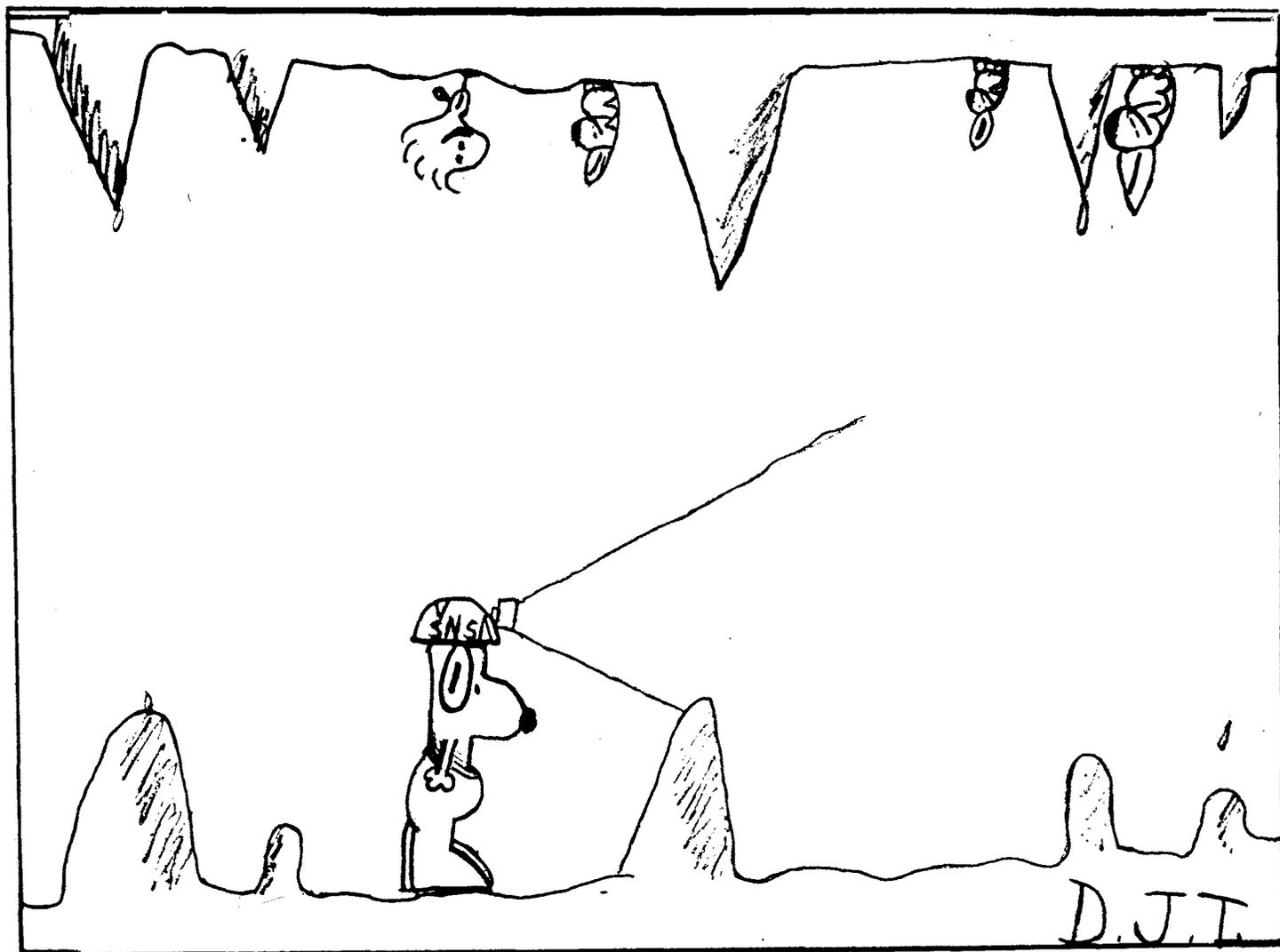


# THE MAVERICK BILL

VOLUME 2, NUMBER 4

APRIL, 1987



THE MAVERICK BULL, is the monthly newsletter of THE MAVERICK GROTTTO, an internal organization of the National Speleological Society (NSS 6-322).

COPYRIGHT © 1987, by THE MAVERICK GROTTTO

The Editor invites all cavers to submit articles, news, maps, cartoons, art, and photographs. If the material is to be returned, a self-addressed, stamped envelope should accompany it. News items will be accepted and are urged to be submitted on floppy diskettes in either APPLE II, or IBM compatible ASCII Text file format. Items should be of interest to cavers and their ilk, and be non-political (except cartoons of very good humor) in nature.

Internal organizations of the National Speleological Society may reprint any item (unless copyrights belong to author as will be stated in byline) first appearing in THE MAVERICK BULL, if proper credit is given and a complete copy of the publication is delivered to THE MAVERICK GROTTTO address at the time of publication. Other organizations should contact the grotto at the address herein.

EXCHANGES: THE MAVERICK BULL, will exchange newsletters with other grottos. Contact any officer.

PRINTING: This issue was printed FREE by the TROG PRESS, INC. in the Republic of Texas. General flunkies for this issue were Pepe Tres, Major Meister Brau and Major Munchkin.

SUBSCRIPTION RATES: Subscription Rate is \$10.00, per year for non-members.

MEMBERSHIP POLICY: Any caver with interest, beliefs, and actions, consistent with the purposes of THE MAVERICK GROTTTO and the National Speleological society is eligible for membership. Membership in the National Speleological Society is encouraged, but not mandatory except to hold office. Acceptance of new members is based on payment of dues and a mandatory three trip requirement with at least three different grotto members. These three members shall act as sponsors and at least one of these members will be required present at a Grotto Meeting where they may be voted in by a two-thirds majority vote of the members present.

Maverick: 1) American pioneer who did not brand

his calves. 2) An unbranded range animal, especially a calf.

MEETINGS: Meetings are held the second Tuesday of each month, at SMOKEY'S RIBS, at 5300 East Lancaster in the east central part of Fort Worth, Texas. Just short of one mile west of Loop 820. This is a central point in Tarrant County, and should be convenient to the mid-cities, Arlington, and Fort Worth! The time is 7:00 P.M., and the food is good. Go through the regular line for your grub and then come to the "party room" which we have reserved in back.

#### OFFICERS

Chairman: Corky Corcoran  
600 Autumn Lane  
Plano, Texas, 75075  
214-578-1474

Vice-Chairman: Donna Anderson  
504 Kimbrough  
Fort Worth, Texas, 76108  
817-246-6313

Treasurer: Joe Giddens III  
P.O. Box 170274  
Arlington, Texas, 76003  
817-572-4082

Editor/Secretary: Butch Fralix  
6315 Woodmont Court  
Fort Worth, Texas, 76133  
817-346-2039

COVER: This months cover was drawn by eight year old Joshua Thompson, son of Dennis Thompson, Ardmore, Oklahoma.

#### 1987 CALENDAR

April 14; Maverick Grotto Meeting.

April 18-20; Guads trip to Sand, Little Sand, Fort Stanton, and Wind Cave. Contact Corky for details.

May 12; Maverick Grotto Meeting.

- May 16/17; Trip to Sherfield Cave  
Boxley, Arkansas  
Contact Corky for details.
- May 18,19; Missouri Caves,  
after Sherfield Cave;  
Big Smittle, Hooten  
Cave (maybe), Big  
time caves, waterfalls.  
Dale Ellison 817/473-0463
- June 9; Maverick Grotto Meeting.
- July 7; Maverick Grotto Meeting.
- August 11; Maverick Grotto Meeting.

**ADDRESS CHANGE NOTICE:**

Please note that Butch Fralia, Editor/Secretary, has moved. Please direct all exchanges and inquiries to the address listed.

**MARCH MEETING:**

The last meeting of THE MAVERICK GROTTTO, was held Tuesday, March 10, 1987 at Smokey's Ribs in East Fort Worth.

A preliminary showing of this month's cover art by eight year old Joshua Thompson, son of Dennis Thompson was shown.

Entries for the Logo Contest were submitted but selection of the winning logo was put off until the April meeting to give several members the opportunity to complete sketches for submission.

Submissions may be made in the form of a rough sketch. A commercial artist will be sequestered to do the final artwork.

The minutes from the last NSS Board of Governors was available for members to read as well as an exchange copy of the D.C. Speleograph.

A petition was circulated for NSS members to sign, limiting the terms of the Board of Governors.

Trip reports were given for two trips to Diamond Cave and reports given that the once commercial cave, Cobb Cavern has been bulldozed closed. Trip reports were given on caving trips to Oklahoma to a very large (as identified on a topo) cave. The cave map was on the back sheet

sheet of the last "Bull."

Russell Hill, reported that Caves in the area of the large cave were once blasted by a geophysical survey crew. Some of the charges did not go off leaving approximately 25 pounds of TNT unexploded in the cave. Anyone caving in Oklahoma finding wire extending into the cave should leave the cave unentered.

Corky Corcoran, gave a trip report on Frio Bat Cave in Uvalde County. Corky went to the cave with members of the Bexar Grotto for the purpose of counting bats and Cave Swallows.

Jody Robertson, reported on a work trip made to Gorman Falls Cave, with members of DFW.

Donna Anderson and Butch Fralia announced a Grotto Sponsored trip to River Styx Cave for all comers. The trip is intended as an opportunity for new cavers to try their hand at caving and to reactivate old cavers.

The program for the meeting was a video tape of Caves in South America, THE REALMS OF DARKNESS.

**APRIL MEETING**

The program for the April meeting will be a slide presentation by John Swartz, on mountain climbing in Africa. John was in Africa and took the slides while climbing Mt. Elgon, Mt. Kenya and Mt. Kilimanjaro.

In addition to John's slide presentation, Richard Dushman and Al Rehfeldt will have a 12 minute video of a recent Maverick trip to Fenceline Fissure and Rotten Log caves in San Saba, County (trip report in this issue - Ed.). The River Styx trip has been edited into a 33 minute video.

The NSS petition to limit the terms of the board of Governors will once again be at the meeting for NSS members who didn't attend the last meeting to read and sign if desired.

**LOGO CONTEST**

THE MAVERICK GROTTTO is holding a contest to select a Logo for the new grotto. The logo should be appropriate for the Grotto name. The winning logo will be the official Grotto Logo for use on patches, bumper stickers, Tee Shirts or whatever. The prize will likely be a Carbide Lamp

of collectors interest, provided by Corky Corcoran.

The dead line for the Logo Contest has been extended to allow members to complete sketches for entries. Entries for the Logo Contest should be in by the April Meeting. Entries may be submitted in rough draft form and a commercial artist will be sequestered to put the winning entry in final form.

#### EDITORIAL

At last it's beginning to happen, the weather is improving, covers are coming out of hibernation and trip reports are coming in. We may actually develop a back log of material for the "Bull."

In this issue, Dale Ellison's "Did you know?" column has been omitted because during the process of moving I lost the article. Sorry Dale, I'll have it located in time for the next issue.

The word is out about the Maverick Grotto and recent trips to Coryell and San Saba Counties. Our thanks to Bill Elliot of the TSS for referring Cavers located near those areas to The Maverick Grotto. We're getting inquiries from cavers over North Texas about Maverick Grotto trips. Joe Giddens reports receiving local inquiries about our organization and the number of complimentary newsletters being mailed is rising every month.

The first Grotto Sponsored trip for newcomers and all comers was held this month to River Styx Cave, in King County and sixteen of a possible thirty cavers attended (including Shane the Wonder Dog). A great time was enjoyed by all despite cold brisk winds. See corresponding trip report this issue.

Mountain Sports has agreed to advertise in the Maverick Bull. Whenever you happen to be in the store, be sure and mention you belong to the Maverick Grotto and/or saw their ad in the Maverick Bull.

#### A LESSON IN THE UNKNOWN

by Jody Robertson

DATE: February 7, 1987

DESTINATION: Unknown Cave - Evant Area,  
Diamond Cave, Coryell County, Texas

PERSONNEL: Corky Corcoran, Dale Ellison,  
Butch Fralia, Mark Porter,  
Jody Robertson

Day break marks the beginning of our gallant adventure, converging on the humble home of Butch Fralia. One by one we arrive, Dale, myself, Mark and Corky (late of course). Once inside we settle down and attempt to subdue anxieties aroused by our perilous trek across the vast wasteland known by all as Fort Worth.

Composure regained, we commence loading our mystical chariot, built by skilled artisans and wizards of the orient. Our task complete, we mounted and brought our 95 horse team to bear southward along the highways of the middle earth in search of the adventure we know only to have existed deep within the bowels of the earth. We survivors of many such journeys, yearned deep within for the feelings we had encountered only while in the midst of some subterranean trek.

Our journey took us to the land of Evant and a ranch presided over by a man known as Vernon, a goodly soul whose livelihood rests upon the raising of livestock. He, who expressed his desire for us to enter and explore the secret caverns on his land. Leading us to the gaping mouth of this unexplored mystery, he watched intently as we made ready our battle armor for our descent into the unknown.

A rope was rigged from the haughty oriental chariot, and descent begun. Once within, we found ourselves staring at gray walls of confining rock, surrounding us in an eerie manner. The ominous void descending to the bowels of the earth as if to swallow us completely. Further and further we dropped into the land of shadows knowing not what new discovery would warm the spirit of adventure in our hearts. The spirit of adventure was quenched only slightly as we gazed upon names of earlier explorers who had accepted the challenge of the dark, their timeless messages scrawled into the walls of the chamber. Fighting away the disappointment of not having been first, we descended further, further, and yet further down, only to be brought to an abrupt end as our feet fell on solid ground. Around we searched for ongoing passage but alas, save that which has been forever sealed by unearthly force's ages before, none was to be found.

Realizing the impending danger of further disappointment by remaining longer we opted to return to the surface, and this we did. Our host watched as we emerged from the ominous pit after what seemed like days. He expressed the wish for more cave for us to explore. Never before had he been so entertained as watching our exuberant entry to the depths below.

Confident the secret of the dead cave was buried forever, we again boarded our waiting chariot, bade fond farewell to Vernon, and continued in our quest.

Our travel brought us (by way of the local store - an oasis in the wilderness) to a cave known as Diamond. Led there by the daughter of it's owner, we again plunged into the unknown.

The air about this cavern was quite different than our previous descent. An almost friendly atmosphere and ongoing passage - an appropriate counter balance for the disappointment we felt earlier. We wandered past odd formations, sculpted by time - formations resembling the serene caves of coral found in balmy tropical waters. We ventured further along seemingly endless passage to find, upon the ceilings, messages formed in mud. Messages left by visitors in long years past. In the void's most remote chamber, a further reminder of previous visitors. Amidst the calm and gentle, flowing beauty of this cave called Diamond, were sculptures created within a pornographic mind, statues to the memory of that ugly world we'd left so far behind in the metroplex. Assured our quest had reached it's fruition, we emerged and began our journey home.

#### CRYSTAL LAKE CRAWL CAVE

by Donna Anderson

DATE: March 14, 1987

DESTINATION: Crystal Lake Crawl Cave,  
San Saba County.

PERSONNEL: Donna Anderson, Butch and  
Jennifer Fralix, and Jody  
Robertson.

Saturday morning at 8:00 A.M. we met at Butch's

house. Our destination was Harrell's Cave and the Bristor Ranch. Butch and Jennifer were full of energy and ready to go. This was surprising in the fact that they had not slept that night. Friday evening Butch had driven to Austin to pick up Jennifer. Shortly before reaching Austin, his transmission started to go out. He lost all gears except 4th. By the time he reached Austin, the clutch also went out. Much time was spent towing the trooper to the Isuzu dealer. After meeting Jennifer, they took a bus back to Dallas and then a taxi to Fort Worth. It was fortunate that Butch had not loaded the Trooper with his caving gear before he left.

We all piled into BURT (Big Ugly Red Truck) and headed south. Upon reaching Lometa, we gave the landowner a call. We then met the Bristor's and they gave us directions to their ranch which was near Bend, Texas.

Before going to the Bristor Ranch, we stopped off to try and find Harrell's Cave. We stopped at what appeared on the topo, to be the area. We hiked around and saw many armadillos, but no cave. (The funniest thing in the world has to be watching Jody play tag with an Armadillo - Ed.) Piling back in the Jeep, we drove a little further and decided we had been hiking on the wrong property. We found the area where we should have been looking, but decided to wait until another trip to locate the cave.

A short drive and we were at the Bristor ranch. The area was beautiful with sheep grazing all around us. We walked to the stream (Spring Branch) and followed it until we reached Crystal Lake Crawl Cave.

Crystal Lake Crawl Cave, is a limestone cave with an opening about 5' high and 8' wide. The passage quickly lowers to a crawl about 3' high. Most of the main passage is a hands and knees crawl. We encountered several side leads, but decided to check them on the way out. Toward the back of the cave the main passage turned into a belly crawl. We continued on until it became even smaller. Butch, who was in the lead, decided he could go no further. Donna was next in line and suggested that Butch back up into a small side lead. Donna directed his feet into the crawl and Butch slowly backed into it. The crawl was, quite fortunately, exactly made to fit Butch. In fact, he said it fit him like a glove; like a tight glove. (I felt like a Hermit

Crab - Butch) With Butch out of the main crawlway, Donna proceeded through the squeeze. A few feet later the passage became a hands and knees crawl. Because of bedrock, it was impossible to widen the squeeze which Donna had come through. However, an area was found a few feet away which looked more promising. Donna dug on one side and Butch dug on the other. However, another layer of bedrock was found. Although this passage was now several inches higher than the one Donna had come through, it was still not quite enough for Butch and Jody. Butch backed up once again into his glove and let Jennifer pass by. Donna and Jennifer continued in a hands and knees crawl until it became tight once again. Another dig, then Donna made it into a small room with a pool of water. Passage then continued as a very low belly crawl in water with only about 2" of air space. At this point, Donna and Jennifer returned to the rest of the group. Pictures were taken on the way out. As we had spent quite a bit of time digging, we decided not to check the side passages on the way out. We wanted to be sure and have plenty of daylight left to find the other caves.

Our next destination was Fenceline Fissure and Rotten Log Cave. We hiked through heavy karst area. Jody found a fissure with a possible dig, continuing on, we hiked further up the hill. Unfortunately, we were not able to locate the caves. As it was getting dark, we decided to head back. We left the ranch and drove back to the Bristor's house. After talking to them, we discovered that we had been following the wrong fence line. Mr. Bristor told us how to find the caves. We had been looking for them on the wrong side of the ranch. We then drove back to Forth Worth, discussing plans for a return the next weekend.

CAVING IN SAN SABA COUNTY  
(On the right side of the ranch)

by Butch Fralia

DATE: March 21, 1987

DESTINATION: FenceLine Fissure,  
Rotten Log Cave,  
San Saba County

PERSONNEL: Donna Anderson, Corky  
Corcoran, Richard Dushman,

Butch and Jennifer Fralia,  
Terry Holtzinger, Mark Porter,  
Al Rehfeldt, John Swartz,  
and Jody Robertson.

The entire crew gathered at Butch's old address on the most beautiful day imaginable for caving. With everyone collected, they proceeded toward the small town of Lometa. Along the way, a pit stop was made and Butch was chastised severely for driving at excessive speeds in his rental Chevrolet Celebrity (the Speleo Trooper's temporary replacement while, it was located in an Austin dealership waiting for the Japanese to collect enough old beer cans to build a new transmission and clutch). This only proved that not only was the Celebrity's turn signal defective, the dealer tags out of date but the speedometer was grossly out of calibration.

At Lometa, trip members stopped at a local convenience store for supplies while Butch, Donna and Jennifer went to obtain keys to the property from the land owner, Otis Bristor.

The Bristor's are exceptionally hospitable hosts to cavers and own a beautiful 240 acre sheep ranch near Bend, of which they are justly proud. They've given Maverick members a standing invitation to explore and/or map the three known caves on the property as well as ridge walk the area. As long as cavers respect the property, the invitation should remain available.

Continuing on, the trip group located the proper gates and arrived at the old Bristor home place. The house was originally a log cabin which has been expanded and covered with siding. The house is now used by the family when they stay on the property during hunting season. There is a functional outhouse and a spring fed creek nearby. Al and Richard had brought video equipment to film inside the cave but found the surface scenery too good to pass up. Surface footage was shot with other trip members acting out assigned parts.

On a previous trip Crystal Crawl Cave, had been located and explored but directions to Rotten Log Cave, and Fenceline Fissure Cave, had been misinterpreted. The latter two caves were to be explored this weekend. Once rigged out, everyone headed due west from the house toward a fence running north and south. After some

200 yards through thick brush, the fence made a sharp left turn heading due west. About 100 yards west and 50 yards north, Terry located two cave entrances.

Terry had located Rotten Log Cave. Both entrances led into a large room with passage leading off. Rotten Log Cave, was so named because cavers in the '60's found a log had once been dropped into the larger of two entrances to facilitate entrance. The smaller of the two entrances is easily climbable while the larger can be climbed if your legs will span out seven feet like Terry's. Butch, Corky, Donna, Al, and Terry made a quick journey through the cave while others stayed in the immediate area to help pass gear in and out of the cave.

Rotten Log Cave, is approximately 100' long and 10' deep. It was surveyed in the '60's only to lie unvisited until recent years when the Aggie Speleological Society re-explored the area. Mr. Bristol, reports that years before, he entered the cave to find shovels and an old carbide lamp. The person leaving these artifacts possibly thought he'd found the lost San Sabe Mine.

Rotten Log Cave, is blessed with a few remnants of formation. The cave walls are shaped like Longhorn Cavern, indicating the water flow to have once been tremendous. If there is more extent to the cave, it has long been filled with mud. Broken pieces of the rotten log is still located at the entrance. Finding no leads to push and estimating the map to be reasonably accurate, everyone exited to find Fenceline Fissure.

Fenceline Fissure is located on the fence line, just as it's name implies. It's five hundred foot surveyed length follows the junction of Ellenburger and Marble Falls Limestone. It's main attraction for this trip is a number of leads shown on the map terminated in question marks.

Al and Richard set up their video equipment while the remaining cavers hammed up the "discovery" of the entrance fissure. The entrance is a two to five foot wide fissure some thirty-five foot long. The fissure can be entered from it's east end by walking down a steep slope for approximately eighteen feet. A six foot chimney is then necessary. There are other entrances to the cave but those require vertical gear. The cave passage begins at the east end of the

fissure (under the slope) quickly dropping down to a tight crawl. Richard, on his first cave trip, squeezed through the crawl complete with video equipment as though he'd done it everyday of his life. Perhaps some things are naturally easy to the young.

The crawl quickly led into a room with a seven foot fissure drop at one end and passage leading off to one side. The side passage led to another closed fissure with another side passage leading off and an entrance in the roof. Corky, looked into the side passage to find the partially decayed remains of a dead animal. When he withdrew, the green expression on his face said that God intended the lead to end here.

Back in the other room, the seven foot drop was made by free climb for some and with assistance by others. Near the bottom of the drop, a long, low ceiling bedding plane crawl led into the main trunk passage of the cave. The trunk passage was again low ceiling'd but was quite wide. Several of the leads marked on the map were noted to continue off the passage with ceiling heights of four to six inches. Even Donna decided to pass them up. At various points along the trunk passage, stalactites were noted. Continuing on, the trunk passage leads into the main room. The west side of the room could not be seen even in strong light. The extent of the room appears endless but with ceiling heights of six inches or less.

Charley's Dome and another small dome room were explored extensively. Charley's Dome has a chimney going off one end, which has a tremendous air flow and a surface opening can be seen. Unfortunately the chimney is unfit for man and most small beasts. Several small bats were observed in the area.

Terry attempted to dig a larger opening into a crawl passage where the survey had been abandoned. He had to abandon the dig for lack of proper equipment but succeeded in getting it large enough for Donna and thirteen year old Jennifer to pass. They continued for approximately sixty feet until another squeeze was encountered. They came back reporting that with some digging, the passage appeared to continue endlessly.

After the completion of more video footage, all

returned to the entrance fissure where Jennifer successfully made her first free climb. Video was made of the exit then (almost) all returned. Al, who had noted the directions to the cave, via compass, inadvertently made a wrong turn and enjoyed a rather extensive ridgewalk of the area.

When all were gathered back at the log cabin, the departure was made. Butch and Jennifer returned the keys to the land owner in Lometa then on to Austin to return Jennifer to her mother. The remaining crew drove to Lampasas for a hardy meal of Pizza before returning to the metroplex. A wonderful time was enjoyed by all.

NOTE: Al, later reported that forty-five minutes of tape was edited into twelve minutes of excellent footage which should be available at the next meeting.

**STYX AND STONES, ETC.**

by Jody Robertson

DATE: March 26-27, 1987

DESTINATION: River Styx Cave,  
Bateman Ranch,  
King County, Tx.

PERSONNEL: (well here goes nothing)  
Donna Anderson,  
Diana Andrews,  
Stephanie Andrews,  
Richard Dushman,  
Dale Ellison,  
Carol Finfrock,  
David Finfrock,  
Sherry Finfrock,  
Butch Fralia,  
Patrick (Bubba) Harris,  
Mickie Millard,  
Al Rehfeldt,  
Sherrie Richardson,  
Jody Robertson,  
Shane the Wonder Dog,  
Tony Van Zuilekom.  
(whew)

Another day, another Styx trip folks. This time, we embark on a journey to that wonderful gypsum clad subterranean void in King County, Texas with the sole desire to induct newcomers into the wonderful world of cave exploration.

It all began with the routine rendezvous at Donna's palace in gorgeous White Settlement. One by one, or, shall I say, carload by carload they arrive - myself first, joined soon after by Al Rehfeldt & Richard Dushman with Diana and Stephanie Andrews as well as Patrick (Bubba) Harris in tow. Soon after came Butch and his work companion, Tony Van Zuilekom, a visitor from Australia. Moments later, David Finfrock showed up with wife, Sherry and sister, Carol. Then along comes this mini van with yet two more newcomers, Sherrie Richerson and Mickie Millard.

This weekend would see the reactivation of David Finfrock, as a caver, having been out of it for ten years. Yes, we were bound and determined to show these folks a good time, and what better way than to film a documentary as we went. That's right, Al & crew had brought along a battery of film equipment and would be filming throughout the cave, so, with all introductions aside, draw in close as I spin my yarn of that windy weekend in King County.

The general idea was for Donna to lead this convoy of five vehicles and I, riding in Sherrie's van would bring up the rear. As luck would have it, we ended up in a fifty minute lead from the rest of the crew and arrived on the ranch, soon to find ourselves stuck in the middle of the La Brae tar pits, or their near equivalent. A twenty minute hike from there would bring me to the campsite where Dale was just finishing setting up his camp. The two of us returned in Dale's truck to the scene of the disaster and opened a path around the massive mud hole for Sherrie to drive on.

Once at camp, we were joined by the rest of the crew and commenced setting up camp in the fiery gale. This weekend would also see Dale disappointed in his anxious efforts to pass on the illustrious "Rain God Award" to David, thus ridding himself of that age old curse. (In next month's issue, Dale's own girlfriend Arlene, proves he deserves the title. - Ed.) I feel that David deserves something for his efforts more along the line of something to do with his wind and cold conjuring abilities. Wait until the Christmas Party, We'll see.

The morning brought us cold and windy conditions and we huddled together around the fire as Al prepared us all a breakfast of champions (Thanks Al!). We suited up and piled into the van

for a quick trip to the sixty-three entrance.

Inside, I found a squeeze or two where there weren't any before, keeping this cave's reputation for changing radically between trips. Down the entrance passage we went, trying our best not to disturb the clusters of bats nestled along the corridor. We began filming right away in the Junction Room and left thereafter for the window, where we paused for group photos. We then made our way to the Dome Room, via a short cut climb not marked on the map. This climb led us through a small Dome Room littered with large chunks of beautiful orange gypsum. We filmed awhile in the Dome Room and set sail for the Bat Cave Passage. The bulk of the group stopped to rest at the beginning of the river passage while three of us continued on to the Bat Cave Passage and the Racing Stripe Room. Satisfied we had taken in enough underground for one day, we turned to exit the cave.

The weather had not changed a whole lot since we entered, but the sun had emerged and made breaking up camp a little more bearable. Most of us would be left at this time due to not wishing to have another cold night and morning to bear. We bade our farewells and set course for Fort Worth. The weekend had been a total success. We'll do it again sometime.

NOTE: At the last minute, I found Dale's column after all.

DID YOU KNOW

by Dale Ellison

MORE GROUND WATER IN ACTION

Hot springs are springs in which the water is warmer than body temperature. Water gains heat two different ways while underground. First, and most common, ground water may circulate near a magma chamber or body of cooling igneous rock. Hot springs and pools of Yellowstone National Park are of this type.

Underground water may also gain heat circulating deep in the earth, such as along a major fissure.

The earth's geothermal gradient is about 25 C./kilometer. Water circulating to a depth of two or three kilometers is warmed above normal surface water temperature. Springs at Warm Springs, Georgia, have been warmed by deep

circulation. Warm water, lighter than cold water, readily rises to the surface.

Geysers are hot springs which periodically erupt near boiling hot water and steam. Bubbles of water vapor and other gases form as water temperature rises. The upper pressure of bubbles pushes out some of the water above in a gentle surge which lowers the pressure in the lower part of the chamber. This drop in pressure causes the chamber water to flash into vapor. The expanding vapor blasts upward driving hot water with it. Now the chamber empties, but fills again and repeat the process. This cycle may be quite regular or irregular. Times range from thirty minutes to a month between eruptions. Deposits outside the geyser can be stained by pigments of algae living in the hot water. This can be used to estimate the water temperature - they change from green to brown to orange to yellow as temperature rises.

Electricity is generated at most power plants, by directing a jet of steam against curved blades of a turbine. Steam jets cause the turbine to rotate, spinning a generator to produce electricity. The steam turning the turbine may be produced many ways. Coal, petroleum, or natural gas can be burned to boil water and create steam. Nuclear power plants produce steam using heat given off during nuclear reaction. Air pollution is eliminated but uranium is expensive and presents a disposal problem. There is also the danger of radio-active contamination.

Geothermal energy is produced by harnessing naturally occurring steam and hot water in areas of subsurface heat. Wells drilled into a geothermal system taps steam and is piped to a powerhouse. Advantages of geothermal energy is that no fuel need be burned, no air pollution, and radiation hazards are eliminated. Superheated water, because of mineral and salt content, may damage plant and fish life if allowed to enter surface streams. This problem can be eliminated by pumping water back underground which helps prolong the life of the field. Geothermal energy could provide 20% of our future energy needs.

Condensed and paraphrased from PHYSICAL GEOLOGY, by Charles Plummer & David McBeary. Published Wm. C. Brown, Dubuque, Iowa, © 1985, pp224 - 229.

## Mountain Sports

We're Moving!!! Look for the big Grand Opening coming soon at our new location; 2024 W. Pioneer Pkwy, just across the street from our present location at 2002 W. Pioneer Pkwy.

In the meantime, COME IN and BROWSE through our complete line of camping, climbing and back packing equipment. We have an extensive outdoor book collection INCLUDING CAVING BOOKS!!!!

Bluewater II, Climbing Rope - Gibbs Ascenders - Petzl Rappel Racks - Brake Bars - Jumar Ascenders - Everything from Tent to Car Top Camping Equipment

2 Locations to serve you!!

2002 W. Pioneer Pkwy, Arlington, Texas - (817)461-4503  
4999 S. Hulen St., Fort Worth, Texas - (817)292-8552

THE MAVERICK GROTTO  
P.O. BOX 170274  
ARLINGTON, TX, 76003