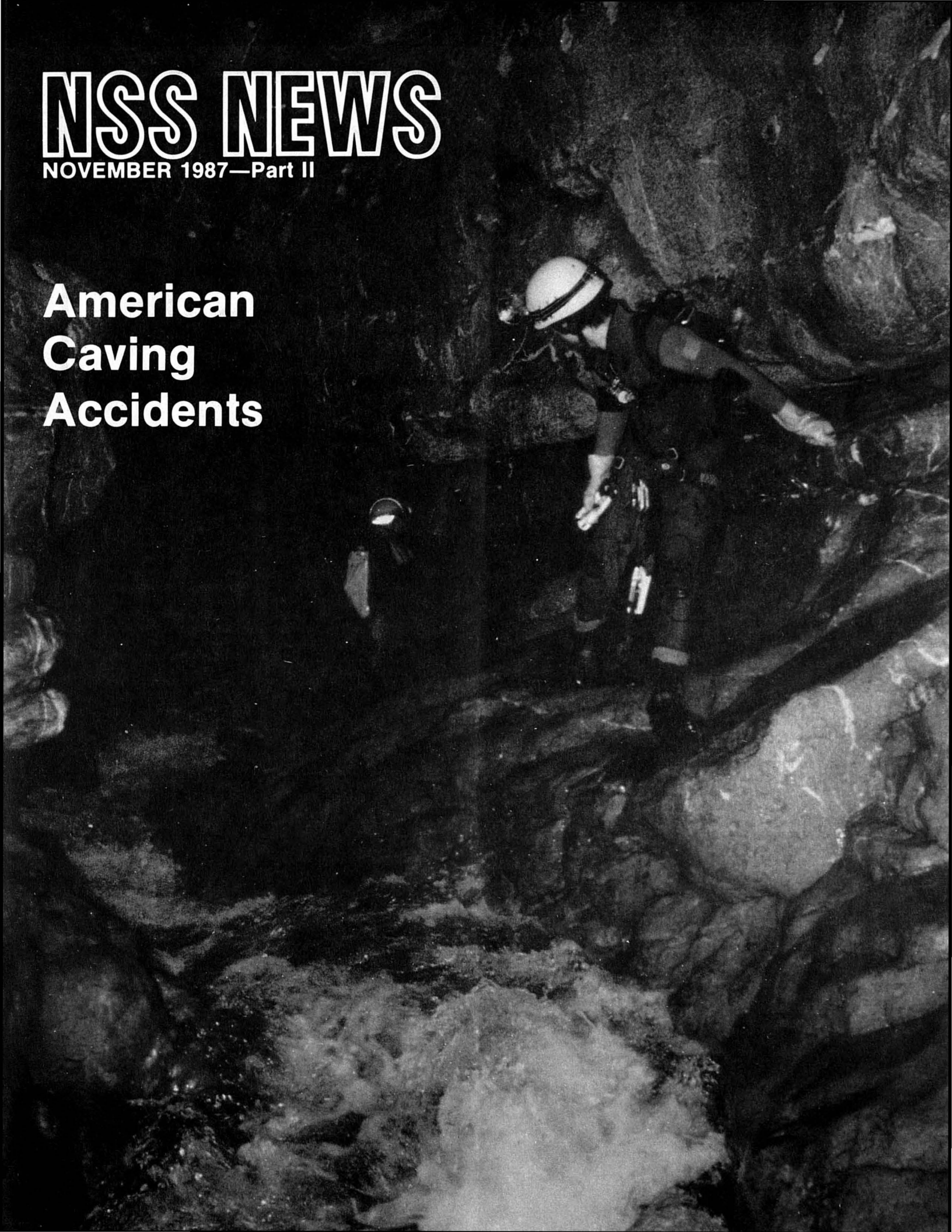
NSS NEWS

NOVEMBER 1987—Part II

American Caving Accidents



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Back Cover

Rio Atima Cave, Honduras by Steve Knutson

American Caving Accidents

THE BUDDY SYSTEM - be the last to leave the cave

There is a lot of discussion among cavers these days concerning the American style of SRT versus the European style. European cavers generally rig a drop to avoid all contact between rock and rope by re-anchoring the rope at each contact point as one first descends the drop. With a drop split up into segments, it is obvious that each segment can accommodate a caver at the same time, thus allowing a party to move up a drop quickly and with very good party unity.

The American system is accorded to be slower for, despite the fact that a single caver would be faster up an American-rigged drop, the whole party would get up faster on the European-rigged drop since more than one caver could be moving up at the same time.

In actual practice however, the American system moves along reasonably quickly, especially in multi-drop caves, by spreading the party out. But as the party is extended in this fashion, something must be done to maintain some sort of party unity. Since this can be just as well applied to any sort of caving, it brings us to the subject of this essay — the Buddy System.

It is rare that a caving party is of equal strength or speed in traveling the cave, and rarer still that the strongest brings up the rear, letting the slowest set the pace. Indeed, I suspect we have all experienced the situation, usually on the way out of the cave, where someone still feels strong and finds some reason (any reason, I suspect) to blaze on out. Someone else feels tired and starts falling behind. The party loses unity and strength. Sometimes this can lead to that party breaking up into a series of solo cavers.

This would be fine except for the inevitable problem — light malfunction, ascender difficulties, exhaustion, etc. And the person who suffers most is the person who can least afford it — that slower, weaker caver who is now bringing up the rear — for when misfortune befalls him, there is no one to catch up and help, he is quite on his own.

And why do cavers split off from a group and charge ahead? Why do some cavers always reach the entrance far ahead of their friends? I'm sure it is natural exuberance, a demonstration of skill and ability — of strength and stamina. Perhaps it is just a matter of natural pace. Yet this is also an exhibition of weakness, for staying with stragglers requires a certain toughness and determination — it would be so much easier to be out in the sunshine, telling a tale of glory to those back at camp, than to be still down in the mud and cold, to be thought as slow as those you are shepherding.

The solution to party unity — and thus to party strength — is clear, and is not simply the old saw about staying together — that is asking too much, especially in technically difficult original exploration. Rather, we must make it a rule, just like adequate light sources, just like proper vertical gear, and hardhats with chin straps, that **each caver in a party is obliged to keep close track of the caver behind him.**

We can call this **The Buddy System**. Under this rule: When one climbs a pitch, exits a very tight squeeze or crawl, rappels a pit, or passes any other difficulty that momentarily slows him, he is no longer free to dash off up the easy passage — he must wait for a companion to show up before proceeding. The group need not stay together — would be better not doing so, but each would keep track of the one behind. The party can move fast but still have unity and strength. Thus, when one prussiks to the top of a drop, de-rigs from the rope and communicates "off rope" to his companions below, he does not move on up the cave. Instead he waits; when the next in line appears, the waiting caver takes off to put some space between himself and the caver he has just waited for so that the party doesn't bunch up at the next ascent or other difficulty.

If the ascending caver gets in trouble, he will be much better off with someone immediately above that he can communicate with, than, as is typically the case, everyone ahead of him waiting a thousand feet further on, to return to help only if a half hour or more passes.

This sounds like a lot of preaching and so it is, but I shouldn't be thought of as holier-than-thou or self-righteous, for I am as guilty of leaving others behind as anyone. So let's all adopt the Buddy System, and if anyone wants to exhibit real strength and fortitude, let him be the last to leave the cave.

AMERICAN CAVING ACCIDENTS - 1986

In this compilation of cave exploration safety incidents for 1986, I am utilizing basically the same classification scheme used for the 1985 issue, as follows:

1. Result of Incident:

Code — Result	Number in 1986
AA — Fatality (body evacuation)	4
A — Injury with evacuation or aid necessary	10
B — Evacuation or aid necessary - no injury	21
C — Injury - no evacuation or aid necessary	10
D — No injury - no evacuation or aid	19
	TOTAL
	64

2. Cause of Incident

Code — Cause	Number in 1986
a — acetylene explosion	3
b — bad air	3
c — caver fall	24
d — drowning	1
e — equipment failure or lack	14
f — flood	1
h — hypothermia	1
i — illness	0
l — losing the way	8
r — rockfall	12
s — stuck caver	2
x — exhaustion	0
o — other	3

Notice that **scuba incidents** have been grouped together in a separate category. There are 9 incident reports including 2 without a fatality. Of the others, there were a total of 12 fatalities.

In ordinary caving there were 4 fatal incidents. A man fell (or jumped) into Dante's Descent (300 feet) in Arizona (9-23-86), a drunk tried to free dive a sump in a cave in which he and friends were partying and exploring (6-15-86), earth fill blocking a cave entrance collapsed on a caver during a dig to open the cave, and a caver fell from an exposed traverse after his light went out (11-1-86).

In the breakdown of causes, there are four which collectively represent the majority of incidents. These are **caver fall** (24), **equipment failure or lack** (14), **rockfall** (12), and **losing the way** (8). Let's examine these important categories to see what sorts of things are happening: (The numbers in parentheses are the date reference to the incident report).

1. Caver Fall: There were 13 incidents where a caver fell from holds, either slipping or holds breaking with a variety of results, from bad, incapacitating bruises to death (1-3, 1-18, 2-26, 3-?, Spring, 5-26, 6-19, 8- 15, Summer, 8-29, 9-23, 10-?, and 11-7). There were two dislocated shoulders, a dislocated knee, a broken kneecap, broken toe, head injury, bruised leg, etc. Surely some of these could have been prevented by use of a belay or handline. There was one incident of a caver losing his grip on a handline (1-?) and one incident involved driving an ATV into a pit (3-29). There were four out-of-control rappels. One was of undetermined cause (5- 27), one a carabiner-brake bar was rigged wrong (1-25), one was a single carabiner-brake bar giving insufficient friction (7-5) and the last was a rack, bent so that bars could pop off giving insufficient friction (12-28).

There appears to be a myth spreading that carabiner brake bar rappel devices are "unsuitable for caving." It is related that side loading of the carabiner gate makes for a weak set-up. These devices have been used in mountaineering and caving for decades with no failures that I know of. In the early 70's mountaineers tested carabiner-brake bar devices to destruction and found them good to about 1800 pounds (as I recall. This was reported in **Off Belay** magazine). It would be very difficult to generate such a force while rappelling. These devices have their disadvantages — the only variation in friction one can apply is to use one or two carabiners-with-bar instead of the complete variability of a rack — but they are lighter and more compact than a rack and, once attached to the seat harness carabiner it does not have to be removed each time it is used for rappel, as does a figure-8. If anyone has any real evidence of carabiner brake bar failures, I would like to hear about it.

2. Equipment Failure or Lack: The chief culprit here was a lack of proper rope ascending gear either when the original intention was to hand-over- hand up (3-22, 4-25, 5-17, 11-3) or on an aborted through-trip (3-30). There was also a tubular nylon chest sling breaking, leaving the climber upside-down (11-30-85), prusik knots jamming in a waterfall (6-14), light failures (7-19 and 12-15), a bent rack causing loss of control (12-28), mis-adjusted vertical harness (Fall), ripped stitching in a foot-Gibbs harness (7-13), shorted batteries producing toxic fumes (7-26), a breaking manila rope (10-25), and failure of a helmet light with no backup except in a pack while on a traverse, causing a fatality (8-29).

3. Rockfall: This includes people being trapped or injured by shifting rocks (3-29, 8-23, 9-14, and 11-15), and being injured or frightened by falling rock (1-11, 1-?, 6-22, 7-7, 11-1, 12-6) as well as having rock fall away beneath them (10-?). There was only one fatality, when a caver was trapped under collapsing fill in a dig (11-1).

4. Losing the Way: Incidents of this type include not being able to find the other entrance on an attempted through-trip (1-3 and 3-30), a single caver leaving the group and getting lost (8-2, 8-15, and 9-13) and simply getting lost in a complex cave (2-16 and 5-?).

Of the other causes there were three **carbide explosions** (3-29, Summer, and 12-28), three cases of **bad air** (lack of oxygen due to organic decay, 6-19, toxic fumes due to a shorting battery, 7-26, and toxic fumes from blasting, 11-?) and two **drowning** incidents, one fatal (6-15), the other not (3-?).

It was a good year for **floods** — there weren't any, though one party was trapped when increased water flow prevented climbing a rope rigged in a waterfall (11-1). **Hypothermia** also was nearly absent with one bad case, where a prusik knot system jammed in a waterfall (6-14). There were two cases of being **stuck**, but both were temporary (1-25 and 10-3). This leaves the **other** category, which included a rib separation climbing into a crawlway (3-6), a near-asphyxiation from a gas pump exhaust (5-2), and a vandalized and jammed lock on a gated cave while a party was inside (12-27).

Note that in the incident write-ups I almost always do not mention rescuer's names. These people are heroes and deserve recognition, but mentioning one would require, in the name of fair-play, mentioning all. This is not the place for it.

The analyses may seem vague and inconclusive at times, but one must remember that safety margins are different for different cavers. The main reason for this publication is to show what can happen — how you deal with the possibilities is up to you.

Please address any criticism, new comments, or information on any incident to:

American Caving Accidents
505 Roosevelt Street
Oregon City, OR 97045
Attention: Steve Knutson

Thank you for your support.

INCIDENT REPORTS —1986

CODE — CAVE NAME	LOCATION	DATE
Be — Fourth of July Cave	AL	11- 1985
Dl — Little Brush Creek Cave	UT	1-18-86
Cc — Dykes Bottom Cave	KY	2-15-86
Ac — Pettyjohn's Cave	GA	2-26-86
Co — Clover Hollow Cave	VA	3-6-86
Be — Sinkrim Pit	AL	3-22-86
Ac — Un-named Pit	AR	3-29-86
Ble — Cassell Cave	WV	3-30-86
Be — Medville's Mudhole	PA	4-25-86
Ac — Salt Creek Cave	IN	Spring
Bo — Goliath's Cave	MN	5-2-86
Ac — Fulford Cave	CO	5-24-86
Ac — Bishop Cave	TN	5-26-86
Cc — Hell Below Cave	NM	5-27-86
Bhe — Un-named Pit	WA	6-14-86
AAd — Bat Cave	FL	6-15-86
Abc — Bell Cavern	CO	6-19-86
Cc — Cave Hill Saltpeter Pit No. 1	TN	7-5-86
Bl — Pleasant Ridge Cave	TN	8-2-86
AAce — Thanksgiving Cave	Canada	8-29-86
Bl — McClung's Cave	WV	9-13-86
Ar — Devil's Icebox Cave	MO	9-14-86
AAc — Dante's Descent	AZ	9-23-86
Be — Fisher Ridge Cave System	KY	Fall
Bf — Carpenter-Swago Cave System	WV	11-1-86
AAr — Northfield Caves	MN	11-1-86
Db — Quarry Cave	VT	11-86

LESSER REPORTS

CODE — CAVE NAME	LOCATION	DATE
Bl — Crevice Cave	MO	1-3-86
Dr — Sugar Tree Pit	KY	1-11-86
Bc — Sloan's Valley System	KY	1-?-86
Dr — Boundary Pit	KY	1-?-86
Cc — Santa Claus (Pearl) Cave	CA	1-?-86
Dr — Fisher Ridge System	KY	1-?-86
Dc — Breathing Cave	VA	1-18-86
Dcs — Parker's Pit Cave	IN	1-25-86
Bl — Bowden Cave	VA	2-16-86
Dc — Sumidero of the Rio Atima	Honduras	3-?-86

Da — Lee Cave	KY	3-29-86
Ar — Moonshiner's Cave	KY	3-29-86
Bl — Buckner's Cave	IN	5-?-86
Be — Fulford Cave	CO	5-17-86
Dr — Brussels Hill Pit	WI	6-22-86
Dr — Summer's End Cave	CO	7-7-86
De — Gargantua Cave	Canada	7-13-86
Be — Breathing Cave	VA	7-19-86
Dbe — Knox Cave	NY	7-26-86
Cc — Fulford Cave	CO	Summer
Da — Brokedown Palace Cave	CA	Summer
Cc — Sloan's Valley System	KY	8-15-86
Dl — Johnson's Cave	TN	8-15-86
Br — Stompbottom Cave	VA	8-23-86
Bs — Goose Creek (Lost Creek) Cave	CO	10-3-86
Dr — Lazy Day Cave	Canada	10-?-86
Cc — Hell Creek Cave	AR	10-?-86
Be — Johnson's Crook Cave	GA	10-25-86
Be — Shaft Cave	IN	11-3-86
Ac — Dames Cave	FL	11-7-86
Ac — Moler's Cave	WV	11-15-86
Dr — Sloan's Valley System	KY	11-15-86
Cc — Scott Hollow Cave	WV	11-22-86
Cr — Scott Hollow Cave	WV	12-6-86
Be — Howard's Waterfall Cave	GA	12-15-86
Do — Wayne's Cave	IN	12-27-86
Da,c — Rehoboth Church Cave	VA	12-28-86
Be — Sotano de Apetzco	Mexico	12-28-86

DIVING INCIDENTS

CODE — CAVE NAME	LOCATION	DATE	No. of FATALITIES
AA — Kihea Lava Cave	HI	Winter	1
AA — Morrison Springs	FL	2-1-86	2
AA — Peacock Springs	FL	3-29-86	1
B — Fishrock Cave	HI	Spring	0
AA — Caye Caulker Caverns	Belize	6-2-86	2
AA — Devil's Ear Spring	FL	8-12-86	3
AA — Morrison Spring	FL	8-30-86	2
AA — Royal Springs Cave	FL	10-8-86	1
De — Crab Creek Cave	FL	Winter	0

Be Fourth Of July Cave, Alabama **11-30-85**

On November 30, four cavers entered a cave northwest of -olly Tree, Alabama that they had discovered three days before. They later connected it to Fourth of July Cave, creating the 'People Eater Entrance.' They pushed down a number of small pit drops and some nasty stream crawls to a crawl that needed enlarging. They turned back here — one had already gone out so there were three exiting. They went up a 15 foot drop and two were up the next, a 25 foot, when Gerald Moni had his top ascender sling (of tubular nylon webbing) break, flipping him upside down. He was held by his two, lower, prussik knot slings, though he wasn't using chicken loops, by the tightness of the loops around his boots.

Moni called for help and Marion Smith, just ahead of him, returned quickly but couldn't do anything. Alan Cressler returned and, since he still had his harness on, got out enough gear to back down the rope on Jumars to where Moni was hanging. A jumar was attached by sling and carabiner to Moni's chest harness, then his prussik knots were released alternately until he was upright again. They proceeded out.

Reference: Marion Smith "The 'People Eater' Entrance to Fourth of July Cave" **Birmingham Grotto Newsletter** July-Aug 1986.

Analysis: A couple of points could be mentioned here. First, sheath (kernmantle) rope is better for slings than webbing since webbing is woven and abrasion affects the strength of all fibers. Abrasion on sheath rope affects the strength of the sheath, not the core. Second, in a vertical system, if the main line passes through the support to the chest (chest box and harness, 'biner and harness) then results are not as catastrophic if the upper ascender or knot sling breaks.

******

Dl Little Brush Creek Cave, Utah **1-18-86**

On January 18 cavers were active in Little Brush Creek Cave in the Uinta Mountains of NE Utah. Two cavers, Kevin Roper and Bob Lamph, entered at 9:30 a.m. Another group of five went in and were out at about 8 p.m. These went to Vernal for dinner and returned to the cave to find the others still inside. At 11:24 p.m. they left a note on the vehicle of the overdue cavers and went to call the Sheriff.

Search and Rescue was called and outfitted. Cavers would act and guides and alternating teams were set up. As the rescuers headed for the cave, the lost two emerged. They had spent from 7 p.m. to 1 a.m. in the area of the H Room looking for the way out.

Reference: John Halleck "LBCC Near-rescue" **Wasatch Grotto News 2**(1) Autumn, 1986.

Analysis: This may seem like an over-reaction but in cold alpine settings, anyone in trouble must be dealt with quickly to prevent hypothermia problems.

******

Cc Dykes Bottom Cave, Kentucky **2-15-86**

At shortly before 2 p.m. on February 15 a group of cavers led by Percy Dougherty entered Dykes Bottom Cave in Kentucky. They found the first 100 feet of the cave to be experiencing sub-freezing temperatures, changing the usual sloppy conditions to hard, slick ice.

Jay Kessel (29) was crawling down the three foot wide by four foot high entrance passage where the floor was now mostly ice covered. About 20 feet from the entrance he put his weight on his left arm, his hand on the ice floor. The ice broke and the short but sudden drop dislocated his shoulder.

Dougherty was able to relocate the shoulder, but continuing pain forced Kessel to return to wait in the van while the trip went on. He later found that he had also suffered a broken bone in his shoulder.

References:

1) Doug Stecko **Personal Communication** 2-28-86.
2) Jay Kessel **NSS Accident Report** undated.
3) Editor **Cave Cricket Gazette** (Miami Valley Grotto) **11**(3), 4-86.

Analysis: Kessel's shoulder had been dislocated previously and the accumulated damage may now require surgery. A broken and dislocated shoulder in a crawlway — dangerous places, these caves!

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Ac Pettyjohn's Cave, Georgia **2-26-86**

At about 6 p.m. on February 26, Randy Burrage, Wesley Dawson, Allen Brambell (all 20's) and Wilson Mann, Jr. (19) entered Pettyjohn's Cave in Walker Mountain, Georgia. They had flashlights and proceeded to explore "several areas of the cave," then headed back out. At about 7:15 p.m. they were free climbing a 45 foot vertical pitch about 500 feet from the entrance when Mann "slipped and fell" about 30 feet. The others could hear moans from below so one was sent to get outside for help while the others downclimbed to give aid.

At a nearby house the authorities were called and various offices were notified including several cave rescue teams. The first rescuers arrived at the cave at 9 p.m. and proceeded to the victim. Mann had a laceration on the top of his head and on his right cheek; the bleeding had stopped. He was conscious and complaining of pain in his right side. After checking for other injuries, rescuers covered him with blankets. By the time an EMT arrived hypothermia was evident and oxygen was requested. He was put on an OSS backboard and moved out of the rockfall zone.

A companion of the victim, Dawson, was now feeling nauseated and showing signs of hypothermia and was also treated as a victim. The way out was rigged for hauling.

Meanwhile Mann's condition was deteriorating due to shock and fatigue; more oxygen and IV's were requested, soon arrived and were administered.

Dawson had recovered so he was belayed up the drop and escorted out of the cave. They other companions had already been taken out.

The victim was hauled up in a SKED stretcher, re-examined by a physician, put into a Ferno-Washington litter, tyroleaned over a "deep breakdown area" and hand-carried the remaining distance to the entrance, arriving at 1:15 a.m.

His injuries were later determined to be only severe bruising.

Reference: Chuck Hans "Incident: Injury" **NCRC Newsletter** 5-6 1987, p 4.

Analysis: The victim had reportedly been drinking before entering and possibly during the cave trip. None of the cavers had helmets; they wore street clothes (pants and short sleeve shirts) and tennis shoes, and had only flashlights for light, and almost no previous experience in caves.

The rescue was manned by over sixty cavers from the Atlanta, Chattanooga and Walker County area. It went without a hitch, better than mock rescues practiced previously in the same cave. Spectators and news media were not a problem, probably due to contacting agencies in person rather than by radio.

******

Cc Clover Hollow Cave, Virginia **3-6-86**

In the afternoon of Thursday, March 6, four cavers entered Clover Hollow Cave in Virginia. They descended several drops and proceeded to the end of the stream passage, staying dry, then visited the Andrews Room.

To go out they had to climb into "a crawlway seven feet above the floor of a small round room. Craig Schneider (29) pulled himself up and leaned into the crawlway, resting on his chest and arms. As he pressed with his feet against the wall, sliding into the passage," there was an audible snap with the sudden onset of chest pain — Schneider had broken a rib. He was able to exit the cave with only slight assistance.

Reference: Rodney Pingree **Accident Report** undated.

Analysis: A doctor determined that two ribs had parted from the cartilage.

******

Be Sinkrim Pit, Alabama **3-22-86**

In the early afternoon of Saturday, March 22, a small group of friends were at Sinkrim Pit, (AL800) in Madison County, Alabama. Bob Caraway (32) descended on a rope 60 feet to a ledge still 35 feet above the bottom of the pit. He could not continue and was left stranded since he had no ascending gear and couldn't free climb back up. His friends went for help.

At 5 p.m. Madison County Rescue Squad was called and in turn called cavers. Rescuers soon arrived. One rappelled down and reported the victim to be OK but "showing initial signs of hypothermia." Caraway was given instruction in prussiking while a second rope was rigged and he was fitted with ascending gear. He prussiked out in 30 minutes accompanied by the rescuer on the other rope. He arrived at the lip at 7:30 p.m. having been in the pit four and a half hours.

References:

1) Carl Craig **Personal Communication** 5-20-86.
2) Eric Steenburn "Rescue at Sinkrim Pit" **Huntsville Grotto News 28**(3), 3-86, p 3.

******

Ac Un-named Pit, Arkansas **3-29-86**

On Saturday, March 29, Randy Carmack (35) and Keith Crawford (15) were riding an ATV on a dirt road near Morningstar, Arkansas when they either got too close or had the edge of a sink collapse under the vehicle. In any case, the vehicle and riders slid and fell 40 feet to the bottom of a pit.

Crawford suffered facial injuries and broke both arms; Carmack received numerous cuts and bruises. The accident was reported to authorities and the Searcy County ambulance service and Buffalo National River's Cave and Cliff Rescue Team responded. Several rescuers rappelled in while a special litter and haul system was set up. The victims were hauled up, Crawford then being transported to Little Rock Hospital by helicopter.

Reference: Connie Toops "Park Service Fights Blazes" **Harrison Daily Times** 3-31-86, p 1.

Analysis: Considering the bad image caves and pits get from this sort of thing, I'd have to say that this pit was in the wrong place at the wrong time.

******

Ble Cassell Cave, West Virginia **3-30-86**

In the evening of Saturday, March 30, two cavers, Steve Thompson and Robert Kostrzewa, entered Cassell Cave, Pocahontas County, West Virginia. They had obtained permission and intended to rappel the old entrance pit, about 95 feet, and exit another entrance. They were not able to find their other entrance and had not brought ascending gear. Kostrzewa made a rig from spare sling or climbing rope and, using prussik knots, successfully ascended (about 7 a.m.). His companion was "too tired" to follow so the Rescue Squad was called. They called cavers.

Sunday morning a party of cave rescuers arrived and set up a haul system while one rappelled in to administer first aid if necessary and fit a harness on the victim. Thompson was hauled up without incident.

Reference: Patty Daw "Easter at Cassell Cave" **The West Virginia Caver 4**(3), 6-86, p5. Also **Personal Communication** 4-22-86.

Analysis: Poor planning but a good, though partial, self-rescue. All-or-nothing trips like this can be big trouble.

******

Be Melville's Mudhole, Pennsylvania **4-25-86**

At about 9 a.m. on Friday morning, April 25, a group of six high school students entered Melville's Mudhole in Snyder County, Pennsylvania. Three stayed at the ledge just inside the cave while their companions Paul Neitz (16), Wayne Haines (17) and Bob Brobeck (16) descended hand-over-hand into a 25 foot pit, landing in knee-deep mud. During this use, the rope became very muddy and they were unable to climb up.

Their companions tried tying knots, then loops in the rope to aid their friends; after three to four hours Haines and Neitz were able to get up. At 1:30 p.m., they went for help for Brobeck.

The Shanokin Dam Fire Department responded and used a 1:1 direct hauling system to retrieve Brobeck.

Reference: Dr. R. T. Stanton "Incident: Poor Equipment" **NCRC Newsletter** 5-6 1987 p 6-7.

Analysis: They had only flashlights and an old manila rope. Since they were cutting classes to cave explore, they left no word of their destination. Luckily only three descended. Probably a lot of cavers have done something like this early in their careers.

******

Ac Salt Creek Cave, Indiana **Spring 1986**

Late one Spring afternoon, four cavers were exploring in Salt Creek Cave in Bedford, Indiana. They intended to stay only a short time. The initial passage inside is narrow and tall with ledges along the walls and a stream on the floor. They pursued this until reaching a crawlway that led on to the major portion of the cave. There they turned back.

To "add interest," they chimneyed about, high on the ledges. Three had descended to the stream and two moved on, one waiting for the last, Suzie Mroz, to descend. She was moving slowly and carefully, testing holds, when a foothold broke. Her other foot was in mid-step and her hands were ripped from their holds by the sudden jerk.

Mroz struck walls and protrusions on the way down, taking most of the force of landing on her left leg. Her head, protected by a Joe Brown helmet, struck a ledge during the fall with sufficient force to remove and destroy her headlamp. She passed out from pain.

She was examined for injuries, then carried for a short distance toward the entrance. She regained consciousness and related the extreme pain in her left knee. She hobbled the rest of the way out with aid and support from her companions. Her left kneecap proved to have been fractured.

Reference: Suzie Mroz "Now They Call Me Chester" **CIG Newsletter** 5-86, p 88-89.

Analysis: I'm sure no one needs to be told that in normal climbing, three points of support at all times gives a good safety margin — but only if they are truly "points of support." That is, if you suddenly lose one point, you should be able to hold yourself with the remaining two. If not, then you should have a belay. To test potential holds, have no mercy — thump, bash, kick and stomp. Find out if these little protrusions of rock are going to let you down before you put your well-being in their trust.

In accidents of this sort, injuries can be aggravated by continued movement or exertion. Companions who suddenly become rescuers should keep this in mind, especially since accident victims, possibly to reassure their own minds, like to believe or pretend that nothing is wrong and will try to continue.

******

Bo Goliath's Cave, Minnesota **5-2-86**

Goliath's is a maze cave with a "significant" stream passage in southeastern Minnesota. It has seen a good deal of interest in recent years. The entrance is a 200 foot crawl which is sumped much of the year. A second entrance was sought and a dig was started inside the cave. To help a dig from the outside it was desired to survey to the dig site inside. In mid-March the entrance sumped. A gasoline pump was selected to open this sump due to the high rate of stream flow and good ventilation from a side passage when it is sumped.

At 8:30 p.m. on Friday three cavers, Greg Heideman, Mike Lilja and Jim Magnussen arrived to carry out this pumping operation. The sump is actually two sumps separated by 15 feet of passage. It was thought to pump the first Friday night, let the air clear, then pump the second Saturday, followed by the survey.

The pump was set up by Heideman and Lilja about 20 feet from the water's edge near Sump 1. They attached the intake hose, started the pump and primed it. The cave was "drawing a good breeze" which went into the main part of the cave past the sump via a too-tight side passage about 30 feet before the sump.

It was estimated that the sump held no more than 3000 gallons and should pump out in 15 minutes. After starting, the output hose was observed to kink so Heideman and Lilja untangled it "from the spot receiving the fresh air — ahead of the junction with the side passage."

Before exiting they wanted to verify that the pump was running properly so Lilja crawled back to check. The pump had been running for some ten minutes in relatively stagnant air. After "counting to fifteen" Heideman looked around the corner to see Lilja squatting by the water's edge. He crawled toward Lilja while Lilja began to crawl back. Heideman slowed the pump and asked if Lilja was OK — he said yes, but that they should go, as he had a headache. He then fell to his knees.

Heideman immediately killed the pump. He shook Lilja and insisted they leave. Lilja replied. "I can't make it." Heideman was suddenly and nearly overcome. At about 11:15 he gave a futile drag at Lilja and then concentrated on crawling the 150 feet to the entrance. The whole time he had an overwhelming desire to stop and rest — he did not stop.

Fifteen minutes after leaving Lilja, he reached Magnussen at camp. Heideman refused to go back in and pleaded with Magnussen not to go. Magnussen couldn't get Lilja out alone, so drove to the house of Steve Landsteiner, the closest caver. They returned with an oxygen tank from a welding rig. At 11:58 they left the tank at the sinkhole and crawled in to Lilja. He was lying face down in the water, still breathing, though very shallowly and with signs of water in his lungs. It was 12:14.

Landsteiner went out to get the oxygen; he got Heideman up to help carry in the cylinder. This was done and they held the output hose over Lilja's nose and mouth. They then exited to get a tarp and poles to make a drag-stretcher. Meanwhile, Heideman was recovering.

At about 12:50 they returned with the tarp and poles and finally, at about 1:45 had dragged the victim out of the cave. At 2:25 they returned with enough manpower to get him out of the sinkhole, a 40 foot climb. He was rushed to an emergency room at the hospital in Cresco Iowa. His body temperature was 81 degrees, he had some water in his lungs and a low oxygen blood count.

They were unable, without a respirator, to increase his oxygen level, so he was flown via emergency helicopter to the Mayo Clinic, where he recovered.

References:

1) Jim Magnussen "Project Update: Goliath's Cave" **Minn. Speleology Monthly 18**(6), 6-86, p 81-85.
2) Jim Magnussen "Editor's Opinion" **ibid.** p 80.
3) Larry Laine "Comments on an Accident" **ibid.** 3-87, p 39-40.

Analysis: Magnussen offers some hindsight criticism:

(1) Don't overlook the value of local cavers and manpower — many can be there on short notice.

(2) In serious cases like this professional aid should be sought despite bad publicity.

(3) Never use gas-engined equipment in a cave.

(4) In this case he made the right decision — to return immediately, without calling extensively for outside aid surely saved Lilja's life.

Larry Laine objects that the use of the gasoline engine was safe enough if the procedure originally agreed upon had been followed. This was to set the pump and hose in position, with everyone on the entrance side of the pump, turn it on, and immediately leave the cave, to return only after the pump had run out of gas and sufficient time allowed for the passage to ventilate. In any risky activity, bypassing any part of accepted procedure will generally make the risk greater.

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Ac Fulford Cave, Colorado **5-24-86**

At 4 p.m. on Saturday, May 24, three cavers entered Fulford Cave, at 10,000 feet elevation in Colorado. These were Steve Reames, Paul Burger and Pete Funk (29). It was early in the season for this cave — the entrance was almost snowed in, and led to a 30 degree, 12 foot ice slope to the top of a 20 foot pit, requiring a rope not normally needed.

They entered while a fourth companion went hiking. The cave was extremely drippy from snowmelt but they proceeded to the downstream sump of the stream passage, then went upstream checking leads. At 7 p.m., at the upstream end, Funk was climbing an easy ledge to a higher lead while his companions checked other leads. Suddenly a handhold broke, dropping Funk ten feet; he screamed as he landed on his back on a breakdown block then rolled and slid another five feet.

His companions found Funk in a small room, "standing in a hole in the floor, his arms draped over a boulder for support." His helmet had been knocked off and he had pain in his left leg; water showered down.

Funk tried to move but experienced great pain in his left leg. He was helped a few feet to a sitting position out of most of the shower. He was given a pain killer and sheltered with a space blanket. Reames left to call the Eagle County Sheriff's Office.

At the campground, a camper was sent with a message explaining the situation to the Sheriff. Three, including Reames, returned to the victim with survival supplies, arriving at about 10:30 p.m. Vail Search and Rescue and a Sheriff's deputy arrived, followed by NCRC rescuers at 2 a.m. A phone line to the victim was established by 6 a.m. Earlier in the night, Funk had been examined by EMT's and placed in a sleeping bag. He had no apparent injuries but was in a lot of pain. He was transported to the entrance on a SKED stretcher and hauled up to the surface via a pulley system, arriving at 10:30 a.m.

References:

1) Mark Tornblom **NSS Accident Report** undated.
2) Steve Reames "For Real" **Rocky Mtn Caving 3**(3) Summer 1986, p 22-24.
3) Steve Sims "A successful rescue" **ibid.** p 24-24.
4) Greg Miller "Fulford Cave Mission Report: Colorado Cave Rescue Network" **ibid.** p 25-27.
5) Steve Reames **Personal Communication** undated.

Analysis: Funk fell only ten feet and was not seriously injured, suffering a deep bruise of the lower back which pinched nearby nerves causing pain, yet caused a major rescue. Was this necessary? I don't wish to fault Funk in particular, because this sort of incident occurs again and again and probably every active caver has done this — the short climb, with little exposure ... go for it! But I feel there is something that can be done to make this sort of thing much safer.

If the position one has to assume in order to make a short climb is such that a fall will lead the climber to land in any way but on his feet, then that climber is courting disaster. Even in this case, one can be "spotted" much as gymnasts are sometimes spotted — a person stands below, just out of the fall line to break the fall and help the person land on their feet rather than on their head or back. Obviously this can be done only on very short climbs.

Reames re-visited the site and found the bedrock to be "a sort of calcified clay with small embedded pebbles" — weaker than limestone. I find this to be no excuse. Weak bedrock is often encountered in caves — one must severely test any hold to which you trust your well-being. If holds are crumbly, then you just can't hang it out quite so far. Think of the consequences — a ten foot fall, a major rescue.

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Ac Bishop Cave, Tennessee **5-26-86**

At around noon on May 26, two cavers entered Bishop Cave in Bedford County, Tennessee. At about 2 p.m., while exploring, Robert Scott Allen (18) "slipped and fell down a 30 foot shaft." His friend went for help.

At 2:20 Bedford County Civil Defense was called. A "local rescue team" went to the cave and began operations. Using a manila rope they attempted to haul the victim up the pit. Near the top the rope broke dropping the victim 25 feet. They tried again and were successful. No patient assessment had yet been done.

At 7 p.m. Nashville Grotto Cave Rescue arrived and aided in the evacuation. The local team had the victim strapped in a Stokes litter with a raincoat covering him. An oxygen mask had been applied and oxygen was being administered. The oxygen tank and extra rope were being carried on top of the victim.

A Nashville paramedic stopped the evacuation and did an assessment of the victim. A rescue blanket and exposure bag were brought in; the victim was "repackaged" and the evacuation continued. The victim reached the surface at 11 p.m. He had suffered "a head laceration and a possible broken leg."

References:

1) Ed. "Rescue Teams pull injured Shelbyville man from cave" **Tennessean** 5-27-86.
2) Morris Sullivan **Personal Communication** 7-2-86.
3) Jim Lawrence "Bishop Cave Incident" **NCRC Newsletter** July-Aug 1987, p 2-3.

Analysis: As Sullivan states these were "standard flashlight cavers." This disparity between the equipment used by "casual" cavers and NSS cavers will probably continue until cavers become more public with their expertise and allow the public to understand how it is supposed to be done.

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Cc Hell Below Cave, New Mexico **5-27-86**

On May 27, four cavers were exploring in Hell Below Cave in Lincoln National Forest in New Mexico. At the second drop, 60 feet, two had rappelled down. At 5 p.m. the third, Eric Pierce (31) apparently suffered an equipment failure and fell free to the bottom. He landed mainly on his feet, suffering a fractured right heel, left foot and a twisted left knee. Mud, water and a pack helped to break his fall.

Fearing hypothermia and shock, Pierce's companions decided to do a self-rescue. The one at the top of the drop exited the cave and ran the half-mile back to camp and fetched their extra 300 foot rope. Back at the drop they set up a pulley system and pulled Pierce up. He crawled down a short passage to a 30 foot pitch and was hoisted up that. He then crawled 75 feet and was carried the remaining 175 feet to the entrance. The self-rescue had taken five hours.

References:

1) Jay Jorden "Accident Report" **Habla la Abuela del Oztotl**
2] Julie Gilberto "Man falls 60 feet into Cave" Arlington Star-Telegram 6-5-86, p 19,23.

Analysis: Two of Pierce's companions were veteran cavers; Pierce and the other were novices but were also fire fighters by profession. All this helps when doing self-rescue. To carry the victim back to camp, they found a pole, rigged Pierce to it by his rappel harness, and carried the pole between them.

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Bhe Un-named Pit, Washington **6-14-86**

At about 3:30 p.m. on June 14, three cavers entered a virgin pit in Whatcom County, Washington. The pit is at 4400 feet elevation and was at this time taking a 60 gallon per minute stream of snow melt. A 7/16-in. Edelrid rope was rigged, out of the main water but spray made the bottom 39 feet of this 69 foot pit very wet.

All three descended and started back out — the first made it without difficulty. At 4 p.m. John Clardy (39) started up using a Gibbs ropewalker set-up; instead of his usual chest box and floating Gibbs (for safety), he used a prussik knot sling attached to his seat harness. "Heavy gear was strapped around his waist."

A little way off the floor the prussik knot jammed, stopping him in heavy spray. He inched up on his Gibbs to work on the knot and suddenly lost his hold on the rope and went partly upside-down. His "summer caving clothes" were soaked and cold; he yelled for help. Clardy detached his knee Gibbs and was "levering" the foot Gibbs down when his companion ascended, found a small ledge and helped Clardy get upright and free the prussik knot.

A Jumar was sent down and tied close to Clardy's chest; Clardy thought he could still ascend but managed only a few feet before having to rest. He swung over to a debris choke for footing, partial de-rig and inspiration.

Clardy sent his companion on up the rope. On the surface he took excess rope, passed an end down, and the went around the pit to set up a belay. With the new belay rope attached, Clardy de-rigged from the original rope and free-climbed out, passing through most of the water flow in the process. On the surface he shook uncontrollably but was safe. He had been on rope 40 minutes.

Reference: John Clardy **Personal Communication** 6-15-86.

Analysis: This was a very near thing; Clardy is lucky to be alive. A cold, alpine cave situation is no place for the wrong kind of equipment and an inferior rig. Use good thermal underwear and waterproof coveralls or a wetsuit, Jumars (which can be taken off the rope with one hand) instead of Gibbs, electric headlamps, etc. If one must use knots, use a good knot (helical, Bachmann, etc.), not a prussik. Hypothermia — killer of the unprepared.

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AAd Bat Cave, Florida **6-15-86**

On Sunday, June 15, a group of seven people (ages 18 to 25) entered Bat Cave in Alachua County, Florida. They had been having a picnic and decided to continue the party in the cave. They brought over a case of beer with them.

After drinking and exploring for a while, they decided to try a water-filled passage. Three of them held to each other with the lead man holding the only flashlight and they pushed into the sump along the right-hand wall. The sump led to an air-filled passage that connected to the room they had started from. At about 8:40 p.m. Clifford Polete (18) tried to follow them, despite physical attempts to stop him. He did not re-appear. Several attempts were made to find him, to no avail; a call made from a nearby house summoned the authorities.

The body was found about 40 feet into the underwater passage, through a restriction too small for a diver with SCUBA gear. Visibility was zero because of silt.

References:

1) Paul Smith "Accident Report - Fatality" **Personal Communication** undated.
2) Edward Barry "Incident Report" undated, 2 pp.
3) Debbie Salamone "Cave diver drowns north of Newberry" **Alligator** 6-17-86, p 2.

Analysis: The victim had reportedly consumed 8 to 10 cans of beer and had no light when he tried to follow the other three. As he went in he was grabbed by the legs, but kicked free and continued to his death.

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Abc Bell Cavern, Colorado **6-19-86**

At about 8:30 p.m. on Thursday, June 19, four teenagers entered Bell Cavern, a cave known locally as the "Old Weaver Mine," north of Durango, Colorado. About 200 feet inside, Thad Scheer (17) tried exploring an 18-inch diameter vertical passage; he slipped and became stuck about 10 feet down. One of his companions went for help and reached the La Plata County Sheriff at 10 p.m.

The cave is at 7500 feet elevation and quite cold; the route to the entrapment was described as "a rock maze that at times narrowed to a height of two feet." Apparently Scheer lost consciousness from lack of oxygen only a minute after his entrapment.

Mine rescue teams from Leadville, Ouray and Silverton were called in and arrived in force at about 2 a.m. A Silverton team soon entered the cave and at about 3 a.m. Keith Dahl (29), while trying to enlarge an adjacent hole, lost his hold and slipped down, falling on top of Scheer; in the fall Dahl struck his head and lost consciousness.

Oxygen masks were passed down and oxygen administered through tubes soon brought both back to consciousness. A "human chain" was formed to relay equipment to the site, including compressed air drills and hammers to open the passage and allow the trapped pair to be reached and then evacuated. They were out by 9:30 a.m. Friday, twelve hours after the entrapment. Dahl was diagnosed as having "a fractured neck and fluid buildup in his lungs."

References:

1) Paula Massa Anderson "Rescuers yank youth alive from cavern" **The Denver Post** 6-21-86, p 1.
2) Bill Bocksteigel **Personal Communication** undated.
3) Larry Blair **Personal Communication** 6-25-86.
4) Rick Rhinehart "Two Rescued from Bell Cavern near Durango" **Rocky Mtn Caving** 10-86, p 10.

Analysis: Apparently neither victim was actually stuck, only disabled, in Scheer's case by lack of oxygen and Dahl's by the blows to his head. Hypothermia may also have been a factor. Mine rescue teams are very well equipped and the ready oxygen may have been a life-saver. In England years ago a caver was trapped in a tight vertical shaft and asphyxiated.

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Cc Cave Hill Saltpeter Pit #1, Tennessee **7-5-86**

In the late morning of July 5, a group of cavers were doing an experience trip to Cave Hill Saltpeter pit #1. There were three very experienced cavers and a group of trained novices getting their first in-cave pit experience. They were joined by a caver not of their acquaintance who had equipment and "some experience."

When the unknown caver started his rappel, Bill Baus, one of the experienced trip leaders, was on the bottom. The pit is 100 feet, 70 feet free but close to the wall. The unknown caver used a carabiner-brake bar setup. "As he paused to adjust the rope pad, he lost control and started to descend at near free-fall." He tried jamming his gloved hand into the rappel device to no avail. Baus, on the bottom, heard the sound of the fall, applied a bottom belay and stopped the fall just as the victim reached the bottom. He had suffered "numerous bruises and scrapes from bouncing off the walls and serious rope burns on his hands and neck."

Reference: J. William Baus "Caving Accident Report" unpublished, 3-1-87, 2 pp.

Analysis: How often do we take someone caving whom we don't really know. This caver is very lucky that Baus was there and alert. Baus says "When caving, especially vertical caving, with persons whose capabilities are not well known, one should be prepared to take precautions which would be appropriate for novices."

It is not known what caused the loss of control. On typical caving ropes carabiner-brake bars usually show too much friction when two are used. One must suspect that only one was in use and the friction was thus insufficient. As Baus says "Once control is lost, even an experienced user may find it impossible to regain control." This is true of racks or even Figure-8's if a thin rope is used. The only way to test the available friction on the device you use is to get on rappel and lean back on the rope anchor before going over the lip; if the rope is rigged right at the edge, pull some up and lean back on the device attachment in another direction.

If one is rappelling and feels the control leaving, one might start wrapping the rope around one's body and leg to gain more friction. Don't expect a novice to do so.

I have heard that some believe carabiner-brake bar setups to be unsuitable for caving, with an inherent weakness due to side-loading on the carabiner gate. I know of no failures of these devices which have been in heavy use in mountaineering and caving for decades. Furthermore, mountaineers did testing-to-destruction of carabiner-brake bar devices in the early '70's and reported the results in Off Belay magazine. I don't have the reference but recall the results — the devices destructed at some 1800 pounds — about the same force at which your body starts to destruct, and much higher than Gibbs, Jumars, etc. In rappelling it is very difficult, even if

you are very sloppy, to generate forces of greater than two or three times body weight. The notion that carabiner-brake bar setups are inherently unsafe is very obviously a **myth**.

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BI Pleasant Ridge Cave, Tennessee **8-2-86**

On August 2, a group was caving in Pleasant Ridge Cave, Cannon County, Tennessee. One member of the group, Cory Sepulueda, was adventurous and liked to split off from the group to check side leads. At some point he left the group without its taking notice and so the group continued. They were "deep in the cave before they missed him." They searched until exhausted, then left, leaving two members at the entrance in case he came out on his own.

The leader, Mike Bose, returned home where at about 8 p.m. his mother called East Tennessee Grotto Rescue. Tennessee Emergency Management Agency and Nashville Grotto Rescue were then called, with rescue personnel soon arriving at the cave. An initial team of two was sent in to search to Survey Station T-100 and return.

The cave is complex so two elaborate teams were formed to carry on the search if necessary. Shortly after midnight these entered the cave. At 1:15 a.m. the initial group encountered Sepulueda near Station A-100. He was escorted from the cave, exiting at about 2:30 a.m.

Reference: Jim Lawrence "Emergency Incident Report" **Nashville Grotto** undated, 3 pp.

Analysis: Sepulueda claims to have informed the party that he was going to check a lead and they either didn't hear him or left him because of the annoyance he was causing. In either case, the responsibility for the incident is his. It is clear that he didn't really communicate with the group — if he had, they would have had the chance to veto the separation on the grounds that they didn't want to wait.

After separating, his helmet light went out (mechanical failure) and he became disoriented. When found he was cold and had already burned some of his equipment to stay warm.

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AAce Thanksgiving Cave, British Columbia, Canada **8-29-86**

On Friday, August 29, three cavers were surveying in Thanksgiving Cave on Vancouver Island in British Columbia, Canada. These were Steve Grundy (27), Pat Shaw (29) and Glen Peppard (22). The trip was part of an annual week-long effort by Canadian and American cavers, the "Vancouver Island Speleofest."

Peppard was following the other two up a "high chimney traverse" in Suicide Passage when he had difficulty finding the route; he called to the others and Grundy backtracked to shine his light on the correct way. Grundy was on a large chockstone about ten feet above Peppard but out of sight of him. Peppard acknowledged the route but just then his pack, which was hanging on a tether to his seat harness, became snagged. When he bent to clear it, his carbide lamp went out. He related this to Grundy and was heard to "shuffle about," apparently to gain a position to use both hands to relight the lamp. A moment later (3:15 p.m.) he slipped, falling to the rocky floor some 20 to 33 feet below.

"Shaw and Grundy quickly descended, finding Peppard helmetless and breathing heavily, but conscious and complaining of severe pain in the right lower back and hip. He was also bleeding from superficial cuts to the head and hand."

Shaw stayed with Peppard while Grundy went for help. Before exiting via the Main Entrance (some 2300 feet away), he ascended the 100 foot Birthday Pot to advise a five-man survey team there of the situation. Those cavers fetched gear from an emergency cache at the top of Birthday Pot to the victim to attempt to stabilize him. Two of their party were also sent to the surface.

At 5 p.m. Grundy reached Phil Whitfield in a nearby cave. Whitfield sent word to the nearest town to request RCMP (Royal Canadian Mounted Police) involvement, an air lift of the VICEG rescue cache at Campbell River (100 miles distant) and a callout of available cavers.

By 7:30 p.m. the other two who had come from the accident scene had returned with available exposure gear, medical supplies and food. The RCMP had arrived at base camp with a radio and an hour later the helicopter arrived with the cache and a doctor.

At 9 p.m. a SKED stretcher and backboard were taken to the cave via the more direct 260 foot Staircase Entrance. Before reaching the victim they were met by cavers who had left Peppard when he died at around 8:30 p.m.

Whitfield recalled the two remaining with the body, putting off body recovery until the following day. All were out by 2:15 a.m. Saturday.

Using a lot of rigging and hauling systems, the body was brought to the surface at 1:30 p.m. Saturday. The removal took nine hours. An autopsy stated that death was caused by internal injuries including a punctured lung resulting from the crushing and breaking of the right rear of the rib cage.

Reference: Phil Whitfield "Fatal Accident Report" **Personal Communication** 9-6-86, 3 pp.

Analysis: This was Canada's first fatality in 23 years of organized caving, and only the second accident to require full victim evacuation. Despite this, the cavers on the scene were well prepared and organized and their liaison with the authorities was obviously well established.

Whitfield says, "Peppard had been caving intensively for two years, was a strong and skillful caver and had encountered no difficulties on the same traverse only days earlier. While the other team members were temporarily out of sight ahead, they had no reason to assume that Peppard would require assistance on a climb with which he was familiar and for which he had already proven competent."

As to the incident, hindsight allows us to suggest improvements — a safety line, a buddy system just in case someone's light goes out, a second light easily accessible, etc. But caving trips are, as Whitfield says. "a conspiracy of circumstances" and practicality versus the idea of "acceptable risk" will dictate for each caving party just how safe they can or want to be.

It is a good practice to have a second light either helmet mounted (there are very light-weight ones available) or dangling from one's person. I would also emphasize, and I cast no aspersions on the members of this caving party, that the last (slowest) person in a group is often most at hazard, since when he gets in difficulty there is no one to eventually catch up and help. I am as guilty of leaving people behind as anyone, but it would be nice if we could all adopt a buddy system whereby you are assigned to never lose track of the man behind you — he is your "buddy." Thus you wouldn't leave the top of a free climb or end of a traverse until your buddy, the guy behind you, arrived. He would do the same for the one behind him. Contrast this with the usual practice of waiting only occasionally for those who drop behind, leaving them to traverse difficulties entirely on their own.

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BI McClung's Cave, West Virginia **9-13-86**

On Saturday, September 13, a group of nine cavers (early 20's) arrived at McClung's Cave in Greenbriar County, West Virginia. Most had experienced only 3 to 4 cave trips but two were climbers. They planned to split into two parties. A group of five would enter the horizontal McClung Entrance and go only as far as the First Breakdown — the other group would enter the newly-discovered, vertical Lightner Entrance and travel through the cave to join the first group.

A fine, adventurous plan. Unfortunately, their only experience in the cave was as far as the First Breakdown. None had been in the Lightner Entrance or knew the route to the First Breakdown. None had even seen a map of the cave. Of the Lightner Group, only two (the climbers) had any rope experience.

At about 6 p.m. the McClung party entered the cave, proceeding to the First Breakdown. They waited "an hour or two," left a lit candle and exited.

The Lightner party entered at 6:45. Lightner has a ten foot climbdown, two offset pits of 40 and 35 feet, a short mud-wallow squeeze, a mud bank with a 12 foot drop and then the Champagne Squeeze to Tufa Trail. As they descended the drops the party became strung out. At the 12 foot drop, Jeff Dersch climbed down and went on ahead. When the others came to the drop, they rigged it and tried to find him; they checked three possible leads but found no sign. A group went for help while two stayed there, patrolling the area.

The owner of the McClung Entrance was contacted and he in turn called Ed Simpson who notified NCRC. Blue Ridge Grotto arrived at about 2 a.m. and four cavers rigged the drops and descended; they taught the two who were waiting to use vertical gear which allowed them to exit.

McClung is an extensive, complex cave with two main trunk passages and 16 miles of mapped passage. At 3:30 p.m. three groups of two checked three areas but found no sign of Dersch, exiting about 8 a.m. At this time a group went in McClung Entrance on a sweep to Second Breakdown. Another crew went in Lightner's to check yet another area.

NCRC personnel arrived at 10 a.m. and a complex command post was set up with various functions delegated. There were about 75 cavers on the scene and more expected. They were equipped to handle the victim whatever medical condition he might prove to be in.

Dersch had an electric headlight, a flashlight and spare batteries; he was wearing jeans, a long underwear top with short sleeved canvas shirt over it and hard hat. He had no food, water or pack. It was estimated that he would have light until about 6 a.m. Sunday, if he used it continuously. The probability of hypothermia was growing. If incapacitated when found, getting him out would be a major problem due to the crawls and climbs to be encountered.

The Command now had to consider strategy — they had searched in all passages they thought Dersch could reach before his light went out, to no avail. Why? The possibilities were:

1) He was injured and disabled in a small side lead or down a pit
2) He was moving around and thus eluding searchers
3) He had somehow got into the unstable-rock areas of the north part of the cave,

not yet searched.

They were also experiencing a shortage of search leaders. More were sought; crews continued to search. At 4:30 p.m. more cavers were called in; by midnight the 80 to 90 on hand would be exhausted. Cavers would be brought in by government air transport from the Baltimore/D.C. area, Bloomington, Indiana area and the southeast.

At 9:05 p.m. a group found Dersch in the Seven Finger's near-loop. He was in good condition and was escorted out the McClung Entrance. He had been in the cave for 28 hours.

Reference:
Chris and Bob Amundson "Search and Rescue Operation in McClung Cave" **The West Virginia Caver 4**(6) 12-86, p 21-24.

Analysis: Dersch wandered for a while before realizing he was really lost. He found a room with no air flow and a number of passages leading in and stayed there sleeping until he got cold, then traversing a loop of cave to warm up and sleeping again.

The traverse from Lightner's to McClung was a great idea but any such plan must allow for retreat when something goes wrong; apparently, since they had no knowledge of the route, they intended to explore their way through.

I think that one of the main disadvantages of a lack of experience is the tendency to let plans exceed reality. Still, it might have worked out just fine except for Dersch.

This was the most heavily-manned cave search in this part of the world. Apparently, it went extremely well — a number of different groups worked smoothly together.

Dersch's strategy, staying in one place until he got cold, then moving off to get warm was flawed in that it was the cause of him not being seen by rescuers in the first sweep at 6 a.m. Sunday. To stay in one place to await rescue is correct; if you need to exercise to get warm, do it there, don't start traveling.

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Ar Devil's Icebox, Missouri **9-14-86**

On Saturday, September 14, Gerald Dwayne Easter (17) and a friend were exploring Devil's Icebox, a cave used as a mine near the top of Pilot Knob in Missouri. At about 4 p.m. the wall collapsed and a boulder moved, pinning Easter. His friend suffered only minor scratches and ran to town for help.

Rescue came quickly but the boulder, estimated at 20 tons was in a position to crush Easter's chest if moved wrong. The freeing of the victim thus took some time. He was kept sedated and apparently experienced only a couple of spells of panic. The boulder was pried off at about 9:30 a.m. Sunday. There was reportedly some concern later that the boy's legs might have to be amputated.

References:
1) AP, UPI "Youth Survives 17-hour Ordeal Pinned by Tons of Rock in Cave" **The Washington Post** 9-15-86, p A16.
2) Anon. "Teen freed in Cave" **Sacramento Bee** 9-15-86.

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AAc Dante's Descent, Arizona **9-23-86**

Shortly after midnight on Tuesday, September 23, Eugene Campbell (33) died from a fall into Dante's Descent, a 300 foot deep pit near Ash Fork, Arizona. The exact circumstances are not known since he was apparently alone when he fell. Friends came looking for him and spotted his body in the pit.

A few days before, two cavers encountered him at the pit "sitting with his legs hanging over the edge, looking very despondent and drinking beer." He left and later, "friends come looking for him, worried that he might commit suicide."

References:
1) Ed. "Fall into sinkhole claims Kingman man" **Arizona Republic** (in **Arizona Caver**) Nov-Dec 1986.
2) Ed. "Death in Dante's Descent" **Arizona Caver** Nov-Dec 1986 (reported from **Desert Caver** no ref.).

Analysis: In the news account, the man was with a friend and fell; the Desert Caver says he committed suicide. It seems that we will never know which.

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Be Fisher Ridge System, Kentucky **Fall 1986**

On a trip into the Remington Sink Entrance of the Fisher Ridge System in Kentucky a group was doing some video taping. When they decided to leave, Joan Miller tried to use new vertical gear her husband, Steve, had better adjusted for himself after Joan had successfully practiced with it. She could not make it work. Finally, in desperation, Steve put on the rig and clipped Joan, via her seat harness, to his seat harness, and ascended. Joan was able to help a little by pulling on the rope when Steve was making a step. When they were up high enough to be against the wall, she found holds to put her weight on and they eventually made it up.

Reference: Joan Miller "Remington Incident" **DUG Scoops 5**(1) 11-86.

Analysis: No matter how well one person's gear fits another, it is not a good idea to share. It just complicates a hazardous activity. In this particular situation they showed good ingenuity and determination to solve the situation, though I would suggest a more secure attachment of the dependent caver to the hauling caver than "an ascender which was connected to his seat harness by a short cord." Ascenders aren't all that strong.

Responsibility for a situation like this rests with both equipment-sharing cavers and with the group for allowing equipment-sharing. But realistically, it is a rare caver who has never had an equipment failure that made him dependent to some extent on his companions.

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Bf Carpenter-Swago Cave System, West Virginia **11-1-86**

At about 3 p.m. Saturday, November 1 a group of five cavers entered the Swago Pit Entrance of the Carpenter-Swago Cave System in Pocahontas County, West Virginia. These were Ryan Carlson [18], the leader, Dan Zeman, Art Yang [16], Thorin Blanco [19], and Jeff Ewers.

The leader had two to three years of caving experience, the rest little or none, though one was a rock climber. They had rented helmets and lights [two Justrite electrics and three carbide lamps]. For vertical gear they had three Figure-8's and one set of Jumars. They left word of their destination with Ewer's wife but did not get permission from the landowner. The weather outside was described as a "lingering rainstorm." They had Xerox copies of a map of the cave.

They rigged the 50 foot entrance drop as far from the waterfall as possible and proceeded down. About 200 feet further in is a 30 foot falls. Here there is a by-pass to a higher, dry rig-point. They did not find this and had to rig the waterfall; all rappelled down, getting soaked in the process. A 300 foot dynamic rope was used for both drops.

The group continued through the Sewer [one to two feet of air space] and spent several hours exploring the main, dry part of the cave. At 10 p.m. they returned to the base of the entrance pitches.

Meanwhile it had been raining and the flow had increased. None could climb the rope as rigged. Finally, Zeman, the rock climber, rigged the rope for a diagonal Tyrolean traverse ascent and was able to climb out. He found the dry bypass above but considered it too exposed to use to re-rig the rope.

Zeman decided it was too dangerous for the others to attempt climbing up the waterfall and so pulled up the rope. He yelled for them to go back to the dry part and wait. He then Jumared up the entrance pit and went for help.

The others were cold and tired. They had little food, were dressed in cotton and were of small, thin stature. They proceeded to burn their spare carbide in the open to gain warmth.

At 1:30 a.m. Zeman contacted the West Virginia State Police at Marlinton. At 2:30 a.m. they got hold of Jerry Kyle. The word was spread and at around 6 a.m. properly equipped cavers began arriving at the entrance. At 6:44, wet-suited rescuers entered with sleeping bags, blankets, hot drinks, heat packs and food. They re-rigged the drop and at 7:30 a.m. reached the victims.

At 9 a.m. the first victim was hauled up the 30 foot drop via the dry bypass. The last exited the cave at 10 a.m. They were examined at Pocahontas Memorial Hospital and released.

References:
1) Jerry Kyle "Rescue at Swago Pit" **The West Virginia Caver 4**(6) 12-86, p 20-21.
2) George Dasher **Personal Communication** 11-14-86.

Analysis: The group was very poorly equipped for wet caving. Still, when things went bad, they made some good decisions and this may very well have prevented a fatality. The use of their spare carbide was very inefficient. Going in a waterfall entrance in bad weather is very foolish.

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AAr Northfield Caves, Minnesota **11-1-86**

On Saturday five students from St. Olaf's College were digging in the entrance of a cave in Northfield, Minnesota. They had tunnelled in about 15 feet through dirt with their hands and a pail when, at about midnight, the fill above collapsed. Thomas E. Johnson (20) was trapped — three others were just inside while the fifth was outside. The body was recovered at about 1:30 a.m. by rescue workers; he was pronounced dead at the scene.

References:
1) Lydia Villalva "Cave collapse kills student at St. Olaf" **St. Paul Pioneer Press & Dispatch** 11-2-86, p 1C.
2) Calvin Alexander **Personal Communication** 11-6-86.

Analysis: The fill that collapsed had been put in the entrance to close it some eight years before; the actual ceiling of the cave didn't collapse.

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Db Quarry Cave, Vermont **November 1986**

On Thanksgiving weekend Peter Quick entered Quarry Cave in Vermont to try some blasting. To get to the blast site requires traverse of 300 feet of passage, the last 70 feet being tight crawl leading to a low room. Quick used seven "TNT primer charges." The site had consumed 28 sticks of dynamite in five previous blasts. He

set up the charge and ran the wire out the entrance into the quarry. The charge went off and Quick took a hike for two and a half hours to let the fumes dissipate — there is little air flow in the cave. There was snow on the ground and night was coming.

At the blast site the results were apparent but not quite enough to open the lead. As he examined the site his eyes started to burn. There was no visible smoke or odor but it was obvious that there were still fumes present. He backed out of the lead but felt dizzy when he sat up. He felt panicky about passing out in the midst of the fumes so he set out for the entrance; his arms and legs felt numb. His wallet and keys were in his pack so it had to come too. He exited and trudged through the snow, down the mountain to his truck. His head and lungs ached but this passed and he recovered.

Reference: Peter Quick "Sudden Impact" **DUG Scoops 5**(4) 2-87.

Analysis: In blasting with dynamite one must give the resultant fumes great respect. They are reputed to give an effect that is gradually deteriorating; the effects, assuming you are not killed outright (which is possible if the assimilated dose is great enough), may "merely" shorten your life a bit. If someone says "The fumes don't hurt you, I've breathed a lot of 'em!", don't believe it — that person will probably not live as long as he would have otherwise.

A good procedure in blasting is to shoot the charge and, if there is little appropriate air flow, come back the next day. Also, one will lessen fumes by lessening the charge used. This can be done by always using a shaped charge — never use whole sticks. Shaped charges are easily made by packing the blasting compound in a funnel with the cap at the apex of the cone, in the stem of the funnel. The large end of the funnel (with plastic taped on to keep the compound in) is placed against the offending rock.

Some explosives, it should be noted, do not produce poisonous fumes.

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MINOR INCIDENTS

Dr Sugar Tree Pit, Kentucky **1-11-86**

Three cavers were surveying in this cave in Pulaski County. Beyond the "second pit" Phil O'Dell was nearly hit by a "small breakdown slab" that "slid from above" and landed on the survey station Phil was occupying an instant before. (**Kentucky Caver**, Bluegrass Grotto, 2-86).

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Bc Sloan's Valley System; Garbage Pit, Kentucky **1-86**

Four cavers were traversing from Garbage Pit to the Post Office entrance of the Sloan's Valley System in Pulaski County. They were at the south overlook to the Big Room and used a fixed rope as a handline for a climb. One out of condition individual failed to keep his hold on the rope and fell; he stopped at the edge of a dropoff, avoiding a further 40 foot fall. He was helped up the rope and continued the trip. One caver commented on "How many times we take nerds and push them to the limit and get by with the attitude of 'he is out of shape and I want to see him sweat.'" (**The Cave Cricket Gazette**, Miami Valley Grotto, 11(3), 4-86).

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Dr Boundary Pit, Kentucky **1-86**

On a trip to this newly opened pit, three cavers experienced rock fall incidents. The upper part of the 105 foot descent is in the crumbly Roubidoux formation. One caver was struck on the foot by a small, ricochetting rock and another was narrowly missed by a larger one. (Mick Sutton, **MSS Liaison 26**(5), 5-86, p 33).

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Cc Santa Claus (Pearl) Cave, California **1-86**

A group traversed the cave to the Register Room. At the "last optional climb" before exiting a caver was demonstrating chimneying, fell and suffered a bad ankle sprain. He was assisted out and taken to a hospital. He had also fractured a toe bone. (**Short Rounds**, Golden Gate Grotto, 2-86, p 10).

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Bl Crevice Cave, Missouri **1-3-86**

A group of university students started on a through trip in Crevice Cave but became confused, turned back, then couldn't retrace their path in. They became overdue and were found by cavers about 1200 feet in from the entrance. (**MSS Liaison 26**(2), 2-86, p 10).

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Dcs Parker's Pit Cave, Indiana **1-25-86**

Four cavers were in Parker's Pit. At the Upper Bound, a 22 foot pit, two had descended when the third came down with a "whoosh," crashing to the floor. He was using a carabiner-brake bar device and had neglected to completely rig in — the rope went through a biner, over the bar, but not back down through the biner! The caver was not injured and continued. On the same trip a caver became stuck in the Z-Bend and had to be helped through by cavers ahead and behind. (S. J. Collins, **CIG Newsletter**, April 1986, p 74-77).

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Dc Breathing Cave, Virginia **1-18-86**

In the Nutcracker, a short but constricted drop, a caver fell, landing on his back on a small knob on the floor. He was in pain but not injured and continued. Later, while leaving the Natural Bridge Room, a second caver fell down a steep clay bank, landing on his back, suffering great pain but no injury, from a flashlight in his back pocket. (**Dead Dog Dispatch**, Tri State Grotto, 1(2), Jan. 1986).

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Dr Fisher Ridge System, Kentucky **1-86**

In January two cavers were in the Fisher Ridge System via the Remington Sink Entrance. They did a long survey trip in Midway Canyon then headed out. At the bottom of the Remington Room they were getting their vertical gear on when there was a large rockfall from the other side of the room. They were inspired to haste. The first got up without incident, but as the second started up another, larger rockfall occurred. He was not hit and they continued out. The collapse had occurred in an area they had passed through only moments before. Apparently this area is affected by freeze and thaw and these cavers recommend it be avoided. (Dan Crowl, "Fisher Ridge Summary" **DUG Scoops**, 2-86, p 5).

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Bl Bowden Cave, West Virginia **2-16-86**

1 p.m. on Sunday, February 16, a group of seven young men (early 20's) from Barbour County entered Bowden Cave in Randolph County, West Virginia. They split up and explored; later only a group of three was able to find its way out. At 11 p.m. Sunday, the Elkins Volunteer Fire Department was notified. Six of them entered the cave and found the lost cavers at about 1 a.m., on the opposite side of the water passage — they had lights and were in good condition but had been unable to locate the water passage and had sat down to wait for help. (George Dasher "Rockin' Chair", **West Virginia Caver 4**(2), 4-86; Bob Liebman, **Personal Communication**, 2-27-86).

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Dcd Sumidero of the Rio Atima, Santa Barbara, Honduras **March 1986**

On a push trip into the Rio Atima Sumidero, Steve Knutson was not far in from the entrance when he slipped on the slimy, water-sprayed rock and severely twisted his left ankle. He decided to continue the trip, getting out 17 hours later. The ankle was swollen, discolored and sore. Hot water baths and exercise were taken the following day. Four days later he went on another push trip and continued caving for the rest of the expedition, taping the ankle for each trip. The ankle later produced bone spurs but has recovered. On another push trip, Jon Burkig nearly drowned when caught in turbulence while trying to cross a waterfall plunge pool. (Steve Knutson, **Personal Communication**, March 1986).

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Da Lee Cave, Kentucky **3-29-86**

A group was pushing the main drain in the Thorsell Shafts area of Lee Cave when Tom Alfred experienced a carbide explosion that burned has nose and singed his eyebrows and moustache. He was using a ziplock bag with the spent carbide sealed inside and opened it next to his face while his carbide lamp was still lit. (Tom Alfred "Expedition Report, March 28-31, 1986," **CRF Newsletter**, 5-86, p 2).

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Ar Moonshine Cave, Kentucky **3-29-86**

In Mammoth Cave National Park ridgewalking produced the entrance to Moonshine Cave, small but with good air movement. In moving breakdown Rick Olsen "Smashed two fingers on his left hand." (Tom Alfred "Expedition Report, March 28-31, 1986," **CRF Newsletter**, 5-86, p 2).

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Bl Buckner's Cave, Indiana **5-86**

At 1:30 p.m. on Saturday, two cavers entered Buckner's Cave near Bloomington, Indiana. They explored for a while, then became confused as to the way out. When their lights began to grow dim, they sat down to wait for rescue in the King's Grotto.

Roommates and friends became increasingly worried and on Sunday local cavers went in to find the victims. At noon fourteen entered and searched for some time. Four novices meanwhile entered and, with beginner's luck, found the lost pair. The victims ate some candy and exited under their own power. (Scott Fee, "The Great May Grotto Trip Rescue" **CIG Newsletter**, 6-86, p 109).

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Be Fulford Cave, Colorado **5-17-86**

Two youngsters entered Fulford Cave in Colorado via a rope hand-line down the 30 foot entrance drop. After exploring, one was unable to climb out. The other went for help; he returned with a local rancher who pulled the trapped boy up. He was shivering from cold and "could only babble his name." (Rick Rhinehart, **Rocky Mtn Caving 3**(3), Summer 1986, p 27).

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Dr Brussels Hill Pit Cave, Wisconsin **6-22-86**

On June 22 cavers were digging in this 30 foot pit, hauling debris up in a bucket. At one point a "huge rock" fell back down but missed Kevin Hennings who was digging at the time. (Norbert Kox, **Wisconsin Caver**, 7-86, p 16).

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Dr Summer's End, Colorado **7-7-86**

On July 7 a group of four was in Summer's End Cave in Colorado. One was climbing down a breakdown slope and dislodged a rock; this bounded down and hit Devin Jones (17) in the face. Fortunately it was a glancing blow and he suffered only abrasion to his cheek and nose. Laura Jones observed, "Keep your head down and stay away from the bottom while others are descending." This goes for vertical caving as well; never look up — let your helmet do its job. (Laura Jones, **NSS Accident Report**, undated).

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De Gargantua Cave, British Columbia, Canada **7-13-86**

On the way out of Gargantua Cave from the 818 foot level, a caver had done one of the two vertical pitches when he noticed "some loose stitches" on his foot Gibbs harness. He continued. Halfway up the 56 foot pitch the primary stitching gave way but the "backup" stitching held. (Keith Wheeland, **Nittany Grotto News 33**(4), 8-86, p 22-23).

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Be Breathing Cave, Virginia **7-19-86**

On Saturday, July 19, Mary Hagerty (29) and Charlie Duffy (30) entered Breathing Cave in Bath County, Virginia. They intended to see the waterfall but were ill-equipped; one had only a flashlight and the other a single helmet-mounted electric light. They were dressed in ordinary clothes and tennis shoes. Fortunately they encountered other cavers. Later that night when they were obviously overdue, the other cavers organized a search and with the help of some BCCS cavers, found the two about 4 a.m. sitting in the dark in the Ignition Room. (John Rosenfeld, "Breathing Cave" **BCCS Newsletter**, 1986).

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Cc Fulford Cave, Colorado **Summer 1986**

"While doing some preliminary work for the upcoming Cave Rescue Seminar, Greg Miller slipped and fell in the Attic of Fulford Cave, dislocating his shoulder." [**Steve Reames, Rocky Mtn Caving**, Summer 1986).

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Dbe Knox Cave, New York **7-26-86**

A group of seven cavers was visiting Knox Cave in New York State on July 26. The group had toured the cave and was headed out. The Gunbarrel is a 50 foot long tube 14 inches in diameter near the entrance. Roland Vineyard started through, shoving his pack ahead of him, followed by two others. At a tighter place, halfway through, he suddenly noticed smoke coming towards him. It was extremely acrid, burning his lungs and eyes. He yelled ahead that his pack was on fire and that he was retreating. He did so, moving as fast as possible, afraid that he might be overcome by the fumes.

The three waited 45 minutes, then exited. They found that a "Nite Lite" battery in his pack had shorted, burning the insulation off and nearly melting through the side of the battery. Only "severe headaches and sore throats resulted." They strongly suggest a fuse in electric systems. (Roland Vineyard, **Personal Communication**, undated; also in **Northeastern Caver 17**(4); Clayton Pauley, **Northeastern Caver 17**(4), p 100).

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Da Brokedown Palace Cave, California **Summer 1986**

On a survey trip to Brokedown Palace Cave, three cavers were in a bellycrawl tube when there was a tremendous explosion from the second in line, Jim Wolff. Wolff started moaning since his pack had suffered a carbide explosion right in his face. His face was blackened and his eyes sore from the flame and soot, but he was OK. The pack, a Lost Creek model, was literally destroyed, with the quick release buckles snapped off and the seams all ripped out. Wolff's equipment was stuffed into other packs and they departed. (Jim Wolff, **Personal Communication**, undated).

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Cc Sloan's Valley System, Kentucky **8-15-86**

On August 15 a group entered the Sloan's Valley System in Kentucky, via Post Office Pit to explore the Appalachian Trail and exit Screamin' Willy's Entrance.

After a considerable time in the cave, they arrived at the exit. To reach the bottom of the 54 foot exit pit, which had already been rigged with a cable ladder, one had to climb into a small hole about ten feet above the passage floor. Mark Guttadauro tried this and fell, badly bruising one leg. He was now unable to do the climb. Remarkably, he found a previously unknown crawlway that bypassed this pitch. A belay was set up at the 54 foot ladder climb. The victim made it out despite a couple of slips and numerous rest stops. (Mark Suer, "Sloan's Surprise," **The Electric Caver**, Greater Cincinnati Grotto, 1-87, p 4-6).

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Dl Johnson's Cave, Tennessee **8-15-86**

At about 11:30 a.m. Friday, August 15, three persons entered Johnson's Cave near Highway 84 and the Putnam-White County line in Tennessee. One of the group, Norman Schall, Jr. (22) went ahead of the other two, intending to wait and "surprise" them. The surprise was his when the other two went a different way. The other two found their way out and, at about 1:30 a.m., notified the Monterey Rescue Squad. The cave has a 40 foot drop which has been the scene of several previous accidents so the rescue crews arrived at about 2:45 a.m. with vertical equipment. The victim emerged at the same time, having finally found his way. Surprise! (Marion Moore, "Caver Exits Unharmed," **Herald-Citizen**, Cookeville, Tennessee, 8-17-86, p 1-2)

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Br Stompbottom Cave, Virginia **8-23-86**

On Saturday, August 23, three cavers went surveying beyond the Gnarly Hole in Stompbottom Cave in Tazewell County, Virginia. At around 5 p.m., Koichiro Takamizawa was climbing a breakdown pile to check a lead when a large rock slipped a few inches, trapping both of his feet.

After a half hour of work, his companions had freed one foot. At 7 p.m. one companion went for help. CRCN waas reached and had rescuers at the cave early Sunday morning. The victim and companion stayed warm with garbage bags and carbide lamps.

At 3:30 a.m. the victim had freed himself by digging in the ground beneath his ankle. They proceeded to a point 100 feet from the Gnarly Hole and waited for a splint to be brought through the tight crawls. Due to miscommunications and inability of the rescuers to fit through the tight places, a splint never arrived. At 6:30 a.m. they started out, arriving at the entrance at 9 a.m. (Joan Johnson, Koichiro Takamizawa "Stompbottom Accident Report" **Tech Troglodyte** (VPI Grotto) Spring 1987).

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Bs Goose Creek (Lost Creek) Cave, Colorado **10-3-86**

On a through trip of the Lost Creek Cave System, Steve Sims was swimming a canal while the others traversed the walls to either side. At a narrow place a foot became wedged underwater between the walls. His friends couldn't climb down to help him, so one climbed into an alcove with a rope and fed the trapped caver one end of it. Sims tied it around himself under his arms but still couldn't pry himself loose. His leg became painful so he pivoted to relieve it and suddenly was free. (Todd Warren, **Rocky Mtn Caving**, Winter 1987, p 24). Note that this is the cave in which Bruce Unger died in 1980 when his foot became wedged in a fast chute. Flowing water is a powerful agent and must be respected.

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Dr Lazy Day Cave, British Columbia, Canada **10-86**

In October of 1986 a group of cavers was in Lazy Day Cave on Vancouver Island in British Columbia, Canada. They were crawling through a virgin fissure two and a half feet wide with a cobblestone floor when the floor suddenly gave way. Those involved immediately jammed themselves across the passage, saving themselves from a 15 foot fall. In virgin cave I guess one should expect anything. (Ed. "Disaster of the Month," **SFBC Newsletter**, 11-86, p 4).

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Be Johnson's Crook Cave, Georgia **10-25-86**

On Saturday , October 25, three people (two males and a female, early 20's) went caving in Johnson's Crook Cave in Dade County, Georgia. To negotiate the 20 foot entrance drop they used a non-nylon rope with knots tied at intervals. The first descended hand-over-hand; the female was then lowered on the end of the rope. When the third started down hand-over-hand, the rope broke and he fell onto the first man; together they rolled down the slope. Neither was seriously injured. They had no helmets and two were wearing only shorts and shirts. Luckily some "real" cavers had entered before them and at 4:30 p.m. they returned to the entrance room and helped the victims out. (Steve Storey and Brian Williamson, "**Accident Report**," Unpublished, 12-15-86, 2 pp.).

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Cc Hell Creek Cave, Arkansas **October 1986**

A group of cavers were in Hell Creek Cave in Arkansas. At the water passage they got very wet and cold. To regain some warmth they took off for the entrance. At the "Don't Slip Crevice" Tim Shaw tripped and fell jamming for a moment across the ledges before falling into the mud and water ten feet below. He badly bruised the upper left side of his body and left shoulder but was able to continue. (Tim Shaw, "Hell Creek" **Hodag Headlines**, Hendrix Student Grotto, 10-86, p2).

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Be Shaft Cave, Indiana **11-3-86,1**

Late on the night of November 3, three people rappelled into Shaft Cave near Bloomington, Indiana. They had no real ascending gear but one made a makeshift rig using knots. He got out and called the State Police for help. They called cavers who retrieved the remaining two. The gate had been vandalized only the week before, allowing this nerd entrapment. [Dave Haun, "More on Shaft Cave," Indiana Karst Conservancy Update, 11-86, p 17).

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Ac Dames Cave, Florida **11-7-86**

On November 7 several people were at a Crystal River tavern drinking and dancing when they got the bright idea to go caving. They drove to Dames Cave in Withlacoochee State Forest. Colleen Costello (26) was looking down into one pit, where there was something burning; she took two steps backward and fell into a second pit. She dropped some 20 to 25 feet, fracturing her pelvis and wrist. She was taken to Citrus Memorial Hospital. (Ed. "Cave Explorer takes a fall," **St. Petersburg Times**, 11-11-86; in **Tampa Bay Caver 4**(6), 12-86)

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Ac Moler's Cave, West Virginia **11-15-86**

At 11 a.m. on Saturday, November 15, a group from YMCA Horizons Youth Service entered Moler's Cave in the West Virginia panhandle. They were apparently novices paying for a cave trip. The group proceeded to the back of the cave. At 2:30 p.m. a 13 year old girl slipped, fell and dislocated her knee. The leaders sent word out to the caretakers at the farmhouse to call for help. Jefferson County Emergency Services was called and two Fire Companies responded. NCRC was also contacted as well as D.C. area grottoes.

The cave has tight places that keeps a Stokes litter from being taken into the lower levels. Meanwhile the knee was relocated and after being given medication the girl was able to walk. She was thus escorted to the litter but it was then decided to put her in a seat harness and haul her up that way. She was out of the cave by 9 p.m. (Jay Sperry, "Rescue at Moler's Cave," **Dead Dog Dispatch**, Tri State Grotto, 1(12), 12-86, p 304-305).

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Dr Sloan's Valley Cave, Kentucky **11-15-86**

At a potential entrance called Doug's Dig, Doug Stecko was checking things after a flood. The sink was enlarged and the lead at the bottom more open. He climbed down to check more closely when two two-ton boulders came loose beneath him; he was not injured as he and the boulders rolled to the bottom. He carefully climbed out. (Doug Stecko, "Sloan's Valley Cave, Doug's Dig," **Cave Cricket Gazette**, Miami Valley Grotto, 12(2), 3-87).

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Cc Scott Hollow Cave, West Virginia **11-22-86**

On November 22, three cavers were in Scott Hollow Cave in Monroe County, West Virginia, surveying. One took a short fall, caught himself with his left hand and dislocated his shoulder. His companions went for help and initiated a rescue call-out. There was a mile of cave and two vertical drops between the victim and the entrance. But, "not having much else to do," he started out, exiting just before midnight. (George Dasher, "The Rockin' Chair," **The West Virginia Caver, 5**(1), 2-87, p 12).

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Cr Scott Hollow Cave, West Virginia **12-6-86**

On December 6 a group of six entered Scott Hollow Cave in Monroe County, West Virginia. They split into two groups, one to push ahead and survey and the other to follow, surveying. The survey reached the top of a 25 foot pit with a continuation at the bottom. As Rusty Wilson stepped to the floor after descending, a rock fell striking him on the shin. He suffered a deep puncture wound with bleeding. A dressing, Ace bandage, and black electrical tape were applied and he was given two aspirin. They exited with further incident. (Gary Ferrell, "Accident Report: Scott Hollow Cave," **Parkersburg Subterranean Flyer 4**(3), 3-86).

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Be Howard's Waterfall Cave, Georgia **12-15-86**

On December 15 a mixed group of novice and experienced cavers visited Howard's Waterfall Cave in Northwest Georgia. They entered in mid-afternoon and toured the cave, but didn't do the rope drop into the "canyon" because one of the new cavers was getting tired.

Meanwhile, three boys (early teens) saw the car at the entrance and became inspired. With one weak flashlight they entered and proceeded, unknowing, in the direction of the register. When the flashlight started to fail, they panicked and ran for the entrance, "slamming into formations and barely missing pits." At this point they encountered the other party, who escorted them to the entrance. They had suffered some bruises and abrasions but were OK. This may seem like a very minor incident but it was pure chance that the experienced group came by when they did. (Dan Hills, **Personal Communication** 5-27-87).

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Do Wayne's Cave, Indiana **12-27-86**

On Saturday, December 27 at 9:30 a.m. a group of cavers entered Wayne's Cave in Indiana. This was an Explorer Scout group with three adult leaders, ten in all. They had obtained permission and a key to the gate from the Indiana Karst Conservancy. While they were in the cave (about eight fairly strenuous hours) someone jammed the lock. Rubber cement had been applied and an X-acto knife jammed in and broken off. When they tried to exit, they could not open the gate.

Most were sent back to a drier part of the cave while two leaders worked on the lock and tried to signal some outsider with their lights. After four hours the lock was opened. (Keith Dunlap, "Incident at Wayne's Cave," **CIG Newsletter**, Oct 1987, p 12; Gary Doolittle, "Incident at Wayne's Cave," **Personal Communication** undated).

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Da,c Rehoboth Church Cave, Virginia **12-28-86**

On December 28 a group of four cavers was in Rehoboth Church Cave in Monroe County, Virginia. They had entered at 11 p.m. to take photos and stayed long enough for at least one carbide charge. As they came through a tight crawlway there was an explosion. Acetylene escaping from the pack of Kenneth Anderson (23) had ignited as he pushed the pack ahead of him. The explosion knocked off his helmet but did no permanent damage. The acetylene was generated from the moisture getting at loose carbide in the bottom of the pack — he had neglected to properly close the lid of his carbide container. On the way out Jay Tompkins (20) was traversing above a pool when he slipped from his holds — the "water belay" saved him from injury. (Wayne Arrington, **NSS Accident Report** undated, 2 pp.).

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Be Sotano De Apetzco, San Luis Potosi, Mexico **12-28-86**

On December 28, four cavers were in Mexico doing Sotano de Apetzco. They rigged a new rope on the 400 foot entrance pitch and rappelled in. Two were down when Terry Bolger came in. At the point where it bells out, 250 feet above the floor, he went out of control and had to be stopped by a bottom belay. They discovered later that his rack was bent near the bottom, allowing the bottom two bars to pop off when he moved the rope back and forth with his braking hand while negotiating the non-free ledges and cracks. When he hit free-fall, he had only four bars working. With the slick new rope this offered too little friction. One should try to wrap the rope around their body and leg to gain more friction if something like this happens.

On the way out the last caver arrived at the rope pad to find that the rope had slipped off it and the sawing up and down had worn off almost all of the sheath. This can be sometimes avoided by consciously breaking your ascending rhythm so that bouncing doesn't occur. (Mike Goar, "Sotano de Apetzco," **Southwestern Cavers**, Jan-Feb 1987, p 18-19).

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DIVING INCIDENTS 1986

AA	Kihei Lava Cave, Hawaii	Winter
AA	Morrison Springs, Florida	2-1
AA	Peacock Springs, Florida	3-29
B	Fishrock Cave, Hawaii	Spring
AA	Caye Caulker Caverns, Belize	6-2
AA	**Devil's Ear Spring, Florida**	8-12
AA	**Morrison Spring, Florida**	8-30
AA	Royal Springs Cave, Florida	10-8
De	Crab Creek Cave, Florida	Winter

AA Kihei Lava Cave, Hawaii **Winter 1986**

In a second hand report, two divers were exploring lava tube caves in shallow water near Kihei, Maui in the Hawaiian Islands. One signalled low on air and went for the surface. When the partner (male, around 50) failed to follow, the diver at the surface went for help. The body was recovered some hours later in the lava cave at a depth of 25 feet. There was no air left in the tank. No guideline, no extra light, no air rule and no survival. (Jeff Bozanic, "Maui Lava Tube Fatality," **Underwater Speleology, 13**(4) p 6.

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AA Morrison Springs, Florida **2-1-86**

On Saturday, February 1, three young men camped at Morrison Spring, Ponce de Leon, Florida, for some diving. In the early evening they did a dive and later, nearly midnight, Todd DeLoach (25) and Joseph Treadwell (25) dove again. They had single 72's, single valves and had a rental underwater flashlight each.

The next morning the diver who had gone to bed instead of diving, awoke to find the others missing. Their bodies were found at 8:30 a.m., one at the 60 and one at the 90 foot level.

References:

1) Editor, "Double Drowning at Morrison Spring," **Underwater Speleology, 13**(2), 2-24-86.
2) John Burge, "Follow-up report - Morrison Spring Drowning," **ibid, 13**(3), 4-17-86, p 6.
3) Jennie Hess, "2 Georgia divers find death in Florida cave," **The Atlanta Journal/Constitution**, 9-14-86, p 41A.

Analysis: Due to high river levels outside the spring, visibility in the spring was five to ten feet; this extended down to 40 feet. At the mouth of the cave leading off, visibility was good but even in daytime, no light penetrates here. It is again pointed out by cave-qualified divers that all the "rules" were violated: no guide lines, no redundancy of lights, no air management planning, no compass, no light at the entrance, etc. But it must be said that these "rules" are really only known to cave-certified divers. Perhaps signs listing these rules and posted at popular springs in Florida would reduce the fatality rate somewhat.

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AA Peacock Springs, Florida **3-29-86**

On Saturday, March 29, a group of four entered Peacock Springs in Suwannee County, Florida. Besides standard SCUBA gear they were equipped only with reef gloves, snorkles, single dive light each and no guide line. On the scene were some trained cave divers who offered advice, to no avail. The group had no cave diving training and no knowledge of the cave. They began their dive; the cave divers kept track of the situation.

Apparently [as reconstructed by cave divers doing the body recovery] the group entered the traditional cavern area and explored for a while. Reaching the western end they saw the orange warning sign and began to move toward the "slit" looking for clear water for photography. There, two descended while photographing the rest. One of these two, John Hodgson [31], apparently became bored and left the group. It is speculated that he followed the main passage guideline as far as the white warning sign. This led to poor visibility so he started for the entrance. At the east tunnel hes exited to get help. The cave divers were still there and began a search almost immediately, while authorities were being alerted. At first they geared up for a resuscitation but as time went by it became a body search. The victim was found after some 25 minutes of searching.

Reference: Joe Prosser, 'Accident Report - Peacock Springs,' **Underwater Speleology 13**(3), 4-17-86, pp 5-6.

Analysis: The group ignored advice; they were told that training was required and available. They believed they didn't need it since they weren't going in very far and only a few times each year. Unfortunately, the victim couldn't resist the "urge to explore" which has already killed many poorly prepared divers and will continue to do so.

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B Fishrock Cave, Hawaii **Spring 1986** At 2 p.m. a cave dive began involving a group of ten divers at Fishrock Cave in the Hawaiian Islands. At 2:06 they were at the mouth of the deep entrance (there are two entrances) to the cave at a depth of 80 feet (24 meters). One diver, "Helen" (31) was certified only ten months before and was apprehensive about the dive. It had been agreed between her and the divemaster Neralyn Single that she might turn back at the cave entrance. She signaled that she was OK. Her "eyes indicated no abnormal signs of stress."

Fifty feet into the cave they exchanged "OK" signals and Single started up the Chimney, a 15 foot ascent in a narrow tube. At this point Helen began reacting strangely; she remembered feeling that she was not moving at all, as if in a dream. At 2:14, eight minutes into the dive, Single could see that "she was severely stressed." She tried holding her close to comfort her, maintaining eye contact. She was taking huge breaths and there was no longer a seal between her lips and the regulator. She struggled, dislodging Single's regulator; her mask floated off and her regulator fell from her mouth. Her eyes rolled up in her head and she arched her back.

Single was able to get to Helen's regulator and get it in her mouth; she pried Helen's fingers from it.

Another diver was now back at the top of the chimney, above them. This led to a large horizontal passage and a shallow entrance, 240 feet away. The way behind them was blocked by the main part of their party. So the diver above and Single got Helen out the back, shallow entrance to the cave. As they did so, they could see foam coming from the victim's lips and nostrils and in outside light they could see that she was blue in the face. They estimate four to six minutes to get her to the surface.

Helen had not been breathing for an estimated six minutes; her head was back, jaw clenched. Single gave three quick breaths, mouth to nose, and the victim's jaw relaxed. EAR was then given mouth to mouth. Another diver took over while one went for the boat.

At 2:15 the boat arrived and Helen was taken aboard. She was given "cardiac compression" initially but was found to have a very slow pulse so this was stopped; she was placed in a "recovery position" and vomited copiously. She was badly cyanosed, with dark blue lips, cheeks, ears and nose, so a regulator was connected to an oxygen cylinder (Bendeez adaptor) and oxygen was administered. Since she wouldn't accept the regulator in her mouth, she was commanded to "breathe in," then "breathe out" and the oxygen vented in her face on each inhalation. She soon accepted the regulator in her mouth but would still only breathe on command.

The rest of the diving party arrived, two with their air depleted. The boat started back, traveling slowly. The victim was still blue, with a very slow, weak pulse and was vomiting and coughing fluid. She was given 25 minutes on pure oxygen, five minutes off, then another twelve minutes.

At 3:24 the boat arrived at the beach and she was transferred by ambulance to a hospital, being given more oxygen in route. She was now lucid, though still appeared to be cyanosed, with pale skin, a pulse of 88. At 4:09 she arrived at the hospital with a pulse of 75 and better color.

Reference: "Drowning and successful resuscitation at Fishrock Cave," **Univ. of Hawaii Report**, in **Underwater Speleology, 13**(4), 6-25-86, p 4-5.

Analysis: According to the hospital report, this was a "remarkable survival" and hinged on a number of coincidental factors:

1) Blood has an increased ability to carry oxygen under pressure. Thus at the time of the incident, the victim had been deep, allowing her blood to have accepted much more oxygen than if the dive had been reversed — going in the shallow entrance first instead of the deep end.
2) The victim's companion and dive leader, Neralyn Single, rendered skillful and determined aid in the form of five exhausting minutes of EAR, given when the victim reached the surface, despite the "dead" appearance of the victim.
3) The boat was well-equipped with oxygen. During her trip to the hospital she was given almost three hours of oxygen administration. They attribute to this the avoidance of serious cerebral damage.

What caused this incident is not discussed. It may be some sort of seizure, or a case of claustrophobia.

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AA Caye Caulker Caverns, Belize **6-2-86**

On Monday, June 2, a group of five set out to explore the great cave off the leeward coast of Caye Caulker. The entrance is a 15 foot diameter pit with a couple of constrictions that drops 80 feet into a huge room, 2200 feet long by 1800 feet wide by 25 to 80 feet high. This is criss-crossed by dive lines from previous explorations.

Adolfo Ayuso [35] and Art Samuels [or Williams] entered first with the rest turning back short of the room. Two went back in after a while and encountered Samuels in the passage leading out but in a state of panic. When he became unconscious they were able to bring him out. Attempts at resuscitation failed. The other diver was never found.

References:

1) George Veni, "Concerning Caye Caulker Deaths," **Underwater Speleology, 13**(5), 9-15-86, p 5.
2) "Caye Caulker Caverns claim two SCUBA Divers," **Belize Reporter**, 6-8-86 (in **Underwater Speleology, 13**(5), p 5).
3) Frank Bounting, "Letter concerning double drowning in Belize," **Underwater**

Speleology 13(5), 9-15-86, p 6.

Analysis: Ayuso was described as a fine and very experienced diver. Veni speculates that they may have become confused by the many dive lines in the room. They had no line of their own, only single tanks without backup regulators or octopus, and only every second person had a light. The letter from Frank Bounting relates that Samuels' companions gave him CPR by putting his regulator (he had 500 psi still in his tank when he was brought in) in his mouth and pushing the "purge" button. The divers were reported to have been drinking heavily earlier that day.

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AA Devil's Ear Spring, Florida **August 12, 1986**

On August 12 three divers, Gary, Mike and Dennis Fuller, ages 29, 31, and 36, were apparently attempting to dive the connection between the Ear and the Eye at Ginnie Springs Caves in Florida. They had no cave dive training, no guide line, only one tiny light each, and no air reserve plan. They apparently had made at least one previous dive the same day on the same air fill. They failed to appear at the Eye, or back at the Ear.

The bodies were found at separate points in the traverse, one just past the tight restriction near the Eye, the second on the far side of the room past the restriction and the third in the Devil's Dungeon. Two had 3 D-cell Dacor lights and the other a micro Tekna light — all these were still burning. Silting had apparently obscured their way.

References:

1) Editor "Triple Drowning at Devil's Eye," **Underwater Speleology 13**(5), 9-15-86, p 4.

2) "Drownings haunt Florida's underwater caves," **The Atlanta Journal and Constitution**, 8-24-86.

Analysis: They violated the "No Light" rule (as well as all cave diving rules) at the Ginnie Springs Resort, forbidding cave diving, and were in fact caught with lights by the caretaker; they had to wait until no one was present to make their fatal dive.

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AA Morrison Spring, Florida **8-30-86**

In the evening of August 30, a group of divers was at Morrison Spring in Walton County, Florida. At about 7:15 p.m. several participated in a training night dive; each had a single light and attached to each person's gear was a cyalume; two colors identified student and instructor. At the end of this session, four decided to do a dive into the lower cavern. No guideline was used; each had a single light, single tank, and single cyalume.

After a short period in the lower cave, two indicated "low on air" to the other two, and headed up. For a while they couldn't find the way, but surfaced safely.

The other two, Mike Clennan (36) and Brenda Beugnot (26) signalled, as the other two left (8:40 p.m.), that they would stay a while. Clennan was PADI rescue certified but had no cave training; Beugnot had been certified open water just that day.

Clennan had started with 1200 psi, Beugnot with 1700, and they had agreed to turn back at 500.

Other divers entered immediately after the two survivors surfaced. It had been five to ten minutes since Clennan and Beugnot were last seen. Beugnot was found against the ceiling and Clennan on the floor of the lower cavern. Both masks were on; both regulators were out of their mouths. No lights were on. The cyalumes were too dim to provide meaningful illumination. It was a dark night — the entrance could not be seen.

Both were evacuated; at the surface they were given CPR until EMS arrived. They were pronounced dead after arrival at a hospital.

Reference: John Burge, "Double Drowning at Morrison Spring," **Underwater Speleology, 13**(5) 9-15-86, p 3.

Analysis: Burge says they only violated:

The light rule
The line rule
The air rule
The training rule
And good judgement.

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AA Royal Springs Cave, Florida **10-8-86**

At around 5 p.m. James E. Morgan, Jr. (28) entered Royal Springs Cave in Suwannee County, Florida. He had no cave dive training. Two companions in open water alerted authorities. A sign at the cave entrance warns against entry with cave training. The cave has no flow and is extremely silty. Morgan became lost and eventually ran out of air. It is speculated that he was within 15 feet of the entrance when he first became lost. His body was found in 40 foot depth on Sunday morning.

Reference: George Petrena, "Man Drowns," **Branford News**, 10-9-86; in **Underwater Speleology, 13**(6), p 4.

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De Crab Creek Cave, Florida **Winter 1986**

Two divers were exploring in a water-filled cave at Crab Creek on the Chasshowitzka River in Florida late in 1986. They had reached their turnaround point and were heading out. They were now experiencing zero visibility. They had laid two lines in the course of two dives. As they headed out, they came to the end of the first line, 50 feet from the entrance where it had been attached; ten feet of it was "flapping in the current." Fortunately they could remember where they were in the main room. The diver with a single tank attached his line to continue out when the current caught the other (double sidemount tanks), breaking off the outcrop he was holding. He was now separated from his companion, could not see his light, and had no line, all in zero visibility. He did know the shape of the room and so oriented himself to the flow of particulates in his limited view and proceeded to the top of the room where he encountered, as expected, the end of the first guideline. Both exited safely.

Reference: Stan Hankins, "How to Assume Yourself into a Statistic," **Underwater Speleology, 14**(2), 3-20-87, p 9.

Analysis: Hankins figures two major errors: 1) They assumed the guideline of their first dive, a month before, would still be there and took a short cut to the end of that dive penetration to start their second dive. 2) They did not account for the poor visibility that should have been expected in exiting a tight, complex, silty virgin cave. But neither panicked and both survived.

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NATIONAL SPELEOLOGICAL SOCIETY
Accident Report Form

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

Cave: _____ State: _____

Reported by:
Name _____

Address _____

City _____ State _____ Zip _____

Name (s) of person (s) involved	Age	Sex	Experience	Affiliation	Injuries or Comments

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

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

The Accident

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

Rescue

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

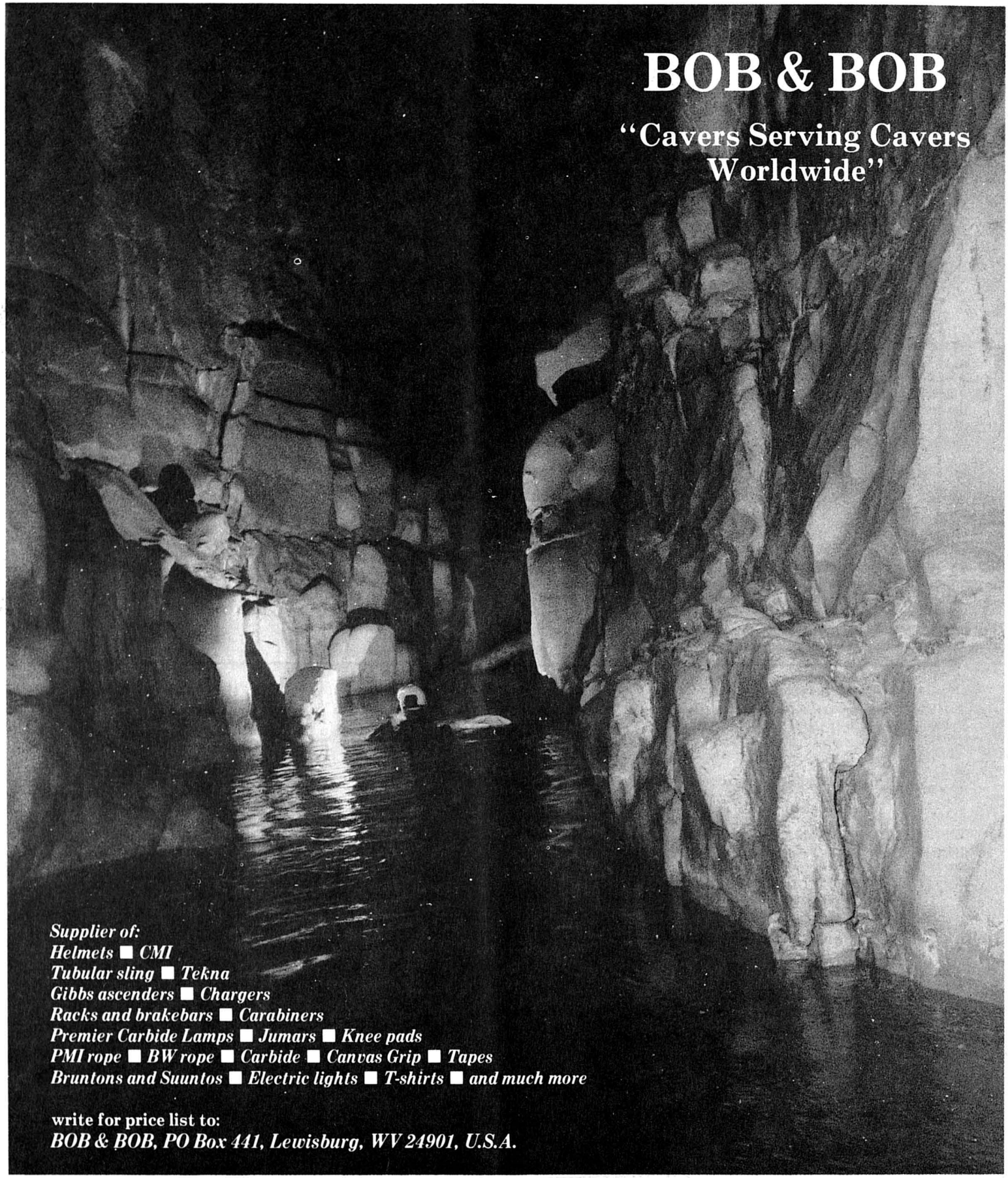
Further details were reported in:

( ) Newspapers ( ) Grotto newsletter ( ) Other

(Please enclose copies if possible.)

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

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