Clardy admonishes himself: "Never assume your rope will reach a dry floor at the bottom of a pit. Your ascending gear must always be easy to reach." Amen.

CUEVA CHEVE, OAXACA, MEXICO

March-B
Ce — equipment problem

An expedition was endeavoring to push 1000-meter-plus-deep Sistema Cheve, in the northern part of the state of Oaxaca in Mexico. At camp three Dan Clardy was preparing a meal. When he poured boiling water into a ziplock bag containing freeze-dried food, the seam broke and dumped scalding water onto his leg. The burns didn't blister until he exited the cave two days later. Dan suggests using two bags.

Reference: Dan Clardy "Cueva Cheve" unpublished report, undated, 1 page.

KING'S BOWL SOUTH CAVE, IDAHO

March 28
AAc — caver fall

On Saturday, March 28, a group of six visited the Crystal Ice Cave area of the Great Rift in Idaho. These were five youths, of apparently college age, and their leader Leland Sorenson, the father of one of the youths. "The Great Rift is a long discontinuous volcanic rift in southeast Idaho that runs from Craters of the Moon National Monument near Arco to its terminus in the Wapi lava flow 65 miles to the south-southeast. It is the longest and deepest such rift in the U.S. and probably in the Western Hemisphere. It has multiple openings into the earth as deep as 300+ feet that occur as volcanic vents, spatter cones, and fissures that date most recently to 2000 years BP."

Intent on sightseeing, they entered King's Bowl, a large explosion crater about 450 by 150 and about 100 feet deep. Fissure caves lead from both the north and south ends of the bottom of the crater. They had a single lantern (it is not clear if this is a gas or handheld electric) and may have planned on visiting caves. Sorenson apparently had visited these caves some years before. In any case, they proceeded into King's Bowl South Cave. These rifts are floored by jagged lava rocks or ice and the going is slow. Just beyond the twilight zone Sorenson, with the lantern, stopped to let everyone catch up. Evan Bates (19) went ahead, scrambling across large breakdown blocks. About 200 feet from the entrance he came to a 20-foot, 45 degree ice slope leading to a 72 foot drop. Bates apparently stepped onto this slope and fell.

In the dark he probably didn't realize what was happening until it was over. In any case he did not cry out. When the others reached the ice slope they called but got no answer. Seeing scrape marks in the dust on the slope, Sorenson went back to his vehicle and fetched a rope. With this he made his way down the slope to the top of the drop. Seeing this, he retreated and proceeded far enough down the road to be able to call out on a two-way radio he had.

Aberdeen Fire Department and Power County Rescue responded. Back at the ice slope, it was discovered that Sorenson, from Special Forces training 25 years previously, was the only one with rappelling ability. When he rappelled to the bottom of the drop he found himself on an ice slope dropping north and had to struggle mightily to reach the ledge where Bates had come to rest, having been propelled out by the momentum of his slide. Bates had a broken neck as well as major head and facial injuries. He had apparently died on impact. Sorenson called for the Stokes litter but he was unable to get the 6-foot 1-inch, 195 pound Bates into it. Bates was hoisted just enough by those above that he could be lowered into the litter. The body was hauled up, apparently by manpower only, followed by the rescuer.

Reference: Scott Earl "Caving accident report..." *Idaho Cave Survey* April 6, 1992, 2 pp.

Comments: Sorenson was leading the group into what he thought was a relatively safe, horizontal cave. Unfortunately, subsequent to his prior visit, the floor had collapsed (in about 1978) yielding the ice slide and pit to the passages below. In fact, the edges of the pit have continued to recede, and the whole floor of the entrance passage is apparently the ceiling of a chamber below and may be held together only by ice. Still, it is obviously a bad idea for everyone not to have their own helmet-mounted light, much less backups. The group was tragically under-equipped.

The rescue group could have backed off and left the body recovery to a better equipped, more experienced group that was in fact en route to the cave at that time.

Earl notes that the first time he saw the ice slope he thought it would be easy to step onto it, with dire consequences. When he met with the Bureau of Land Management on the Tuesday after the accident, he suggested a warning sign but was told the agency didn't have money for such. Earl went home, made his own sign and returned to the cave on Friday, to find BLM signs in place, closing the area to caving.

RIVER STYX CAVE, TEXAS

April 6
De — equipment failure

On Monday, April 6, several cavers visited River Styx Cave in west Texas. Most of the group went in the dry 1963 entrance while Mark Porter and Bruce Anderson used the river entrance. The latter two thus had to negotiate 2000 feet of water passage to reach the main, dry passage. At that point they stopped to remove the tops to their wetsuits. Porter then proceeded while Anderson stayed to empty his boots of gravel. He had just finished tying the second bootlace, about 30 minutes after leaving the water, when he smelled smoke and felt something hot against his side. It took one glance to see that his wheat lamp battery was burning.

As he removed the belt the light started to fail so he turned it off and fumbled for his backup mini-mag. All he could think was "When is it going to blow?" The charger plug had melted completely out of the top. He scrambled to get a screwdriver out of his pack and separated the charger plug wires which were by now burned bare. After taping the wires Anderson found there was still some charge left in the battery — the light still worked. He continued with the trip.

Reference: Bruce Anderson "Equipment Failure Report" *Internet Caver Forum* (Caver Computer Network), entered by Stephen Jung, transmitted by Oren Tranbarger, 7-29-92.

Comments: Anderson believes that nylon screws in the vent holes kept the battery from exploding. This model of Wheat lamp, the 5800, charges via a plug in the battery, and this is what had shorted. Anderson has now switched to a model that charges through the headpiece, and believes the 5800 is not suitable for caving.

SHELTA CAVE, ALABAMA

April 15
Ac — caver fall

On Wednesday, April 15, following a meeting of the Executive Committee of the Huntsville Grotto, a group of six cavers visited Shelta Cave, on NSS property in Huntsville, Alabama. They entered the cave at about 9:15 p.m. and toured the Big Room. When they headed for the East Room they didn't take the usual route. The route they chose traversed up high and has a six-foot climb-down with slick surfaces above a 33 foot breakdown pitch to the floor of the East Room. Chuck Lawley (52) did this climb-down, but when he turned to help the next caver, he took a step back, lost his footing and fell down the 33-foot slope.

The others reached him quickly and it was obvious he was badly injured. It took only minutes to send cavers out to call for help. Huntsville Cave Rescue and other personnel began to enter the cave at 10:20 p.m. A haul line was rigged down the 30-foot entrance (ladder) drop, about 70 feet horizontally and down a 50-foot slope. Lawley, a fireman, was conscious and able to aid his rescue. The site of the accident was about 300 feet horizontally and 80 feet vertically from the entrance. Once they started moving the victim it was only 25 minutes before he was out, at 12:30 a.m.

Reference: Bill Torode *Shelta Cave Accident* Report to the August 3, 1992 meeting of the BOG of the NSS, 4 pages.

Comments: The victim had suffered eight broken bones: three ribs, a wrist, a knee and two leg bones. The report states that a rope was not being used at that point as "it would not have helped in that spot." It seems to me that if you have a potential fall with potential consequences as great as these, you must either find a way to protect the move, or back off.

SAN RAMON RIVER CAVE, GUATEMALA

April-A
Do — snake encounter

An expedition was pushing the Cave of the San Ramon River in the Department of Huehuetenango in Guatemala. A group of four had pushed and mapped downstream from a middle entrance and was exiting. At a canal bordered by a complicated set of ledges that had been traversed when the party went downstream, Steve Knutson tried to go upstream in the canal. About halfway he found the current too strong so he climbed onto the ledge. As he heaved himself onto the lowest tier, which was the outer lip of a grind hole, he felt his bare right hand hit something that gave, falling into the grind hole. Looking down he could see a medium sized snake with a wedge head and distinctive markings. He later found a picture of the snake in a book on pit vipers, in the Fer-de-Lance section. The snake may have been unaggressive due to a long stay in the cave.

Reference: Steve Knutson *Personal Communication* April, 1992.

SAN RAMON RIVER CAVE, GUATEMALA

April-B
Co — infection

In April, an expedition was trying to complete the exploration of the cave of the Rio San Ramon in the northern part of the Department of Huehuetenango, Guatemala. The constantly wet conditions in the cave, plus the humid conditions outside the cave in the tropical lowlands, caused various infections and ailments that resulted in varying amounts of lost time.

John Wyeth suffered a swollen lower arm, Ron Ryan had lesions that seemed to reappear on different parts of his body just as they healed elsewhere, and Dan Clardy suffered swollen feet that were so bad he couldn't get his caving boots on. Still, on the important last push and derig trip, there was Clardy, caving in bare feet.

Reference: Steve Knutson *Personal Communication* April, 1992.

DIAMOND CAVE, NEW MEXICO

April 18
Ar — rock fall

On Saturday, April 18, a group of three, Jeff Forbes, Elizabeth Earl and Linda Starr (43), visited Diamond Cave in New Mexico. They intended to survey, as part of the GYPKAP Project. They were all experienced vertical cavers and expected difficult conditions — previous survey crews had encountered waterfalls over loose breakdown at downclimbs, rather than the usual winding horizontal passage of GYPKAP caves.

On this day the cave was without streams but still wet and cold. They put hand lines on exposed pitches and took up the survey where it had ended, about 400 feet into the cave, just short of a downclimb. After Forbes had checked ahead for stations, they began. The second station was at the top of this drop, on a slab 1 x 1.5 x 2 feet that was wedged in place by other rocks.

Starr was head chain and positioned herself at this station to give a light for the sighting of instrument person Earle. While this occurred, a rock was dislodged and heard to fall by Starr.

It was then decided to backsight this station from the next one, so Earle climbed down. As she did so, a foothold broke, but she had three other points of support and did not fall. Starr also climbed down and was marking the next station with flagging while Forbes gave a light for the backsight. The station was on a large breakdown block near the center of the passage, about 10 feet from the base of the drop.

Forbes was holding a light "on station" when a rock suddenly fell from about five feet below him. He yelled "Rock!" but there was no time for those below to do anything. The rock hit a ledge, broke into pieces, and one of these, about 1 x 2 feet in size, grazed Starr's left leg, while another, 1 x 4 inches, struck her left foot.

There was some confusion at first, since Earle feared that Forbes had fallen. When Forbes reached the bottom he found Starr clutching her leg and screaming in pain. They removed her boot and found the foot badly bruised, but there appeared to be no broken bones. The boot was replaced and the laces loosely tied. Abandoning the survey, they made their way out. Starr used a ropewalker rig on two short roped climbs (one had been done free on the way in) and was otherwise able to crawl through the horizontal passage, out the entrance and up, out of the sinkhole to the vehicle, arriving about an hour after the incident.

Reference: Linda Starr *NSS Accident Report* undated, 2 pages.

Comments: Caves are hazardous places and rock fall is one of the prime hazards. When you are in a cave like this one appears to be, you can't be too paranoid, too vigilant. The more hazardous the cave, the higher the level of caving to which you must aspire.

VALHALLA CAVE, ALABAMA

April 26
Ac — caver fall

On Sunday, April 26, two cavers, Roger Mankin and Lloyd Campbell, visited Valhalla on Crow Mountain in Alabama. They had explored in this cave on three prior occasions. They rappelled the 240-foot entrance drop and explored for a while before heading for the Mega Dome area. About 200 feet short of the dome they came to a ten foot ledge with exposure into a 30 foot pit with a small stream at the bottom. They had crossed this ledge on a prior trip, scooping holds in the sloping mud along this ledge. A belay would have been nice but a bolt would be necessary to anchor a belayer. Since no one else had placed a bolt, they didn't want to "be the first to scar an otherwise pristine cave."

Campbell started across first, grabbing the only really good hold and jerking on it to reassure himself of its strength. He moved along, facing in. In a crouching position he reached ahead to the other hold, a pinch on a rock projection. At this point the first hold broke and the pinch hold was not good enough to support the shift in weight. Campbell fell down the pit, landing on his left side.

Mankin called to the victim and got no answer, so he found a way to climb down. Campbell was conscious but had suffered chest injuries and felt short of breath. He found he could move his arms and legs. Mankin arrived and after 20 minutes the victim was able to sit up. They concluded he had suffered a few broken ribs and a sprained wrist. Campbell urinated and noted a lack of blood.

They proceeded out of the cave, Mankin helping when he could. With all the frequent rest stops, it took six hours to reach the base of the entrance drop. After resting they tandem climbed up; Campbell felt nauseated near the top but was able to keep from vomiting. Mankin went past him and over the lip and helped Campbell over that last obstacle. They proceeded all the way home to Murfreesboro, Tennessee, some 14 hours of travel, before presenting themselves at a medical facility. Campbell spent the next 18 days there, having experienced two broken ribs, a collapsed lung and a broken wrist.

Reference: Lloyd Campbell "TCBG Member Injured at Valhalla" *TCB Passages* (Tennessee Central Basin Grotto, NSS) 2:2, April-May, 1992, p 13.

Comments: Having thought about it for 18 days, Campbell believes the only safe way to cross the pit is to place a bolt at either side and rig a traverse line. Amen.

CLARKSVILLE CAVE, NEW YORK

April 29
Be — equipment failure

On Wednesday, April 29, at 1:30 a.m. four members of the rock band "Overture" visited Clarksville Cave in New York, after an evening "gig." Inside, Kenneth Wilke (29), armed with only a flashlight, crawled into the Corkscrew headfirst. He was unable to back out so he crawled on. Emerging from the crawl, his light soon grew dim so he sat down to wait for help.

What he didn't know is that there is walking passage involving a crotch-deep pool leading back to the start of the Corkscrew. His companions waited for several hours before exiting and notifying the Sheriff. Cavers were called and located the missing spelunker, on the far side of the Corkscrew, waiting in the dark with dead batteries.

References:

1) Editor "Northeast News" *Northeastern Caver* 14:2 June, 1992, p 37.

2) Chuck Porter *Personal Communication* March 21, 1993, 1 page.

CAVE DISAPPOINTMENT, ALABAMA

Spring-A
Be — equipment failure

An incident was reported where a teenager had descended the 55-foot entrance drop on a "frayed polypro rope" and was unable to ascend, requiring aid.

Reference: Jeff Harris *Cave Ownership and Management Report* Report to the August, 1992 BOG meeting, NSS, 1 page.

J-4 CAVE, PENNSYLVANIA

Spring-B
Cc — caver fall

On a cold, snowy Saturday in the Spring, several groups of cavers visited J-4 Cave in Pennsylvania. The entrance to this cave is on a quarry face, some 35-40 feet up. There are ledges leading to the entrance and it is regarded as easily climbable. The group in question was a joint party with members of Loyalhanna Grotto, Pittsburg Grotto and the Explorer's Club of Pittsburg, some 14 in all. A Boy Scout group preceded them and rigged a handline up to the entrance culvert which this group used.

On the way out, however, the scouts had exited and taken their handline, so the group had to downclimb the face without it. They did have some webbing and rigged some sort of etrier line that climbers could clip into as they proceeded, but this was painstaking and one caver declined to clip in. This caver (female, about 25) got down about 15 feet, at which point she slipped, let go of the webbing and fell 25-30 feet to the bottom of the face.

She suffered only a bruised tailbone, sprained ankle and bruises. Apparently more serious injuries were prevented by the four to five inches of snow on the ground, a tree partway down that she hit, slowing her fall and directing her away from a large tree, and the fact that she didn't fight the fall but relaxed and took the tumble as it came. She was able to walk to the vehicles under her own power.

Reference: Kim Opatka *NSS Accident Report* June 3, 1992, 3 pages.

Comments: Opatka voices the retrospective obvious — they should have rigged their own handline and could have had a much more usable line by undoing the etrier loops to make a

continuous, longer line that they then could have tied at each end, making a handline that would have been easy to clip into. Opatka also reminds us that a caving party is only as strong as its weakest member ...

CON CAVE, PENNSYLVANIA

Spring-C
Dc — caver fall

In the spring on a Friday evening, some enterprising cavers had a trip to Con Cave, in Westmorland County, Pennsylvania. It was cold and snowy out and everyone wanted to get into the cave. Unfortunately, there is a set of climbdowns just inside, and three of the five in the group were beginners, and needed to be coached down the climbs. One of these (female, about 25) apparently would not wait and went ahead. She fell a short distance but suffered only bruises and refused any aid.

Reference: Kim Opatka *NSS Accident Report* June 3, 1992, 2 pages.

CLARKSVILLE CAVE, NEW YORK

May 3
Bs — stuck caver

On Sunday, May 3, a group of ten novice cavers from Northwestern University went on a "high-speed" tour of Clarksville Cave in Albany County, New York. They exited through the very tight Thook Entrance at the end of the Pictograph Crawl, only to discover they were now only nine. Jasmen Hamzehzake (28) had gotten through most of the Snake Passage, just before the Pictograph Crawl, but stuck fast in the lower crevice near the end, only 25 feet from the entrance.

It was in fact four hours before caver rescuers could free her. While trapped she reportedly became somewhat claustrophobic and panicky.

Reference: Editor "Northeast News" *Northeastern Caver* 14:2 June, 1992, p 37.

CEMETERY PIT, ALABAMA

May 9
Ce — equipment theft

On Saturday, May 9, a group of eight cavers visited Cemetery Pit in Alabama. It had rained the day before and they could see no new footprints as they hiked up the mountain, so they figured they had the cave to themselves. They used both rig points and all were down the pit by 12:30 p.m. The ropes were a Bluewater on the left rig point and a Pigeon Mountain Industries rope on the right; the BW was too short, but they were able to tie off the PMI at the bottom.

They proceeded into the cave over Earl's Ledge and on to the Waterfall. They then backtracked and took a route through the 3-D Maze to the Bypass Passage. They rested and then split up, part of the group climbing up and then down to the bottom of the entrance pit while the others retraced part of the route already traversed to get back to the pit. The first person back to the pit got the thrill of finding the ropes missing.

The others arrived and one caver climbed to a large ledge somewhat above the floor, where he found the BW going up the side of the pit with the excess in a pile on the ledge. They exited on this rope. The first one up discovered that some of the carabiners used in the equalizing multiple rig at the top were gone, and redid the rig before the rest ascended. Apparently the rope had been pulled up and then lowered back down. The other rope was gone. A report was filed with the county sheriff.

Reference: Mark Jones "Theft At Cemetery Pit" (originally transmitted on Internet Caver Forum, a caver computer network) *TCB Passages* 2:2 April-May, 1992, p 14.

Comments: The PMI was white with a red marker; the five carabiners were SMC bright finish D's with a small "GT" engraved on the flat just above or below the gate. How the secured rope was hauled up is not addressed in this report, but Jones does say he doesn't think the thieves descended the pit; perhaps it was not in fact tied securely. What would you do if you found someone stealing gear?

MARSHALL'S CAVE, VIRGINIA

May 16
Br — rock fall

On Saturday, May 16, a group of five cavers entered Marshall's Cave in Virginia. Mike Mehta and Tony Petrilla led three inexperienced cavers. The leaders had been in Marshall's at least ten times before. They headed for the back part of the cave, intending to reach the stream. It had rained a lot recently and the cave seemed wetter than usual. At one point Petrilla stepped along a ledge and part of this gave way, sending 800-1000 lbs of rock and mud downslope.

Mehta was below Petrilla but was not directly in the path of the rock fall. Still, they took this as a sign that the cave was more dangerous than usual, and aborted the trip.

Reference: Mike Mehta *Caving Accident Report* undated, unpublished, 1 page.

UNSPECIFIED CAVE, MISSOURI

May 20
Bcs — caver fall, stuck

On Wednesday, May 20, there was activity in a cave about a mile west of Ash Grove in northern Greene County, Missouri. One of the explorers was Ryan Graves (16). Graves weighed 280 lbs and was dressed in cut-off shorts and a t-shirt. He had no helmet and only one light source. At one point he slipped and slid into an opening too narrow to allow him to fall all the way to the floor. Thus he was wedged at his hips and ribs with his feet suspended above the floor, a little below.

His companions went for help and firemen, and others used hammer and chisel to free him. He was stuck for some two hours.

References:

1) Editor "16-year-old gets stuck in cave hole" *Springfield Newsheader*(?) May 24, 1992.

2) Ken Olive *Personal Communication* June 13, 1992, 1 page.

CORKSCREW CAVE, ARKANSAS

May 24
Ac — caver fall

On Sunday, May 24, a group of six Buffalo River Grotto cavers entered Corkscrew Cave in Arkansas. Near the bottom of the cave is a 20-foot waterfall. Three of the cavers, Brian Stone (31), Rick Shaw and Larry Gray, were on a ledge about 30 feet above the falls and were able to climb down until they were in essence alongside it. The other three made their way around and down to the base of the falls. Suddenly the ledge under Brian Stone collapsed and he fell 20 feet, landing in shallow water just below the falls, landing on all four limbs with his head hitting the floor as well.

He was in pain and unable to move himself out of the water, but companions were right there to aid him to a position on the bank. His ankle and wrist were in pain, so they loosened the shoe and splinted the wrist. He was somewhat shaken and starting to get cold from the wet conditions and the shock of the accident. They decided he could move on his own, so they made their way up the narrow climbs to the entrance. The victim was able to proceed under his own power with the occasional push and/or pull from a companion at a climb. They had a rope but did not use it, arriving at the entrance about 45 minutes later. He had suffered three cracked bones in his foot and a severely sprained wrist. His helmet surely spared him a potentially fatal head injury.

References:

1) Billie Stone "Corkscrew Cave, May 24, 1992" *Inner Mountain Press* (Buffalo River Grotto) 1:1 July, 1992, p 9.

2) Billie Stone *NSS Accident Report* undated, 1 page.

WAYNESVILLE CAVE, MISSOURI

May 23-25
Be — heel hang

On Memorial Day Weekend, three soldiers from Fort Leonard Wood entered Waynesville Cave near Waynesville, Missouri. One of them, Danny Gay, was descending a pit on a rope, hand-over-hand, when one foot got tangled in the rope and he ended up hanging from that foot. He was unable to right himself as the rope and his hands were muddy.

His companions were also unable to aid his predicament, so they went for help. The local emergency medical service responded and helped Gay out of his situation and out of the cave. He was treated for mild hypothermia.

Reference: Ken Olive *Personal Communication* June 13, 1992, 1 page.

BRAMMER CAVE, WEST VIRGINIA

May 25
Ac — caver fall

On Monday evening, May 25, Howard Miller and Paige Dempsey (late 20s) entered Brammer Cave, in the Flattop Mountain area of Summers County, West Virginia. The cave has about 200 feet of horizontal passage between walk-in and pit entrances. Visitors normally enter via the walk-in and climb out the pit entrance, and these two apparently intended the same. They made their way to the pit, burning an oily rag for light. Dempsey got about 40 feet up in the climb out before he fell, suffering serious head injuries.

His companion went for help, and it reportedly took rescue personnel about 4-1/2 hours to get the victim out. He was hospitalized with a blood clot in his brain.

Reference: George Dasher "Summers County Caving Accident" *The West Virginia Caver* 10:4 August, 1992, p 15.

CON CAVE, PENNSYLVANIA

May 31
Ac — caver fall

At about 1:30 p.m. on Sunday, May 31, a group of two, Chris Guarlotti and Jeanette Coughenour (14) entered Con Cave, an 800-foot-long cave among a group of caves called the Bear Caves, in Derry Township, Pennsylvania. Guarlotti had a helmet-mounted light but Coughenour had only a flashlight.

About 350 feet from the entrance, they were in an upper level crawlway when she tried to back feet first out of a crawl and climb down a vertical pitch into the Rotunda Room. This is normally considered a roped drop. She fell, striking a ledge about 21 feet down, and then fell another eight feet. Guarlotti apparently was able to climb down and found his companion to be incapacitated from an injured right ankle, but otherwise all right. Guarlotti went for help and then returned to wait with the victim.

Firemen, National Cave Rescue Commission, and Westmoreland County Tactical Rope Rescue Team were called. Rescuers arrived and the victim was put into a harness, so she could be hauled up vertical pitches and strapped into a SKED. She had been wearing a sweatshirt and had gotten a little cold, so a space blanket was wrapped around her. She was hauled vertically to the top of some breakdown blocks and then transported horizontally to the entrance. There were enough rescuers that they could form a human roadway, passing the SKED along their backs from one to another. There are short pitches in a very narrow passage near the entrance where the victim had to be turned sideways to make it through. The evacuation was complete by 8:15 p.m. The victim was found to have suffered mild hypothermia and fractured pelvic and ankle bones.

References:

1) Kim Opatka "Girl Breaks Ankle in Cave" *The Latrobe Bulletin* 90:138 June 1, 1992, p 1, 3.

2) Martin Kinnunen "Trapped teen fought pain, terror, cold" *Tribune-Review* June 2, 1992, pp A1, A5.

Comments: A mock rescue in these caves a few weeks before was given credit in greatly aiding the real thing.

LONG-COCK CAVE, PENNSYLVANIA

Summer
Ac — caver fall

On a supervised (grotto?) trip to Long-Cock Cave, in Huntington County, Pennsylvania, the trip leader was unaware that a guest from a different grotto was on her first wild cave experience. She thus apparently was not closely watched and reportedly fell into a 20-foot pit, suffering a broken ankle. Some of the cavers in the group had National Cave Rescue Commission training and conducted her rescue.

Reference: Editor "Cave News" *The Cave Hunter* 8:1&2 April and August, 1992, p 2.

KILLIANSBURG CAVE, WEST VIRGINIA

June
Bs — stuck caver

In June a Boy Scout outing was hiking along the C and O Canal and camped one night at Killiansburg Cave. This cave and others in the area are small. Some of the scouts visited Killiansburg Cave and Brian Quintanilla (13) noticed a passage that seemed to connect to a second entrance. He couldn't get through from that side, so he went around to the other entrance and tried it that way. The passage was tight with a plan view like an "L." Quintanilla endeavored to enter the passage, but found he had to hyperextend his knees to get past the tight bend. He pushed on regardless and when he popped through, he was trapped — he could not continue and the move in reverse did not seem possible.

His friends tried to help but could not, and the victim became a little panicky. The scout leader, Quintanilla's mother, was summoned and was able to reach his feet, offering at least a little comfort. She decided he might be able to get out if he carefully duplicated his moves in reverse. Upon questioning him, she found that he was in the same position as when he had popped through. They discussed the situation and with the mother pulling on his pants and feet, and the victim enduring the pain of forced hyperextension of his knees, Quintanilla was dragged back through the constriction. Once free he thrashed his way past his savior, in a panic, to get out of the cave.

Reference: Art Dodds "Cave Rescue at Killiansburg Cave" *Subterranean Sun* 22;4 July/August/September 1992, p 4.

SLOAN'S VALLEY CAVE, KENTUCKY

June 13
Bhx — hypothermia, exhaustion

On Saturday, June 13, two novice cavers entered the Post Office Entrance of the Sloan's Valley Cave System in Pulaski County, Kentucky. They proceeded to the 25-foot drop to the Big Room and descended the rope hand-over-hand. Proceeding, they reached Echo Junction but found it flooded, with wall-to-wall deep water. They turned back, but after five hours in the cave, they were unable to climb the Big Room rope.

Returning to Echo Junction they did the swim, hoping to continue on to the Garbage Pit entrance. The cold water further sapped their strength and they were just able to make it to the far shore. Continuing, they ran into another swim, in the First Lake Room. At this point they

gave up and realized they would have to wait for rescue.

Fortunately, a second party of three cavers appeared on the far side of the lake. Hearing of the situation, two of that group exited the cave and borrowed three life preservers from the landowner. Returning to the Lake Room, Jon Jasper swam across and assisted the novices. They were conducted out of the cave, suffering only from hypothermia and exhaustion.

Reference: Anon. "Sloan's Valley Cave System, KY" unpublished report, undated, 1 page.

Comments: A situation like this is ripe for disaster. Many people would find it difficult to resist the urge to continue to try to get out. This group made an intelligent decision and stuck with it.

CAMP'S GULF CAVE, TENNESSEE

June 20
Ac — caver fall

On Saturday, June 20, a group of 14 cavers, all from the East Tennessee Grotto, NSS, entered Camp's Gulf Cave in Van Buren County, Tennessee. The cave is horizontal with a lot of breakdown, having a coating of either slick mud or "chemical weathering products." They had been in the cave about two hours when Phil Barb (28) slipped or tripped and tried to catch his fall with outstretched arms.

The victim usually wears gloves, but on this occasion he had left them in his car. His left hand grazed a mineral-encrusted breakdown block as he fell, resulting in two deep gashes. One of the party was an EMT and she examined, cleaned and dressed the injury. The dressing was done with scrounged material — cloth and duct tape. The bleeding was stopped so the victim left the cave under his own power, accompanied by two companions. At a medical center he received 15 stitches and a tetanus shot.

Reference: Lee Trowbridge *NSS Accident Report* July 5, 1992, 2 pages.

MCBRIDES CAVE, ALABAMA

June 28
Ac — caver fall

At noon on Sunday, June 28, a group of four entered McBrides Cave in Jackson County, Alabama. They were Darcy Duin (23), Jeff Dilcher, Bill Howcroft, and Nancy Hagstion. The upper entrance to the cave is near the top of a mountain near the Tennessee/Alabama border, just north of Stevenson. The cave is nearly 500 feet deep with ten vertical drops, and there is a lower entrance, apparently allowing a pull-down through trip. They intended to spend about four hours in the cave, doing the through-trip. At about 3 p.m. Duin slipped on a slick rock and fell about four feet, injuring her left ankle.

She was unable to proceed, so Dilcher exited the cave and went for help, hiking about a mile down the mountain to the Lloyd farm, the cave owners, and calling authorities. Walker County (Georgia), Hamilton County (Tennessee) and Madison County (Alabama) Cave Rescue Teams were called out as well as the Ider and Rainsville Rescue Squads, some 70 rescuers in all. This was all coordinated by Jackson County Sheriff's Department. The rescue was difficult because of the many vertical drops, wet conditions in the cave, and the presence of several constrictions. The victim was conscious and able to assist rescuers. The evacuation took about 24 hours. The ankle proved to be fractured.

Reference: William Bynum, account from *The Sentinel* (Scottsboro, Alabama) entered into *Internet Caver Forum* (caver computer network) by Jeff Dilcher, August 3, 1992.

J-4 CAVE, PENNSYLVANIA

July 4
Be — equipment lack

On Saturday, July 4, a group of two cavers, Allen Scholl and Gerry Barsky, visited J-4 Cave in Pennsylvania. In the cave they encountered three groups that were without helmets or other cave gear, using flashlights for light. One of these groups were encountered at the Wedding Cake with two of their four lights failing. The cavers asked if they wanted help finding the entrance and the spelunkers readily agreed. They were led out, traversing the Highway, a ledge 15-20 feet above the floor, in the process.

Reference: Al Scholl and Gerry Barsky *Personal Communication* July 13, 1992, 2 pages.

CATHEDRAL CAVE, ARIZONA

July 5-A
Ace — wooden ladder

On Sunday, July 5, a group entered Cathedral Cave near Ashfork, Arizona. This included George Garcia, Jr, and his family, Jim Swan (38), a program producer for TV station KTVK in Phoenix, and a photographer/cameraman. They wanted to film in the cave for a program on caves in Arizona. The entrance of the cave apparently leads to a 30-foot vertical drop which was equipped with a wooden ladder. Garcia and family descended and Swan started down. He got about 10 feet down when the ladder collapsed and he fell the 15 or 20 feet to the floor, suffering an obviously broken left leg.

Enough of the ladder remained that they could use it and self-rescue. A harness was put on Swan and a belay from above was attached. He was able to climb the remains of the ladder and was hauled up the rest of the pitch. He was treated at a medical facility where the leg proved to be fractured in two places.

Reference: Jim Swan *NSS Accident Report* undated, 2 pages.

Comments: Too bad they weren't filming at the time. Swan admits the ladder should not have been trusted. He also notes the haul up the top part of the pit was facilitated by people not of their party who chanced to be there. A wooden ladder should be regarded as an interesting historical artifact, nothing more.

MCFAILS CAVE, NEW YORK

July 5-B
Bhx — exhaustion

At about noon on Sunday, July 5, a group of four cavers visited McFails Cave In New York. They were Art Rafferty, Jane Prendergast, Harry Brandle and Jason Brandle (14). They were all wearing wetsuits and each had their own vertical rig. They intended to reach the Northwest Junction, and the Ack's Shack Entrance drop was rigged in case they wanted a quick way out.

They entered the Coeyman's Dome Entrance, finding the waterfall to be negligible. The midpit was comparable to a heavy rain. Apparently they stored their vertical gear here, as the remaining drops are short and were rigged with etriers. They did 8- and 12-foot drops via these etriers and did one upclimb to view formations. At about 5:30 p.m. they started out.

It soon became apparent that Jason was tired. They managed the two etrier climbs and proceeded to the entrance drop. Jason was now very tired and needed encouragement to put on his frog rig. Harry Brandle explained how to attach it to the rope and proceeded up. Jason tried to go next, but his seat ascender had been attached to his chest harness, and when he tried to ascend it was immediately apparent that something was wrong. He got off rope and they checked the rig.

Those at the bottom didn't know any better, so he tried again with the same results. Harry Brandle was unable to descend to see what was wrong, since in the process of repacking gear so that he was taking most of Jason's, his rack remained at the bottom. Rafferty tried rigging his rope walker on Jason, but he only got seven feet up before deciding he didn't like the way it was working. Rafferty managed to talk him back down, and they decided to send Prendergast up with Harry's rack so he could descend and get things straight. Meanwhile she would go and call for assistance, as Jason had now become nauseated and was starting to look as though he would not be able to make it up on his own. Prendergast also had trouble with her rig, apparently a ropewalker with a double bungie cord

setup. They rerouted the bungie and she headed up. As she went up, Rafferty attended to Jason, who seemed to be getting hypothermic. A head hole was cut in the bottom of a trash bag and put on him, and he and Rafferty sat huddled together, out of the waterfall spray.

Meanwhile, at about 9 p.m., another party of cavers stopped by to see how this group was doing. Prendergast was still ascending, apparently still having some difficulty with her rig. They immediately determined to rig for hauling and returned to their vehicle for more gear. Prendergast arrived at the top of the drop disoriented, experiencing bursts of shivering, and with no manual dexterity — her rig was removed from the rope by others. Jason was hauled up at about 11 p.m., verbally responsive but unable to form coherent sentences and unable to unrig. Rafferty ascended and had some difficulty derigging, admitting he was cold and tired.

References:

1) Harry Brandle *Accident Report* undated, 1 page.

2) Arthur Rafferty *Trip Report-McFails Cave July 5, 1992* unpublished report, July 17, 1992, 2 pages.

3) Peter Haberland *Incident Report* unpublished report, undated, 5 pages.

Comments: Haberland, one of the rescuers, is of the opinion that the group should have been discouraged from attempting the trip. I heartily agree. A cold, wet cave is no place to break in untried vertical rigs. Jason had never done vertical drops in a wetsuit, and the leaders might have kept better track of his physical condition — moving about in a wetsuit is more demanding than other cave clothes. Indeed, Rafferty admits Jason asked to leave earlier than they did. It is fun to introduce novices to caves that you know, but you must remember they will probably expend more energy doing the caving moves than you will, being familiar with them. All in all, this group was rather lucky not to have suffered dire consequences.

HIGH WATER CAVE, KENTUCKY

July 5-C
Cc — caver fall/rappel

At about noon on Sunday, July 5, a group of three cavers entered High Water Cave in Rockcastle County, Kentucky. They were Bob Dobbs and his two sons, Randy and Philip. They had decided to go in the upper entrance, do the through-trip, then retrace their path through the cave ascending back to the upper entrance. They had been practicing rappelling for a year and had recently practiced ascending using knots and a sit-stand rig. The trip would be the boys' first in-cave vertical work.

The entrance pit (30 feet?) leads immediately to a second, 10-foot drop, so the 50-foot rope was rigged on the lower side of the pit so it could serve for both drops. The father went down last; as he descended he somehow got off line, and about a third of the way down he slipped and did a pendulum, striking a pointed projection with his back, just behind the upper part of his right arm. He heard a "crack" and felt pain.

He continued the rappel but on the floor, when he tried to stand, he found it very painful. He began to feel faint and broke out in a cold sweat. One of the boys gave him some pain medication from their first aid kit, and he started to feel a little better. They decided to get him rigged for ascent; when this was done he felt fairly comfortable, so he gave it a try. The ascent went well but it took him 20 minutes to get over the lip. The boys followed without further incident. At a medical center it was found that he had suffered four broken ribs and a partly deflated right lung.

Reference: Bob Dobbs "Foiled by High Water Again" *The Electric Caver* 28:8 August 1992, p 3.

BEAVER FALLS CAVE, ALASKA

July 6
Cr — rock fall

On Monday, July 6, Dave Herron and Mark Fritzke were surveying in Beaver Falls Cave on Prince of Wales Island in Alaska. Fritzke was bridging a deep pool near the terminal sump when a large flake he was using for a handhold popped off and jammed between his hip and the wall. He was able to let the flake fall away without falling himself, but he soon discovered that the sharp edge of this slab had jabbed through his coated coveralls, two layers of polypro thermal underwear and the waistband of his undershorts, cutting his hip down to the bone. The injury did not incapacitate him.

Reference: Kevin Allred *Safety Concerns...* unpublished report, undated, 3 pages.

PULL THE PLUG CAVE, ALASKA

July 9
Dr — rock fall

On Thursday, July 9, five cavers were looking for a cave on Prince of Wales Island in Alaska. It was nearing the end of the day and they decided to check a sink they had passed earlier. This was a stream insurgence that looked rather unstable. Carlene Allred carefully descended and studied the rocks there. It looked like an entrance — a void could be seen under a choke of a half dozen rocks. This choke, however, seemed to be supporting the sides of the sink.

Cody Petterson (16) suddenly bounded down to the bottom and gave the plug a kick. The rocks immediately collapsed into the void; Petterson was barely able to catch himself with his arms. The rest of the sinkhole did not collapse and the two were able to climb back up.

Reference: Kevin Allred *Safety Concerns ...* unpublished report, undated, 3 pages.

Comments: One of the ultimate caver nightmares ... Carlene Allred feels she should have played leader and ordered everyone to stay out while she checked the sink. Most of the group was relatively inexperienced. There had been poor communication within the expedition, for this sink had already been checked out and pronounced too unstable to work on. Impulsive behavior is difficult to explain and must be resisted. Expect it in yourself and others.

HURT TREE PIT, ALABAMA

July 18-A
De — rappel gear

On Saturday, July 18, a group of six cavers visited Hurt Tree Pit, a cave in William's Cove in Jackson County, Alabama. The cave entrance is a 166-foot fault-developed pit with several ledges and boulder slopes, requiring at least two re-belays. At the bottom a canyon traverse over 50 feet of exposure leads to a 54-foot drop. Down this, water flow is encountered and followed through a belly crawl for 150 feet to an 81-foot, wet pit. Beyond this, they intended to push a lead that required a short leader climb.

Three cavers proceeded down these drops to start the climb. At the 81-foot pit, Deepak Chopra (20) applied his six-bar rack to the rope and backed over the lip. On rappel, things felt funny so he looked at his seat harness. Whoa! His rack was clipped into the belt of his battery pack, not his seat harness! He quickly engaged a safety ascender to the rope above the rack, unloaded the rack, and switched its attachment to his seat harness. He was then able to unload the ascender and continue the rappel.

Reference: Andy Porter *NSS Accident Report* undated, 2 pages.

Comments: The battery belt was one inch tubular nylon webbing, but the buckle was a sliding type with teeth that grip the webbing and reportedly not very strong. Luckily the victim weighed only 120 pounds. The victim was relatively experienced but had complained of fatigue on the hike to the cave, and this may have been the reason he rigged his rack wrong. Check your 'biner!

CHURCH CAVE, CALIFORNIA

July 18-B
Ac — caver fall

On Saturday, July 18, a group of nine cavers visited Church Cave in the Sierra Mountains of California. The itinerary was complicated: four rappelled the 140-foot Cliff Entrance drop into the Cathedral Room and once there, they were joined by another who soloed in via the Creek Entrance. The five then rigged two handlines for the use of four others who were entering via the Root Entrance. The groups planned to pass each other at the Formation Room, doing opposite crossover trips.

A few hundred feet before the Formation Room, the group of five was in a fissure passage about 20 feet high and six feet wide. At one point it is blocked at the bottom by breakdown requiring a 12-foot climb. Two climbed up and were being asked about a handline when Tim Goodwin started up. A foothold immediately broke and he fell three to four feet, landing on his behind on a rock embedded in the dirt floor.

He was in considerable pain and had suffered at least a serious bruise. They decided to try to "walk" him out the Creek Entrance. Two went on ahead to collect the other group while two helped Goodwin along. Climbing proved to be excruciatingly painful for the victim, and he had to be lifted over small boulders in a few places. At Passage Pit, where one must traverse the pit on a ledge, a rope was already in place. Goodwin was able to make the traverse on his own. Motrin was administered at some point in the proceedings, reducing the pain considerably. Goodwin was, in the main, kept moving with breaks to eat and drink. He was also able to climb the two handline climbs under his own power and exited about two hours after the fall. X-rays revealed a hairline fracture of the pelvis.

Reference: Richard Sundquist *Personal Communication* undated, 2 pages.

ESPEY CAVE, TENNESSEE

July 19
Be — light problems

On Sunday, July 19, two cavers entered Espey Cave in Tennessee to survey. In the main part of the cave they encountered a group composed of two men, two boys and a dog. One man was drinking a beer; the other held their only source of light, a Coleman lantern. They had no helmets or other caving gear. The cavers accompanied them for a bit to preach good caving practice. The lantern soon experienced problems and went out. The cavers got out extra lights and passed them around and escorted the spelunkers to the entrance.

Reference: Editor "Trip Reports" *TCB Passages* (Tennessee Central Basin Grotto) 2:3 June-July 1992, p 8.

CAROL'S CRACK, WEST VIRGINIA

July 22
Dc — caver fall

At about 1 p.m. on Wednesday, July 22, a group of six cavers entered Carol's Crack in Hardy County, West Virginia. All were wearing wetsuits. They reached the end by 6 p.m. and then decided they needed to hurry out. About three-quarters of the way out, one must step across a gap of four feet above a pit. Paul Gillis (35), the trip leader, had made this move on 12 previous trips. Yet, when he made the move, he hit his head on an overhanging rock on the far side. He rebounded from this and fell down the pit, sliding down the near-vertical wall feet first, face in to the wall. He fell 12 feet, landing on his feet, suffering only bruises to his shins. He was able to climb up, and they continued out without further incident.

Reference: Paul Gillis *NSS Accident Report* August 16, 1992, 3 pages.

Comments: Gillis had never noticed the overhanging rock before. Perhaps it wasn't there before but the cave didn't like being taken for granted ...

SLOAN'S VALLEY CAVE, KENTUCKY

July 25-A
Be — equipment lack

On Saturday, July 25, a group of eight, three adults and five teenagers, all novice cavers, entered the Sloan's Valley Cave System in Pulaski County, Kentucky via the 20-foot pit of the Post Office Entrance. They made use of a cable ladder rigged there by a group already in the cave. While they toured the cave, the other group left, taking the ladder. When the novices tried to exit, only two of the adults were able to chimney up. Other cavers using that entrance rigged a haul system and hoisted the others out.

Reference: Kirk Bristol *Sloan's Valley Cave System* unpublished report, undated, 1 page.

SLOAN'S VALLEY CAVE, KENTUCKY

July 25-B
Be — equipment lack

On Saturday, July 25, a group of seven novice cavers entered the Sloan's Valley Cave System in Pulaski County, Kentucky via the Garbage Pit entrance. They made their way to the Screamin' Willy's Entrance. They didn't have the gear to climb the pit and were too tired to return the way they had come.

Fortunately, a group of three experienced cavers from the East Tennessee Grotto were in the process of exiting that pit. One of the novices was allowed to use a rigged rope to climb out hand-over-hand. A wood and rope ladder was then rigged but the stranded cavers were on the Lunch Room side of the pit and could not reach it. Sean Gaherty then came upon the scene and got the help of cavers from Miami Valley Grotto. They rerigged the pit and Gaherty rappelled down and led the cavers to the proper side. They ascended the ladder with a belay consisting of an ascender on a standing line.

Reference: Anon. *Sloan's Valley Cave System, KY* unpublished report, undated, 1 page.

FAT MAN FILTER CAVE, ALASKA

July 26
Dr — rock fall

On Sunday, July 26, two cavers entered Fat Man Filter Cave on Prince of Wales Island in Alaska. It had been raining for two days. The cave entrance is an insurgence and flow was high. They managed to avoid most of the water while surveying. About 150 feet into the cave, one of the cavers noticed an occasional pebble or rock falling from the slope next to him. Just after setting a survey station on the face of a six- to eight-foot high bank of unsorted fill, the entire bank collapsed, cascading into the spacious passage, narrowly missing both cavers.

Reference: Kevin Allred *Safety Concerns* ... unpublished report, undated, 2 pages.

Comments: Allred feels some of these caves are actively expelling debris from glacial infilling and that such instability should not be unexpected. It may be that very minor disturbances could trigger such an instability.

GOOSE CHASE CAVE, ALASKA

July 28
Dr — rock fall

On Tuesday, July 28, Dave Herron and Kevin Allred were surveying and exploring in virgin Goose Chase Cave on Prince of Wales Island in Alaska. They had rigged a handline at the slot-like, 35-foot entrance pit. Another caver joined them in the chamber below the drop and a fourth started down, but had just gotten below the lip when two "basketball-sized" rocks came loose and onto his helmet and shoulder. Not knowing if the others were clear or not, he managed to

work them upwards until he could push them back over the lip of the pit.

Reference: Kevin Allred *Safety Concerns ...* unpublished report, undated, 1 page.

Comments: Allred had cleaned the pit but had done a minimum of work to preserve its mossy beauty. He feels he should not have been so aesthetically concerned.

SPIKE CAVE, ALASKA

July 29-A
Dr — rock fall

On Wednesday, July 29, a group of four cavers entered Spike Cave on Prince of Wales Island in Alaska. Three were surveying and the fourth, Pete Smith, climbed up the canyon above them to check a lead. When he was about 15 feet above Leo Zak he touched a large rock on a ledge. It promptly dropped away and he yelled "Rock!" The rock glanced off Smith's thigh and landed where Zak had been before he yelled.

Reference: Kevin Allred *Safety Concerns ...* unpublished report, undated, 1 page.

Comments: Don't climb above others and don't let people climb above you.

SHARPS CAVE, WEST VIRGINIA

July 29-B
Bx — exhaustion

On the morning of Wednesday, July 29, a group of 13, ten novices led by Marshall Homes, Dave Goldman and Eddie Burdette (42), entered Sharps Cave in West Virginia. This was reported to be a cave-for-pay group sponsored by Elk River Touring. The entrance is a small vertical squeeze (1.5 x 5 x 10 feet) and it is said it is tricky to fit through.

The entire group negotiated this, but upon entering the spacious main passage, Burdette was concerned about getting back out, so he and Goldman decided to exit while Homes took the novice group further into the cave. When Burdette tried the slot he couldn't make it and exhausted himself in the process. Goldman exited and, apparently on Burdette's suggestion, fetched a come-along and an additional caver, Gil Willis. Goldman reentered and put a harness on Burdette while Willis rigged the come-along to a tree. Using this they hoisted Burdette up the slot.

References:

1) George Dasher "Rockin' Chair" *The West Virginia Caver* 10:5 October 1992, p 11.

2) Marshall Homes *NSS Accident Report* undated, 2 pages.

3) Marshall Homes "A Trip into Sharps" *The West Virginia Caver* 11:2 April 1993, p 17.

Comments: Apparently the root cause of this incident is that the victim was overweight and out of shape. Homes suggests they shouldn't have taken him into the cave.

A later note in *The West Virginia Caver* asserts that no aid was required by Burdette in exiting the cave. If this is true, where on earth did this story come from? I believe aid was required.

EL CAPITAN CAVE, ALASKA

July
De — scaling pole

A scaling pole had been constructed by Pete Smith for checking high leads in the Alaska Room of El Capitan Cave on Prince of Wales Island in Alaska. The pole consisted of three hand-milled, 8-foot lengths of "excellent straight-grained" spruce dowel, rounded at the ends and fitted with connectors of two inch diameter pipe. A set of tether ropes was attached to the top as well as a line to ascend.

This was used successfully a couple of times but on its third use, Steve Lewis had ascended to near the top when the upper section broke where it enters the pipe connecting it to the next section. Fortunately, the upper section didn't break completely but hinged with the top jamming against the wall. Lewis was able to descend without further incident.

Reference: Kevin Allred *Safety Concerns ...* unpublished report, undated, 1 page.

Comments: Allred believes the pole had been set up at too much of an angle and Lewis might have grabbed the pole for support, thus stressing it laterally. As he points out, scaling poles are tricky to use and have strength only along the axis of the pole, allowing little force to be applied at any appreciable angle to the axis. That is, they should be set up as vertically as possible and one should only put force on the rope attached to the top.

SPANISH CAVE, COLORADO

August 14
Ac — caver fall

On Friday, August 14, a group of three cavers were camped on Marble Mountain, in Colorado, having backpacked in the day before. That day they wanted to enter Frank's Pit and do a through trip in Spanish Cave. They were Skip Withrow, Steve Lester and Jim Wilson (54); Withrow and Wilson had done the trip two years before. They climbed the slope to the pit. Apparently this short, tight pit is done as a free climb. Emerging from this you are on a small ledge eight feet above a steep slope.

Wilson entered and descended to the ledge where he collected the ropes and bags that were passed down. There was now insufficient room for the next caver so Wilson decided to move on. He started to climb down but lost his balance and fell. He struck his head right away and lost consciousness, apparently (from the blood trail) falling about 15 feet down the slope. He came to with blood streaming down his face and his left hand, having suffered obvious fractures or dislocations. He crawled five feet back up the slope where he met Withrow.

A rope was run in from outside, and the victim was put in a seat harness and a Jumar from that safetied him to the rope. With Withrow pushing and Lester pulling, the victim made his way up the climb, through the squeeze and out of the entrance. An antiseptic pad was applied to the scalp cut, kept in place by a bandage made from a shirt. They then hiked out the five miles to the vehicle and drove to a medical facility in Colorado Springs. Wilson had suffered a scalp cut requiring eight stitches, and two fractured metacarpal bones in his left hand, as well as various bruises and scratches.

Reference: James Wilson "Spanish Cave, Colorado" *NSS Accident Report* undated, 2 pages.

Comments: Wilson speculates his eyes were not adjusted to the dark, that his bifocals put his first step out of focus and that he was incautious. His helmet stayed on but must have been twisted about to allow the scalp cut.

LOST WORLD CAVE, WEST VIRGINIA

August 22
Dr — log fall

On Saturday, August 22, a group of cavers visited Grapevine Pit, an entrance to Lost World, a commercial cave in Greenbriar County, West Virginia. This is a 120-foot free drop that is cemented over at the top, leaving a 15-inch-square hole with a gate. Under the cement is a jam of rotting logs; several years ago they had cleaned this by knocking down all the logs they could reach.

George Dasher was ascending in a rope-walker and reached the hole at the top. He reached out a foot to get a hold and struggled a bit, trying to get through the small opening. When his foot touched one of the logs, it fell. He yelled "Rock!" twice, watching the log spinning end-over-end into the darkness. Susanna Clark was below, giving tension on the rope, and she dashed down the tour stairs off one side at the bottom. The ten foot by four to five inch log struck and damaged the 2 x 4 guardrail of a tour platform but missed Clark.

References:

1) George Dasher "Incident at Grapevine" unpublished report, August 26, 1992, 2 pages.

2) George Dasher "Rockin' Chair" *The West Virginia Caver* 10:5 October, 1992, p 11.

Comments: Giving tension or bottom belays is often dangerous. Whatever vertical system you use, practice it until you require no aid.

SITES CAVE, WEST VIRGINIA

September 4
Bxh — exhaustion, hypothermia

On Friday, September 4, a group of cavers visited Sites Cave in Pendleton County, West Virginia. The entrance pit is a 180-foot waterfall drop. A rope was rigged, let down and the group entered. When Art Fogel (early 40's) ascended he got about 70 feet up and arrived at the Fishhook, a finger-like, protruding rock. Here he found the rope was way off line, caught on the Fishhook. He could not get over it and became exhausted trying. Cavers above rigged a second rope, and Julia Smith descended and was able to lower Fogel to the floor. More rescuers arrived and Fogel, now suffering from hypothermia, was hauled up the drop.

Reference: George Dasher "Rockin' Chair" *The West Virginia Caver* 10:5 October, 1992, p 11.

Comments: The Fishhook cannot be seen from the floor and this rope problem is apparently encountered occasionally. It is reported cavers either descend and free the rope or work it off the projection and do a 20-foot pendulum, slamming into the wall.

CAVE ON PLATO BLVD, ST PAUL, MINNESOTA

September 25
AAb — bad air

On Friday evening, September 25, two teenagers, Annie Fries (17) and Jill Huntington (17) left the Fries home in Annie's car. They planned to go to a bonfire at a Burnsville park, but this fell through, and at 6:30 p.m. Huntington called home and obtained a half-hour extension on her 12:30 a.m. curfew. They failed to return home that night and were reported missing Saturday morning.

Saturday night some other St Paul youths visited a small cave near Plato Blvd and found their bodies 30 feet inside, face down and side-by-side. They were about 20 feet from a 10-foot incline leading to the entrance. They had apparently died of carbon monoxide poisoning. Indeed, the first officers on the scene were nearly overcome, and firemen brought fans to ventilate the site before an investigation could take place.

References:

1) Wayne Wangstad "17-year-old friends inseparable even in death" September 28, 1992.

2) Theresa Monsour "Cave entrances blocked after 2 deaths, but effort unlikely to deter many" September 29, 1992 — both from an unspecified Minneapolis/St Paul newspaper.

GENE LAMBERT CAVE, ALABAMA

October 2
Ac — dislocated shoulder

At 1 p.m. on Friday, October 2, two spelunkers, Brad Morrow (20) and Chase Thompson (20) entered one of the Gene Lambert Caves in Blount County, Alabama. They intended to be out by 5 pm. They had no helmets but may have had headbands to hold mini-mag flashlights. At one point they had reached the streambed and Thompson was standing on a rock. When he moved his feet, the rock shifted and he lost his balance. Trying to catch himself, he grabbed the nearest hold above and dislocated his shoulder. They tried to exit and made some progress, but Thompson was unable to make the climb at survey station B-12. They had read in a grotto newsletter of a scheduled trip to the cave the next day, so Morrow stayed with the victim and they waited for the grotto group to find them.

At around 11:30 p.m., friends of the pair called cavers and reported them overdue. They checked with Lambert, the landowner, and their vehicle was still there. At 3:30 a.m., rescuers arrived at one of the caves and found a pack, verifying that the victims were in that cave. They were found at 4 a.m. The rescuers rigged a simple seat harness on Thompson and belayed/aided him up the series of short pitches to the entrance. They were out by 5 a.m.

References:

1) Jimmy Sims *NSS Accident Report* undated, 1 page.

2) Jimmy Sims "Dangerous Assumptions II" *Birmingham Grotto Newsletter* November 1992, pp 4-6.

Comments: The shoulder was said to be a "bad" shoulder, apparently meaning it was prone to dislocation. The victim reportedly said it popped in and out six times on the way out of the cave. It seems to me a cave is no place for someone with a "bad" shoulder.

MYSTERY HOLE, TENNESSEE

October 9
Be — vertical problem

On the morning of Friday, October 9, a group of 12 cavers visited Mystery hole in Tennessee, with a 290-foot entrance shaft. This was a trip of the annual TAG "Cavein." A waterfall and the size of the pit, widening to 100 feet across at the bottom, makes for poor communications. They had two ropes of 300+ feet, so they rigged both the original and the newer waterfall-zone site. A dam and plug allows one to eliminate the waterfall until the reservoir fills up. This time was estimated to be about 45 minutes.

They put in the plug and rappelled in. After some exploration and lunch they started out, two tandem teams at a time, one on each rope. The plug had been removed after they had completed their rappels, and was apparently replaced just before a crew started up. Thus the wet rope team had 45 minutes to make it. Two cavers from Arkansas, Chuck and Carol, were one team, with Chuck in the lead, but when Carol got about halfway up the harness of the foot Gibbs of her ropewalker rig came loose.

She had problems getting it retied, so Kerry Rowland, last on the other rope, backed his ascenders down to help her. By the time he got there, she had fixed it with a section of shoelace and started climbing again. Within five steps her knee Gibbs came loose, but she was still supported by a chest ascender and the tied up foot Gibbs. Rowland told her to hold still, and did a pendulum to her rope and clipped onto it. He fixed the knee unit and gave her his backup foot ascender with a good harness. She continued, and was helped over the lip by Chuck, who had transferred to the tail of the rope, hanging just over the lip.

References:

1) Richard Walk *NSS Accident Report* undated, 2 pages.

2) Rick Walk "15th Annual TAG Fall Cave In" *Foresight* (Chouteau Grotto, NSS) 28:4 Winter 1992, pp 3-4.

Comments: Walk identifies several factors in this incident. When they rig a pit, others check the rig, but no one checks another's vertical rig. Carol's was tied together with parachute cord. She had not been on rope in 6-8 months. There was no trip leader, and this was a group of cavers who didn't necessarily know one another. After the trip everyone examined their own rig and there were several repairs made. The carrying of an extra ascender and a length of 8 mm cord, or some webbing, allows for problems like this.

The pendulum swing put added stress on that rope and its anchor—it was rigged on the older bolts, one of which was loose

Walk calls this "A near disaster on rope!" Luckily the core of the group, he and his friends, really had it together, and one of them was close by when the incident developed. Situations of

bad communications, like this big waterfall pit are inherently dangerous and should be afforded due respect—don't take them for granted; they don't like it and may unravel your seat harness.

WOOL HOLLOW CAVE, CALIFORNIA

October 24
Ac — caver fall

On Saturday, October 24, a group of 18 cavers on a Mother Lode Grotto outing visited Wool Hollow Cave in California. A hand line was rigged on the entrance pitch and two experienced cavers to set other hand lines and help novices down. The cave is protected as a bat habitat and trips are allowed only in October and March when the bats are least likely to be there. They split into subgroups and toured the cave.

As they began to exit, a group of three was following most of the rest out. At the small vertical chimney in the middle part of the cave they encountered the handline furthest from the entrance. Cavers ahead of them were close, so Marianne Russo asked Bob Horton to wait at the top while Debbie Cheris, a novice, free-climbed. She started up but slipped, and support from the line she was holding came with a jerk and injured her shoulder. Still, she did not fall.

Gary Cheris was able to climb up, and with cavers helping above and below, she made it back down. A harness was put on her; with this clipped into the rope for safety, she was assisted to the top of the drop. At that point Dennis Worthington, a doctor, arrived and immobilized the arm with duct tape. She was then assisted to the entrance drop and out of the cave.

Reference: Marianne Russo *Wool Hollow Rescue* unpublished report, January 7, 1993, 3 pages.

Comments: Apparently an old shoulder injury was aggravated, resulting in a painful muscle spasm. Otherwise the slip would have been inconsequential.

PORTAL CAVE, WEST VIRGINIA

October 26
Acr — caver fall or rock fall

On the evening of Monday, October 26, two cavers from Pittsburg Grotto were exploring in Portal Cave in northern Greenbriar County, West Virginia. At about 5:30 p.m. they were some 4000 feet from the entrance when "a breakdown block fell — or caused a caver to fall — and hurt one of the caver's legs." In any case Norm Snyder was incapacitated, so his companion left to get help.

After exiting the cave, he went to the Friar's Hole Preserve and encountered a number of very competent cavers. At about 9 p.m. they entered the cave and two hours later found the victim. The leg was splinted with a straightened ankle splint and duct tape; he was given some soup. The leg was swollen but not painful, so the victim was able to proceed out mainly on his own. He was hauled up a 20 foot climb and the 35 foot entrance pit using a pulley on the victim's seat harness and a safety jumar. he reached the surface at about 3:30 am.

Reference: George Dasher "Rockin' Chair" *The West Virginia Caver* 10:6 December 1992, pp 9-10.

Comments: Dasher attributes his information to one of the rescuers, a caver named Randy Rumor. *Randy Rumor???*

FLETCHERS CAVE, WEST VIRGINIA

November 14
Drc — fill collapse

On Saturday, November 14, a group of four cavers were surveying in the downstream maze area of Fletchers Cave in West Virginia. Buzz Rudderow took a 12 foot fall when an arch or bridge of alluvial material collapsed. He landed on his behind on stream gravel and amazingly suffered no injury. The alluvial material was reportedly very solid looking and had been crossed previously when one of the group reconnoitered ahead.

Reference: George Dasher "Fletchers" *The West Virginia Caver* 10:6 December 1992, p 21 (plus added margin notes).

BOURBILLON CAVE, MEXICO

November-A
Be — rappel problem

A group of cavers, some from the Windy City Grotto, and some from Mexico, were apparently visiting Bourbillon (sp?) Cave in Mexico. At a pit inside the cave, a caver rigged in and made the move back over the lip, only to discover that the locking carabiner holding the rack to the seat harness had webbing from the seat harness caught in the gate which was thus held open. An extra ascender and sling was lowered to this caver so the rack could be relieved of weight so the carabiner could be closed and locked. The caver's own ascenders were apparently buried in a pack.

References:

1) Editor "Near Miss!! Mexico" *Chouteau Grotto Newsletter* December 1992.

2) Richard Walk *NSS Accident Report* undated, 1 page.

BOBCAT CAVE, VERMONT

November-B
Bo — bear encounter

In mid-November a local caver visited Bobcat Cave near Bennington in Vermont. At the edge of his light he suddenly saw two glowing eyes, rather far apart. He felt it had to be a bear but didn't stick around to examine it closely or assess its mood ... he got out, quick.

Reference: Chuck Porter *Personal Communication* March 21, 1993, 1 page. Also a note in *Northeastern Caver* December 1992, p 122.

BANSHEE HOLE, TENNESSEE

November-C
AAe — ascending rig

In late November, four cavers entered Banshee Hole in Tennessee. They descended the 95-foot entrance drop and apparently did some exploring. The first caver to try to exit was apparently the least experienced and started up the entrance pit rope using a system like that illustrated in the flyer that used to accompany a new pair of Jumar ascenders — two ascenders, each tied to a foot with different length slings to each foot and a chest harness of webbing with a carabiner hooked to it in front. The rope being climbed passed through the 'biner to hold the caver upright. There was no seat harness.

The caver did alright until he got to a lip about eight to ten feet down from the top. This he was unable to pass and became exhausted. His companions, more experienced, were able to ascend to him and struggled for some three hours to either get him over the lip or back down, to no avail. At that point, they reinforced the chest harness with more webbing and one of them went for help. The Cumberland County Rescue Squad responded and reached the victim within 40 minutes of being called. When the victim was released from the chest harness he went into cardiac arrest and died.

References:

1) Don Lance "Accident in Tennessee" *Internet Caver Forum* (Caver Computer Network) December 8, 1992.

2) Buddy Lane *Personal Communication* January 17, 1994.

3) Randy Lane *Personal Communication* January 23, 1994.

4) Steve Hudson *Personal Communication* January 23, 1994.

5) Cumberland County Rescue, Crossville, Tennessee *Personal Communication* February 4, 1994.

Comments: The rescue personnel point out the fact that no one went for help at the start of the

incident. Such would have cut at least two hours from the time hanging in the harness.

It is speculated this victim may have died from compression syndrome (crush syndrome). This syndrome involves a change in blood chemistry when the body is under compression, or other circumstances that limits circulation in some major part of the body for a lengthy period. When the compression is released or circulation otherwise restored, the blood from that area conducts its accumulated toxins or acidity to other parts of the body. The result is either death or kidney failure. Apparently drugs and intravenous saline solution can be administered at the time of compression release to counteract the blood chemistry changes but the situation is medically complicated and must be handled by personnel equipped expressly for such a problem.

Apparently there is a difference between the effects of compression and restriction of circulation by a harness. Compression will cause toxins to be released from crushed cells and these will gradually accumulate, to be passed into the blood stream when compression is released while acidosis is the likely result from harness restriction of circulation, with the acidic blood causing shock when it is released to be distributed about the body.

It is reported that a few years ago, a practice victim who was wearing an ill-fitting wetsuit and strapped in a litter for an extended period of time had to be hospitalized for the effects experienced on his release from the litter, apparently due to this syndrome.

This is a life threatening condition that must be treated at the time of circulation restoration and is reportedly not as yet dealt with in EMT manuals. The syndrome has only recently been recognized in this country but has potential impact in many cave rescue scenarios. Anyone inert for a long period (several hours?) in a crawlway, hanging in a harness or trapped in some way is apparently in danger from this syndrome. French research seems to indicate that hanging inert in a seat harness for even ten minutes can produce another syndrome, that can cause death *before* release from the harness — see the essay on harness hang pathology in this issue.

ORGAN CAVE, WEST VIRGINIA

December 18
Bel — lost, lack of light

At about 4 p.m. on Friday, December 18, a group of three, Doug Lilly and two friends (all 16, all male), entered Organ Cave in Greenbriar County, West Virginia. Organ is a 36+ mile system characterized as a dendritic maze, mostly dry and horizontal. The cavers entered via the Commercial Entrance. From this the most accessible sections are the two major levels of the eastern part of the cave, each aligned along the Caldwell Syncline, each possessing multiple maze areas and cross-connecting in only a few places.

The group proceeded to the Throne Room, some 45 minutes in, and left a note saying they intended to visit both Sally's Waterfall, to the north in the Upper Stream Passage, and the Waterfall Room, at the southern terminus of the Upper Stream Passage. The cavers were equipped with helmets mounting electric lights but were relatively inexperienced. They toured for some time and started out.

Past the Throne Room they apparently made a mistake. After descending "A" Trail to the T Room, they turned down Straddle Alley instead of going out the Discovery Passage. When they came to the Blowhole they turned downstream toward the Hedricks Mainstream. Unfortunately the upstream passage is hidden by a keyhole — this would have led them to the Dog Room with which Lilly was familiar and which leads to the commercial section.

At some point their lights grew dim and they started resorting to Cyalume backups. With poor light they were truly lost and apparently wandered for some time.

At 1 am, when the teenagers failed to return home, George Sively, the owner of the commercial portion, was notified and called rescuers. There ensued a long, complicated series of searches in the cave, involving numerous local cavers. The searchers left cards as they traveled through the cave, telling the lost cavers to stay put — if they were moving about, and passed rescuers unseen, they might, to all intents and purposes, never be found. The Throne Room note was quickly found, and led the searchers to the wrong areas.

When a rescue group reached the mouth of Slate Creek, one of them climbed down to creek level and spied a patch of white — it was a note left by the lost cavers. It read "11:19 Heading south along stream. Saturday am. Doug, Danny, Marvin." One rescuer was sent out with the news while the other two headed south and downstream in the Hendricks Mainstream. They encountered the lost cavers about 300 feet downstream from the Hendricks-Organ Junction, near the mouth of the 1812 Overflow Passage. They were in good condition, but the Cyalumes were dead and only Lilly had a functioning light, which was dim and flickering. They were within minutes of being without light. They had wandered up both the Organ Mainstream and the Hendricks Mainstream and had twice been within feet of the Dog Room.

They were given water and lights and the five headed out. At the Organ-Hendricks Junction the victims were given more water and some food. They continued out, arriving at the entrance at about 3 am.

Reference: George Dasher "Organ Cave" *The West Virginia Caver* 11:1 February 1993, pp 12-15.

Comments: George Dasher: "If all the cavers who are male, in their teens or early twenties, and who get into trouble underground were somehow prevented from 'doing their thing' then we could cut the number of cave rescues by 90 percent.

"Obviously, the three teenagers should have had someone with them who knew the cave better. On the plus side, they had not only a compass, but also notepaper and pencils, and they kept their heads about them. Doug Lilly, the trip leader, has reportedly already attended a Greenbriar Grotto meeting and seems to be interested in learning from 'organized cavers.'

"On a very serious plus side, the large number of experienced cavers with an intimate knowledge of the cave system contributed greatly to the successful outcome of the rescue — despite the complexity and size of the cave system."

SCHOFER'S CAVE, PENNSYLVANIA

December 19
Ac — caver fall

On Saturday, December 19, a Boy Scout outing visited Schofer's Cave near Kutztown, Pennsylvania. Thomas Hoeft (11), one of the scouts, was climbing on the face above the entrance at about 12:30 p.m. when he slipped and fell some 25 feet, landing in the entrance. He landed on his feet but struck his head and was knocked unconscious. By the time the MedEvac arrived he had come around. At a hospital he was placed in intensive care in guarded condition.

Reference: Ron Devlin "Boy falls 25 feet at Berks cave" *Allentown Morning Call* (Allentown, Pennsylvania) December 20, 1992, pp B1, B11.

1992 DIVING INCIDENTS

CENOTE ON COZUMEL ISL., MEXICO

June
B — line trap

In June four divers were diving on Cozumel Island off Yucatan in Mexico. A dive was made by two of them into a cenote that had been dived only rarely before. They returned to report a huge room with fine visibility below 60 feet; they had left a line leading to it. The other two decided to go down and search the lower edge of this room for phreatic passage. They were Chuck Jones, a local Cavern Instructor, and R. D. Milhollin, a Cave Diving Section Cavern Instructor. They were equipped with double, back-mounted 80s and separate K-valves.

Milhollin led the dive in, tying off at the surface. They descended a short chimney and found the tied off end of a line almost immediately, much sooner than described by the other two. This led at a 45 degree angle down, toward the large debris cone at the bottom of the cenote. The line they were looking for was vertical, and they came to realize that this was a different one. It ended at 130 feet, tied off to a large log at the edge of the debris cone. Agreeing with hand signals to search there, Milhollin tied off the search line to the exit line and proceeded.

They passed through a low wall opening with a smooth ceiling into a slightly vaulted passage. As he entered this, it turned right to parallel the main room of the cenote, and the line had to be placed against the ceiling. As he moved along, even gentle kick strokes stirred up silt, and

1992 PRACTICE SESSION INCIDENTS

EL CAPITAN, YOSEMITE VALLEY, CALIFORNIA

September
AAec — rappel

In late September a group of cavers from Georgia rigged single, static ropes on El Capitan and Half Dome in Yosemite Valley in the Sierra Mountains of California. The lengths of the roped drops produced were 2600 feet for El Cap and 1800 feet for Half Dome. They proceeded to rappel and ascend these lines. For safety there was radio contact between the top and the bottom. The ropes were tied off to trees at the bottom to try to minimize off-line sway from wind gusts.

On El Capitan, Robert Moore put on his vertical gear and rigged his rack to the rope. He first applied only three bars but was advised against this, so he used four. He seemed to those nearby to be in a good frame of mind, with respect for the drop and maybe a little healthy fear. He crossed the edge rollers at the lip without difficulty and without aid from a haul system. He had given his camera to a companion with the plan that he would stop 10 feet down and have his picture taken. Then the camera would be given back to Moore for photos on the descent.

Moore descended the 10 feet and stopped; the photo was taken. As the camera was being handed down, Moore was seen to be "fooling around with his rack" when he suddenly started descending at a high rate of speed. A call was made for a bottom belay but this was not effective. A caver between the tie-off tree and the free-hang line of the rope heard the sound of the fall increase in pitch, indicating an increase in speed. The tree was seen to take a major shock load closely followed by another. Apparently Moore had struck the bulge on the face about 400 feet from the bottom. When the victim arrived at the bottom it was obvious that this blow had been fatal. A Search and Rescue team was called in to recover the body.

References:

1) G. Scott Smith "El Cap Death" *Internet Caver Forum* (caver computer network) September 29, 1992.

2) Harold Payson and Chris Anderson "Climber killed in Yosemite" *Internet Caver Forum* September 22, 1992, 1 page.

3) Chris Hudson, Pat Smith and Chris Anderson "More from rec.climbing on Yosemite death" *Internet Caver Forum* September 28, 1992,

Comments: Apparently the victim and a friend hiked up that day to do the drop and thus missed the benefit of having seen the drop rigged and others going over. He did see his companion go over using four bars without difficulty. The important factor seems to be the fact that Moore and his companion had practiced for this using a rope weighted to 250 pounds, much more than the El Cap rope weighed. Thus he would have the feeling that there would be more friction available than there was.

Also, Moore weighs 50 pounds more than his friend and should have been thinking about using more bars, not fewer (remember, he first tried to rig in with three). Using four bars might have been all right, but Moore's rack had spacers between the first two openings; the amount of friction these openings can give is thus limited. If the fourth bar was pushed or dropped down the rack, there might suddenly be insufficient friction. This is probably what happened. Moore reached the bottom with four bars rigged.

One report (1) is that the rack was homemade out of chrome-moly with the bend at the top poorly done by hand. The bars were stamped steel with spacers made of thin copper tubing. At the bottom the spacers were reportedly found to be jammed into the holes in the bars and the bars were fully jammed up to the top of the rack. The rack was also bent. The speculation made was that while descending the spacers failed and allowed the bars to come together, allowing the rappel to go out of control. This doesn't make sense — if the bars come together, there is more friction and more control; furthermore he was not descending when he lost control. If the spacers were jammed into the bars and the rack bent, I would guess that this happened when Moore hit the bulge near the bottom.

One other thing is apparent — Moore fought to get control. He apparently was able to get the rope looped across his body, perhaps like the old body rappels. Unfortunately he had gained too much speed. The body was found with a six inch deep groove cut up into the crotch and "everything from the shoulders on up missing."

visibility deteriorated. Jones went back to the log and held onto the line there waiting for a signal or for the silt to settle.

Milhollin continued until he could see that the silt floor was rising to the ceiling ahead. He checked possible leads and then turned around in what by then was near-zero visibility. He began following the line out but it led him into an impassable place. What was going on? He persisted and found himself wedged tight. This was his first experience in both zero visibility and extreme tightness and it was "not a good feeling!" Just then the breathing resistance began to increase, probably indicating low air in one tank—he would need to change second stages soon. This would be difficult in his immediate situation.

At that point it occurred to him what had happened—the line had not been properly secured at the turn and had moved into the edge of the bend where the ceiling met the floor: a line trap, a classic danger stressed at all levels of training. He thought the usual banalities: "What a stupid way to die" and "What will my friends say?" But he fought the panic and concentrated on the problem. He began to worm his way backward and began a repeated series of three tugs on the line, hoping Jones could help. As he was working his way out, still with no answer from Jones, the reel jammed. Just then came a return signal.

Jones had indeed followed the line in and seen the difficulty. Milhollin could feel him rerouting the line, and he began moving sideways following the movement. This seemed to his disoriented instincts to be the wrong way, but he kept hold of his logic and followed the line. After what seemed like hours, he felt a hand. He signalled "OK" and "turn" and in a few kick-strokes emerged into clear water.

Reference: R D Milhollin "Line Trap: an incident" *Underwater Speleology* 19:5 September/October 1992, pp 7-8.

Comments: R D Milhollin: "On reflection, I credit the exceptional training received at each level of the NSS-CDS progression, which enabled me to rationally analyze the situation and act appropriately. I further realized that the ability to remain calm and to control thoughts was at least partially the consequence of several years of cave diving in less demanding conditions, working up slowly to deeper dives, longer dives, more complex dives ..."

ALACHUA SINK, FLORIDA

July
AA — separation from line

In July two divers entered Alachua Sink in Alachua County, Florida.

This is considered an advanced cave dive under good conditions, and the summer algae bloom had occurred, creating extremely poor visibility.

A short distance in they realized they had missed the main tunnel and turned back. One diver, having last noticed his buddy in front of him, heading out on the line, reeled up the line. When he reached the surface his buddy was not there. He carried out several line searches but found nothing and went for help.

Rescue divers arrived quickly, hoping for a rescue of the lost diver, who should still have plenty of air. They conducted an extensive search in what they reported as the worst visibility ever encountered there. They even tried pumping in fresh water to get better visibility, to no avail. It took three days to find the body.

Reference: Editor "Recent Accidents" *Underwater Speleology* 19:5 September/October 1992, p 9.

Comments: The victim was a newly-certified cave diver and was carrying a small safety reel specifically recommended for lost-off-the-line scenarios. Editor H. V. Grey writes: "The exceptionally poor visibility made a difficult, advanced dive extremely difficult and advanced. The admonitions of highly experienced cave divers to build up experience slowly and conservatively cannot be repeated often enough."

NICKAJACK CAVE, TENNESSEE

August 15
B — stranded

On Saturday, August 15, two non-CDS, NSS divers entered Nickajack Cave, submerged in Nickajack Lake (a reservoir), in Tennessee. The cave is protected as a bat habitat and closed to unauthorized entry. The divers passed the chain-link fence at the flooded entrance and proceeded, illegally. They were hoping to catch catfish, which reportedly grow to lengths of 6-8 feet, weighing 200 pounds. Apparently they became separated and only one made it back out. He called for help.

The Tennessee Valley Authority opened the reservoir spillway on Sunday and lowered the level of the lake 2-3 feet. This exposed the top of the cave passage. On Sunday afternoon, six and a half hours later, Gant emerged, weak and nauseated. He had been in the cave for 16 hours, much of that spent about 1200 feet into the cave, holding to a stalactite with his head in an 8" high air space.

References:

1) Editor "Rescue in Tennessee" *Underwater Speleology* 19:4 July/August 1992, p 11, paraphrased from AP article "No Air, No Fish, But lots of Luck" *Miami Herald* August 18, 1992.

2) AP "Diver Freed From Cave After TVA Lowers Lake" *Boston Globe* August 18, 1992, p 25, obtained from *Internet Caver Forum* September 15, 1992.

HOLE IN THE WALL, FLORIDA

Late Summer-A
AA — regulator, silting

In late summer two divers entered Hole in the Wall in Merritts Mill Pond, Jackson County, Florida. One was a hard-core caver from Australia, with a little cave-diving experience, but he had not completed full cave certification. This was reportedly to be his last dive before leaving the country. His equipment, borrowed, included twin-mounted 104s with independent K-valves. He reportedly had never dived this cave before nor had he dived with his partner before. His partner was himself not very familiar with the cave.

They reportedly headed for Alfred's Room, diving on air. At some point, when the Australian went to switch to this second tank, he had a malfunction of some kind and was forced to continue with the first tank, which was very low on air. Shortly after he signalled "out of air" to his buddy and they attempted to share air using the buddy's long hose.

They then experienced trouble controlling buoyancy—the Australian was very negative, so his partner tried to compensate by increasing his buoyancy. At some point the Australian let go of his partner, or of the hose he was sharing, and descended, plowing into the thick silt on the floor. His partner shot upwards. the silt boiled up and they were separated, in zero visibility. The partner was by now also low on air and elected to exit rather than attempt a search.

Recovery divers found the Australian, only a couple of hundred feet from the entrance. One tank was empty, the other had considerable air left.

Reference: Editor (H. V. Grey) "Recent Accidents—Editorial" *Underwater Speleology* 19:5 September/October 1992, p 8.

Comments: Editor H. V. Grey writes: "Air planning and management for independent tanks is considerably more complicated than for a dual-valve system, and it greatly increases task loading. For these reasons, it is mostly discouraged for novices. Maintaining the recommended tank-pressure balances in conformance with the thirds rule would have gone a long way toward preventing this fatality.

Clearly, unfamiliarity with the borrowed equipment, and resultant lack of buoyancy control in a cave system with a terribly silty floor, also greatly complicated the air-sharing on the way out. Though it is easy to sympathize with a visitor's desire to get in as much cave diving as possible on a potentially once-in-a-lifetime trip, this, unfortunately, does not render the advice to build up experience slowly and conservatively any the less sound."

DEVIL'S EYE, FLORIDA

Late Summer-B
AA — suspected convulsion

In late summer divers were at Devil's Eye in Gilchrist County, Florida. They were doing a deep dive and staged their way in on compressed air to the beginning of the Hill 400 jump at which point they switched to what was reportedly analyzed as a 39-40 % nitrox mixture. At some point during the exit portion of the dive, one diver lost consciousness and died.

Reference: H. V. Grey *ibid.* p 9.

Comments: The family declined to allow an autopsy, so the exact cause of death is not known. "Oxygen convulsion is suspected as a possible cause of death, although depth versus partial pressure considerations were not beyond accepted valances."

BLUE SPRINGS, FLORIDA

October 1
AA — untrained, ill-equipped

On Thursday, October 1, two divers entered Blue Springs in Orange County, Florida. They were both open-water dive-masters; each had a single 72 with no octopus regulator. They had no reel or line and only a single light each. Both had dived at this spring frequently.

At the bottom of the spring, at a depth of 110-120 feet, is a crevice with an extremely strong outflow of water. A large boulder sits on this crevice with the flow passing on either side. At this point one diver "apparently popped the low-pressure hose serving his power-inflator. This caused the low-pressure hose to free flow" and he signalled for them to head up immediately. Shortly after that the diver with the failure was out of air and signaled this. The pair began buddy breathing off the intact system.

Apparently a dispute arose over the proper direction to take. The diver with the good system began pulling to go deeper into the spring with the other pulling toward the actual exit. The diver who had experienced the failure then reportedly took a last deep breath from the shared regulator and opted to go his direction, even if he had to free ascend. On the way he was spotted by two other divers, on their way down. They gave him a long hose and breathed him up to the surface. There he told them of his buddy, still below. One of the new divers immediately went down, but the missing diver was found with the regulator out of his mouth, unconscious. Attempts to resuscitate him using both mouth-to-mouth and CPR failed.

Reference: H. V. Grey *ibid.* p 9.

Comments: The divers' tanks were old and several years out of date on VIP and hydro testing. The dead diver's single steel 72 cf tank was found to contain some 2400 psig—his buddy said that the deceased routinely pumped it to 3500 psig, despite its rating to 2250.

ROUBIDOUX SPRINGS, MISSOURI

Fall
AA — unknown

"In the Fall a trained cave diver died during a fairly routine penetration of Roubidoux Springs, in Missouri. There were apparently no equipment irregularities or malfunctions."

Reference: H. V. Grey *ibid.* p 9.

SEND ANY INFORMATION ON ANY INCIDENT TO:

Steve Knutson, Editor

American Caving Accidents

41811 S.E. Loudon Road

Corbett, Oregon 97019, U.S.A.

National Speleological Society
Accident/Incident Report Form

Date of Accident/Incident: _____ Day of Week: _____ Time: _____

Cave: _____ State: _____

Reported by:
Name _____

Address _____

City _____ State _____ Zip _____

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

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

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

The Accident/Incident

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

Rescue

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

Further details were reported in:

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

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

National Speleological Society
Cave Avenue
Huntsville, Alabama 35810