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# PERMIAN BASIN SPELEOLOGICAL SOCIETY

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*December, 1993*

## MEETING NOTICE

Date: Tuesday, December 14, 1993

Location: Murray's Delicatessen, 3211 W. Wadley. Murray's is on the south side of Wadley, in the strip shopping center east of Midkiff and Texas Burger.

Time: Food consumption and socialization are optional and begin at 6:30 PM; the meeting starts at 7:00 PM.

## DECEMBER CONVENTION AND TRIP

A work trip for Amazing Maze is scheduled for Saturday and Sunday, December 18 and 19. Call Walter at 367-8253 for more details. Amazing Maze, a horizontal cave, is one of the longest in Texas, and is now under the care of the Texas Cave Management Association. Walter, Gralin and Bill have become caretakers for this cave. They were embarrassed by our grotto's attendance at the last Amazing Maze work day, and would very much appreciate your presence.

J. D. will likely lead a trip to Montgomery Cave sometime in December or January. His phone number is 558-7248.

Rick is looking for one or more leaders and may have slots open for several caves in Lincoln National Forest, including the Pinks and Virgin. He's taking a group from Houston caving between Christmas and New Years. Call him at 1-523-9665 for more information.

The NTSS is holding its annual Christmas Party in Wichita Falls the weekend of December 18-19. This is a group of world-class drunks with reputations on two continents, and their Christmas Party is sure to be a unique experience. Contact Martha at (817) 723-9890 or Sheree at (817) 723-7758.

## NEW MEMBERS

Sheree Mahan from Wichita Falls has joined PBSS. Sheree went with us to H. T. Meiers Cave a few months back, and also attended the SWR winter meeting in Midland recently. We were very impressed by her vertical and caving skills at H. T. Meiers, considering her only previous vertical experience had been Hidden Cave. She has since become very active in caving, and we appreciate her becoming a member.

## MISCELLANEOUS

The following came from the TSA activities newsletter, published by Pat Copeland, and was contributed by Chuck.

Mike Bilbo with the Roswell office of the BLM reports that the following caves are closed due to bat hibernation season from November 1 to April 15: Big-Eared Cave, Crockett's Cave, Feather Cave, Malpais Madness Cave, Torgac (Torgac/Tillar) Cave, Corn Sinkhole Cave, Crystal Caverns, Fort Stanton Cave, Martin-Antelope Gyp Cave Complex, Tres Ninos Cave.

Olive Rohrer of Queen New Mexico died on October 15, 1993. She was the wife of Tom Rohrer, noted surveyor of Carlsbad Caverns, who's known to several members of PBSS.

Thanks to Bill for organizing the SWR winter meeting. Everyone had a great time, and the Petroleum Museum was an excellent venue. The party afterwards at Chuck, Jan & Tiffany's house was great too, to the best of my recollection.

Sorry if you contributed something to the newsletter this time and it didn't get in. Jan will Xerox what she can, but a couple of recent contributions will probably have to wait until next month.

We all enjoyed the T-Shirts that the boys from ASS wore at the last PBSS meeting, but were a little disappointed they didn't wear them to the SWR meeting.

DUES NOTICE - LAST CHANCE - MAIL \$5.00 TO DON CARLTON, 1301 DAVENTRY, MIDLAND, TX 79705. MAKE CHECKS PAYABLE TO DON.

RECEIVED

CONTRIBUTED BY WALTER FEASTER

197 24 12 25 PM '93  
UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
ROSWELL RESOURCE AREA  
P. O. Drawer 1857  
Roswell, NM 88202-1857

Reference:  
8380 (066)

November 22, 1993

### CONVICTIONS RESULT IN CAVE RESTORATION

On Wednesday, November 17, 1993, U.S. Magistrate Judge Wayne Jordan sentenced four adults and four minors to a total of \$345 in fines and court costs for the offenses of possession of controlled substances and failure to obtain legal cave entry permits for Fort Stanton Cave, New Mexico. Four individuals, who had removed 21 cave formations were each fined \$1000 and ordered to perform community service totalling four days (128 hours) in the form of CAVE RESTORATION, during a period between April 1 and June 1, 1994.

The restoration work is to be performed under direction of BLM cave managers and representatives of its volunteer cave management cooperators. The NSS and CRF. Upon successful completion of restoration, \$925 will be suspended per person. An adult and juvenile, who were not charged with removal of speleothems, volunteered to assist in the restoration. This is apparently the first time restoration has been ordered by any court in the U.S. for vandalism of a protected cave.

This significant conviction resulted from action by the Cave Research Foundation. While conducting a precision survey for the Bureau of Land Management, members of the Cave Research Foundation caught nine illegal entrants in Fort Stanton Cave, New Mexico, on August 8, 1993. Responding Lincoln County and Federal BLM law enforcement officers apprehended the offenders and found 21 cave formations and marijuana in their possession. All formations were coated with rare velvet (macro-crystalline dogtooth spar crystals) that make Fort Stanton Cave speleothems unique. Fifteen citations were issued for the removal of cave formations, possession of a controlled substance and failure to obtain a legal permit.

BLM cave managers, responsible for Fort Stanton Cave, recommended to the Federal Magistrate Court that the offenders be sentenced to full restoration of cave areas from which the formations came. It was also recommended that the offenders bear the cost of restoration, so as not to burden the Treasury and taxpayers for this cost.

By such a project, cavers, cave managers and the judicial system would hope to influence offender attitudes toward the importance of caves and cave conservation. Offenders would participate firsthand in the techniques and methods of restoration, including documentation, photo-documentation and re-survey of affected sites and formations. Given that some convictions could be worth \$10,000 each, one-time project costs and offenders' hard work to restore the cave, were considered a reasonable settlement.

### SUPPLEMENTAL INFORMATION

Significant caves on Federal lands are an invaluable and irreplaceable part of the Nation's natural heritage. With the passage Federal Cave

Resources Protection Act of 1988 and Federal Cave Resources Protection Act Regulations of 1993, significant caves on federal lands are protected from improper use. The purpose of the Cave Resources Protection Act is to protect and preserve significant caves on Federal land for the perpetual use, enjoyment and benefit of all people. The law was also passed to foster increased cooperation and exchange of information between governmental authorities and those who utilize caves on Federal land for scientific, educational and recreational purposes.

It is important for Americans to help preserve cave resources wherever they are found. Although the offenders were not made to bear the monetary cost of restoration this should be recommended in future cases, as well as restoration. This case should lend weight to other similar cases, including acts of vandalism in other circumstances, such as graffiti in cities, public places and natural settings.

While the size or length of caves can be factors in their preservation, it is the resources in caves that make them important. Caves may range in size from a small one room cave to the giant Carlsbad Caverns. Vandalized or trashed caves can be rescued through restoration projects. Federal cave managers, the National Speleological Society (NSS), the Cave Research Foundation, the American Cave Conservation Association and numerous grottos (chapters of the NSS) participate every year in successful restoration projects throughout the United States.

The types of cave resources addressed by the Federal Cave Resources Protection Act, that we need to preserve, are: cave biota (plant and animal life - it is well known that bats are harmless to humans and consume tons of insects harmful to crops each year), hydrology (groundwater resources), cultural materials (such as historical or prehistorical artifacts), geology and mineralogy (cave formations and other rock materials in caves), paleontology (fossil bones), recreational potential, and other educational and scientific values.

An example of the importance of these cave resources is the hydrological resource. Sinkholes and caves serve as direct sources of groundwater recharge. Water draining from surface runoff will pick up residues and other substances from trash thrown into them and directly contaminate our groundwater resource which we use for drinking, bathing and other uses..

Future acts of vandalism, destruction or stealing of cave resources will be prosecuted under the Federal Cave Resources Protection Act of 1988 and other federal laws. Penalties for persons who knowingly destroy, disturb, deface, mar, alter, remove or harm an significant cave or alter the free movement of any animal or plant located in caves on federal lands will be punished by a term in prison up to one year or a 100,000 fine.

Any person who possesses consumes, sells barter or exchanges or offers for sale any cave resource from federal lands will be subject to the same penalties. Additional civil penalties up to \$10,000 can assessed by the court to include the restoration of the cave resources.

Points-of-contact for this case are:

Saundra Allen, Area Manager

Jerry Ballard, Lead Outdoor Recreation Planner/Cave Manager

Mike Bilbo, Outdoor Recreation Planner/Cave Manager

These persons may be reached at the above address or phone:

(505) 624-1790.

## SCIENCE &amp; SOCIETY

# Subterranean blues

*Caverns are an uncharted, and increasingly threatened, wilderness*

One would think that New Mexico's newly discovered Lechuguilla cave would be fairly safe from harm. It is located in a national park, first of all, and vandals would have a hard time even finding the entrance, tucked away as it is in a remote desert canyon. Furthermore, the only way into the cave proper is to rappel down a daunting 155-foot rock face.

Yet Lechuguilla, one of the wonders of the subterranean world, faces a far more insidious threat than the vandals who would plunder its dazzling geological formations. Though the cave falls within the Carlsbad Caverns National Park, some passages are a mere 900 feet from lands leased by the Bureau of Land Management for oil and gas exploration. Cavers fear that escaping gases could seep into Lechuguilla or nearby Carlsbad Caverns, contaminating the fragile underground realm and threatening tourists and cavers.

Lechuguilla is by many measures a unique cave, but its plight is not unusual. All over America, caves are being damaged and destroyed by mining, logging, grazing, agriculture, urban sprawl and dumping. Ironically, this environmental assault is coming at a time when caves are finally being recognized as something more than commercial tourist attractions. Scientists have begun studying this vast unseen world for insights into everything from mineralogical processes to the migrations of prehistoric humans. America's unappreciated underworld, they argue, not only is a repository for a host of valuable and uninventoried species but provides essential conduits for ground water. "Caves are part of aquifers," says hydrologist Tom Aley, president of the American Cave Conservation Association. "Asking why caves are important is really asking why pure ground water is important."

**Out of sight.** Yet until recently, caves had few champions. Only in 1988 did Congress pass the Federal Cave Resources Protection Act, which for the first time directed federal agencies to manage public lands in ways that would protect the caverns below. But the feds

## ■ SCIENCE & SOCIETY

have taken their time developing regulations to implement the legislation. The Interior Department finally produced its regulations last month, while the Department of Agriculture promises its rules soon.

By many accounts, the cave protection act is full of loopholes. For instance, it states that cave conservation should not interfere with the development of oil and gas and mineral resources and that only "significant" caves must be protected in any case. The problem with the latter provision, say critics, is that many caves are still undiscovered and unexplored. Indeed, until 1986, when a team of cavers dug through a short, rubble-filled passage, Lechuguilla looked pretty insignificant.

Today, however, with almost 70 miles of passageways mapped, there's no question that Lechuguilla is a world-class find. At 1,590 feet, it is the deepest cave in the country. It is fantastically "decorated," with an abundance of crystal formations that have taken millennia to form. One of its most spectacular chambers is a ballroom-size space adorned with monstrous gypsum "chandeliers," some more than 18 feet long. Explorers have also found many previously unknown formations, including helictites—twisting, spaghetti-like strands of calcite—that grow underwater.

The cavern seems to be populated primarily by an intrepid band of microorganisms that derive their energy from sulfur and sulfide minerals. Scientists are searching this strange community for compounds that might have disease-fighting potential. Says Ohio State University's Calvin Welbourn, "Lechuguilla is such a weird environment, who knows what chemicals [the microorganisms] are secreting?"

**Human presence.** Yet as scientists and surveyors probe this virgin wonderland, they are, despite themselves, changing it forever. Even when great care is taken to minimize physical damage, cavers trample formations. What's more, explorers undoubtedly introduce foreign insects and microorganisms as well as nutrients in the form of hair, tiny flakes of skin, droplets of sweat and crumbs of food. At

the National Cave Management Symposium last month in Carlsbad, N.M., one researcher made a nannyish plea for "clean clothes, clean cavers and careful eating."

The cave's future now hinges on a long-awaited environmental impact statement. The BLM has nearly completed a document with a "preferred alternative" that would prohibit drilling in a newly created "cave protection zone" along the park's northern border. Further, the BLM would buy back oil and gas leases or portions of leases that fall within the zone. Outside the zone, drilling

would be permitted, but only with special protective strategies for minimizing gas leaks should drilling problems arise.

The almost completed EIS raises the hackles of the oil and gas and mining industries, which historically have had their way with the BLM. "There are a lot of nervous people. The BLM has never taken back an oil and gas lease," says BLM geologist Joe Incardine. Fred Yates of Yates Energy Corp. contends that the impending EIS overstates the risk to Lechuguilla. "This is not a virgin drilling area," he says, pointing out that there are at least 25 gas-producing wells along the northern border of Carlsbad Caverns National Park. Yates Energy Corp. is part owner of an oil and gas lease adjacent to the park, part of which now falls inside the proposed protection zone. Yates argues that it may not make economic sense to develop only a portion of the lease as recommended, and he is seeking compensation. He estimates the lease is worth about \$18.7 million.

The likelihood of gas's leaking into and contaminating Lechuguilla remains undetermined. One study, which the BLM conducted with the help of local cavers, suggests that any gas leaking from the proposed wells would not make it all the way into Lechuguilla. But skeptical cavers and even a couple of renegade BLM officials point to another BLM study that mapped

all known subsurface fractures in the area. While none were found to directly link Lechuguilla's passages with any proposed wells, several came very close. "Risking a world-class resource to make one company richer for a little while? It just doesn't make sense," argues one New Mexico caver. Either BLM chief James Baca or Secretary of the Interior Bruce Babbitt will make the final ruling on Lechuguilla after the EIS is completed in January.

While the controversy over Lechuguilla has grabbed the spotlight, the stiffer challenge for both the caving community and federal agencies may be the task of conserving the host of lesser known, less dramatic and still undiscovered caves on federal lands. Indeed, America's caves, like outer space and the ocean depths, are truly an unexplored wilderness. New Mexico's Guadeloupe Mountains, for instance, are a caving mecca, attracting aficionados from all over the world. Yet local cavers estimate that they have found only two thirds of the region's caverns; just last month, cavers discovered three new ones. Even the popular Carlsbad is still being mapped at a rate of 5 miles a year, and scientists don't really know how far it reaches.

Now that the cave protection act is being implemented, federal agencies are charged with compiling a master list of "significant" caves. For both cavers and the feds, however, the biggest hurdle to coming up with this roster may be their deep mutual mistrust. Cavers accuse the feds of having closed their eyes to the marvelous wilderness beneath their feet. "They are afraid to know too much. They figure the less they know, the less they have to manage," asserts Jeff Lory, Southwest region chairman of the National Speleological Society.

Many federal officials concede that their stewardship of caves has been lacking and that, as a result, the resource has suffered. But they say their job has been hindered by a culture of secrecy among cavers. In fact, cavers are notoriously taciturn about the location of "wild" caves, in part to protect them from vandals but also to avoid having federal officials prohibit cavers' access to their discoveries.

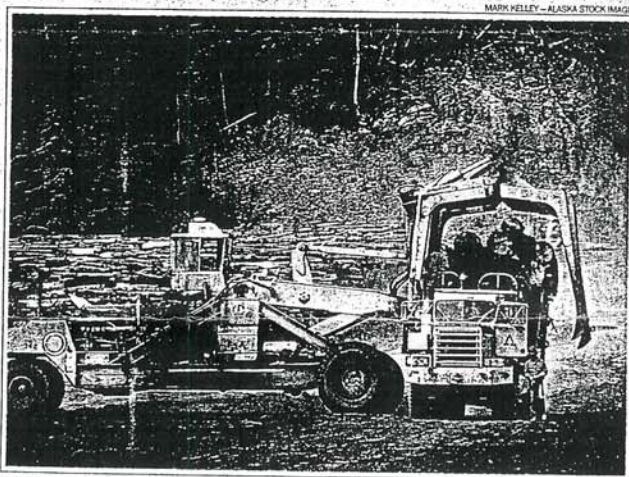
By all accounts, this adversarial approach is backfiring now that poor land-use practices pose the greater threat to caves. Says NSS President Jeanne Gurnee, "We have a choice now—either be on the outside looking in or cooperate and make this effort work." For her part, Gurnee is urging full cooperation. ■

## CULTURAL SPELUNKING

# The artifacts and the loggers

Cavers were exploring one of the myriad caverns on Alaska's Prince of Wales Island when they stumbled across the bear skeletons. At first it seemed an unremarkable discovery, but then experts dated the bones and teeth as relics of the last Ice Age, fully 10,000 years old. The 1990 discovery has sparked new interest in the debate over North America's first settlers—and has exacerbated a bitter

speculate that if Prince of Wales Island was warm enough for bears during the last Ice Age, migrating humans could have survived there, too. James Dixon of the Alaska Quaternary Center at the University of Alaska contends that portions of the island could have supplied refuge for mammals fleeing the frozen continent. "The caves may provide a unique window into the prehistoric



Watch out below. Soil runoff from clear-cutting clogs underlying caverns.

conflict between timber interests and preservationists over the heavily logged Tongass National Forest.

The first Americans were long thought to be hunters who crossed the Bering land bridge linking Asia and America during the last Ice Age. Recently, however, some archaeologists have argued that the first humans on the continent were maritime people who ventured along the coast in primitive boats. But the debate stalled over lack of physical evidence, since the ice-free places where scientists believed coastal people might have camped and lived during the Ice Age are now covered by ocean waters.

**Window on the past.** The discovery of the bear bones has given the archaeological world hope that the debate may be settled. Researchers

past," he says. Dixon and his colleagues are planning an extensive survey of many of the region's 1,000 or so caves.

Yet heavy logging in this timber-rich area continues to damage Prince of Wales caves. The island is part of the Tongass forest, one of the most productive timber stands in America. But clear-cutting releases topsoil, which, in such a rainy region, drops quickly into the vast network of caves below, clogging the caverns and disrupting ecosystems miles away.

The U.S. Forest Service has just begun the difficult task of evaluating this rich underground resource. Officials are considering rearranging timber sales to protect the more vulnerable caves and preserve the cultural legacy that may be hidden below.

BY BETSY CARPENTER IN NEW MEXICO  
WITH LISA B'SCH IN ALASKA

U.S. NEWS & WORLD REPORT, NOVEMBER 22, 1993

### PBSS CARLSBAD CAVERNS RESTORATION TRIP

On Saturday 13 November 1993 Chuck Anderle ramrodded another in the ongoing series of PBSS work trips. Once again Carlsbad Caverns was the destination as Bill Bentley, Don Carlton, Gralin Coffin, J.D. and Richard Fincher, Ken Kamon, Alan and Rose Laman, and Martha and Jill McArthur arrived ready to work. Wayne Campbell was voted the Weasel Award for being this month's no show.

The objective of this project was to restore the Big Room floor to its original cave condition. The original floor is covered with a layer of red clay ranging from 1 inch to 3 feet deep. This clay was excavated from Left Hand tunnel and spread in the Big Room to serve as the floor of the first lunch room. Thousands of red and white box lunches of fried chicken were served by Cavern Supply to visitors who hiked down the trail from the natural entrance. A lot of boxes, chicken bones, pickle jars, and small glass cream containers have been buried in a few isolated spots. When the four elevator shafts were blasted through 800 feet of limestone, a huge amount of rubble was created. All of these pebbles, stones, and boulders were spread over the old lunch room floor, and a new lunch room with a concrete floor was created adjacent to the elevators. On past trips we have moved rubble from the Big Room into Left Hand Tunnel and Pickle Alley. This time we separated the clay and dust from stones and boulders. The fine stuff we hauled into Pickle Alley to cover our rocks and make a smooth hard packed trail. The large stuff (up to about 250 lbs) was loaded into wheelbarrows, taken up the service elevators and dumped into a dump truck for eventual transport to the old rock quarry east of the caverns. The dump truck saved the back breaking labor of having to unload pickups by hand.

The morning started off with minor delays while I had to find the combination to the lock in Pickle Alley and round up a couple more wheelbarrows. Then about the time rocks were rolling quickly and smoothly, a snake in the grass appeared in the form of a deeply buried thick black cable that appeared to be a 7,200 volt transmission line with badly corroded insulation. We detoured around the cable for an hour or so until Wes from elevator maintenance could get there with a clamp-on amp meter and volt meter. Tests showed no current was flowing on the line and careful probing of cuts in the insulation revealed only two low voltage conductors. The decision was passed down to go ahead and cut the dead line and pick-mattock executed our snake in the grass.

After our lunch break we found Ron Kerbo and Ron Schultz upstairs autographing the newly published Looking Inside Caves and Caverns (really nice photos Ron). Most of us bought a copy and then headed back down to work.

Work progressed smoothly all afternoon uncovering the usual assortment of blasting wire, rotten splinters of wood, and old pieces of asphalt trail along with a single large nail and what appeared to be a guy wire anchor still embedded in a block of limestone. Eventually the crew uncovered a galvanized pipe which appears to have served as a culvert under the present tourist trail. While checking to see if the pipe still would be functional by coming out on the side of the trail opposite of where we were digging, Martha made the find of the trip. Tucked up under a small ledge beside the trail was a long neck Budweiser beer bottle and a very badly corroded tin cup. All of the man-made objects were as usual stored separately for the historians to catalogue and evaluate.

By 3:30 the dump truck was full, so with no driver on duty, we had worked ourselves out of a job. Saturday night as the sounds of tourists and rolling wheelbarrows faded and the cave returned to its natural state, we headed out on our reward trip. Gralin led a group into the Guadalupe Room while I led the way to Lake of the Clouds. Martha entrusted me with her daughter, so Jill got to see the wonderful cloud formations over the lake at the deepest point in the caverns. For J.D. and Richard it was also their first trip off trail in CACA and they were surprised how hot it gets near the bottom. The two roped descents were no trouble since everyone had vertical gear and plenty of experience, except Bill and Ken who had both neglected to bring their seat harness. My chest harness, inverted and locked with a carabiner made a sufficient seat harness for Ken, but Bill, I think, decided he was a little short on experience for such a difficult piece of technical rope work and elected to wait at the top of the drop. [Reference the Rule of 7 P's], The return trip as usual was a lot further back to the surface than it was to the bottom. [Reference subsection 5 to Murphey's Law] We returned to the elevators only ten minutes ahead of Gralin and his team. They claimed to have seen prettier scenery but I knew they had more painful knees.

Altogether, PBSS had 11 cavers contribute 77 man hours to the National Park Service this trip and we managed to fill a dump truck overflowing with rock. With a couple more wheelbarrows ( about six for a crew of 12 ) the use of both service elevators instead of a single key, and a driver available to empty the truck, I think we could nearly double our output on the next trip.

Thank you one and all who participated in this trip. Without exception everyone pitched in with 100 per cent effort and without complaint. Both Ron Kerbo, NPS Cave Resources Specialist for the Southwestern U. S., and Jason Richards of the Carlsbad Cave Resources commented on how much they enjoyed seeing us as a grotto working together and having fun.

Give me time for the blisters to heal and the backache to subside, then let me know who is willing and we'll do it again. After all just because Martha, Jill, Rose, and I all together couldn't budge that last boulder doesn't mean that we can't do it the next time.

Until Then:

THANKS

Chuck Anderle

**PBSS Membership**

To join PBSS, mail \$5.00 to Don Carlton, at the address that appears below. Make checks payable to Don, and include your address, phone numbers, and, if you have one, NSS number.

**PBSS MEMBERSHIP**

| Last Name | First Name | W. Phone       | H. Phone       | NSS # |
|-----------|------------|----------------|----------------|-------|
| Abernathy | Tony       |                | 694-7919       | ----- |
| Abner     | Rich       | 267-4100       | 264-0023       | ----- |
| Anderle   | Chuck      | 685-3119       | 685-3119       | 31477 |
| Anderle   | Jan        |                | 685-3119       | 31478 |
| Bentley   | Bill       | 694-7721       | 697-3079       | 21977 |
| Brannon   | Tom        |                | 697-2806       | ----- |
| Brannon   | Debbie     |                | 697-2806       | ----- |
| Brown     | Jon        |                | 366-0581       | ----- |
| Carlton   | Don        | 335-3265       | 687-4352       | 30417 |
| Campbell  | Wayne      |                | 362-7634       | ----- |
| Cargile   | Terry      |                | 697-8700       | ----- |
| Coffin    | Gralin     | 684-5548       | 682-1904       | 33471 |
| Coffin    | Kari A.    |                | 682-1904       | 33472 |
| Cullen    | James      |                | (214)412-1632  | ----- |
| Day       | Rick       |                | 523-9665       | ----- |
| Day       | Kevin      |                | (817)491-1026  | ----- |
| Eddy      | David      | (817) 287-8350 | 699-6451       | 11830 |
| Feaster   | Walter     |                | 367-8253       | 31624 |
| Fincher   | J. D.      |                | 558-7248       | 31859 |
| Fincher   | Richard    |                | 694-4381       | ----- |
| Fox       | Charles    |                | (817) 692-5770 | ----- |
| Franks    | Stephen    | 697-7672       | 683-3305       | 35245 |
| Glasson   | Larry      |                | 523-9772       | ----- |
| Gray      | Kim        | 523-5675       | 523-6409       | ----- |
| Gray      | Larry      | 655-6957       | 653-3823       | 19588 |
| Griffin   | Duane      |                |                | yes   |
| Guad      | Slut       |                | (505)393-5604  | ----- |
| Harter    | Gary       | 523-9758       |                | ----- |
| Hill      | Tom        | 560-5044       | 687-2122       | 27888 |
| Hunt      | Doug       |                | 697-1885       | ----- |
| Kamon     | Ken        | 686-0720       | 699-7192       | 34637 |
| King      | Joel       | (210)498-8829  | 438-4049       | yes   |
| Knight    | Kenneth    |                | (817)696-8713  | ----- |
| Laman     | Allen      | 550-0910       | 550-0910       | 37903 |
| Laman     | Rose       | 550-0910       | 550-0910       | 37904 |
| Mahan     | Sheree     |                | (817)723-7758  | yes   |
| McArthur  | Martha     |                | (817)723-9890  | 35327 |
| Nance     | Jim        |                | 563-5208       | 27723 |
| Pando     | Noel M.    |                | 523-9294       | ----- |
| Pando     | Noel D.    |                | 523-9294       | ----- |
| Parent    | Laurence   | (512)280-2843  | 280-2843       | ----- |
| Qualls    | Patrick    |                | (505) 397-0884 | ----- |
| Sawyer    | Bill       |                |                | ----- |
| Scott     | Melissa    |                | 694-4381       | ----- |
| Seefeld   | Cheryl     |                | 570-1124       | ----- |
| Terrett   | Tiffany    |                | 685-3119       | ----- |
| Wall      | Denise J.  | (214) 637-5297 | 553-5740       | ----- |
| Whiddon   | Lisa       |                | 884-3162       | ----- |



PERMIAN BASIN SPELEOLOGICAL SOCIETY  
c/o Don Carlton  
1301 Daventry  
Midland, TX 79705

Bill Bentley  
3815 W. County Rd. 116  
Midland, TX 79703



BENTLEY 79703021 LAF 18/11/93  
NOTIFY SENDER OF NEW ADDRESS  
BENTLEY  
400 EASTWOOD DR  
MIDLAND TX 79703-5305