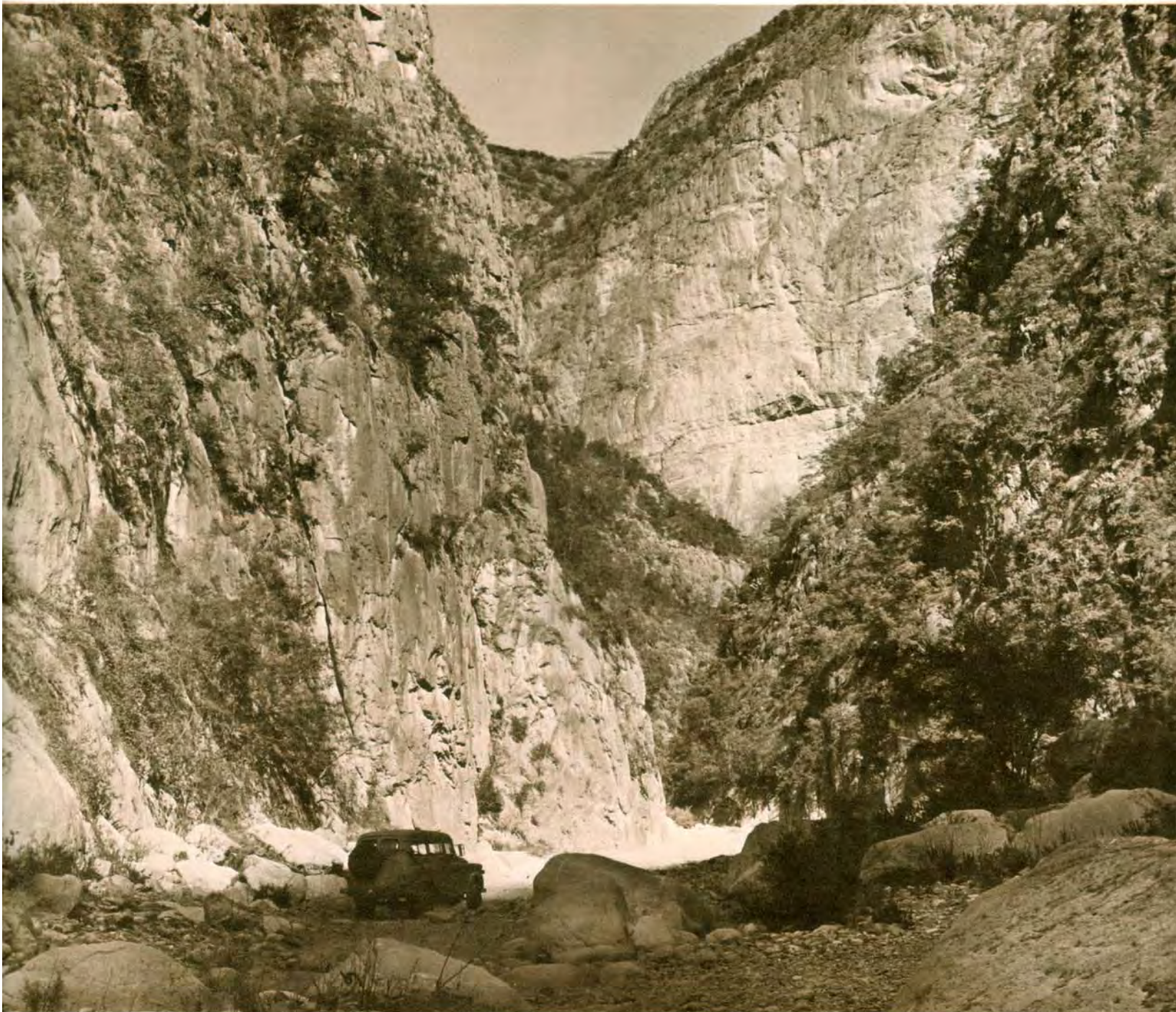


Association For
Mexican Cave Studies
NEWSLETTER



The Association for Mexican Cave Studies is a non-profit organization whose goals are the collection and dissemination of information concerning Mexican caves. The AMCS publishes a Newsletter, Bulletin, and Cave Report Series which are available to any sincerely interested conservation-minded person. The AMCS Newsletter is published six issues per volume as frequently as necessary at a cost of \$5 US per volume. Information concerning the other publications is available upon request. Potential contributors are urged to submit articles for publication. The article may cover any phase of Mexican speleology. Trip reports are requested from all trips. All correspondence and orders for publications should be sent to:

ASSOCIATION FOR MEXICAN CAVE STUDIES
P.O. Box 7037, University Station
Austin, Texas 78712 USA

Material for publication in the Newsletter should be sent to James Reddell or Terry Raines at the above address.

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THE SPELEO PRESS
Austin Texas

Cover Photograph—

If you fancy yourself as a successful cave hunter, may we suggest Cañon de la Huasteca for your next objective. The Cañon area is quite extensive, covering several hundred square kilometers, and is characterized by high, parallel mountain ridges of massively bedded limestone, and a drainage system forming deep canyons that both parallel and cut directly across the ridges. The photograph shows one of the many points where the stream has cut directly through the ridge, exposing, in places, limestone sequences as great as 400 meters. The network of roads in the area make use of these natural water gaps as well as smooth gravel stream beds. Perhaps the most popular route (four-wheel drive) through the area begins at Santiago, N.L. and ends at Santa Catarina, N.L. It is about 100 km long and the river bed is followed down stream. The trouble with all this limestone is that hardly any caves are known. Climbing the mountain walls is rugged and very few people live in the area to give directions. For this reason cave hunting is a real challenge, but should prove rewarding for the determined.

Association For
Mexican Cave Studies
NEWSLETTER



NEWS AND NOTES

Our regional correspondent in Pennsylvania, Nevin Davis, recently passed on some news from Jorge Ibarra in Mexico City. On 2 November 1973, Lorenzo García Gallardo became the first Mexican to descend Sótano de las Golondrinas. His ascent took 12 hours because of poor training and entanglement of the *belay* rope (see Reviews in this issue for more details). Eduardo Castro, as mentioned in vol. IV, no. 4, visited the pit with an AMCS group on 25 December 1973. On 5 February 1974 another Mexican group of six descended the pit and prusiked out easily. Mexico City cavers have also recently visited Pozo Melendez, Cueva la Chifladora, and Sumidero de Sacatecolotla (near Taxco).

On a May trip to Cd. Valles William Elliott met Steve Lebel, Rick Davis, Donald Evans, Bert Ammann, and Chuck Elliott, vertical enthusiasts from Maryland. Some had descended the skylight in Cueva de El Abra and found it to be 380 ft (116 m) deep. As far as we know, this is the first such descent. Various members of the group also visited Sótano de las Golondrinas, El Sótano, Sótano de Puerto de los Lobos, the skylight in Ventana Jabalí, and other deep pits. Elliott was rather shocked to hear the description of several of their party speed-rappelling, in 2 1/2 minutes, to the bottom of Golondrinas. After several such descents a new rope was essentially ruined. There is only one word to describe such behavior—stupidity.

Rumor has it that John Fish plans to start publishing some of his studies on the Sierra de El Abra soon in *The Canadian Caver*. We certainly hope so.

The editors would like to thank Don Broussard for compiling the index to AMCS Newsletter, volume III, which was issued with vol. IV, no. 5-6. Before leaving for Venezuela and Cueva de Guacharo with Tom Wright, Don did the index for vol. IV, which we plan to publish soon.

John Graves reports that the following note was found in the entrance room of Sotanito de Ahuacatlán:

Suckholito
18 Dec 1972

All to the bottom: 1. Jack W. Hart, NSS 4960, Rockeater PED.
2. Jim Youmans, NSS 7004, Rockeater DCG
3. B.C. Thompson, NSS 13814
4. David Stidman, NSS 9543, Spectre Grotto, Carthage, Tenn.
5. Ted Wilson, NSS 11352
6. Marion O. Smith, NSS 9164, not as bad as the top name indicates
7. David W. Teal, NSS 11982, Huntsville Grotto, GSS, deserves its name

This is about the 3rd group to visit this pit. Advice: Do not have more than 2 persons at the bottom of the pit. Its small with no protection from falling rocks. Voice communication is not possible. Ledge will fray rope about 600 ft. down.

Craig Bittinger reports in the *NSS News*, 32(6):102, that "Two week-long expeditions from Austin got good results. One finished mapping Dos Bocas, near Taxco, with the length of the Chontalcatlan cave approaching 18,000 feet. This group also surveyed Grutas de Carlos Pacheco and the back of Cacahuamilpa. The second Austin team continued the exploration

of Sótano de San Francisco and bottomed it at -650 feet. They then looked for new caves, ending up in Valles where an effort was made to connect Tinaja and Arroyo. A lead was found, but lack of enough rope to do a 10 foot drop stopped any more progress.” Ed. Note: The map of Sótano de San Francisco is published in this issue on p. 4.

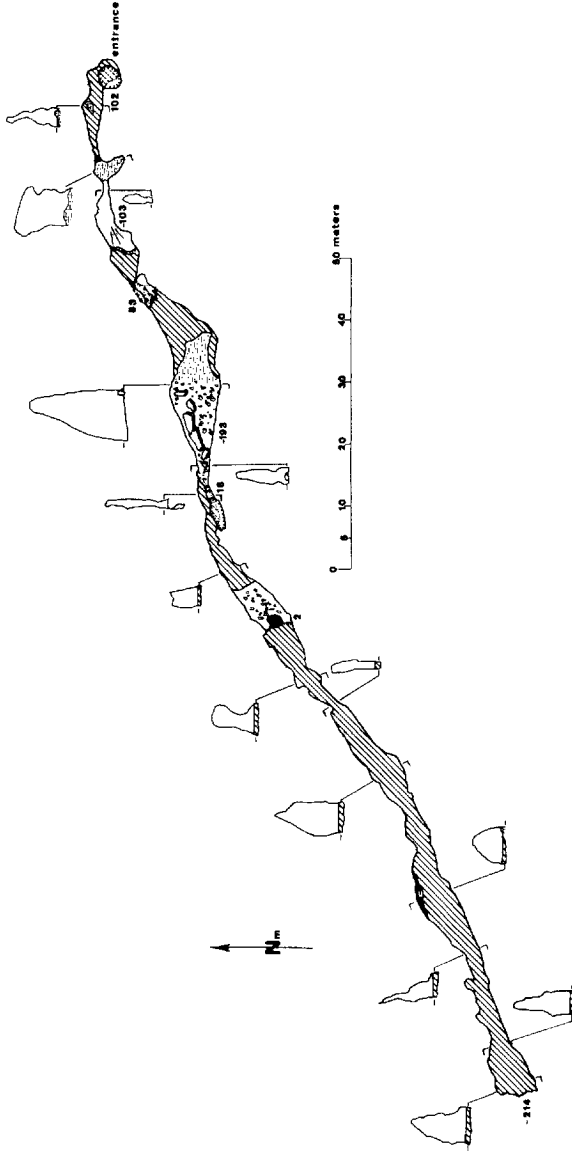
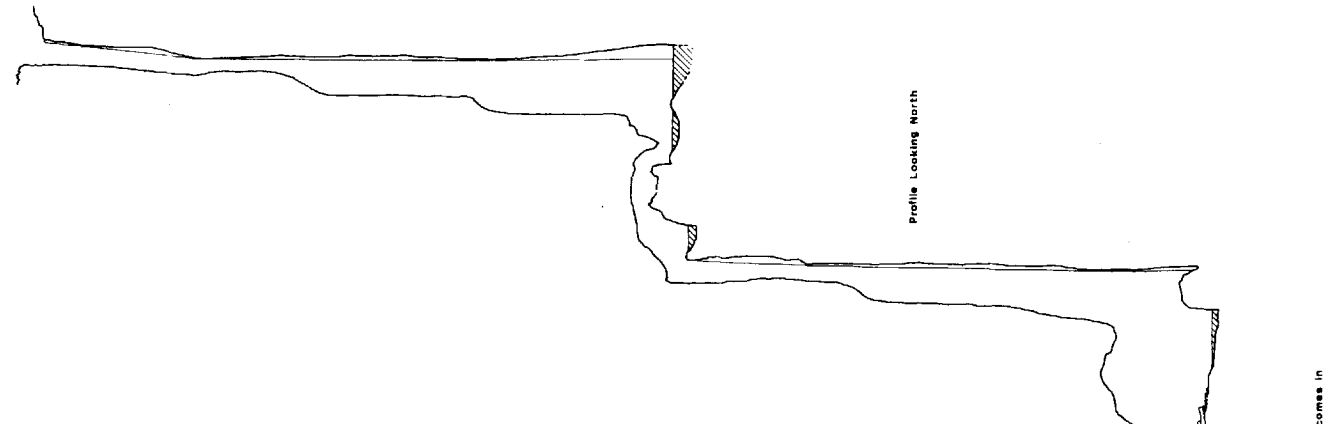
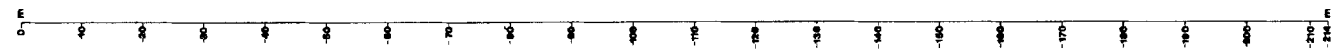
The following miscellaneous items have appeared in *The Texas Caver*, vol. 19, nos. 3-5. Since no trip reports have been received they are partially reprinted here:

Several members of the Greater Houston Grotto “visited the Rfo Purificación area northwest of Cd. Victoria during the Christmas-New Year’s vacation, surveying and checking leads.” (TC, 19:42)

A lot of caving by the University of Texas Grotto was done in Mexico over the Christmas Holidays. Extensive exploration occurred in the Chapel area of the El Abra Range and in the Sótano de las Golondrinas Area. A club trip to Bustamante was planned at the first UTG meeting of the Spring semester. On January 18 Roy Brooks, Susan German, Jay Jorden, Preston Forsythe, Ron T. Kopel, Mary Conner, Neal Morris, Peter Strickland, John Steele, Rene Shields, Barbara Vinson, and Willie Vinson left for Mexico and visited La Gruta del Palmito and El Carrizal. On January 26 Craig Bittinger, Ron Ralph, Peter Sprouse, Jay Jorden, Terry Sayther, and Richard Booth went to the Bustamante-Carrizal area investigating Pictograph caves and sites. (TC, 19:70)

Several Greater Houston Grotto members have made trips to the Bustamante area in recent weeks, discovering caves near the summits of the Sierra Gomas and Sierra Bustamante. Others have recently returned from a road-logging trip to the Sierra Madre Oriental south of Monterrey. (TC, 19:70)

On February 9 there was a large group of cavers from UT, A&I, and SWT at Bustamante, Nuevo León, México. Arriving in six vehicles, some of the people present were Preston Forsythe, Logan McNatt, Blake Harrison, T.C. Ferret, Dale Pate, Brian Clark, Rebecca Lougheed, Thomas Moore, Neal Morris, Barbara Vinson, Amador Cantu, Glenda Dawson, Paul Duncan, Stan Bittinger, Ann Baltrazak, Wayne Klemke, Terry Sayther, Craig Bittinger, Pat Asnes, Molly Asnes, and last but not least, Harold (Termite) Romike. People visited La Gruta del Palmito, mapped in Precipicio, and recorded numerous pictograph sites in the area. On March 9, Craig Bittinger, Terry Sayther, Nancy Sayther, Mary Conner, Charlotte Rogers, and Debbie Flanagan drove to Gruta de Carrizal, N.L., México. They discovered two small caves and recorded numerous petroglyphs.



SOTANO de SAN FRANCISCO

Municipio de Zerezo, S.L.P.

Mexico

Survey and Tapa Survey

by

M. McEchtern, R. Ralph 19 May 1972

D. Hutchings, P. Sprouse, P. Strickland 31 March 1974

Drafted by Peter Sprouse June 1974

Depth: 214m

Length (true horizontal): 188m

ASSOCIATION for MEXICAN CAVE STUDIES

water comes in

-214 m

TRIP REPORTS

Date: 29-31 May 1973

Destination: Potrero Redondo, Nuevo León

Persons: Mike Connolly, Charles Fromén, Charles Pace, Blanca Ortega Pace (Sr. Manuel Ortega Sandoval); Ernie Gaw, Vicky Gaw, Lloyd Pond, Ferrel Pond.

The group left Houston about 4 p.m. Friday and spent the night at Ojo de Agua. The next day they drove on past Horsetail Falls where they met Ernie and the others, who were having overheating problems with their car. They reported that it had been impossible for them to cross the border at the Cd. Aleman entry point because they didn't have enough money and had been forced to enter via McAllen.

Both groups proceeded slowly along the steep road beyond El Cercal where they established camp. Ernie's group, distressed because of the rain that was about to set in and the difficulties with his car, debated returning to Monterrey. After lunch, Charles F., and Mike set out for Potrero Redondo on the bikes, leaving the others in a state of indecision.

The light mist served to keep the dust down on the roads and Mike and Charles arrived in Potrero Redondo within an hour. Leaving their bikes at the house of Juan Torres, they hiked down to Las Truchas Waterfall, below the town, and started the climb to the caves on the opposite wall of the canyon. The rain had made things very slippery so that the climb took about 3 hours. Deciding that it would be too dangerous to descend in the dark, they spent the night in one of the caves.

The early morning light proved the view from the caves to be as spectacular as might be imagined, with the waterfall framed by surrounding canyon walls and the road dimly visible in the distance. The two explorers climbed back down to the waterfall and headed back for town, checking for cave openings that had been visible from the road. When they arrived in town, they stopped at the tienda for several cocas grandes and questioned the locals about more caves in the area. They heard reports of several caves which had not been entered and, with a map drawn by one of the villagers, they set out to locate them. After spending several hours in fruitless searching, they headed back to town where they encountered José and Jesus Beltran, who offered to guide them to one of the caves.

This particular cave turned out to be a water passage with deep, cold water. The entrance was located about 10 ft above the water level at the time of their visit. However, the guides explained that during the month of August the water actually flows from the cave, completely submerging the entrance. Due to the depth and temperature of the water it was decided to return at a later date with rubber raft and suitable equipment.

While returning from this cave, the guides seemed to notice for the first time the 150 ft rope on one side of the bikes. This prompted them to casually mention something about a sótano in the vicinity. Trying to restrain their excitement, Mike and Charles asked

about the location and learned that it was only a short distance from town. They returned to town and headed up to the sótano located about 1/4 mile away. The entrance (Sótano de Potrero Redondo) was about a 70 ft drop (surveyed later and found to be 57 ft) into a room, with large formations, and a series of incredibly thin rimstone dams at one end. A passage leads down from one side of this room over a series of flowstone waterfalls until reaching a small opening about 60 ft below the entrance room. From there, a complicated crawlway extends for a distance of about 100 ft to a large muddy terminal room.

Due to failure of photographic equipment, lack of mapping instruments, and the fact that neither of the explorers had eaten in 24 hours, it was decided to return to the surface and begin the journey back to camp. Darkness was falling as they departed and the return trip took several hours; including a stop to discuss a cave lead with Martín Gutierrez, who offered to act as a guide any time they wanted to check it out. This particular cave is of the walk-in variety and is located about 4 mi upstream from Gutierrez's house. The duo arrived in camp about 11 p.m. to discover that the others were ready to contact the American Consulate to find out what had become of them! ?

The next morning, Charles and Mike explored El Alamo Canyon by motorbikes. Sra. Liberata Sausera de Sanchez, of Rancho el Alamo, indicated that there were no caves in the vicinity, and very infrequent traffic through the canyon. The scenery, however, was quite spectacular. They returned to camp and loaded up for the return to Houston. Sr. Ortega, who had come up the night before from Monterrey, would return to Houston with them. A brief stop in Monterrey was made to visit the Ortega's relatives.

Date: 30 November - 2 December 1973

Destination: La Gruta del Palmito and La Gruta de Carrizal, Nuevo León

Persons: William Ballard, Debbie Flanagan, Keith Heuss, Mike Hill, Sylvia Hurd, Frances McCauley, Katie Monahan, Janel Nye, Hal Odem, Dale Pate, Frank Sodek, Bill Thomas

Reported by: Dale Pate

Our three vehicles made it to Bustamante Canyon by 4:00 a.m. where we encountered John Graves and a group from San Marcos. After a restful sleep of a few hours, we were up and headed for Palmito while the others were headed for Precipicio. We stayed in the cave for about four hours and got out while it was still light. Saturday night was spent at Ojo de Agua where several carloads from A&I, including Tom Wright, were camped. After a long delay the next morning, we finally got to Carrizal. We visited a large part of the cave and swam out the water entrance. How long can you tread water while holding a Nikkormat above your head? It would have been a quick trip home had Frances remembered to bring both her books back from Carrizal. As it was, we only had an hour delay.

—Reprinted from *The Texas Caver*, 19(3):47.

Date: 27-31 December 1973

Destination: Gruta del Palmito, Grutas del García, Huasteca Canyon, Cueva de la Boca, Nuevo León

Persons: Paul Bonner, Joe Everton, David Foster, Jim Jasek, Jane and Mimi Laurens, Francis McCauley, Gary Parsons, Frank Sodek, Alicia Wisener.

Reported by: Alicia Wisener

T.C.A. took advantage of the semester break with a trip to Mexico. Seven of us left Thursday and got to Bustamante about midnight. We met some cavers from Illinois who had just done Carrizal and Gruta del Precipicio. The next morning we all hiked up to Palmito while the sun got surprisingly hot for December. We visited the Hidden Room and the Birthday Passage before our time ran out.

Jim, Mimi, and Joe met us the next morning at Ojo del Agua and we all headed for Grutas del García. The caves are massive and rival Palmito although the formations are no longer active. The cable car up the mountain is a real experience as is a commercial tour with 200 people who wander away from the guide at every opportunity. We got through about 4:00 p.m., got to Monterrey a little later, and headed for Huasteca Canyon. It was pitch dark by the time we got up the mountain so we ate and crashed.

There was an abundance of frost the next morning and it was *cold*. However, 30 minutes after the sun got into the valley we were all in shirt sleeves. In the beautiful weather we hiked into the canyon. We got only as far as the spectacular waterfall before high water blocked our passage. Our friends from Illinois showed up a few minutes later in a 4WD truck and proceeded on through the fifty mile canyon. We visited another gorgeous canyon a couple of miles away and then started down the incredibly scenic road we had traveled in darkness the night before. We headed for Cueva de la Boca and got there about dark. The entrance revealed itself as a massive (35 meters by 35 meters) blotch of darkness on the mountainside across the river. Eight of us hiked up and did the cave. It gave Francis and me the creeps with its many man-made shafts that kept popping up right at our feet. The cave had been mined extensively for phosphates.

Monday morning we headed for the border where we met a cold front just blowing in. The original seven did the turista bit in Nuevo Laredo before crossing the border where we were royally shafted in a crappy cafeteria in Laredo. We got back to Temple just thirty minutes before the new year.

—Reprinted from *The Texas Caver*, 19(3):48.

Date: 21 December 1973 - 12 January 1974

Destination: Zacapoaxtla-Cuetzalan Area, Puebla; Acatlán, Oaxaca; Soledad Atzompa and Cofre de Perote, Veracruz

Persons: William Elliott, Bob Harr, Roy Jameson, David McKenzie, James Reddell

Reported by: James Reddell and William Elliott

21 December—James Reddell, Bill and Nell Elliott leave Lubbock in Bill's truck at 6:00 p.m. We drive to Georgetown arriving at 2:00 a.m.

22 December—After leaving Nell at her parents we drive on to Austin where we find David and Bob waiting. We pack the truck, pick up Roy Jameson, and finally get on the road at 4:00 p.m. We cross at Reynosa at midnight with no trouble and drive all night.

23 December—We reach Tampico at 6:00 a.m., finally find the ferry, cross, and eat

breakfast. We decide to take a shortcut from El Tajin but decide that the road is so rough that it would take us longer than by the highway so we continue on the highway to Papantla. We camp among pines at more than 7000 ft elevation.

24 December—We drove on to Zacapoaxtla where we eat. We then drive on across the Rfo Apulco and get out to try to find an elevation benchmark to use to set David's altimeter. A gust of wind sends our area map over the bridge but it fortunately catches on a bush about 30 ft below the bridge and we are able to recover it. Following Nevin Davis' road log we check out the entrance of small cave just below the town of Coctapqual. It proved to be an unclimbable pit about 20 ft deep so we left it until later. We drove on and took what we thought to be the road to Jonotla. Instead it was a new road to the village of Santa Lucia. We discovered the entrance to a large cave, Sima Esteban, at about an elevation of 5000 ft. Everyone rigged the western pit entrance (40 ft) and Roy went down. As Bill prepared to descend James showed up at the bottom of the entrance. He had entered the large dolina on the east side of the road and found a stream entering. It proved to be the same cave. Collections and photographs were made in the cave and a map begun (see AMCS Newsletter, 4(5-6):187, pl. 6). We camped in a dolina not far from the cave entrance.

25 December—Bob, Roy, and Bill continued the map of the cave while David and James set out on a reconnaissance of the nearby karsted countryside. They first located the entrance to Cueva de Olivares and sketch-mapped it and made a good collection in it (see AMCS Newsletter, 4(5-6):187, 189). From here they went on to check other leads but became separated. David went to Cueva de la Barranca (see AMCS Newsletter, 4(5-6):188), Cueva de Guayateno (see AMCS Newsletter, 4(5-6):188, 190), Cueva de Xilipa (see AMCS Newsletter, 4(5-6):188, 190, where it is misspelled Chilita), and Sumidero de Cuaucteno (see AMCS Newsletter, 4(5-6):189). James made collections on the surface, noted several promising leads, and got hopelessly lost in a pea-soup fog which descended before noon. David and James returned to the truck and not too much later the others appeared to report that two pieces of rope and come untied while being pulled up a waterfall and were lost in a deep plunge pool. We camped again in the dolina despite a miserable night of fog and light rain.

26 December—Bill and Roy took a block with a big hook on it and returned to the cave where they retrieved one piece of rope. David and James worked on a location map of the area and looked at other cave entrances. We drove on to Jonotla, checking out While James explored a small nearby cave, Cueva Murciélago de Xocoyolo, everyone else made a collecting-photographing trip into Cueva de Xocoyolo (see AMCS Newsletter, 4(5-6):174-175, pl. 2). After a quick trip into Cuetzalan in dense fog we returned to the house of Rafael Arellano where we obtained directions to two nearby caves. David and Roy went into Cueva de Octimaxal Sur n. 2 while Bill and James went into Cueva de Octimaxal Sur n. 1 (see AMCS Newsletter, 4(5-6):177-179). Upon returning from Octimaxal Sur n. 1 James took a long walk into the gorge of the Sumidero de Atepolihuit in search of Grutas de Atepolihuit. He met three amateur Mexican cavers returning from the Grutas. Darkness began to fall before the long walk to the Grutas could be completed so James returned and we all went into Cuetzalan to spend a dry night in a cheap hotel.

28 December—The day was the first really clear day we had seen so we took advantage of it and drove along the main road slowly looking at scenery and karst features. We turned off on the road to Xochitlán, hoping to be able to drive on to Grutas Karmidas. In town we took a wrong turn and drove to a point where it was blocked by men working on the road. At the edge of the town one small cave was checked and found to be nothing more than a

40 ft long fissure. We returned through town and took the right road. It essentially ends at the Río Tecuantepec where the bridge across the river has not been completed. We then hiked downstream to find the Grutas de Ateno (see AMCS Newsletter, 4(5-6):185-186, pl. 5). We photographed, collected, and mapped until 1:00 a.m., at which time we returned to the car and found a campsite.

29 December—Everyone but James returned to Grutas de Ateno to finish the map and take more photographs. James walked around on the surface collecting and checking other caves. In addition to looking at many spring-type entrances, some rather promising, he entered and made a good collection in Cueva de los Camarones (see AMCS Newsletter, 4(5-6):186). After everyone returned from Ateno we drove back along the road to check several sinks we had seen on the way into the river canyon. Bill and Roy hiked down the bed of an arroyo which was found to end in the impressive entrance to Sumidero de Cuetzaltamanes (see AMCS Newsletter, 4(5-6):186). David located and explored a small cave, Cueva de la Vibora (see AMCS Newsletter, 4(5-6):186). We then returned to the same campsite and slept.

30 December—We logged the road back to the highway, stopping off to try to locate the entrance to Cueva Xochitl (see AMCS Newsletter, 4(5-6):162-163). David, James, and Bill set off in search of it, but David and Bill turned back while James was doing a little surface collecting. On the way back he ran into an Indian who showed him the obscure entrance. He explored the cave back to the drop and made the best collection of the trip. After his return to the car we completed the road log and drove on to Veracruz where we camped near the airport.

31 December—We got up early and took Bob to the airport so that he could fly back to Austin and his job. We drove on to Acatlán. Upon arriving we tracked down the rumor of the deep sinkhole which opened up after the earthquake. It proved to be quite small (see AMCS Newsletter, 4(4):112) so we drove on to Luis Calderon's house. We hiked down to Cueva del Nacimiento del Río San Antonio and went back to the breakdown mountain at the end of the main passage. We had been told of a continuation beyond this breakdown which had been discovered by Peter Strickland and Jim and Julie Rodemaker on an earlier trip. We quickly found the opening, surveyed through the breakdown, and along the main passage to a side passage which we mapped to a siphon. Altogether we mapped a total of 1160 ft before giving up and returning to camp.

1 January—We entered the cave about noon and mapped the main passage to a siphon (about 3000 ft) and a gross muddy side passage which ran for 1000 ft to another siphon. This completed the map of the cave so we returned to camp and celebrated by eating a whole hershey bar. The total length of the cave is about 15,000 ft.

2 January—We slept late and then David and Roy were taken to Cueva del Lencho Virgen, a small complex of passages on a hillside north of Cueva del Nacimiento del Río San Antonio. We then drove into town to eat. On the way back we took a new road being built up into the mountain range. It supposedly is to go to a ranch containing a large sumidero. We were shown a few small caves containing eyed fish, but were otherwise of little interest.

3 January—We all went to Cueva del Lencho Virgen to make a collection. It is a multi-level maze with at least three entrances. We explored at least 500 ft of passage. We then drove on towards Orizaba, stopping at Cueva del Ojo de Agua Grande to collect. We got a hotel and spent the night in Orizaba.

4 January—We drove up to Soledad Atzompa (about 6900 ft) over very slick, steep roads. We arrived at Soledad in a heavy mist and obtained permission from the Presidente

to camp and to look for caves. About 20 men and boys immediately set out with us to show us caves. We were first taken to Sumidero de Oxtotempa. A small cold stream entered the cave by rushing down a steeply inclined slope and then over a short drop. From here we were shown to a second sumidero, Sumidero de Oxhaustempa. A smaller stream runs along a large dolina and then plunges over a drop of about 100 ft. Both caves are extremely promising, but lack of time prevented our entering either. We were then shown about 10 other entrances, but since it was late in the day we postponed entering any of them until the next day. We camped under the porch of the small schoolhouse.

5 January—We got an early start and, accompanied by about six Indian kids, we went to the first sótano, Sótano de Lomapa. Roy entered it and found it to be 53 ft deep with no passages from the bottom. While he explored this pit, Bill went into a small unnamed pit nearby. It dropped 35 ft to a point where it narrowed to 1.5 x 1 ft and continued to drop. No attempt was made to explore this narrow crevice. The third sótano of the day proved to be far more interesting. David, Roy, and Bill entered it. A large funnel-shaped hand-line entrance led into a passage with drops to a total depth of 185 ft. From here a small hole leads to a drop of over 100 ft which was not explored. They surveyed out of the cave, which was named Sótano de Teamácan, and re-joined James on the surface who was directing the collecting activities of all the kids in the neighborhood. In exchange he



David McKenzie at the entrance to Sótano de Teamácan.

taught them English words and phrases. The next cave was the only one we saw with a horizontal entrance. A duck-under opening led to a walking passage for about 100 ft to a 75 ft drop. Roy descended the drop while the others collected. At the bottom of the drop a fissure led steadily down for an additional 100 ft to an unclimbable drop which was not entered. The name of this cave was found to be Cueva de Mazateopa. Several additional caves and pits were seen on the way back to Soledad but it was too late to check them. We again camped at the schoolhouse and talked to the local people and James continued his English lessons until he was threatened with bodily harm by the remainder of the crew. It being the 12th Day of Christmas, church bells and fireworks lasted much of the night.

6 January—Bill woke up sick so the others hiked up a ridge in hopes of a good view of Pico de Orizaba. While Roy and David walked down into a valley to check an impressive sumidero (this proved to be Sótano Itamo) James made surface collections and returned to the truck. Conversations with local people and Bill's illness led us to decide to await further explorations in the area since we were particularly eager to see what had been done by the group of Pennsylvania cavers. The local people had told us of several trips to the area by them and by their explorations in a very deep (1500 ft) cave. We drove down off of the mountain and went to Cueva Macinga south of Orizaba and camped.

7 January—We went into Cueva del Ojo de Agua de Tlilapan to see if the recent earthquake had caused any damage to the cave. To our surprise and interest we found that nothing at all had been shifted in the cave. Even the poorly cemented breccia ceiling and loose breakdown on the cave floor were apparently unshifted or affected by the quake. We ate in Orizaba and drove toward Huatusco to check out roads in the area. We finally found a deep canyon which was reported to have caves. Since the canyon was entirely in igneous rocks and from descriptions of the caves by local people we decided they were large shelters in rhyolite and not worth the time to descend into the canyon to try to locate them. We then drove on to Jalapa and camped near Las Vigas where we hoped to locate and explore a large rumored lava tube.

8 January—After pushing the truck to get it started we drove 4 km S of Las Vigas and



David McKenzie in the upper entrance to Cueva del Volcancillo. The crater is visible from the entrance.

were directed to El Volcancillo. A small boy led us uphill for about half an hour where we encountered the 400-500 ft in diameter, 150 ft deep crater of El Volcancillo. A cave about 15 ft below the lip of the crater led back for 100 ft to a large collapsed segment of the tube. From the lower end of this collapsed area a slope down led into the main passage of Cueva del Volcancillo. The floor of the cave is almost entirely covered with very jagged, irregular breakdown blocks, making travel through it somewhat difficult. We mapped about 1000 ft and left. We returned to our previous campsite for the night.

9 January—We returned to the cave and mapped an additional 800 ft to a breakdown choke. The entire cave is negotiable with only a 15 ft unclimbable drop below a small skylight entrance about midway through. We attempted to find a way through and over the breakdown choke (apparently where breakdown has occurred between an upper and lower segment of the tube). Upon exiting the cave we were told by a man living near the cave that you can squeeze by the breakdown (es muy feo) and continue for a very long distance at which point you can hear trucks passing overhead. If this is true, and he seemed to know the cave very well, it will be a very long and very deep cave. At the point where the survey stopped the total depth is about 450 ft (see map, pl. 1). While Roy and Bill photographed in the cave David and James went to another cave, Cueva del Larco. A long collapsed seg-



Roy Jameson at the drop in
Cueva del Volcancillo.

ment of lava tube formed the lower entrance. At the upper end a steep slope and a ladder led down to a breakdown-floored room. No negotiable passages led from the bottom but a large passage could be seen about 50 ft above the cave floor. The same man who had described the continuation of Cueva del Volcancillo to us informed us that a ladder had once led to this upper passage and that from here it went back to a drop into a long cave passage. From Las Vigas we drove on to south of Tampico and camped.

10 January—We drove on to Reynosa, crossed the border, and drove to Austin, arriving at 2 a.m. Stayed at Terry's house in Austin.

11 January—Spent the day in Austin.

12 January—Bill and James returned to Lubbock.

Date: 4 January 1974

Destination: Cueva de Sacatale and Sótano de Sacatale, Ciudad Valles, San Luis Potosí

Persons: Alexia Cochrane, Don Coons, Dale Pate, Ivy Atherton, Jim, Julie, and Eli Rodemaker

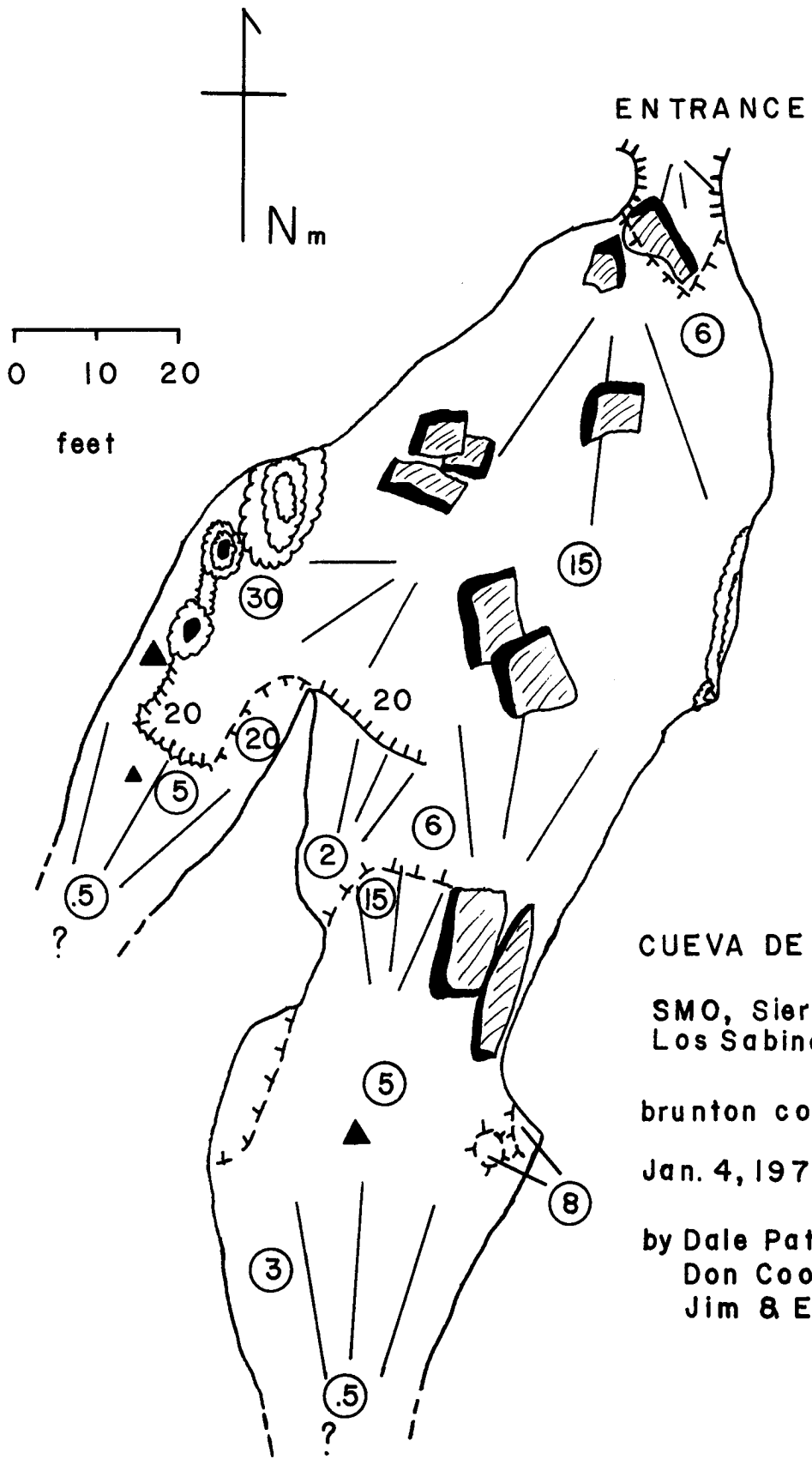
Reported by: Don Coons

Alexia and I arrived at Los Sabinos the evening of the 3rd. We had been caving in northern México with friends and so were somewhat late in arriving at the "Christmas happening." We heard of a small cave and new pit that had been discovered by Julie, Jim, and Craig Bittinger two days before. They had hired guides at Los Sabinos who talked of a "cueva grande" and were shown a new road that led southeast of the village to within a 10 minute walk of the El Abra crest. The cave turned out to be disappointingly small, but a small nearby pit complex turned out to be "about 500 ft deep." Julie, Alexia, and Ivy planned to survey the pit, while Jim, Dale, and I were to survey the cave and then descend behind the women to photograph. We left around 12 PM and arrived at the pit about 1 PM. The pit was rigged, the women on their way down, and we on our way to the cave by 1:30. We arrived some 15 minutes later with little difficulty.

Cueva de Sacatale consists of a medium-sized entrance room with two smaller upper levels (see map, p. 14). It is located just a few dozen yards east of the El Abra crest and trends basically north-south. It seems to be a section of some larger passage that has clay-filled at one end and collapsed at the entrance. We completed our survey and found upper and lower jaws of a larger vertebrate at the bottom of a breakdown hole. These were collected by Jim for identification and we started back to the pit. Los Sabinos was visible at one point on the trail near the cave. The compass showed it at 267°.

We arrived back at the pit about 5 PM. Jim and Dale built a fire while I walked down a nearby trail. One 20 ft hole and a lot of jungle later I got back about dark. The women were out around 7 PM. They had rigged and nearly bottomed the pit, but decided that time was too short and the sketches too complicated to attempt a survey. We started in to recover the rope, photograph, and survey as much as time allowed.

Sótano de Sacatale is a small diameter multiple drop pit with many active formations (see map, p. 16). The entrance drop is 6 ft wide and 103 ft deep. A ledge is encountered at 50 ft. Twenty horizontal feet below a formation natural bridge leads to the second drop, which is 204 ft over major ledges at 87 ft and 119 ft. It is adorned with many 10 ft long, tapered stalactites and columns, flowstone cascades, and small, crystal-covered stalactites. The last 70 ft opens into the largest room of the cave. The floor of the room is dominated by a large "table" formation. This is a flowstone shelf, decorated by 4 in high stalagmites, that has been undercut by removal of clay. A large skull was found in this room, but I did



CUEVA DE SACATALE

**SMO, Sierra de El Abra,
Los Sabinos area**

brunton compass & tape

Jan. 4, 1974

**by Dale Pate
Don Coons
Jim & Eli Rodemaker**

not notice from what animal it was. The final drop is 55 ft through a breakdown choke at 36 ft. This was named Crystal Pit because of many large 5-sided calcite crystals on the walls. Each crystal would absorb the light of a flashlight and glow without transmitting it to adjacent crystals.

From the bottom of the Crystal Pit, the cave gets steadily smaller and reaches a muddy belly crawl within 100 ft. One upper lead about 30 ft from the base of the last drop was noted but not entered. The total surveyed depth was 370 ft. The cave seems to be developed entirely along one joint, with greater passage diameters at lower levels. A great deal of secondary mineralization makes it hard to follow in some places. The lower three rooms are actually the same chamber with a clay and breakdown false floor below the largest room, and a breakdown floor halfway down the Crystal Pit. Shortly after reaching the lowest level, we all three agreed that the passage seemed unusually muggy and noticed that our breathing was faster than usual. Our lights seemed to be burning normally, but we terminated the survey and decided to leave. We exited with no trouble and were out of the cave by 11 PM and back to Los Sabinos shortly after 12.

Joe Lieberz and a group of people whose names I did not catch returned to the Sótano on the 6th. He checked the upper lead and reported 400 ft more passage with many helictites. It ended temporarily at a 20 ft high mud bank in a narrow canyon "over 200 ft high." The mud bank is reportedly climbable, but he was alone at that point and did not want to try it.

Date: February 1974

Destination: Salto de Agua, Chiapas

Persons: Alexia Cochrane, Don Coons

Reported by: Don Coons

Alexia and I were headed east to the Yucatán after two weeks of mapping near Acatlán, Oaxaca. We had heard of a large, beautiful waterfall near Palenque and saw Salto de Agua marked on our map just off the highway west of there. Twenty kilometers of Volkswagen-bending "road" later, we arrived at Salto de Agua, the town, that is. It seems there are two waterfalls near the town. Cascada de Agua Azul is 80 kilometers away and can only be reached by airplane, which costs \$12 (U.S.) per person. Las Cataractas are 5 km. away and can be reached by trail, or boat at high water.

We hiked out to Las Cataractas the next day. It was a pleasant walk, though somewhat hot. The waterfalls are actually a series of large travertine rapids in the Río Tulija. The largest is only 8 to 10 ft high, but they run for more than half a mile where the river is over 100 yds wide. It was a fine place for swimming, sliding, and generally pulping one's body in the froth and spray. We learned of several caves, "grande y chica," at the spring near town where we had camped the night before.

The area around Salto de Agua consists of long, low-lying limestone hills separated by wide shallow valleys. The valleys have been cleared for cattle grazing and a widely varied agricultural system, but the karst hills are still covered by jungle. The town itself is somewhat of a surprise after the bad road in. A railroad apparently serves as its main transportation link so that it is supplied with restaurants, hotels, a bank, and even a taxi.

We returned from the waterfall about 5 PM, ate, and drove back to the spring to try to locate the caves. We met Señor Miguel Rodello there, a local jefe, who showed us the entrance to a small cave near the road and offered to send a man out the next morning to show us the large cave. José Gerónimo arrived that evening and said that we would

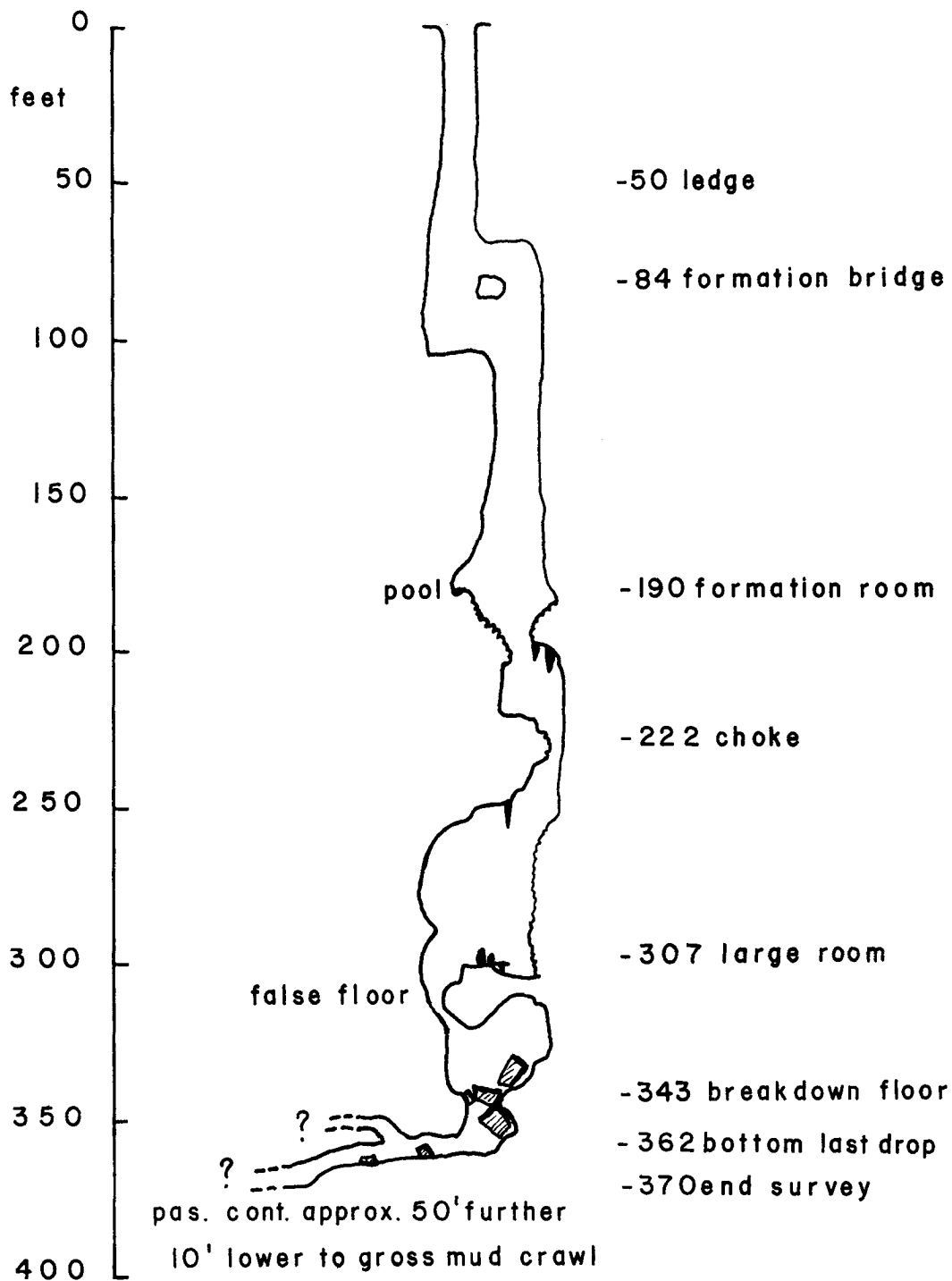
SÓTANO DE SACATALE

SMO, Sierra de El Abra
Los Sabinos area

brunton compass & tape

Jan. 4, 1974

by Dale Pate
Don Coons
Jim Rodemaker



need permission from the land owner but agreed to return at 9 the next morning.

He arrived at 10 and we set out to contact the owner. We soon learned that he was not home and was not expected to return until 2 PM. Bummer! I tried to locate the entrance alone, but there were no clear paths and the heat and jungle were too much to allow a great deal of crashing on vague directions. By noon the heat was worse, so we decided to take a swim and leave. At 1 PM, the overseer of the property appeared and offered to take us to the cave himself. Back to the jungle!

We arrived at the large entrance in about 5 minutes, since it was only about 200 yds from the spring, and began exploration by the light of my carbide and his quart bottle of kerosene with a paper wick. The cave turned out to be quite large and well worth the effort spent in locating it. It appears to be phreatically formed along approximately 12 parallel joints running nearly perpendicular to the hillside. Passage diameters on the joints range from 10 to 30 ft wide and 15 to 70 ft high, with smaller diameter interconnecting passages and windows. Floors are mud and guano for the most part, although the cave is quite well decorated and has many erratic stalagmitic formations. A 10 ft pit at the large entrance separates the cave into two parts. The "upper" section is reached through the large entrance, while the "lower" area is more easily accessible through a smaller, nearby entrance. The pit is climbable, barely. A cable ladder would help a good deal.

I believe I saw all of the obvious, accessible passage, but did not by any means check all leads. I would estimate the cave as being well over one-half mile long. I did a sparse preliminary biological collection and noted many pot sherds throughout the cave as well as two negative hand cast paintings near the entrance. The pot sherds were rather small and nondescript. Since the cave is frequently entered by the local people, I suspect there were a good deal more at one time. I would like to return to map the cave, or give directions to anyone interested in doing so. At the time, however, the Yucatán beckoned and we decided to leave.

After a second dip in the spring to dilute some of the sweat and guano I had accumulated, we headed out. We tried to check a lead on a cave "so large you can't reach the end of it in one day." It's near a rancho called El Chival. We thought the rancho was on the road out, but were soon informed that it was 6 km west of the road by trail. Anyone want to find a cave?

Date: 9-13 March 1974

Destination: La Gruta del Palmito, Bustamante, and Huasteca Canyon, Nuevo León

Persons: Gary Caldwell, David Cullen, David Finrock, Cathy Hargrave, Chris Hentzen, Jack Morgan, Neal Proctor, Dan Ross, Doug Symank, Wayne Walker, Gary White, and Alicia Wisener

Reported by: David Finrock

The A.S.S. took advantage of spring break by taking what was the first trip to Mexico for most of us. We were immediately hassled at the border by officials who incredibly asked some of our "long-haired" Aggies to get haircuts. With much perseverance (but not one haircut or bribe) we got everyone across the border and into camp near Bustamante Saturday night. With what pidgin Spanish Alicia and I could muster, we got our "doce billetes para la gruta" and did the cave both Sunday and Monday, with Alicia acting as our guide to some of the prettier and more remote rooms. Tuesday we made our way to Cola del Caballo and then to Huasteca Canyon, which was completely dry, but still beautiful. The return trip was uneventful—except

that Chris' fuel line broke, Doug's VW caught on fire, Wayne's and Don's cars both drowned in high water, and three of the four cars got lost in Monterrey, (the one that did know where it was had an unexpected encounter with a rather large bus while travelling the wrong way down a one way street). Back in Nuevo Laredo, we all played turista for a while before the U.S. customs officials had their turn to screw us by ordering *everything* out of the car for inspection. I'm sure they must have been puzzled by the smell of the charred battery and burned insulation under the VW's rear seat, but they didn't say anything. We all fell in love with Mexico and vowed to return soon, but a word of warning: never mention Monterrey to any of us.

—Reprinted from *The Texas Caver*, 19(5):79.

Date: 29-31 March 1974

Destination: Gruta del Precipicio, Rfo Sabinas (Bustamante) Canyon, Nuevo León

Persons: Charles Fromén, Ralph Batsche, Fred Messic, Sheila Balsdon, Tom Iliffe, Ernst Kastning

Reported by: Ernst Kastning

This was just about the last favorable weekend to have our long-awaited trip to Gruta del Precipicio before the hot weather would make the long climb up Rfo Sabinas Canyon's south wall unbearable. We planned to make it a photographic trip.

The climb to the cave is certainly an uphill fight. The long scree slope, the knife-edged, nearly vertically-bedded limestone ridge, and numerous man-eating plants created a challenging obstacle course during our four hour ascent. We reached the short plateau over the cave about noon, having successfully avoided the sun by staying in the shade of the mountain. Our 30- to 40-pound packs contained food, water, and sleeping and climbing gear for our stay in the cave.

Once around the corner of the precipice and inside the coolness of the cave, we slept for an hour and a half and then proceeded the 1000 or so feet to the first drop. Charles, Sheila, Fred, and Tom descended. Tom had a close call when his jacket became ensnared in his brakebars about one-third of the way down the 150-foot drop. I advised him to cut the tangled piece of clothing away with his pocket knife. Having done this, he then proceeded uneventfully down the remainder of the pitch in his newly ventilated cave garb.

Ralph and I remained topside to photograph the upper level. The passing of vertical gear in the pits would drastically lengthen the remainder of the group's stay in the lower passages and lessen their sleep for the next morning's trek down the mountain and 400-mile return drive. Ralph and I sat in the entrance during the remaining daylight hours and enjoyed the incredible view of the canyon. Vultures soared silently past our commanding perch. Then we systematically photographed our way back to the pit and checked the numerous leads enroute. About 10:00 p.m. we bedded down for the night in the quiet solitude of the cave. Various unidentified arthropods crawled over us as we slept. About 4:00 a.m. the others arrived in camp and sacked out after a successful photographic venture to the Big Room.

The next morning we descended to the Ojo de Agua campground in the canyon floor and treated ourselves to a leisurely swim in the spring-fed stream. The pickup ride back to Houston was pleasant as we were able to rotate driving and sleeping in the comfortable cots in the back.

Speaking as a born-and-raised northeastern caver, México is something else!

Date: 15 May - 8 June 1974

Destination: Sierra de El Abra and Micos area, San Luis Potosí

Persons: William Elliott, Andy Grubbs, Robert Hemperly, Neal Morris, John Prentice,
Carmen Soileau, Barbara Vinson, Greg Walker

Reported by: William Elliott

15 May—John and Carmen drove down from Lubbock and met me in Austin. We picked up Robert in San Marcos and crossed over at Reynosa that night.

16 May—Halfway between Cd. Mante and Cd. Valles we stopped and looked at a Le Torneau “jungle eater.” This machine is about 50 ft long and sits on three 7 ft high, 6 ft wide steel tires that have blade-like lugs. The thing weighs 90,000 kg and has a tree-pushing apparatus on the front. It seems to be very effective, having leveled the thorn forest for some distance around. We continued to Valles and spent the night at Sr. Gloria’s house.

17 May—We rented a house at Number 16 Calle Allende for 100 pesos a week. The owner of the Hotel Covadonga, Rafael Aguirre, told us of a possible blind fish cave south of the Río Tampaón. Since the purpose of the trip was to map blind fish caves for Dr. Mitchell’s ongoing blind fish research project, we planned to visit the cave and check it out. That night, Bill Russell, Neal Morris, Barbara Vinson, and Andy Grubbs arrived from Mexico City where they had just bought many of the new, excellent topo maps that the government recently started issuing.

18 May—Russell and crew continued on to the Sierra de Guatemala to meet another group of Austin cavers. We drove to El Pujal to map two fish caves that Mitchell and Russell had found three years ago. We hired some guides, Victor and Enrique Gonzalez, who first took us to Rancho Viejo, about 4 km NE of El Pujal. To reach this, take the gravel road E of Pujal (paralleling the Río Tampaón) for 3.5 mi (5.6 km), turn onto a dirt road heading N and drive 2.4 mi (3.9 km). Here there is a group of four houses and a pool against the east face of the El Abra range. The pool, El Nacimiento del Rancho Viejo, is a very dirty one and discharges water only in wet weather. About 100 m up an arroyo from the houses is Cueva del Rancho Viejo. The entrance is 2 m in diameter and there is a climbable 8 m drop to a room with a deep pool on the left. The pool contains eyed fishes. The passage continues 60-100 m to a small pool. The last 30 m is a crawlway which slopes down steeply. We collected eyed *Astyanax mexicanus* (close relative of the cave fish) and cichlids here. Near the entrance is an upper level that extends 120-150 m. We then returned to El Pujal, where we were shown the dirt-filled entrance of Cueva El Mante. Further up the hill, east of Pujal, they showed us the entrance of an unnamed cave. Robert and Victor dug in the entrance room for awhile, finding a steep, sloping passage that was too tight to enter. We went further up the hill onto the Ejido Alvaréz Obregón to a double pit, which they said was Los Cuates (the Twins), one of the fish caves we were looking for. Further east and just north of the trail was a cylindrical pit that may drop 30 m. They took us on toward the Cañon del Toro to look for another pit, but couldn’t find it. We returned to the double pit, which Robert and I entered and mapped. It was a 42 m drop to a 4 m long fissure floored with cobbles. This was not Los Cuates.

19 May—We went to Sótano de las Piedras, 8 km NE of Valles, to finish mapping the cave. After reaching the end of the survey, 270 m from the entrance, Robert dropped the Brunton in a deep lake. We surveyed only 38 m.

20 May—John and Carmen were sick, we rested.

21 May—We returned to Piedras and completed the survey, bringing the cave to 405 m long and 47.5 m deep.

22 May—We dug out the entrance of El Mante, only to find the cave seemingly filled with dirt about 1 m in. John and Robert continued digging in the other cave while Carmen and I began the surface survey from El Mante to El Pujal.

23 May—John and Robert were sick. Carmen and I surveyed through El Pujal up the highway toward Cueva Chica. That evening Steve LeBel, Rick Davis, and Donald Evans, vertical enthusiasts from Maryland, showed up from a trip to Golondrinas. They went with us to El Pujal that night, where Robert took them to dig in the cave while Carmen and I continued the surface survey. John Mikels, his new bride Jo, and a crew of cavers from Pan American Speleological Society in Edinburgh, drove up on their way to Xilitla and talked for awhile. They have been working in the El Barretal area of Tamaulipas over the last few months, as have David McKenzie and Roy Jameson. They promised to send the AMCS a report on their findings. Robert and the pit cavers returned saying they had gotten down the steep, dirt slope to a muddy room.

24 May—Robert and the pit cavers went to the Nacimiento del Río Choy while John, Carmen, and I completed the survey to Cueva Chica. Carmen and I went through the cave so I could draw a profile to complete the cave survey, started back in 1970. Morris, Vinson, and Grubbs returned from a week in the Sierra de Guatemala, having found nothing but debris-choked sinks and razor sharp karren.

25 May—John, Robert, Carmen, and I found the real Los Cuates in a large, overgrown sink 100 m N of the cave Robert had dug in. One pit drops 26 m into a 20 m long fissure with a small pool on the left with eyed and eyeless fishes. The other drops 22 m into a N-S fissure which goes 19 m to the S to a small pool with eyed and eyeless fishes. To the N we surveyed 42 m over a high breakdown slope to the top of a 5.5 m drop, then 20 m more in a high, muddy fissure. Robert explored further to a lake.

26 May—Rafael Aguirre gave us directions to a vampire cave 2 km S of the Río Tapaón. The cave is owned by Rodolfo Villareal, a local rancher, but we could not get a name for it. The cave is located E of the highway at the top of a hill and at the end of a 1/2 km dirt road. The entrance is in a small sink and descends 7 or 8 m. This is barely climbable with a log that has been left in the entrance with steps cut in it. The cave is very hot and heavily inhabited by vampires. It extends perhaps 150 m through stooping and walking, winding passage to a deep pool covered with floating debris. No fish were seen. Dr. Clay Mitchell supposedly studied the vampire population here. Andy, Neal, and Barbara mapped farther in Los Cuates and collected cave fish while John, Carmen, and I mapped the sink and down to Cueva El Mante. Robert went to Oaxaca for a few days.

27 May—Carmen and I mapped an arroyo system, pools, and well near El Pujal. The arroyo is a backflood channel from the river and is the probable route by which eyed, river fishes enter the local cave systems, since it comes up to some small tinajas which are probably connected to the caves. The others finished mapping Los Cuates, resulting in a total length of 394 m and a total depth of 33 m for the main section.

28 May—We washed out muddy rope and tired bodies in the cascade below the hydroelectric station near Micos, then drove S of Micos about 10 km to Cueva de Otates. While the others collected cave fish in the stream passage, I went to look for Cueva de Lienzo to the south, but could not find it.

29 May—We all went to Sótano de la Tinaja to try and make a connection to Sótano del Arroyo. We went into the Left-hand Water Passage and split into two groups at the “Y”. Neal, John, and I went to the left to a dome room, where Neal bolted 6 m up into an upper level passage. We explored about 100 m of wet, muddy passage, which kept going through a pool, but we had to turn back because of difficulties with John’s electric light. Neal

joined the others while John and I exited to find Carmen waiting at the truck. We waited for several hours while the others broke into new passage. It is not known yet whether they got into Arroyo. We returned at 3 AM to find Peter Strickland and the rest of the Guatemala crew sacked out at the house.

30 May—A day of rest. Robert returned from Oaxaca. Peter and ten others headed to Austin in his truck late in the afternoon, leaving John, Greg Walker, and me.

31 May—John, Greg, and I began mapping from the back of Cueva de Otates. We began where the stream disappears into the left wall. The cave goes on at the bottom of a sloping, muddy 7 m drop, but the air is quite bad and we had difficulty breathing. We mapped to the bottom of the 7 m drop from the entrance room, about 250 m, collected invertebrates, and photographed.

1 June—We located Cueva de Lienzo, mapped it (90 m long, 11 m deep), and collected eyed and eyeless fishes in the small pool at the bottom. We found the arroyo to Cueva del Río Subterráneo, which has already been mapped by Bill Russell and David McKenzie, but missed the main entrance which is apparently behind a hump. We thought the cave was plugged, since the arroyo runs into two alcoves filled with dirt. We returned to Otates and finished the survey, bringing it to 270 m long and 14 m deep. The black dirt roads were muddy on the way back and we nearly fishtailed off the side several times.

2 June—We met a group of backpackers from Austin on their way to Golondrinas.

3 June—We drove to Damian Carmona, W of Micos, to check out some leads Neal had gotten in Valles. Rafael Acuña of the Rancho Aguacate, and some other men took us N to a fissure on the western edge of a cane field at the base of the Sierra de Peñas. This is used as a well. I started to chimney into it, but as my head got below ground level I noticed that the air tasted bad and my light went out, even though it had a 3 inch flame. Then I began to breathe heavily. I came up and tested the air with my lamp several times. Each time it went out about 1/2 m below ground level. All were amazed and we left muttering “mal aire.” We then went to a small pit 100 m N of there and just E of the road. The air was not so good, and the cave was only 5 m deep and 20 m long and filled with mud. We hiked up the canyon from El Quince along the beautiful, crystal clear, Río Ojo Frío, to Cueva del Nacimiento de El Quince. The cave is about 100 m above and to the right of the cataract at the top of a talus slope. A 3 m handline drop leads into a 15 m long, 7 m high room to the left, then down a slope into a smaller room with a tight fissure on the left inhabited by vampires. Large fruit bats also inhabit the cave. A narrow fissure goes to the right from the entrance for about 15 m to a 5 m diameter dome room. During high water the cave is supposed to discharge water, but it was dry today.

4 June—We started packing to leave, then went out to Santiaguillo, 3 km S of the Río Tampaón, to check out a small cave. Cueva de El Sabino is about 100 m up an arroyo E of the turnoff to Santiaguillo. A pipeline leads to the entrance of this water cave. Eyed *Astyanax* were seen behind a small dam just outside the entrance. The water passage goes 30 m to a siphon, but we saw no fish in the cave. We did see frogs and vampires. We left Valles and spent the night at the Nacimiento del Río Frío.

5 June—We entered Sótano Escondido (about 1/2 km SW of Gómez Farfás) at 10 AM and spent 10 1/2 hours surveying and collecting cave fish. The cave is 148 m deep and 100 m long. A 100 m rope may be used to descend the 34 m entrance drop, a series of short drops totalling 20 m, and a 24 m drop. The cave goes under itself in corkscrew fashion through some “squiggly” passage to the top of a 21 m drop, which can be rigged with a 30 m rope. Then a drop of 20 m and a sloping drop of 7 m can best be rigged with a 50 m rope, due to offsets. The bottom room is very muddy and goes 20 m to a large pool with hundreds of eyeless fish. The next day we returned to Austin.

ARTICLES

MEXICAN TOPOGRAPHIC MAPS

by William H. Russell

High quality detailed topographic maps at a scale of 1:50,000 (the same scale as the USGS 15 minute quadrangle) now cover extensive areas of interest to cavers. This topographic mapping program was started two years ago by the Comisión de Estudios del Territorio Nacional (CETENAL), in Mexico City. They hope to have the rest of the country mapped within a few years and at their present rate of progress they will achieve their goal. The maps cover an area of 20 x 15 degrees—thus the mapped area is the size of one and a half USGS 15 minute quadrangles. The maps are printed on sheets 34 by 25 inches, which includes a border and a legend. The mapped area is 34 x 28 kilometers. This relatively large mapped area is handy as it reduces the number of maps needed to cover an area and makes it likely that two adjacent caves will be on the same map. The contour intervals are either 10 or 20 meters depending on the local relief. The maps are printed with green overprint and are pleasing to the eye.

Topographic maps now available extend from the west coast east to Victoria and Pachuca, north to 24 degrees (Durango) and south to 20 degrees (Pachuca). Unfortunately the edge of the mapping extends east to 99 degrees only between Cd. Victoria and Cd. Valles but this includes all of the Sierra de Guatemala and the area west and north of Micos. South of Cd. Valles the eastern edge of mapping is irregular, unfortunately omitting all of the Xilitla and Aquismón area, but covering the area west of El Sótano (the east edge of the map bisects the pit). Large areas of México are soon to be mapped, next will be areas in northern México between Cd. Victoria and Chihuahua, the Baja California peninsula, and Tabasco.

These maps are one of the few genuine bargains still existing. The price, post paid, from Mexico City is 5 pesos (40 cents). (How about that, USGS?) Maps can be ordered from the two offices listed below. The Insurgentes office is a small sales office and will

CETENAL
San Antonio Abad No. 124
México 8, D. F.
MEXICO

CETENAL
Insurgentes Sur No. 1694
México 20, D. F.
MEXICO

probably give faster service on small orders, while large orders of over four or five of the same map should be sent to the main office on San Antonio Abad. Service is likely to take a month or so. Index maps (Indice de Hojas) are available free. The AMCS will attempt to maintain a few maps in Austin to provide a few maps for trips going to México, but as our stocks are limited this service cannot be counted upon. Needless to say these maps show large areas of sinkholes and sinking streams not yet investigated. Mexican caving will never be the same. Promising cave areas can be easily located, the best routes of access planned, and once found individual caves can be located with accuracy.

PETROGLYPHS AT SÓTANO DE LOS MONOS, SIERRA DE EL ABRA, SAN LUIS POTOSI, MEXICO

by John W. Greer

Abstract

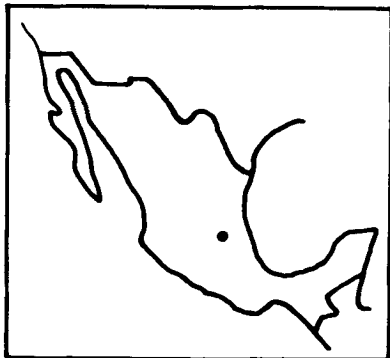
A small upper room at Sótano de los Monos in east-central México contains humanoid, animalistic, and geometric petroglyphs, including bundle figures. From the naturally lit room, burials probably were dropped down the 141 m vertical shaft.

Introduction

Recently, members of the Association for Mexican Cave Studies (AMCS) located a vertical pit known locally as Sótano de los Monos. They made the initial descent of the 141 m (464 ft) vertical entrance shaft, briefly recorded a few of the petroglyphs in the upper cave, and later returned to fully explore and map the upper cave passage and the lower cavern systems (AMCS cave files, Austin, Texas, USA). In June 1972 I revisited the cave and recorded the petroglyphs, which are described here. No other archeological materials were observed.

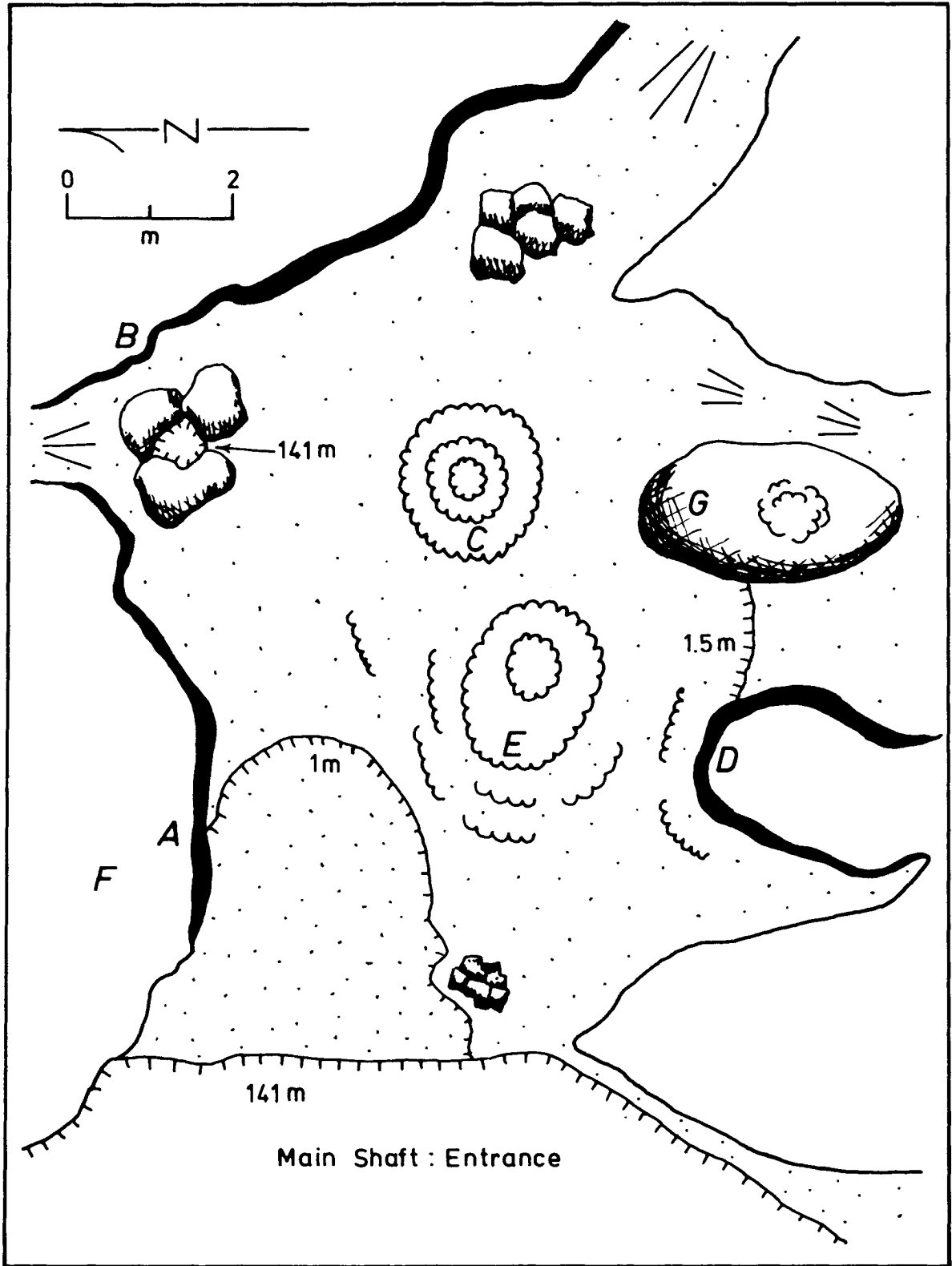
Location and Description

Sótano de los Monos is located in the south-central part of the crest of the Sierra de El Abra, 16 km northeast of Cd. Valles in east-central México in the state of San Luis Potosí (Russell 1972a:127; 1972b:140) (see location map). The crest of this karsted limestone range is moderately dense jungle and brush, necessitating passage along the few trails or with machete.



The natural entrance shaft is 15 x 30 m across and drops 141 m to a large room leading to an underground system reaching a total depth of 290 m (951 ft). A presumably older horizontal cave, the remaining portion 61 m long, is near the surface next to the pit entrance. The entrance room to the upper cave is approximately 10 x 7 m, overlooks the main shaft, and contains petroglyphs. A small hole, 0.6 m in diameter, in the floor opens into a 141 m vertical shaft paralleling the main shaft and joining it at the bottom (see map, p. 24).

Inset location map of México.

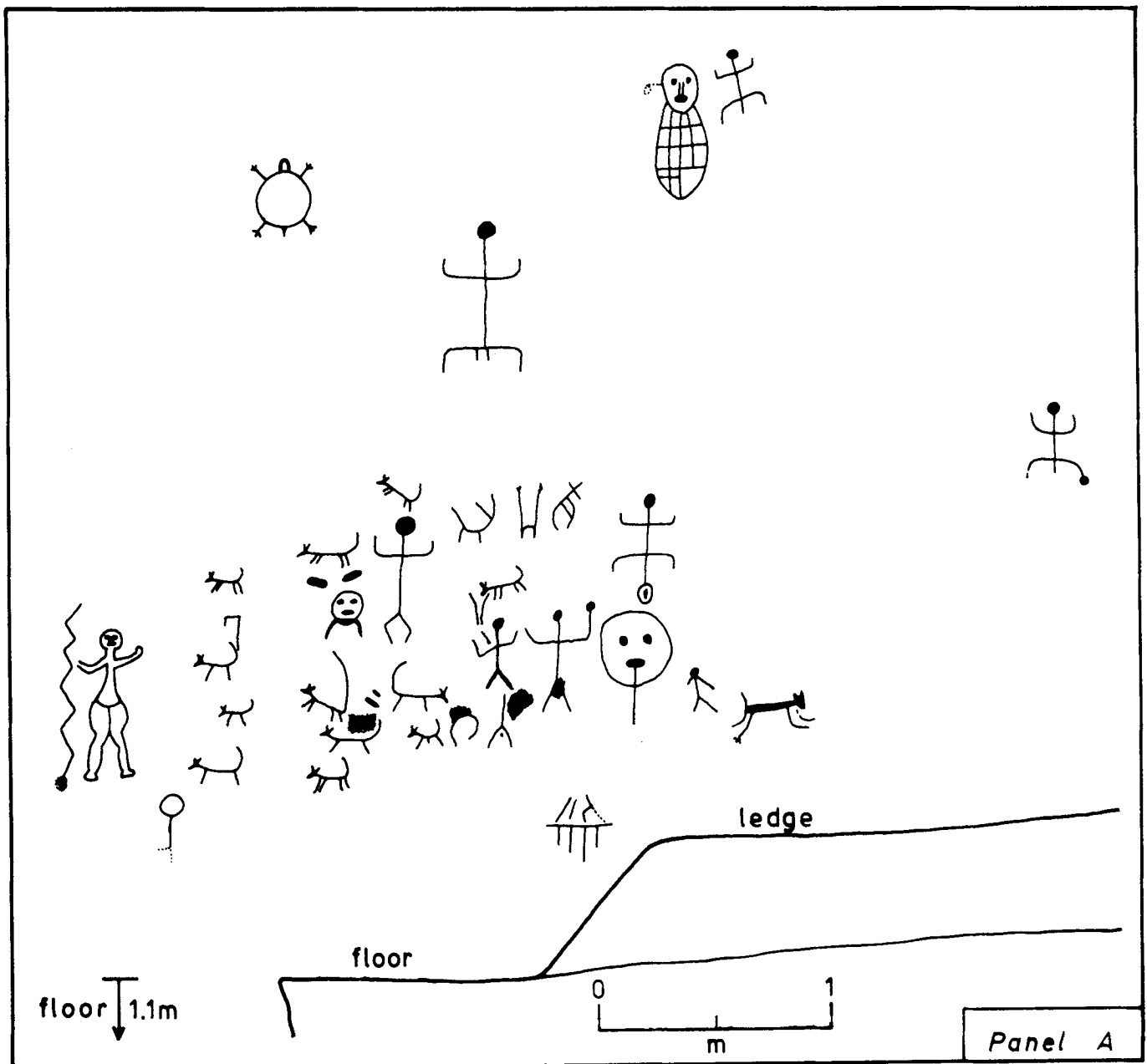


Entrance room to upper cave at Sótano de los Monos. Petroglyph panels are labeled in letters according to text descriptions.

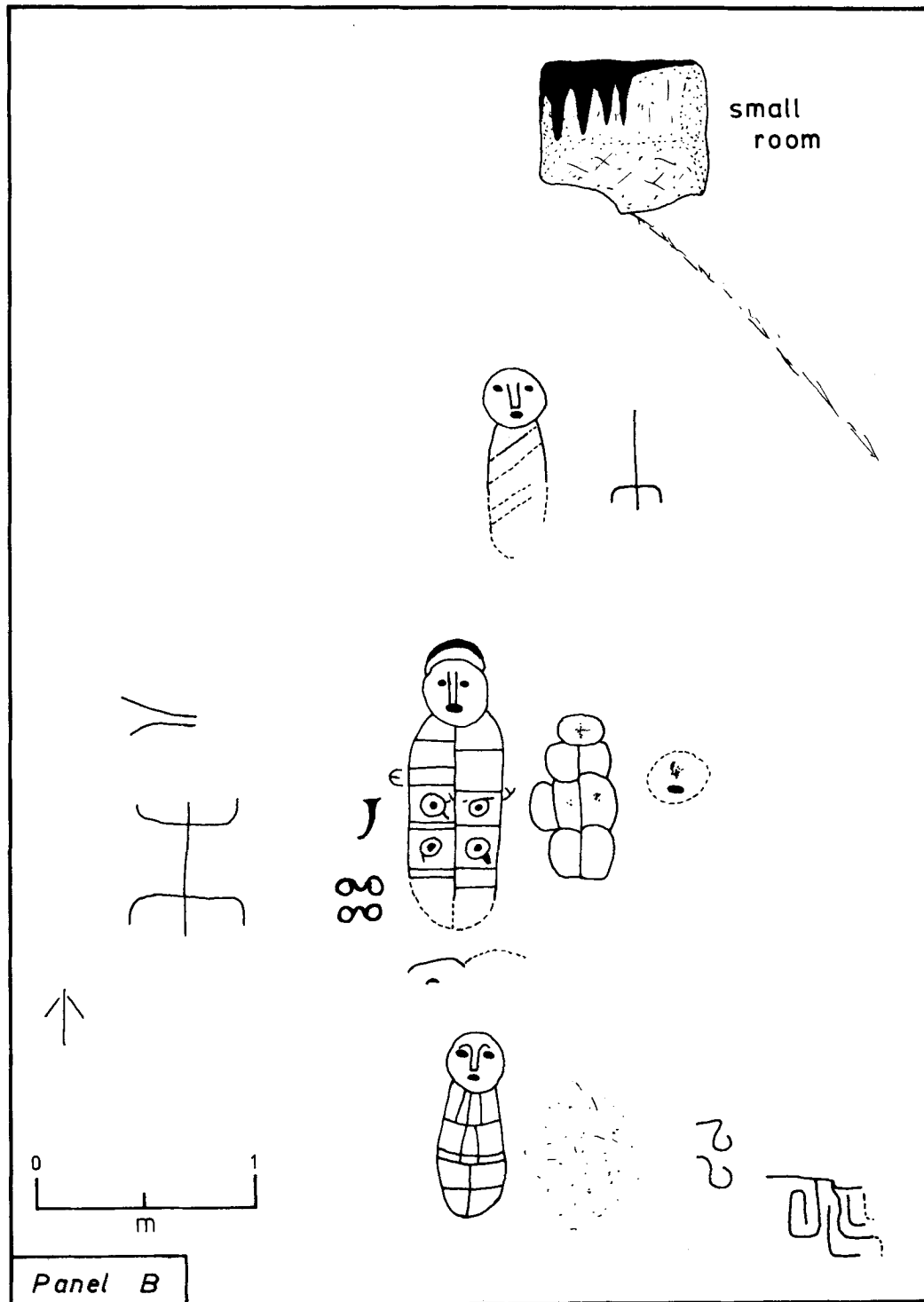
Petroglyphs

The soft flowstone surface on walls in the upper entrance room contains numerous petroglyphs. Most are about one meter or more above the floor, approximately at waist level or higher. All apparently were pecked, and most smoothed slightly, to lines usually 1.0-1.3 cm wide and 0.5 cm deep. The smallest figures are the Panel A coatimundi (?) figures (15 x 25 cm) and the largest the Panel B bundle figures (36 x 66 cm). All recognizable petroglyphs were recorded. Some of the faintest figures were chalked in for recording and photographing, but none originally contained any sort of pigment.

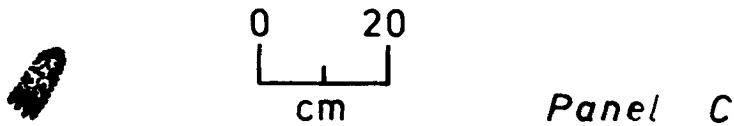
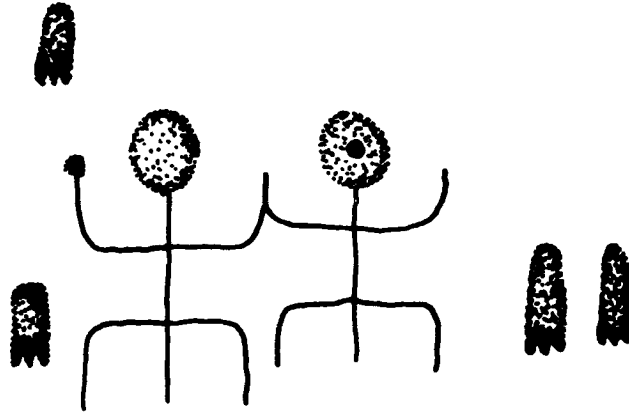
Panel A. This is the main panel and takes up most of the flowstone-covered north wall. It is nearly covered with numerous small animal figures (presumably coatimundi, dog, or tigre), a few stick men, a turtle with three-toed feet, a bundle figure like those on Panel B, a woman next to a zig-zag line, and several indistinguishable grooves and scratches (see below).



Panel B. This panel is on the back wall directly above the opening to the smaller shaft and faces west toward the main shaft. It is composed of at least four bundle figures, three stick men, and a few geometric designs not duplicated on other panels. The two complete and best recognizable bundle figures are 23 x 60 cm and 33 x 92 cm. A small square, flat-floored alcove 1.1 x 1.1 x 0.6 m deep is 1.4 m above the upper figures or 5.2 m above the floor. It can be reached without equipment but contains no cultural debris (see below).

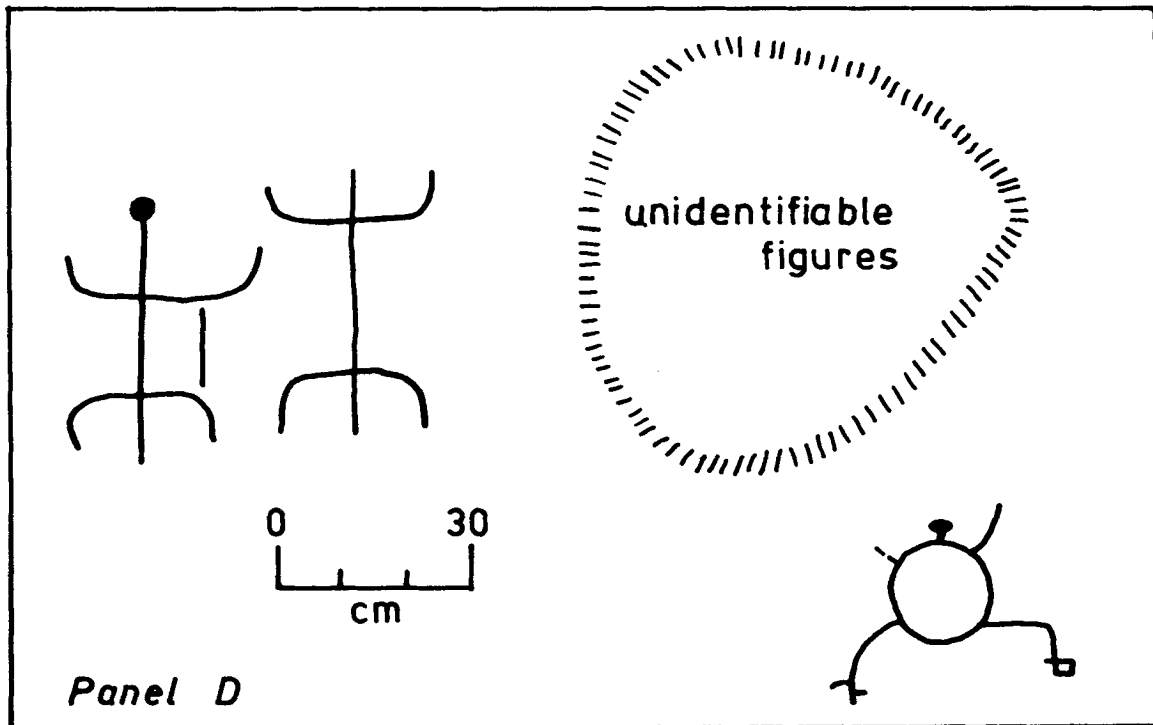


Panel C. On a large flowstone boulder in the center of the room are two adjacent stick men with joined hands. The heads are large, very shallow, circular depressions, one with a small, shallow, secondary pit in the center. The men are essentially surrounded by five foot-prints 12-17 cm long (see below).



Panel C

Panel D. A large spider or tick-like figure, two stick men, and a few indistinguishable line fragments are about one meter above the floor on a flowstone ledge or flowstone-covered boulder on the south side of the room (see below).

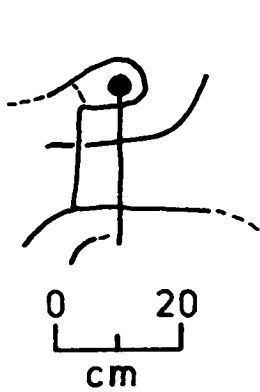


Panel D

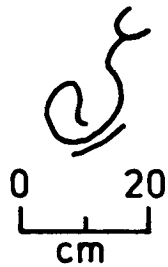
Panel E. A presumably single, man-like figure is on the west end of a flowstone boulder in the middle of the room (see below).

Panel F. Two stick men and several indistinguishable figures and light scratches are high on a vertical flowstone wall 1.4 m above the turtle at the sloping upper part of Panel A. It was impossible to discern whether the men have very slightly indented circular heads or no heads at all. Each hand and foot of the complete human figure has three digits (see below).

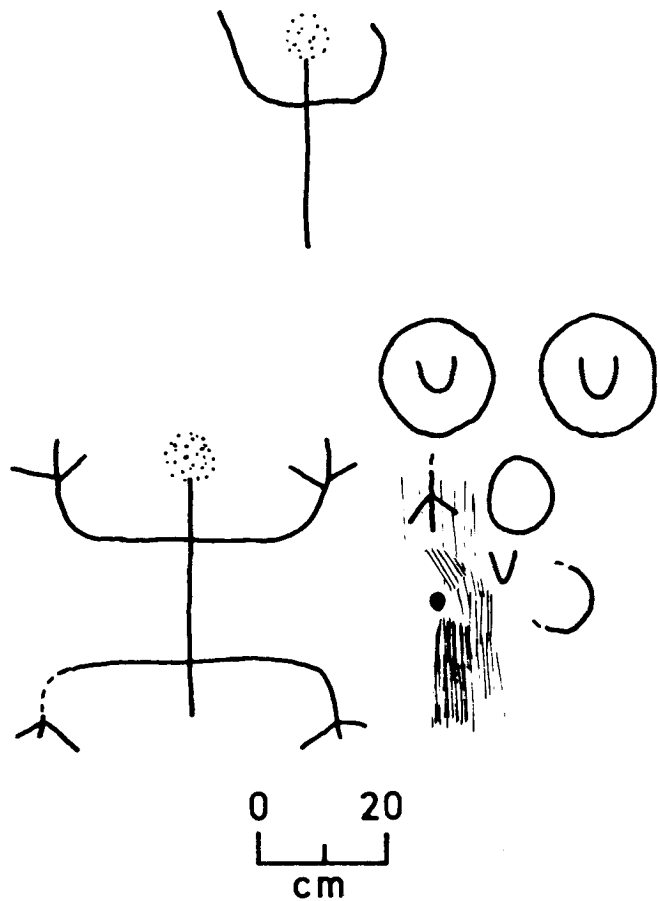
Panel G. A small group about one meter above the floor on the west end of a big flowstone formation is indistinguishable except for a single, presumably geometric element (see below).



Panel E



Panel G



Panel F

Discussion

Presumably some activity pertaining to the pit was performed in the area of the petroglyphs. Figures occur only in this room, although there are suitable walls and flowstone surfaces in natural light in other parts of the cave. Figures abound on most of the suitable flowstone surfaces in the entrance room, although they do not seem to have any relationship to each other. They do not, however, seem to be idle doodling and may represent different activities of different visits.

It seems likely that bundle figures on Panels A and B represent burial bundles to be dropped down the shaft immediately below Panel B. This small diameter shaft is vertical and as deep as the main pit entrance. Occasionally it is possible for a rock to fall free the total distance, but bundles undoubtedly would bounce on the walls. Wall indentations and ledges in the pit and the floor at the bottom were checked for potsherds, bone fragments, and other debris, but results were negative.

Although burials could have been thrown into the main shaft from the room, it is believed that they were not. Bundles in the main shaft would remain in natural light and would be visible from the surface, while ones dropped into the secondary shaft quickly fall into darkness and can be heard striking the bottom only as a faint echo coming from the bottom of the main shaft. Bundles thrown into the main shaft *from the room* probably would initially land on a natural bridge less than 30 m below the room and might lodge there.

Explanations of other figures are nearly impossible. The unique figure of a woman holding lightning (or a snake) in Panel A is reminiscent of many Mexican figurines and likely represents an attempt to attract divine assistance in such daily activities as farming. Coati-mundis (?) are numerous on Panel A but are absent elsewhere. The lone turtle in the corner of Panel A and the large spider-like figure in Panel D are un-alike and likely represent different objects. Men are all stick figures with the usual pendant phallus portrayed in various ways. Human stick figures are on all panels and in three instances (in Panels A, C, and D) are standing in pairs—the pair on Panel C have joined hands. Appendages with three digits occur with stick men in Panel F, humanoid footprints in Panel C, the turtle in Panel A, and the tick-spider in Panel D.

Figures very similar to those at Monos also occur in remote sections of Loltún near Oxkutzcab in central Yucatán. These include bundle figures, human females with fattened hips, and linear male figures. Photographs from Thompson (1897:Pl. II, fig. 1, and Pl. IV, fig. 1) are not quite clear enough to provide sure comparisons, but David McKenzie, the first to visit Monos, also has visited Loltún and reports (personal communication) that the figures are very similar.

Gamio (1967:Foto 23) pictures a group of stone idols from Cola de Palma in Oaxaca having remarkably similar form and designs to the Monos petroglyphs. They are also the same size. Ceramics from that site are all from the Classic period. The age of the Monos figures is unknown.

The absence of pottery or other archeological materials suggests that Monos had a presumably religious function, possibly with different activities, and was not used for habitation or temporary shelter. The *total* absence of sherds, however, is still curious. It also is impossible to ascertain whether the fine grade calcite crystal here was aboriginally collected for pottery temper, since relatively recent mineral prospecting has disturbed a huge quantity of the formations. Also unknown is the cultural relationship of Monos with the nearly adjacent Hoya de Higuerón (Greer ms.a) and such nearby occupied caves on the east face of the range as Ventana Jabalf, Cueva de las Manos, and Cueva Cerámica (Greer, 1974; ms.b).

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RECENT STUDIES ON THE INVERTEBRATE FAUNA AND ECOLOGY OF SUB-TROPICAL AND TROPICAL AMERICAN CAVES

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Abstract

The invertebrate fauna of temperate North American caves is now fairly well known at a taxonomic level, through the efforts of several generations of investigators. In contrast, the intensive study of the fauna of sub-tropical and tropical American caves began comparatively recently. A review of the advances in knowledge of these faunas is presented, based on some of the literature combined with the author's field experiences and data in sub-tropical and tropical American caves. Special consideration is given to the North, Central, and South American continental localities of Florida, Texas, México, the Yucatán Peninsula, Guatemala, British Honduras, Panama, Trinidad, and Venezuela. The islands considered are Jamaica and Puerto Rico in the West Indies, and Hawaii and the Galapagos Islands. Generalizations are given on the ratios of troglobites to troglaphiles, and aquatic to terrestrial species in the various areas, as well as aspects of guano ecology.

The fauna of sub-tropical North American caves is relatively well known. The fauna of tropical American caves is not yet well known. However, enough was known so that generalizations were made, stating that tropical aquatic troglobites are mostly all derived from marine rather than freshwater ancestors, and that tropical terrestrial troglobites are almost completely non-existent (Vandel, 1965:271-276). Nicholas (1962) lists some of this fauna. In the light of more recently acquired data, the generalizations will have to be altered or entirely re-written, for the distribution and evolution of tropical American cave faunas is proving to be much more complicated than previously suspected.

The purpose of this paper is to review some of the progress that has been made in recent years in our knowledge of the invertebrate faunas of the caves of the American sub-tropics

and tropics. The review is personal in that it is based heavily on my own experiences and acquaintances. It is also not comprehensive, in that no attempt has been made to seek out and include every paper on the subject, because of a lack of space. The goal is to make more widely known some of the faunal survey research that has recently been completed or is now underway and is not yet published, to encourage more of this research in poorly known regions, and to encourage more evolutionary and ecological syntheses of this information.

For purposes of organization the discussion will cover the cave regions in a north to south order. As will be seen, the use of the terms tropical and sub-tropical are used in a relative sense, and not as usually defined by geographers.

The United States

Florida. Eleven aquatic troglobites (all crustaceans) are known from Florida. An amphipod, isopod, palaemonid shrimp and five crayfish were listed by Warren (1961), and three additional crayfish were added by Hobbs (1971) and Hobbs and Means (1972). Nineteen species of terrestrial invertebrates are known of which only one is a troglobite, a *Pseudosinella* collembolan. The *Islandiana* spider, reported as a troglobite (Peck, 1970), has since been found to be *I. unicornis*, also known from Texas. Fourteen species are troglaphiles and 3 species are troglaxenes (Peck, 1970).

Georgia. Few caves occur in south Georgia. Most of the 130 species (24 to 27 troglobites) of invertebrates known from Georgia caves (Holsinger and Peck, 1971) occur in the northwest corner of the state. One aquatic troglobite species which occurs in the south (a crayfish) also occurs in Florida, and some of the troglaphiles are also shared with Florida.

Alabama. Little is known of the cave fauna of south Alabama. A survey which I am compiling for the state lists about 300 species of invertebrates (only terrestrials and based on the work of others and my own collections from over 500 visits to over 200 caves) but few of these species are in the southern half of the state. The only southern troglobite is an undescribed amphipod. Many of the troglaphiles in the southern part of the state are the same species as in Florida and Georgia (personal data).

No caves are known from southern Mississippi or Louisiana.

Texas. A rich invertebrate fauna has been found in Texas, but in the more temperate elevated interior, not on the coastal plain. Reddell (1965, 1970a) has reported 298 species of non-insect invertebrates, with about 70 of these being troglobites. Reddell (1966, 1970b) has likewise reported 280 species of insects, of which about 15 are troglobitic. An analysis was not made by Reddell of the numbers of aquatic or terrestrial troglobites, but by Mitchell (1969), who, in comparing the cave fauna of Texas, considered as "temperate," totaled 36 aquatic and 59 terrestrial troglobites. This number was compared to a "tropical" region, the Sierra de El Abra of México, with 10 aquatic and 6 terrestrial troglobites. The Texas faunas were again reviewed by Reddell and Mitchell (1969) and Mitchell and Reddell (1971); the total invertebrate fauna was raised to about 700 species, and the numbers of terrestrial and aquatic troglobites revised to 70 and 30 respectively.

Few detailed ecological studies on Texas troglaphiles or troglobites have been published. Aspects of ecology of the troglobitic agonine carabid beetle *Rhadine subterranea* (Mitchell, 1971a, 1971b, 1971c) and for two millipedes (Bull and Mitchell, 1972) are now known. The total number and density of several species of arthropod cavernicoles has been measured in a Texas bat cave. Mitchell (1970) calculated that the guano (and bodies?) of 4,984 ± 3,391 Mexican freetail bats supported a combined mid-summer population of about 66,813 crickets, bedbugs, and three species of beetles in one part of the cave only, in addi-

tion to population densities of up to 135 per dm² of fleas, pseudoscorpions, bedbugs and beetles. More such studies such as this are needed from temperate and tropical guano caves to evaluate the ecological hypotheses of Poulson (1972).

Summary explanation of lack of terrestrial troglobites on coastal plain of southern U.S. The troglobite fauna of central Texas, with a greater proportion of terrestrial species, occurs at the same latitude as the coastal plain of the southeastern U.S. where the fauna contains a greater proportion of aquatic troglobites. It is worth noting that this latitude is the same as that of the northern half of the Sahara Desert of Africa. This comparison of Texas and the southeast shows that latitude itself is not the prime factor leading to a small terrestrial troglobite fauna in the southeast. The main factors are rather a comparative scarcity of suitable cavernous strata, combined with the eustatic low and high sea levels accompanying Pleistocene glacial and interglacials. More caves were drained and exposed, available for terrestrial colonization, during the low sea levels which occurred during times of glacial maxima. Any potentially troglobitic terrestrial colonists that occupied these caves in a late glacial or early interglacial were exposed during the late interglacial to the rigors of decreased, and finally no, genetic contact with epigeal populations. At the the same time, terrestrial cave environments were being reduced in area by rising sea levels and water tables. Several of the present day terrestrial troglaphiles of Florida may already be genetically isolated populations because they are not known from the epigeal environment on the coastal plain. If this genetic isolation makes these species potential troglobites, their potential will likely not be realized if the caves are gradually flooded directly or indirectly by a continuing marine transgression. Through this mechanism we may expect that the Southeast coastal plain through the Pleistocene has not had a terrestrial troglobite fauna that persisted through a full cycle of glacial-interglacial sea level fluctuations. The presence of aquatic troglobites, however, shows that in at least the last interglacial high sea level "islands" of subterranean fresh water persisted, notably in north and central Florida.

Hawaii. F. G. Howarth has recently investigated the invertebrate fauna of over 50 lava tube caves in Hawaii, and found at least 20 species of cavernicoles, of which at least 5 are specialized species (Howarth, 1972, and personal communication).

México

It has long been known that México has a cave fauna, but the luxuriance of this fauna has only recently been realized. One of the earlier attempts at surveying the fauna over a wide area was that of Pearse (1938). He found, for the Yucatán Peninsula, 261 species of invertebrates in the caves, of which 26 were considered to be troglobites, and of these, 6 species were aquatic. Pearse likewise analysed the fauna according to feeding habits (the trophic levels through which energy flows in the cave community) finding 31 species to be "vegetarian," 62 predators, 67 parasites, 71 scavengers, and 13 coprophages.

More recent contributions have come mostly through the activities of members and associates of the Association for Mexican Cave Studies (AMCS), centered in Austin, Texas. Many of these contributions, as well as previously reported species, are listed by Reddell (1971), totaling 759 invertebrate species from Mexican caves, from a bibliographic compilation of 710 references (many of which deal exclusively with vertebrates). About 90 species are considered to be troglobites, and although this figure is not computed by Reddell, about 21 of these species are aquatic. Consequently, the whole of México (in 1971) had a known fraction of 23% of its troglobites being aquatic (Yucatán also had 23% aquatic troglobites), while the El Abra region (Mitchell, 1969) had 62% aquatic troglobites.

These figures are unfortunately out of date now because of the new taxa of annelids, beetles, arachnids, and diplopods (including new troglobites), contained in the collection of papers edited by Reddell and Mitchell (1971).

Additional recent contributions have resulted from the 1969 expedition of Sbordoni and Argano (1972) to México. New finds of troglobites not yet in press resulted from field work by Reddell and others in 1972 in the state of Oaxaca and in Yucatán in 1973. Some of this and other new Mexican (as well as for other areas of Central America) collections will be covered in Bulletin 5 of the AMCS to be published in mid 1973.

No ecological studies have been conducted on the Mexican cave invertebrates, and only the ricinuleid *Cryptocellus pelaezi* has been studied in detail and this was limited to its morphology (Pittard and Mitchell, 1972).

Central America

British Honduras (Belize). No information was available on the cave fauna of this country prior to my field work there in 1972. Unfortunately, only 6 caves could be studied in a period of one and one half months, mostly because exceptionally heavy rains prohibited field travel and flooded several of the caves we intended to study. Nevertheless, about fifty species were collected in the caves, of which 11 are new. The new species include troglobites in the groups Diplopoda, Araneae, Opiliones, Pseudoscorpionida, Isopoda, and Decapoda, of which only the last two are aquatic. Some measurements were made of the fauna of samples of vampire guano.

Guatemala. Before 1969, little was known of the invertebrate cave fauna of Guatemala. Nicholas (1968) reports collecting about 50 species (including bats) in 12 different Guatemalan caves but no detailed list has yet appeared. As a result of my 1969 field work, I collected over 70 species of invertebrates of which 30 were new species. From this and the work of others the Guatemalan cave fauna is now known to contain as troglobites (mostly undescribed) a flatworm, spider, two pseudoscorpions, a rhachodesmid milliped, a *Bogidiella* amphipod, a catopid beetle, an agonine carabid beetle, and possibly a pseudothelphusid crab.

More recent field work has been performed by AMCS members and this has contributed additional species to the fauna. My data will be combined with that assembled for the AMCS by Reddell in a later paper.

The only ecological studies are some I have made on guano invertebrates. Vampire guano was found to contain large proportions of nematodes, 13 psychodid and 30 drosophilid fly larvae and 0.23 gm of solid debris per 10 ml of liquid guano. A sample of fruit bat guano in the entrance zone of Lanquin Cave contained 13 taxa of invertebrates (excluding Acarina) while a similar sample from 200 m inside the cave contained 11 taxa (excluding Acarina). However, the proportions of abundances of the faunas were very different, with large numbers of *Brachystomella* and *Onychiurus* collembola, *Solenopsis* (?) ants, staphylinid and ptiliid beetles, and Acarina. In contrast, the sample from 200 m inside contained large numbers of *Amnestus* hemiptera, isopods, chernetid pseudoscorpions, and *Folsomia* and *Isotomiella* collembola. Although the final analysis is not complete, both samples had similar total numbers of arthropods, with a density of about 2 per gm of wet guano (about 1 per ml of guano).

Honduras, Nicaragua, Costa Rica, Panama. Little is known of caves in these countries. Honduras is known to have some cave potential (Finch, 1969), and limestone caves are known in Costa Rica near Arenal and Puntarenas (personal data).

Chilibrillo Cave, Panama, has been repeatedly collected for fauna. This has been summarized by Peck (1971), with a list of 67 species, of which three are possibly troglobites. This

community was composed of similar numbers of species of predators, guano-scavengers, and detritivore-herbivores. Since this study, the cave has been fumigated to remove the bats. Undoubtedly bats have since moved back into the cave, as have a new suite of invertebrates. This recolonization of the cave, in the light of acting as a vacant niche, would be worthy of study.

The Greater Antilles

Cuba. A number of speleological expeditions have visited Cuba in recent years (for instance, Botosaneanu, 1970). To my knowledge, the Cuban fauna of aquatic and terrestrial troglobites and troglaphiles has not been summarized. Someone could provide a useful service to biospeleology by doing this.

Jamaica. Field work has shown Jamaica to have the richest cave fauna of any island in the Caribbean. I have investigated 19 caves on the island in 1968 and 1972-73, and this plus the work of others has resulted in a list of 103 species which are judged to be non-accidental residents of the caves. Nineteen species of troglobites are now known and include 1 onychophoran, 6 spiders in 4 families, 2 phalangodid harvestmen, 1 *Sesarma* (grapsid) crab, 1 palaemonid (*Troglocubanus*) shrimp, 1 *Hadzia* amphipod, 1 terrestrial isopod, 1 mysidacean (*Stygio-mysis*) shrimp, 1 *Troglopedetes* collembolan, a roach, a cixiid bug, and two carabid beetles. Of the above troglobites, only the harvestmen, grapsid, and palaemonid are described. Most of the troglaphilic species are likewise undescribed, and many are not known from epigeal sites, despite the large amount of entomological field work that has been performed in Jamaica.

Some work has been done with the quantitative ecology of Jamaican bat guano, but a full analysis is not yet completed. Some mite densities of over 50 per ml of dry insectivorous bat guano were found.

Hispaniola. This island has good potential for cave fauna, but none is known. A reconnaissance of caves has been conducted in Haiti (Dunn, Schmidt, and Taylor, 1959), listing 38 localities. Caves are known in the Dominican Republic only as vertebrate paleontology sites (personal data) and the government is presently actively discouraging cave field work because of guerilla activity.

Puerto Rico. Seventy-eight species of free living invertebrates are known to inhabit caves in Puerto Rico (Peck, 1973). Fifty-two of these are known by precise species name, of which 23 species are also known from the American mainland, 6 are West Indian in distribution, and 23 are endemic to Puerto Rico. Sixteen of the endemics are known from non-cave habitats, while the non-endemic species are usually known to associate with caves in other parts of their ranges. Ninety percent of the total fauna is troglaphilic, with only 2 definitely troglobitic species known (the amphipod *Alloweckelia gurneei* and the atyid shrimp *Typhlatya monae*). In feeding habits, the fauna is composed of 55% guano scavengers, detritivores, and herbivores, and 45% predators. Most if not all of the fauna, including the troglobites, probably has a short history of association with Puerto Rican cave habitats, dating only from and since the Pleistocene.

Detailed ecological studies were conducted in Aguas Buenas Cave in May 1973. The population densities of bats, and the rate of bat guano input into the cave community were measured. The structure was determined for the biomass and trophic levels of the invertebrate community which use the guano as a food base. Respiration rates and quantitative differences were measured for the biota on insectivorous and frugivorous bat guano.

South America

This continent is still the "terra incognita" of biospeleology as pointed out by Vandel (1965) but some progress is being made. Strinati (1971) summarized much of the known invertebrate fauna.

Trinidad. Many caves exist here, with a varied fauna, but no attempt at summarizing the fauna seems to have been made. Snow (1962) indicates caves inhabited by the oilbird, and these caves should have a large invertebrate fauna. The ecology of some of the guano fauna of lowland bat caves has been extensively studied by Miss J. P. Darlington and Stuart Hill and others at the University of the West Indies in Trinidad (Hill is now at McDonald College, McGill University, Ste. Anne de Bellevue, Quebec, Canada) but no results have been published. They found Tamana Cave to have 53 species of invertebrates, but none were troglobites. Small guano arthropods had densities of 1,628,000 per m² to a depth of 7.6 cm. *Eublaberus* roaches had densities of up to 5000 per m² (up to 2775 gm fresh weight roach per m² of guano).

Venezuela. Cave invertebrates in Venezuela are recently mostly known through the collections of Carlos Bordón and Omar Linares, of Caracas. Bordón has collected throughout the country, while Linares has concentrated on Cueva del Guácharo, finding (unpublished) about 100 invertebrate species, of which several seem to be troglobites. I made collections in 1971 in Cueva Alfredo Jahn (see also Strinati, 1971) and caves on the Paraguaná Peninsula and found about 20 species of invertebrates (no troglobites) but these are not yet all determined. Other cave fauna data can be found in the "Boletín de la Sociedad Venezolana de Espeleología."

Samples of vampire guano from Cueva Alfredo Jahn were found to contain 18 arthropods per ml, of which 15 were drosophilid larvae, comprising 0.13 ml of volume for every 1.0 ml of guano (personal data).

Ecuador. Although caves (but no fauna) are known from mainland Ecuador, an interesting cave fauna has been found on the Galapagos Islands (Leleup, 1968, 1970). The troglobite fauna is known to include a tenebrionid beetle, a dermapteran, a small-eyed opilionid, 5 spiders, a shrimp, an amphipod, and a terrestrial isopod.

Colombia, Brasil, Peru, Uruguay, Argentina, Bolivia, and Chile. The fauna of these countries is summarized by Strinati (1971), but other taxa are known (personal data). C. Bordón of Caracas made a 6 month collecting trip down the length of the continent in 1972 and made many cave collections in these countries. This one expedition alone should add significantly to what should still be known as the "terra incognita" of biospeleology.

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Fig. 1. Map of Caribbean America, summarizing present knowledge of invertebrate cave faunas. The first number in a column is the total number of invertebrate species known for the caves of the state, country, or region. The following figures refer only to troglobites. "T" signifies terrestrial species and "A" signifies aquatic species. The dark line in the southern United States represents the edge of the coastal plain.

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NEW ROAD TO REAL DE CATORCE

by Glenn Darilek

This scenic and historic mining town has been put well within the reach of the determined tourist because of a new road which has been cut through the desert. Although there is at least one cave in the area (see Texas Caver, January 1973), a sightseeing trip for picture taking alone is certainly worthwhile. The road log which follows should help you find the new road.

Road Log to Real de Catorce April 6, 1974

Miles	Kilometers	
0.0	0.0	Between kilometer posts 9 and 8 on the highway from Saltillo to Matehuala is the turn-off for Cedral and Catorce. Turn right if you are coming from Saltillo
5.9	9.4	Cross railroad track.
9.6	15.4	Turn-off to the village of Acapulco (1 km). No relation to <i>the</i> Acapulco.
10.3	16.5	La Agua
11.1	17.8	School
11.35	18.2	Take a sharp turn to the left into the town of Cedral.
11.8	18.9	Start onto cobblestone pavement in road.
11.95	19.1	Nice plaza to the right with a large church.

12.0	19.2	Turn right on the next street past the plaza for the new road to Catorce. The old road used to be reached by continuing straight until you leave the town and continuing across the desert on the crudest of roads, picking your way among the maze of parallel roads cut across the desert by the Mexicans. Every time the old path got worn, a new path was cut through the cactus to afford a slightly better road.
12.3	19.7	20 de Noviembre School
12.45	19.9	Start paved road and leave Cedral.
18.2	29.2	Just after a slight rise, turn left onto the graded dirt road to Real de Catorce. The paved road continues on across the desert to some marginal irrigation farms, a cross on a hill, some railroad tracks, and beyond.
24.7	39.5	Road cut
27.3	43.7	Graded dirt road ends here (the remainder of the road to Potrero has not been finished at this time).
27.9	44.6	This hacienda was once used to load ore into railroad cars. The cars were backed into a trench, leaving the tops of the cars at ground level so that they might be filled easily.
28.8	46.2	Town of Potrero. Beware of the local kids jumping onto your car, asking for money. Take a gradual left turn here to get back onto the graded dirt road.
28.9	46.3	Turn right onto the continuation of the graded dirt road.
30.0	48.0	Shelters on the left.
30.3	48.3	Spil area on the left. These ore washings are being stockpiled for the day when it becomes profitable to re-refine it.
30.4	48.6	Inhabited shelter houses on the right.
30.9	49.5	Santa Anna Mine. Notice the church high on the mountain to the left, and the handball(?) court near the entrance to the mine workings. Continue to the right, up the mountain.
31.6	50.5	Look back towards the Santa Anna Mine for a view of the entrance to La Cueva-Mina de Real de Catorce (January 1973 Texas Caver)
31.85	51.0	Parking space on the one way mountain road for a view of Potrero.
32.5	52.0	Enter Ogarrio Tunnel and the world beyond of Real de Catorce. A short distance inside the tunnel notice the shrine on the right.

LAS GRUTAS DE JUXTLAHUACA

by Skip Roy

Las Grutas de Juxtlaahuaca is a federally owned cave 4 km from the village of Colotlipa, which in turn is roughly 37 km from Chilpancingo, the capital of the Mexican state of Guerrero, the state in which Acapulco is located. Its original and consequent preservation stems from the discovery of several cave paintings of Olmec origin and estimated to be roughly 3000 yrs old, hence the oldest cave paintings in the New World. In addition, further exploration with the help of Dupont's finest boom-boom cave maker produced a new section with beautiful

lakes, rimstone, and flowstone, including a long passageful of anthodites, probably the most beautiful in the world.

A tourist tour is available free Monday through Friday 8 to 5, although there are several items that will still end up on the bill. To take the tour, ask for Andres or Enrique Ortega in Colotlipa—you'll be in good hands from there. If you want to see the anthodites, be prepared for a swim, some sharp-edged crawls and a long trip. The wet season (June through November) turns the swim into a sump. The trip through the archaeological section is easy and well worthwhile. One further note—although the road is better now, a honky car still might balk a little bit here and there.

Juxtlahuaca means beautiful blue-green valley—or so John Fish said in his article on caves of Guerrero in an old AMCS newsletter. The valley can be seen from the cave entrance. Even after some 5,000 years of occupancy, it is still an organic gardener's delight, rich with the minerals from volcanic rock, lime from the limestone, and abundant water from several nearby streams. It *is* blue-green, especially in low light, and it *is* beautiful; it is to be hoped that the new cave road, electricity, and the anticipated flocks of turistas don't wipe it out entirely.

The entrance is not grand or beautiful or even noteworthy—except for the stench of the accumulated wisdom of much more than 5,000 years of occupancy by a large and active vampire bat population. There *is* the new gate, somewhat out of place here, but itself a welded museum piece—gears, springs, etc. And too it is the home of Enrique's pet bat-eating snake, guardian of the portal to the depths.

The nature of the first section of the cave is immediately apparent; the weird acid-eaten silhouettes of old stal masses, the mud and guano floors with rock paths through the purple-black pools of fresh vampire feces. The passage here is small on the Mexican scale. The walls and ceiling are pocked with phreatic grottos, leaving little doubt in the Yankee caver's mind that things are indeed different in the tropics. Small fruit-eating bats whip by, and an occasional larger vampire. On the left is an opening to a small cluster of 10 m pits—complete with skulls cemented in flowstone, javelina jaws, etc. The amount of human bone and potsherds in this part of the cave is astounding.

The first junction is just past the original cave gate, about 150 m inside the entrance. Here the cave's personality changes greatly—I won't say for the better, but at least I'm always glad to get beyond those decayed formations. Bats? Did I say something about vampires a while ago? Turn left at the junction and climb up the oozy slope, follow the rising temperature to find the right (wrong?) hole leading to the Inferno, the biggest passage in the cave and the least explored part of the cave. Several feet of purple-red vampire sleaze on the floor and 250,000 vampires hanging on the ceiling.

The tourist trip (and anybody else with good sense and not surveying) turns right and stays in the lower level, the formations no longer bothered much by bat-generated uric acid but still not active. More human burials—here an alcove with only children, there one with adults, rib cages in flowstone. The phreatic pocketing becomes more pronounced—how in hell do you sketch a formation forest in a passage composed of the random intersection of random pockets, hollows, and bedrock curtains?

A short crawl through Paso del Toro and into the first major room on the tourist trip. The beauty of the cave starts to take hold. Once again a junction—lower level to the right, filled with columns; and a big passage to the left—which way?

Well, either way. To the right—slick rocks, massive formations that bring out the best/worst in the guides—marimbas, giant tits, the whole thing; there is surely a common bond between the cave guide, the used car salesman, and the pimp. Anyway, just before La Lech-

era, a perfect breast-form 2 m high (complete with stone nipple and a suckling cave guide now and then), a passage with several more burials heads left through a dodge—around stalactite mess and back to the main passage. The other way, straight ahead past the mammi-formation, down a slick mother climb, on and on and on, eventually there is the other entrance, a small sink “con abejas i avispas”—with bees and hornets.

So now we're back to the main passage, and let's backtrack to that first big room—the Salón del Toro. Someplace in here the Ortegas have their first beer stash—yes, that warm Tecate tastes pretty good—but there will indeed be a reckoning back at Colotlipa—La Cuenta strikes terror deep into the hearts of visiting American speleologists and cave bums.

A burp or two then onward—to the left a high lead with lots of pretties, then on the right the passage back to the enlarged mammary gland, followed by a low lead to the right—not on the normal camino de turistas but pretty, pretty, pretty, complete with a non-electric reverberating fuzz-tone echo chamber pool that might be pushed in the dry season. (I might as well say it now—nothing really “ends” in this cave—everything's just plugged up with flowstone—and, if you balance your sense of aesthetics against your desire for more cave, temper it with the Mexican government's twin purposes of preservation and tourist development, who knows? Old Andres might take you out on a passage hunting trip after you get to know him. Maybe not. But I always had the feeling that there is more cave there.)

After the echo chamber passage there are no side passages for a while—the main passage features are enough to over-activate your neurons anyway. Huge columns, one called the Pillar of the Constitution (or whatever the equivalent of that is in Spanish). There is a small trench in the floor that the guides tell you was dug by the Olmecs to drain water away (by now you might think that the Olmecs not only hollowed out the cave and made the mountain, but created the very limestone itself—a point with which the guides might agree). Then the ceiling goes out of sight, the floor becomes level, smooth—strangely smooth like a well-used set of steps. A massive flowstone cone fills the right wall, an altar carved near the top. Ah, at last, the Ballroom, home of the oldest technicolor cave vandalism in the New World—and who? The Olmecs of course. One is a jaguar/human, a standing man with a tail done in red, yellow, and black. The other is a feathered serpent. These are the two most important gods in the Mexican pantheon and are woven together throughout Mexican culture history. (Just one anecdote: The reason that Moctezuma II gave in to Cortez was the returning Quetzalcoatl, the feathered serpent god who in real life had been a Toltec priest circa 987 A.D., exiled from the city of Tula by the military jaguar cult. Quetzalcoatl and his followers sailed to Yucatán where they gained dominance over the Maya and built the city of Chichén Itzá.)

The paintings are there, and the experts vouch for their authenticity. Far be it for me to question. I guess I've seen too many petrified baby's heads and assorted other natural hogwash wonders in American commercial caves to fully believe anything that a cave guide tells me. Juxtlahuaca has the best guides of the lot, however.

It's still a short crawl through the section Andres dynamited, and on the other side it's a new world. No mud, no bats, no guano, no artifacts. Clear rimstone pools, calcite rafts, crystal crusts. At one self-contained pool the guides make one wash all the mud from one's clothes and boots in an effort to retain the cave's pureness. Next comes the Salón de Navidad, a wade, a swim or a sump depending on the season. The water is so clear that it seems as if one is flying, suspended over the usual complement of stalagmites and breakdown blocks. Here the guides go loco, diving, turning flips, imitating dolphins. Once a guide said that he was glad to see the hippie girls come because they take off their clothes and he doesn't have

to go to the dirty movies that month. An alcove part way through the pool offers a resting place and some draperies inlaid with beautiful marble-sized calcite nodules. Then comes the sump or duck-under and POP! –back into a big room. The water makes obscene sucking noises filling the odd pockets on the walls. There are two levels leading from this chamber, an upper one with superb cave pearls and a mural in the Mayan style by a modern Mexican artist, and a low grovelly breakdown crawl that leads to a section known as the Jardín de Rosas or Rose Garden. Here begin the anthodites. Anthodites are pretty rare as well as spectacularly beautiful, literally crystal flowers or radiating aragonite needles. At the Rose Garden, the walls are covered with them. What can I say, except that it is impossible to render the high points of natural beauty into black words on white paper.

The usual trip ends here, going back by nearly the same route, making the other half of the loops, perhaps drinking another beer or two to the tune of Andres' jokes and the metallic ting of water dripping on well-placed empty beer cans. "Hear that?" "Those are the workmen." So says Andres.

But let's push on through the Rose Garden which is, after all, only an anteroom on the edge of the beautiful anthodites. A short walk, a few small climbs, some breakdown crawls. The cave becomes drier and drier, crystals become larger. Anthodite sections alternate with sections of white powdery rock. Aragonite sand makes up the floor. One tricky climb deserves a handline. Then a white paradise, a true fairyland, the fabled Crystal Cave. Merlin could be waiting here for rebirth. Pine-like anthodite stalagmites two and three feet high. Long crystal needles, the whole room so delicate that it cannot possibly survive. Once again, words fail. Past this point are some more anthodites, more squeezes. Finally, the passage gets wet again, with flowstone instead of crystals. A too-small hole in a plug, bats flying through it into the ever-present virgin cave beyond. Time to quit, turn around, leave the cave. After all, Acapulco is only a couple or five hours away.

When I talked with Andres last summer he told me about a new fairly long section near the back of the cave—no formations or artifacts but about a kilometer long and very tight. But it should be mapped. There are also some short sections that were underwater when we were there—right near the Salón de Navidad. Other than this and a paucity of good pictures of the anthodites, I'm fairly well satisfied with the record of this cave since a Mexican geomorphologist has started to do some very detailed geology. He's welcome to it. One last thing. This map (see inserted plate) and these experiences, and in some ways, this article belongs as much to Bill Steele as it does to me.

—Extracted from *Inside Earth*, No. 3

RECENT PUBLICATIONS ON MEXICAN SPELEOLOGY

Abstracts

Barr, T. C., Jr. 1973. *Speocolpodes*, a new genus of troglobitic beetles from Guatemala (Coleoptera: Carabidae). *Psyche*, 80:271-276.

Speocolpodes franiai n. gen. et n. sp. is described from two female specimens collected at Seamay Cave, Alta Verapaz, Guatemala. It is the first troglobitic beetle from Guatemala and the farthest south of any troglobitic beetle in North America. *Mexisphodrus*, previously thought to belong to the Sphodrini, is discussed and its affinities to the colpodines discussed.

Barr, T. C., Jr. 1974. Revision of *Rhadine* LeConte (Coleoptera, Carabidae). I. The *subterranea* group. *American Mus. Nov.*, 2539. 30 p.

The genus *Rhadine* includes about 60 species, of which 11 are troglobites found only in Central Texas. These troglobitic species encompass the *subterranea* group. This paper includes the description or redescription of all of the members of this group. It makes brief reference to *R. araizai* Bolívar, *R. pelaezi* Bolívar and Hendrichs, and *R. boneti* Bolívar and Hendrichs, all from Mexican caves. Barr does not consider these last two to be true *Rhadine*, but to belong to another genus of primitive agonines.

Brignoli, P. M. 1973. Il popolamento di ragni nelle grotte tropicali (Araneae). *Internatl J. Speleol.*, 5:325-336.

This paper discusses the differences between the spider faunas of tropical and temperate caves. Most spiders of tropical caves are reported to ambush their prey or actively search for it whereas the spiders of temperate caves capture prey in webs. Mention is made of several Mexican cave spiders and the report includes numerous distribution maps showing the relationships of the New and Old World cave spider faunas.

Fromén, C. 1974. 10 years looking for caves around Bustamante. *Texas Caver*, 19:63-65.

This brief article summarizes the last 10 years of cave-hunting by the author in the mountains near Bustamante, Nuevo León. Included are brief descriptions of the discovery and exploration of numerous small caves. These caves are briefly described with the map of one (Cueva del Mercurio) being included. The caves are located on two cross-sections of the mountain ranges under discussion.

Gertsch, W. J. 1974. The spider family Leptonetidae in North America. *J. Arachnol.*, 1:145-203.

The spider family Leptonetidae includes two genera and 44 species in North America. Of these nine cave-inhabiting species occur in the Appalachian Mountains, nine in the Edwards Plateau of Texas, and nine in México. *Leptoneta limpida* n.sp. is a probable troglobite from Cueva de los Riscos, Durango; *L. capilla* Gertsch is a troglobite from Cueva de la Mina and Cueva de la Capilla, Tamaulipas; *L. isolata* Gertsch is a troglobite from Grutas de García, Nuevo León; *L. delicata* Gertsch is a possible troglobite from an "iron mine" 2 km east of Pinal de Amoles, Querétaro; *L. pecki* Gertsch is a possible troglobite from Grutas de San Bartolo, Nuevo León; *L. reclusa* Gertsch is a probable troglobite from Cueva de Chorros de Agua, Nuevo León; *L. rainesi* Gertsch is a troglophile from Cueva de El Pachón and Wet Cave, Tamaulipas; *L. bonita* n.sp. is a troglo-

phile from Cueva Bonita, Tamaulipas; and *Archoleptoneta obscura* n.sp. is a troglophile from Cueva del Tío Ticho, Chiapas. Only two epigeal species of the family are known from México: *L. brunnea* n.sp. from Hidalgo and *L. modica* n.sp. from Nuevo León. The reasons for not using *Neoleptoneta* Brignoli for the Mexican species are given and a new subfamily (Archoleptonetinae) and new genus (*Archoleptoneta*) are erected for three primitive species from California, Texas, and Chiapas.

Husson, R., F. Graf, J. P. Henry, G. Magniez, C. Marvillet. 1973. Les recherches biospéléologiques poursuivies au Laboratoire de Biologie Animale et Générale de la Faculté des Sciences de Dijon, p. 113-133. In: *Livre du cinquantenaire de l'Institut de Spéologie "Émile Racovitza"*. Bucaresti: Editura Academiei Republicii Socialiste România.

This brief review of the work of the Laboratoire de Biologie Animale et Générale de la Faculté des Sciences de Dijon includes a brief discussion of the two Mexican troglitic stenassellid isopods, *Mexistenasellus wilkensi* and *M. parzefalli*.

Jones, J. K., Jr., H. H. Genoways, and T. E. Lawlor. 1974. Annotated checklist of mammals of the Yucatán Peninsula, México. II. Rodentia. Occ. Pap. Mus. Texas Tech Univ., 22. 24 p.

This checklist includes published records of cave remains of 17 rodents from Actun Has, Actun Coyok, Actun Spukil, Loltun, Actun Chacaljas, Actun Lara, Actun Oxkintok, Actun Jih, and Actun Xkyc, Yucatán. In addition all other current and published records for rodents in the Peninsula are included.

Jones, J. K., Jr., H. H. Genoways, and J. D. Smith. 1974. Annotated checklist of mammals of the Yucatán Peninsula, México. III. Marsupialia, Insectivora, Primates, Edentata, Lagomorpha. Occ. Pap. Mus. Texas Tech Univ., 23. 12 p.

This checklist includes published records of cave remains of 2 opossums, 1 shrew, and 1 armadillo from caves in Yucatán. In addition all other current and published records for these five orders are included.

Kawakatsu, M. 1974. A report on caves of the United States and Mexico. Japan Caving, 6:23-29. (In Japanese)

This is a popular account of two trips to the United States and México by a Japanese flatworm taxonomist, Masaharu Kawakatsu, for the purpose of collecting flatworms. He was accompanied on both trips to México by Dr. Robert W. Mitchell and other cavers and cave biologists from Texas. The first trip was to various caves in the Sierra de Guatemala and Sierra de El Abra, while the second was primarily to caves in the Yucatán Peninsula.

Márquez Mayaudon, C., and J. Ramos Elorduy de Conconi. 1974. Un nuevo ricinulideo del género *Cryptocellus* Westwood para la fauna de México (Arthropoda, Arachnida). J. Arachnol., 1:73-84.

Cryptocellus gertschi n.sp. is described from an epigeal habitat at Playa Escondida, Catemaco, Veracruz, México. It is found to be most closely related to the epigeal *C. spinotibialis* Goodnight and Goodnight from Chiapas, and to the cave-inhabiting species, *C. pearsei* Chamberlin and Ivie from Yucatán. A key and resumé of all of the species of the genus *Cryptocellus* is given. This includes seven cave species from México.

Sbordoni, V., and M. Cobolli-Sbordoni. 1973. Aspetti ecologici ed evolutivi del popolamento di grotte temperate e tropicali: Osservazioni sul ciclo biologico di alcune specie di *Ptomaphagus* (Coleoptera Catopidae). *Internatl. J. Speleol.*, 5:337-347.

This paper gives the results of a study of the degree of adaptation to the cave environment in the two phylogenetically related catopid beetles: *Ptomaphagus troglomexicanus* Peck, a troglobite from a cold high altitude cave in the Sierra de Guatemala of Tamaulipas; and *P. spelaeus* (Bilimek), a troglophile from a warm lowland cave (Grutas de Cacahuamilpa, Guerrero). These two species are also compared to *P. pius* Seidlitz, an epigeal species from southern Europe. *P. troglomexicanus* is found to be strikingly different in many morphological features from the other two species. It is concluded that evolutionary rates in cavernicoles are strongly affected by the ecology of the cave, mainly depending on the degree of energy input into the caves.

Schultz, G. A. 1974. *Mexicerberus troglodytes* n. gen., n. sp. from a cave in Mexico, with notes on isopod crustaceans of the Microcerberidae from the New World. *Crustaceana*, 26:308-312.

The genus *Mexicerberus* is described to include a single species (*M. troglodytes* n.sp.) discovered in La Cueva de la Mina, Tamaulipas. This is the first species in North America not to be associated with a marine beach habitat. It is a troglobite. The genus *Microcerberus* is also reviewed.

Steyskal, G. C. 1973. A new species of the genus *Archiborborus* Duda from Mexico (Diptera: Sphaeroceridae). *J. Kansas Entomol. Soc.*, 46:154-157.

Archiborborus (Procpromyza) mexicanus n.sp. is described from Sótano de El Porvenir, near El Porvenir, in the Sierra de Guatemala, Tamaulipas. This sphaerocerid fly is of interest in that it extends the known range of the genus *Archiborborus* north from Colombia, South America.

Vomero, V. 1973. Stato attuale delle conoscenze sugli Histeridae ipogei. *Internatl. J. Speleol.*, 5:361-367.

The troglobitic and endogeous Histeridae of the world are reviewed and the degree and types of adaptation to the cave and soil habitat are discussed. Only five truly troglobitic histerids are believed to be known: *Spelaecritus anophthalmus* Jeannel from Asia Minor, and four species of the genus *Troglobacanius* from México. *T. maya* Vomero is known from Grutas del Coconá, Tabasco; *T. reddelli* Vomero occurs in Grutas de El Puente and Cueva de los Vampiros in the Sierra de Guatemala, Tamaulipas; *T. bolivari* Vomero is found only in Sótano del Tigre, Sierra de El Abra, San Luis Potosí; and *T. sbordonii* Vomero inhabits Sótano de Gómez Farfás, Sierra de Guatemala, Tamaulipas.

REVIEWS

La fabulosa exploración del Sótano de las Golondrinas, by José Luis Beteta. Contenido, No. 130, March 1974, pp. 18-37.

This is an account of the first Mexican expedition to Sótano de las Golondrinas, San Luis Potosí, and of the near death of one of its members. The expedition took place in November 1973. The author seems to know nothing of the AMCS or of the 1967 exploration of this 330 m pit (see AMCS Bull. 2). The story is illustrated with thirteen color

photos, three black and whites, and the color cover photo, which is a reproduction of fig. 6 in AMCS Bull. 2, the photo of the entrance from the bottom. The author never mentions the AMCS and he takes credit for all the photos.

Even though the article is written with a definite sensationalist, macho explorer “slant,” there are some interesting bits of information, such as the legend of the last Huastec sacrifice at the pit, as told by a local “india vieja,” Chumén. It is probably news to all of us that the Huastecs ever threw maidens into sótanos. If the author is at all credible, the legend bears further investigation. According to Chumén, who told the story in Huastec to a Spanish interpreter, some time before the coming of the Spanish to the Huastecan region, the pit contained sacred water and was regularly used for human sacrifice. The legend goes that the maiden, Calmallí, was being taken to the pit by a retinue of priests. She had been purified with incense and copal and led to the 15 m high censer stone, which supposedly still stands in the center of an esplanade near the Golondrinas trail. Chumén’s hut stands a few meters away. The priest Thimal Hejat spoke the words and the group continued to the pit. But the gods were angry with the Huastecs because of their arrogance. Calmallí was sacrificed. The mountain shook, the heavens groaned, and the priests prostrated themselves at the edge of the pit. In the pit they saw a giant whirlpool form and suck the waters of the dead into the earth. Even though two streams keep trying to fill it, the pit remains dry to this day because the gods have not been placated. Hard times then befell the Huastecs in the form of white men and their guns. Thimal Hejat, priest of health, and Tzitz-In, priest of birds, tried valiently to organize a defense, but the Huastecs fell like leaves in autumn. Then a miracle happened. Thousands of red vipers came out of the pit and attacked the white men. They were led by a large viper who wore a necklace of sacred blue flowers, the same as were thrown on the trail in front of Calmallí. It was apparent that Calmallí had escaped divine imprisonment and had returned to save her people. When the white men had been driven off, Calmallí reunited her people, who then watched as the vipers metamorphosed into swallows and dove into the sótano, where they have nested ever since. Hence, the name “Sótano de las Golondrinas.” The author claims to have seen pictographs in a cave near the trail, depicting a group of warriors marching a maiden to the pit and tossing her in.

The Mexican expedition hoped to explore the pit and find archaeological remains and a cave. They were aware that they were not the first to enter it. After taking two days to reach the pit from Aquismón, they rigged the pit with a “descendedor” system, which the author describes as “...a set of harnesses, pulleys, counterweights, and safety lines.” He says, “It is difficult to explain in detail the functioning of this apparatus...” (my translation). A safety line was run from the opposite side of the pit, but it is not clear if the descent was by rappel, although the description suggests that. The first, and as it turned out, the only one to enter the pit was Lorenzo García Gallardo. Dressed in white overalls, white knee socks, and an orange military helmet (illustrated), he descended at 11 AM, November 2, taking thirty minutes to reach bottom. Finding nothing on the bottom but bird guano and dead birds, he communicated his disappointment by walkie-talkie and began his ascent at 2 PM, apparently with a Gibbs ropewalker-ascender box system and a belay line. The painful “millimeter by millimeter” ascent is explained by the author. By 12 PM he still had 100 m to climb and was exhausted. Could this have had something to do with his Gibbs ascenders possibly being rigged upside-down, as shown in a photo? We can only guess. Lorenzo hooked his “descendedor” onto the safety rope, but the line was tangled in some branches 20 m from the pit. The author grabbed a machete and started hacking at the branches while standing on a cable ladder. Suddenly he found himself airborne and grabbed the ladder with both hands. The ladder had slipped and he fell several meters, almost into the pit. All

the flailing served to dislodge the rope. Lorenzo continued up, half under his own power, half pulled by his companions, Daniel Sáenz, Pompeyo García, and Francisco Hernández. After twelve hours on the rope, he was out. They returned to Mexico City the next day without attempting further descents, although they had all planned to.

I hope that this article, having been published in a popular magazine, will not set off a rash of similar "expeditions." Other Mexican groups have since descended and ascended with no problems (see News and Notes). I predict that a death will probably occur at Golondrinas within the next year or so if it becomes a popular place for thrill seekers. The pit is heavily visited by American speed-rappelling freaks as it is, so it may only be a matter of time anyway. Beteta hopes to guide a group of scientists to the pit to look for sacrificial remains. If they get there in one piece, they may find fresh bones.

—William R. Elliott

Ed. note: Back issues of Contenido are supposedly available for 12 pesos (\$0.96) from Contenido, Morelos 16, 3er Piso, México 1, D. F., México.

The Well of Sacrifice, by Donald Ediger. Garden City, N.Y.: Doubleday and Co. 1971. 288 pp., 16 color plates.

The Sacred Cenote (or Well of Sacrifice) at Chichén Itzá in Yucatán, México, is one of the more important archeological sites in Yucatán. It has intrigued modern-day explorers as much as it did the ancient Maya who worshiped the god Chac living in its depths. Many attempts to excavate the bottom of the well, which served as the focal point for the worship of the pilgrims who visited Chichén Itzá for hundreds of years, failed because of the depth and murkiness of the water. The well was remarkable for its use as an oracle and for its sacrificial nature. Legends of its use as a recipient of the bodies of the most beautiful virgins of Mayab abound. It is known that women thrown into the well were frequently not killed but were pulled out to receive the message from Chac. One of the great historic events in the history of Chichén Itzá was the leap by the great Mayan hero, Hunac Ceel, into the well when the victims of the plunge failed to survive. Hunac Ceel survived the fall into the well and reported that Chac gave him the power over the city. He received it and ruled Chichén Itzá afterwards.

This volume, however, fails to give much idea of the history of the nature of the Sacred Cenote. The few brief historical sketches in the book are interspersed with accounts of how the author learned to skin-dive so he could visit the bottom of the well, endless accounts of rain, tea drinking, and attempts to turn a dreary expedition into an exciting adventure.

This volume is the account of an expedition sponsored by the Mexican National Institute of Archaeology and History and the Club de Exploraciones y Deportes Acuáticos de México and financed by United States commercial concerns, such as Purex Corporation and the Ford Motor Company. The original plan was to pump the cenote dry, a project obviously doomed from the start since the cenote is directly connected to and fed by waters of the Yucatán water table. Holes in the walls of the cenote contained noticeable currents feeding the waters of the cenote. Their attempts to lower the water level succeeded only to the extent that a large dump-ground of an earlier attempt to excavate the cenote with dredges was partially exposed. This

permitted archeologists to go over the leavings of the earlier excavation with some fairly good results. When it finally became apparent that this method was a total failure it was decided to clear the waters of the cenote which are a dark green from algae, combined with the brown of suspended particles. A combination of chlorination, filtration, and flocculation did succeed in clearing the water so that divers could pick artifacts, bones, and pottery directly off of the floor of the cenote. This permitted the recovery of a considerable quantity of archeological material, some of real value. One of the more interesting aspects was the recovery of the bones of hundreds of children, indicating that the sacrificial victims were not usually the beautiful virgins of popular myth.

It will be left up to the study of the archeological material to determine how successful the expedition was, but one is inclined to suspect that the vast sums of money invested in this venture could have been far better spent elsewhere. No accounting is given of finances but a casual statement that it cost \$6,000 a month to run the office in Pompano Beach, Florida, gives some idea of the amount of money which was poured into the recovery of relatively few artifacts.

Despite every effort to justify the expedition it seems obvious that a combination of ignorance about the nature of the cenote (why was there no competent hydrologist along?) and the presence of many extraneous personnel (such as the sons of sponsors) led to its failure. As a side aspect a comment such as this leads a cave biologist to shudder, "Although we had killed all life in the cenote..." It will be interesting to see if the life of the cenote has returned. It is unfortunate that serious biological studies were not conducted before the experiment with clearing.

Aside from the factual over-simplifications, historical casualness, and failure to give any good idea about the reason why the Sacred Cenote is important (the author keeps referring to it as a "time capsule of the Maya"), the book is an attempt to bring excitement to what was seldom an exciting few months. This is really unfortunate because the proper treatment of the Sacred Cenote should provide enough excitement without attempts to build suspense. A few incidents did lead to possible injury or death of members of the expedition, but to try to make you think these were part of the "curse of the Cenote" is really unnecessary.

The book is attractive, with beautiful color photographs of the cenote and the artifacts recovered. Many black and white photographs also enhance the account. A map of Yucatán showing the location of the cenote would have been helpful for those who know nothing about the area. References to temples in and around Chichén Itzá would have been made easier to place with a map. And finally a map of the Sacred Cenote itself seems certainly to be an absolute necessity. The failure to include these is puzzling. Perhaps the author felt they would have been too technical for a popular book, but to try to describe the location of fallen temples around the cenote and to picture a sacrifice without our being able to visualize it only detracts from the narrations themselves.

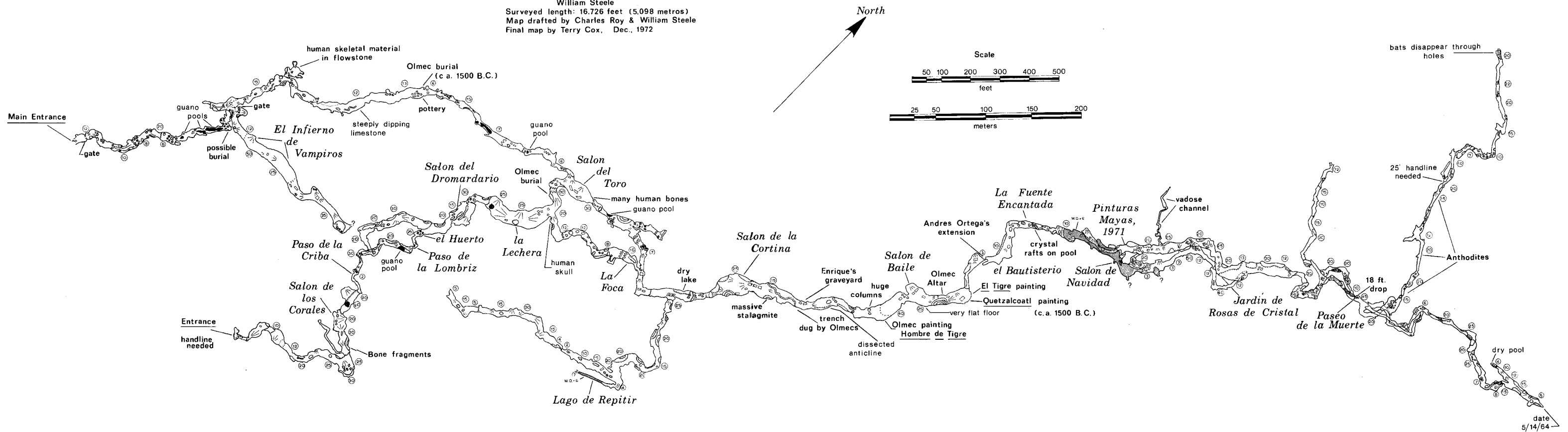
Our knowledge of the Well of Sacrifice is not greatly increased by this book, nor is the book sufficiently fascinating by itself to stand as popular reading. For those who might expect a fascinating account of an expedition such as many good mountaineering or caving books are will be disappointed.

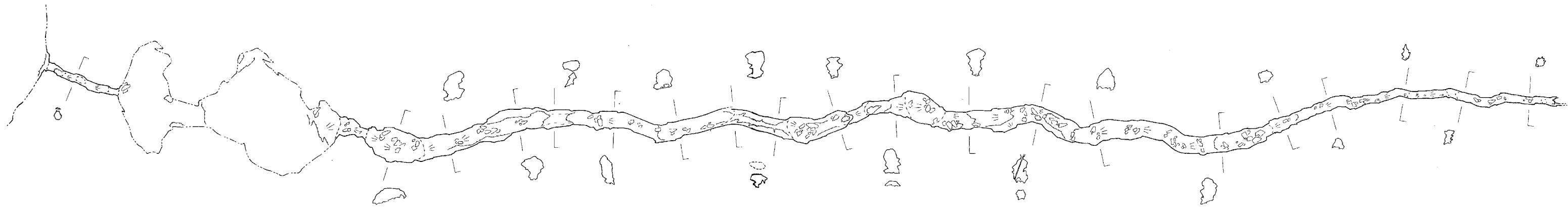
—James Reddell

GRUTAS DE JUXTLAHUACA

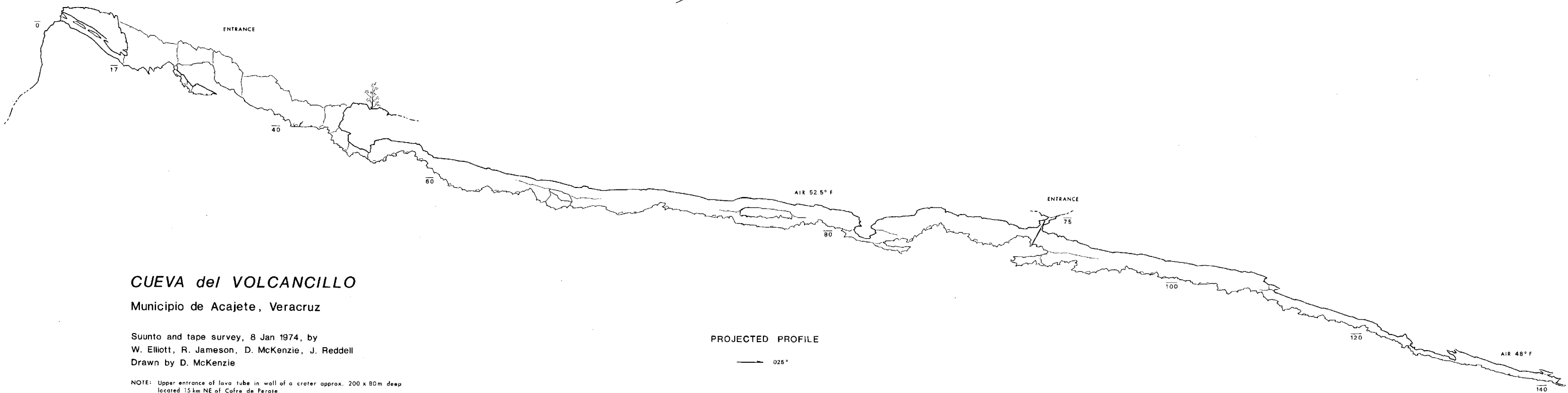
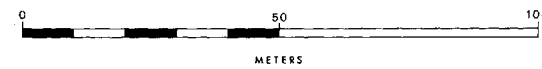
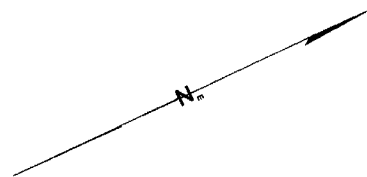
Municipio de Colotlipa, Guerrero, Mexico

Surveyed October - November, 1971 by:
 Jess Corson
 Enrique Ortega
 Charles Roy
 Kathleen Roy
 William Steele
 Surveyed length: 16,726 feet (5,098 metros)
 Map drafted by Charles Roy & William Steele
 Final map by Terry Cox, Dec., 1972





PLAN



PROJECTED PROFILE

→ 025°

CUEVA del VOLCANCILLO

Municipio de Acajete, Veracruz

Suunto and tape survey, 8 Jan 1974, by
 W. Elliott, R. Jameson, D. McKenzie, J. Reddell
 Drawn by D. McKenzie

NOTE: Upper entrance of lava tube in wall of a crater approx. 200 x 80m deep
 located 15 km NE of Cofre de Perote.
 Surveyed length: 590m horiz. Depth: 140m.



Association For
Mexican Cave Studies
NEWSLETTER



The Association for Mexican Cave Studies is a non-profit organization whose goals are the collection and dissemination of information concerning Mexican caves. The AMCS publishes a Newsletter, Bulletin, and Cave Report Series which are available to any sincerely interested conservation-minded person. The AMCS Newsletter is published six issues per volume as frequently as necessary at a cost of \$5.00 US per volume. Information concerning the other publications is available upon request. Potential contributors are urged to submit articles for publication. The article may cover any phase of Mexican speleology. Trip reports are requested from all trips. All correspondence and orders for publications should be sent to:

ASSOCIATION FOR MEXICAN CAVE STUDIES
P.O. Box 7037, University Station
Austin, Texas 78712 USA

Material for publication in the Newsletter should be sent to James Reddell or Terry Raines at the above address.

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Cover Photograph—

The tenth anniversary of T. R. Evans' initial descent into Sótano de las Golondrinas is now being celebrated by AMCS cavers throughout the world. We thought it appropriate to reproduce this entrance photo from AMCS Bulletin 2 in honor of the occasion. In the ten years since the 1967 exploration we estimate that more than 300 people (mostly cavers) have entered the pit. It is truly a miracle that no one has been killed, considering the competency and equipment employed by some. The hole's measurements are 62, 48, 333 meters. The floor is an incredible 134 by 304 meters and along the west wall a fissure drops to a total depth of 376 meters. **Regardless** of what future explorations discover, the Golondrinas chapter will remain one of the grandest in the great **Book** of Speleology. (Photo by Terry Raines)

Association For
Mexican Cave Studies
NEWSLETTER

Volume V Number 2 & 3

June 1977

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Cueva del Guano
Cueva de los Riscos
Sótano de Sauz
Cueva de la Siquita

NEWS AND NOTES

In the September issue of the AMCS Newsletter (AMCS News., 5(1):2) an article appeared concerning a group of vertical enthusiasts from Maryland. This group is reported as having done the skylight in Cueva de El Abra and found it to be 380 ft (116 m) deep; and that this group made the first recorded descent of this skylight. Also in this article it is reported that Sótano de las Golondrinas was rappelled in 2-1/2 minutes. As the members of this group of vertical enthusiasts we would like to clarify some of the statements made about us and our trip. The skylight at Cueva de El Abra was done before our descent. Our records show that the pit was done by a group of Maryland and Tennessee cavers in December of 1973, and also done by a group of Tennessee cavers in April, 1973. The length of the drop was never measured by us, we only estimated it to be about 400 ft by the hundred foot markings we had placed on one of the ropes we rigged for the drop. During the descent of Golondrinas the fastest time on rappel was 18 minutes (see the trip report that appears in this issue). The new rope we used (a 1540 ft Bluewater III) was not damaged at any time while we were in México—as a matter of fact it will be used in México again in the near future. It is our hope that this article will show that our group recognizes the importance of safety in caving and are just as intolerant of unsafe caving methods as our fellow spelunkers.

Bert Ammann	Doug Dotson
Chuck Elliott	Don Evans
Terry McClanathan	Al Goldey
Rick Davis	Steve Lebel

(Editor's Note: The editors of the AMCS Newsletter regret very much the inaccurate report printed in the News and Notes Section of the previous Newsletter and wish to take the opportunity here to formally apologize to the above cavers for the earlier statement. We hope that in the future such statements, reflecting as they do on the character and qualifications of other cavers, will be carefully verified before they see print.)

EDITORIAL

With this issue of the AMCS Newsletter it is undergoing its latest rebirth. Hopefully, this issue marks a true beginning of a consistent series of newsletters. Problems have plagued the Newsletter for several years, with the unfortunate result that much information which should have been made available for all cavers working in México has lain fallow in the AMCS files or else has never been submitted for publication. The AMCS Membership Committee Newsletter has done an admirable job of keeping cavers abreast with the more significant caving by Austin area cavers, but a consistent publication policy by the regular Newsletter is desperately needed if the work which is being done in México is to be recorded and if duplication of effort by cavers working in México is to be avoided.

A complete reorganization of the AMCS Publication Staff is in progress and this should bring about a more efficient and productive organization. Andy Grubbs has consented to be the new AMCS Secretary. All letters, including subscriptions, should be addressed to him at the address given for him in the back of the front cover. He has promised to be faithful in answering correspondence and in seeing that members receive their newsletters *on time*—that is, as soon as they are published and not several years later.

Although the present and the following issues are being edited by the old editors, James Reddell and Bill Elliott, the reorganized staff will shortly include special editors who will be responsible for putting together a single issue. This will prevent one or two people from becoming tired of the Newsletter and the hassles involved in getting material together and in shape for publication. James Reddell will probably remain an overall production editor for the remainder of Volume V.

With this issue we are initiating a new concept in content for the Newsletters. At least until all of the backlog of material is published each issue of the Newsletter will be oriented largely towards a single area in México. The present issue concentrates on the caves of the general north and west of México. The following issue (Vol. V, No. 3) will emphasize the caves of the Ahuacatlán-Jalpan region. Future issues will concentrate on the caves of the Soledad-Tequila areas, the Aquismón area, and the El Barretal area. This is NOT to say that if we receive a current trip report or article outside of these areas that they will be held until they belong in a specific report. We promise to publish all material in the next issue to be published following receipt of that material. In fact, it is important that current material be sent to us, so that other people working in México can know what has been found.

We realize that to once again call on Mexican cavers to trust us is to ask a lot—and we will understand the scepticism of those whose issues have been delayed for years or never received, whose material has languished in the files for years or never been published, and whose letters have gone unanswered. But, we believe that we are going to produce a good newsletter and one that will come out promptly and that will be in the hands of the members immediately upon publication.

The present Newsletter has a lot going for it. In addition to Bill Elliott and myself, it has the active support of the Austin caving community—including Andy Grubbs, Bill Russell, Peter Sprouse, Bill Stone, and many others.

And so, once again, we ask the support of the caving community—and once again, we say that we will try to provide all Mexican cavers with a valuable publication.

—James Reddell

TRIP REPORTS

Date: 4-7 July 1968

Destination: La Cueva del Alamo, Chihuahua

Persons: Richard L. Breisch, Tom Meador, Lee H. Skinner

Reported by: Tom Meador, Eldorado, Texas

4 July—We entered México at Zaragoza during a light rain, and drove down Route 2 to El Porvenir. The pavement ends at El Porvenir and we found it necessary to switch the jeep over to 4-wheel drive because of numerous flooded arroyos. Most of the afternoon was spent hunting a route to Rancho de Marffn. Also an unsuccessful search was made for La Cueva de la Pluma Colorado. After numerous detours up canyon beds we found the right canyon and drove up it to a pass in the mountains. Late in the afternoon we reached the ranch house. Señor Marffn was in Chihuahua, but Señora Marffn gave us permission to cross their ranch to La Cueva del Alamo. She also gave us permission to camp in some dugouts, which we had passed on the way to the ranch house. During the night a heavy rain fell soaking our bedding and flooding Lee out of one of the dugouts.

5 July—Next morning the jeep wouldn't start. After working on the motor for some time, pushing it down a hill, etc., we were about to start walking out when it was decided to try starting it "just one more time." It started! We drove back over the pass and turned up the main canyon. After letting down several fences, rebuilding them, and going up numerous side canyons in search of the right road we decided to return to El Porvenir for a guide. Reaching El Porvenir in the late afternoon we inquired about Quirino who had guided Lee to La Cueva del Alamo 4 years earlier but were told that he had been jailed on the other side as a *mojado*. Benito Levario was persuaded to go with us as a guide. It was decided to cross back over to Fahens as we were running low on gas and needed some more groceries. We left Benito Levario on the south side of the Río while in Fabens. When we returned to México we were denied entry as we did not have tourist cards. We were able to give Benito Levario his bed roll and made arrangements to meet him at his home in El Porvenir the next morning. Then we drove to Lee's apartment in El Paso for the night.

6 July—Next morning we obtained tourist cards and car import papers in Ciudad Juárez. Sections of the city were flooded and more rain was falling. We drove to El Porvenir and picked up Benito Levario. Returning to an airport south of Guadalupe, where we turned off the paved road and put Lee's super wagoner in 4-wheel drive. We drove south over a pass in the Sierra de Guadalupe and out onto a plain beyond. We entered the Sierra de Alamos through a small canyon and drove up it to its head and over a pass to the headquarters of Rancho del Alamo which is owned by Señor Enrique Domínguez. No one was at home so Benito Levario wrote a letter to Señor Domínguez explaining the purpose of our trip and left it at the ranch house. After eating supper we hiked up the mountain and along a ledge to the entrance of La Cueva del Alamo.

La Cueva del Alamo is formed along bedding planes which dip 25 degrees to the northwest. The ceiling height ranges from 0.15 to 1.52 meters and the average passage width is approximately 1.52 to 3.05 meters. We started mapping at the entrance of the cave and after explaining to Benito Levario that we didn't need string in order to find our way out. We had surveyed 160.48 meters, reaching a depth of 52.40 meters, when we stopped near midnight for a bite to eat. Lee pushed ahead in search of the 38.10 centimeter gypsum flowers which he had seen during the 1964 trip (Rodes, Douglass, "Mexican caves," *Southwestern Cavers*, 3:27-28, April 1964). Later he returned to report that he had found a 12.70 cm gypsum flower, but had been unable to locate the large ones. It was decided to stop surveying at this point as the cave passage was opening into a complex maze. So we started crawling out of the cave. On the way out it was necessary to enlarge a crawlway for one of the larger members of the party. We hiked along the ledge and down the mountainside, reaching camp at 1 A.M.

7 July—After an early breakfast we drove back to El Porvenir to leave Benito Levario at his home. We then made another search for La Cueva de la Pluma Colorado but were unsuccessful. So we returned to El Paso, which was flooded by the recent rains.

Date: 25-26 October 1969

Destination: Rancho Agua Caliente, Baja California

Persons: Phil Curtis, Bill Deane, John Ineson, Steve Lopez, John McIntosh, Don Miscowich, and Pat Zedalis

Reported by: Bill Deane

According to rumors a fabulous cave filled with formations is located in Baja California in a marble outcropping near some hot springs. During a weekend in October seven cavers made a trip into Baja to locate this cave. The search was concentrated near the town of Guadalupe which is located 47.6 miles south of the border on the road between Tecate and Ensenada.

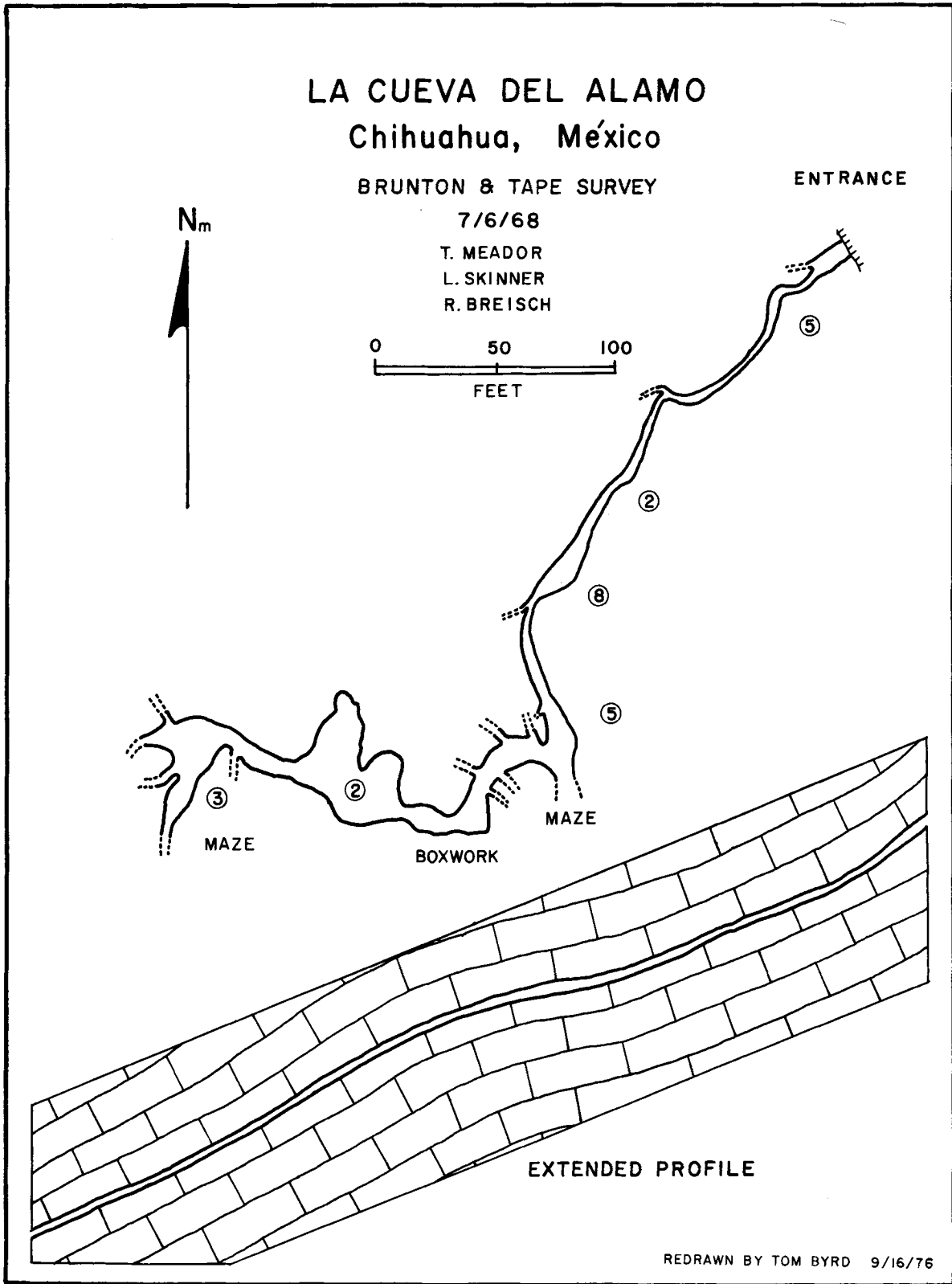
The search led the cavers to the Rancho Agua Caliente which is located at the entrance of a steeply walled canyon of marble and granite. Two sets of hot springs discharge enough water to turn the canyon into an oasis.

A discussion with the ranch owner revealed that the cave did exist and was on his property. However, it had been very badly vandalized and he had permanently sealed the entrance shut. The cave had been discovered, explored, vandalized, and closed in a matter of three or four years.

Very discouraged over this setback the cavers checked out a second lead in the same area. Two caves were located in a marble outcropping near the top of a wet weather waterfall above the oasis canyon.

Cueva de Rancho Agua Caliente No. 1 has two entrances and consists of a room 6 ft high, 4 ft wide, and 15 ft long. A crawl 4 ft long leads to a 9 ft pit which has a 4 ft long crawl at the bottom.

Cueva de Rancho Agua Caliente No. 2 has a 20 ft deep sloping pit-like entrance which apparently ends in a dirt and rock choke. Air was blowing out of the choke and an hour long digging effort broke into a tight crawlway. Bill Deane and Pat Zedalis forced their way through the crawl and were able to explore about 200 ft of virgin cave having many formations.



Date: 23-25 December 1969

Destination: Rancho de El Refugio, Tamaulipas

Persons: Dennis Barnes, Bill Deane, Walt Rosenthal, John Smyre, Pete Strickland, Joe Sumbera, and Ron Zawislak

Reported by: Bill Deane

Our original plan had been to hike up to a deep sôtano located in the center of the Sierra de El Abra near the site of an airplane crash. A trail led to a small shrine at the crash site and from there it was only a few hundred feet to the sôtano. To our dismay we found that our English speaking guide had left on his annual Christmas vacation. Efforts to obtain a satisfactory second guide failed so we elected to go to our back-up destination, the Sôtano de El Regugio, located in the Sierra de Guatemala (see road log, AMCS Bulletin 1, p. 45). We planned to map the pit and hoped to photograph some of the beautiful giant parrots which John Fish said lived in it.

The road from Ocampo to the Rancho de El Refugio leaves much to be desired. Ron's 4-wheel drive Chevy Blazer had no trouble negotiating the ruts, rocks, and steep grades. Unfortunately Pete's Volkswagen Bus did not fare as well and it became necessary to leave it at a small village about 4 miles from the rancho.

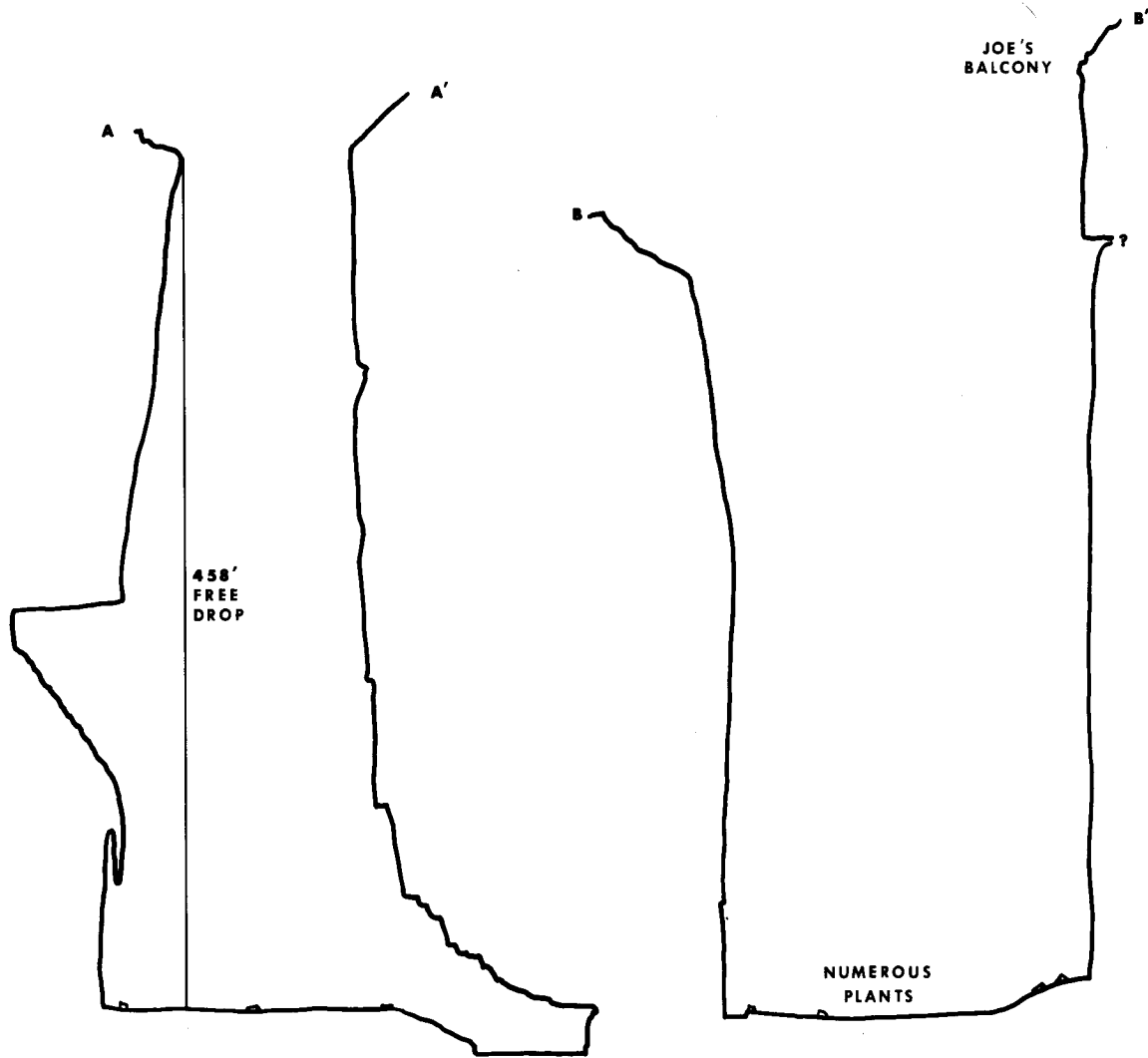
The rancho is located in a large semi-dolina a mile long and a couple of hundred yards wide. We were informed that the jéfe would not be home until the next morning and that only he could give permission to explore the sôtano. The next morning the jéfe told us the sôtano was not on his property and that permission must be obtained from the Presidente at Ocampo. Ron (tightjawed) and Walt (laughing) drove back to Ocampo and obtained the Presidente's permission. The round trip of fifty miles took 4 hours. The letter of permission was given to the jéfe and we proceeded on to the sôtano.

The large impressive entrance is 100 ft wide by 200 ft long and is located on the side of an arroyo about a mile from the rancho. We rigged the rope on the southeastern edge and Ron, Walt, and Pete rappelled in just before sunset on Christmas eve. Walt spent the night on the bottom.

Christmas morning we re-rigged the rope at a spot picked out by Pete which gave a free drop to the bottom. We measured the depth at this point with a steel wire to be 458 ft. High on the western rim Joe cut the brush away, opening up a balcony with a splendid view of the entire pit and arroyo. From the balcony a free drop of over 500 ft should be possible. The drop from the eastern rim is only about 400 ft, half of which is against the wall.

The bottom measures 215 ft by 165 ft and is composed of packed dirt and small rocks. The majority of the bottom is covered with plants ranging up to 18 inches in height. The lowest level is a barren mud flat. A very impressive feature is the giant flowstone formation in the southeast corner which is 25 ft high and 50 ft long (see map, page 56).

The most outstanding feature of the sôtano are the rainbow-colored macaws which live in it. For 2 days the birds circled high above the pit afraid to enter. They finally flew in on the evening of Christmas day presenting a beautiful spectacle. They are 2 ft long with a wing span of 3 ft. They have bright red and green tail feathers, an orange beak and their wings and body are every imaginable hue of yellow, green, and blue. Watching these birds in flight was the high point of the entire trip. We learned that locally the pit was named for the macaws and was called the Sôtano de los Guacamayos, rather than being named after the Rancho de El Refugio. About 200 small green parrots also live in the pit. We were amazed at the virtual absence of small animals such as salamanders and insects.

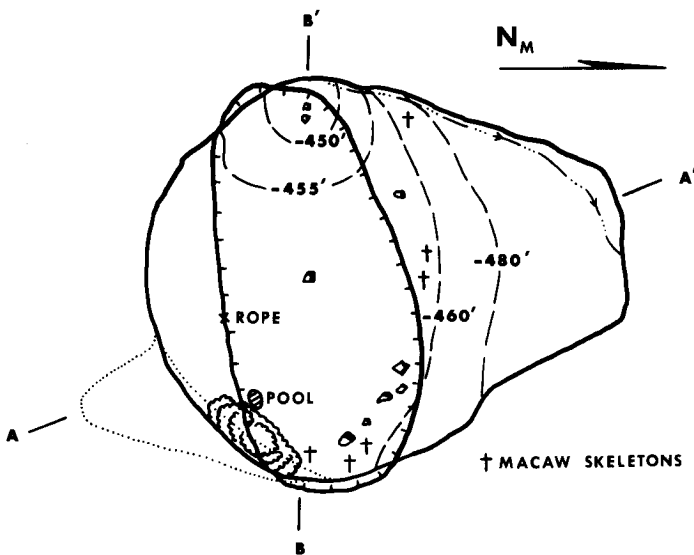


SÓTANO de los GUACAMAYOS

MUNICIPIO DE OCAMPO
TAMAULIPAS, MEXICO

SURVEYED 25 DEC 69 BY
D. BARNES, B. DEANE, W. ROSENTHAL,
J. SMYRE, P. STRICKLAND, J. SUMBERA,
R. ZAWISLAK

DRAFTED BY B. DEANE



Date: 12 May to 1 June 1974

Destination: Aquismón area (S. L. P.) and Ahuacatlán-Jalpan area (Querétaro)

Persons: Bert Ammann, Rick Davis, Doug Dotson, Chuck Elliott, Don Evans, Al Goldey, Steve Lebel, and Terry McClanathan

Reported by: Bert Ammann and Chuck Elliott

12 May—The entire group had scheduled to meet in Hagerstown, Maryland, at 8:00 p.m.; a little after 8 the convoy of three automobiles and a trailer left for México.

13 May—The day was spent in driving with the only noteworthy incident occurring that night when the group just missed being involved in a truck accident. After lending help, the trip continued after having been delayed about two hours.

14 May—Encountering no further mishaps we arrived in Laredo, Texas. The water supply was refilled, Mexican auto insurance was purchased, and our dollars changed into pesos; when all these things were completed, we went to the customs building to be cleared to enter the country. Some of our group ran into trouble in crossing—but after some discussion and the payment of certain “gratuities,” we were allowed to enter México and continue on our way. It was agreed that if any vehicle became separated from the others we would meet that night in Cd. Victoria; an arrangement that later proved beneficial because we arrived in Monterrey at evening rush hour. The congested confusing traffic conditions caused us to be separated but hours later we rejoined in Cd. Victoria and slept on the apron of a Pemex gas station.

15 May—We arrived at Cueva de El Abra. Within our group were two cavers (Bert Ammann and Terry McClanathan) who had been to México previously, so they were serving as guides and trip organizers. The drop had been estimated from earlier trips to be about 400 ft, so we decided to rig two 600’s down the skylight. Two members of the group entered the horizontal entrance that intersects the large dome with the skylight at the top. At the end of the horizontal passage they rigged the small (about 90 ft) sloping drop to the dome’s floor. Everyone did the drop; the only difficulty encountered at El Abra was the extreme heat the people on top had to contend with while carrying up the 600’s and waiting their turn to rappel. The first Mexican cave for most of us was impressive and heightened our interest in seeing more of what we had heard existed in the central mountain area. We then drove to Aquismón, arriving around 9 p.m. Arrangements were made with the local authorities to camp behind the jail and to see “El Presidente” in the morning to obtain a letter of permission to do Sótano de las Golondrinas and Sótano de Cepilla. While searching for burros for the trip we met Señor Pepe López, a local resident who had lived in the U. S. many years ago but still spoke good English. Señor López was very hospitable to the group and offered shelter and sleeping areas to us when it appeared to be about to rain. Having no success renting burros we camped for the night, hoping to be more successful the next day.

16 May—Rising early to start the trip and avoid the sun’s heat, we were told that “El Presidente” would not be in today, but we could wait for his secretary. While waiting we hired three Mexicans who were willing to carry what supplies and rope we couldn’t fit on our backpacks. The entire four day trip was agreed to for the price of 400 pesos, so when the secretary arrived and gave us our letter the group immediately started the hike. Unfortunately due to the lateness of the secretary, the majority of the hike took place during the heat of the day, making many of us glad we had started preparing ourselves physically months earlier for this trip. After about 7-1/2 hrs of hiking we arrived at Golondrinas; we rigged the 1500 ft Blue-water and retired for the evening—hoping to get an early start into the pit the next morning. Two of the Mexicans decided to return home and come back the next day; two young boys

who we had hired to come along (mostly because they had asked to go along) and one Mexican called Pedro decided to remain in camp. After everyone had eaten we prepared camp. Most of us had constructed jungle hammocks to sleep in while two other members had brought tents. That night it rained extremely hard; the Mexicans abandoned the blankets given them for the cover of the tents. Unfortunately for the rest of the group, the hammocks did not prove to be completely waterproof, so that the next morning the hammock people were wet and very cold.

17 May—Although we were cold and wet, all were eager to start descending the pit. The entrance area was shrouded in mist and a cloud of vapor was hanging in the top 300 to 400 ft of the pit, obliterating the view of the bottom. It was agreed that Terry would go down first and that no one would exceed his descent rate. Bert would descend last so he could help everyone over the edge. (Bert and Terry had done Golondrinas previously so they knew what to expect.) Everyone in preparation for Golondrinas had done drops in excess of 600 ft, everyone except Chuck who agreed to remain on top for safety reasons and to take pictures of the descents. The descents were made in the following orders and times: 1) Terry, 22 min.; 2) Doug, 26 min.; 3) Al, 25 min.; 4) Don, 36 min.; 5) Rick, 25 min.; 6) Steve, 18 min.; and 7) Bert, 26 min. As descents were made, the morning's rain clouds were replaced by sun, which burned off the fog in the pit. Because of the time of the year and the latitude of the pit, the sun was hitting the floor of the pit when the last person made his descent—causing a very spectacular illumination of the pit. After some exploring and photographs on the bottom, climbs were made in the following order (climbing tandem): 1) Doug and Terry in 1 hr. and 30 min.; 2) Rick and Don in 1 hour and 10 min.; 3) Al and Steve in 2 hrs. and lastly Bert in 40 minutes. The rope was derigged and we returned to camp where we got rained on that night harder than the previous evening.

18 May—Two members who did not want to walk to Tamapatz took off and returned to Aquismón. The rest of the group went on to Tamapatz where they rigged Sótano de Cepilla. The pit was covered on the edges by thick vegetation and poison ivy type plants. Bert descended first and reported the pit as being very impressive. The drop bells out from about 30 ft in diameter to 250 by 300 ft in diameter. The drop was estimated to be about 414 ft. There is a lake on the low side of the steeply sloped breakdown floor. There is also a waterfall which is very impressive because it is visible in its entirety without a light. The pit was very well lighted by reflected light from the wall, considering the enormous size of the floor relative to the size of the entrance. The only problem encountered in doing Cepilla was the spin on the rope during the climb out (a 600 ft piece of Goldline was used).

19 May—We got up early to walk back to Aquismón. After arriving in town the sheriff offered us a shower, which everyone accepted with pleasure. After the bath we paid the porters, did some shopping, and headed south of Highway 85 for Ayutla. We discovered that the town of Ayutla was not on our maps and the authorities in the city of Tamazunchale didn't know where the town was either. So after some searching part of the group decided to go to Tampico rather than on to El Sótano. The rest of us went on, arriving at Ahuacatlán at 3 in the morning. We then hit some horrendous mountains which made night driving rather unnerving. We got a couple of hours sleep about 20 minutes east of Jalpan.

20 May—In the morning we arrived in Jalpan to get gas and directions. We asked a bus driver where Ayutla was; he pointed to a road which went toward Rfo Verde. We went by a sign which said Puerto Ayutla, but saw no roads marked Ayutla. We crossed an impressive highway bridge, and after passing a few more towns arrived in Rfo Verde. Taking on gas and food in Rfo Verde, we headed back in search of Ayutla. We stopped in Puerto Ayutla where we learned that Ayutla was about a half mile back down the road. Before reaching the large highway bridge there is a dirt road that bears off to the left. This road winds down the hillside

and comes out somewhat underneath the highway bridge—this is the town of Ayutla. We arrived in town too late to start the hike to El Sótano but we did bargain for four burros for 300 pesos. The burro dealer, Modesto Ramírez, showed us Ed Yarbrough's trip report on El Sótano; it seems Ramírez had gotten a copy of the article and was very proud of it. We spent the rest of the evening swimming in the river and turned-in hoping to get an early start for El Sótano.

21 May—Ramírez got things moving early. Everything went on the burros except our cameras and cartridge belts with canteens and first aid supplies. Everything went well and we crested the first mountain range and had our first look at El Sótano after 3 hours of walking. Four hours later we were sitting, exhausted but happy, under some trees in Puerto el Barro. We were pleased and relieved that the walk had taken only seven hours instead of the anticipated twelve. Al and Bert went over to Rancho el Barro and obtained permission to do El Sótano from the area mayor, a man named Amador. Terry found burros to carry the equipment on to El Sótano the next day.

22 May—The walk from Puerto el Barro was quick and easy, taking about 2 hours. We were left with our gear at the edge of a freshly plowed field about 10 minutes walk from the pit. We regretted not having a machete or huingaro to chop our way around the pit, the vegetation being extremely hostile with razor sharp leaves and spines. About 6 hours were spent scouting for a rig point and rigging the rope. Since there was about an hour of daylight left, Bert decided to rappel in. He was on rappel over 20 minutes and was followed by Doug and then Terry. Al stayed on top and decided to rappel in the next day. It was dark by the time Terry got down so Bert and Doug started up the rope in tandem. When they were about half-way up they heard rocks clattering on the far side of the pit, and began to shout a warning to Terry who was standing below. A shower of rocks crashed into the floor for several seconds and we were relieved when Terry shouted up that he was alright. Bert and Doug reached the lip without further incident and as soon as Terry reached the top, all retired to the camp for food and sleep.

23 May—Four people did El Sótano, and after derigging the rope, we waited a few hours for the Mexicans to show up. Ramón, the man who owned the burros, finally showed up to take our gear back to Puerto el Barro. He told us to dump our garbage in the field by the campsite, but we refused and eventually carried the garbage back to el Barro on our backs.

24 May—Bert and Doug hiked back to Ayutla via the gorge and discovered that what Ramón had described as being an easy 2-1/2 hour walk turned out to be an exhausting 5 hour hike over very rough terrain (this route is definitely not recommended to anyone thinking of doing El Sótano). The others walked to Ayutla over the mountain in about the same amount of time. When the Mexicans arrived, there was some disparity regarding the fee to be paid for their services. The agreement was as follows: transport of our gear from Puerto el Barro to El Sótano, back to el Barro and from there to Ayutla, all for 700 pesos, but only if four burros were needed all the time during the three days. Since 100 pounds of water and 40 pounds of food were consumed at the pit, the load for the return trip was much lighter. Ramón used only 3 animals from El Sótano de Ayutla. One of these animals was a mule; Ramón informed us that in México a mule equals 2 burros, so technically we had four animals as per agreement. In the end we paid the price of 700 pesos and departed Ayutla to camp in the mountains between Jalpan and Ahuacatlán.

25 May—We did Sótano del Pozo, a 376 ft freefall pit about 0.8 miles west of Ahuacatlán. While doing the pit some unusual tarantulas were obtained off the cave walls along with a species of flatworm. The tarantulas were later identified by John Prentice as probably being *Schizopelma stygia* (Gertsch); the species is described in AMCS Bull., 5:142. After doing Pozo we drove back to Aquismón to meet the rest of our group that had gone to Tampico. We drove

to Valles to eat some good Mexican food and then went on to Estación Tamuñ where we hoped to camp and do the 503 ft skylight drop at Ventana Jabalf the next morning. While in Valles we met a group of AMCS cavers who were doing research and survey work in the area. Some of our members (Steve, Rick, and Don) went to a cave with one of the AMCS group and had learned where they were staying. After talking for some time and examining the tarantulas with John Prentice and William Elliott we headed for Estación Tamuñ, where we camped late that night.

26 May—After a couple of false starts on the wrong roads we finally found the road (?) to Ventana Jabalf. The road turned out to be a washed-out creek bed that played havoc with our automobiles, but none were seriously damaged. After driving as far as we could, we still had about a two hour hike through the jungle to the cave. We walked up to the entrance and found the cave very impressive. To reach the skylight a rough, thickly vegetated steep slope had to be climbed, and once climbed the skylight is very easily missed, so after a couple of hours searching for a way up the slope and for the skylight, it was decided to explore the cave rather than risk being caught by darkness wandering around in the jungle. The sheer cavern size of Ventana Jabalf more than made up for the missed rappel. After hiking back to the cars and driving to Valles, we drove west toward San Luis Potosí. About an hour out of town we camped for the night.

27 May—Drove to San Luis Potosí; along the way Steve, Terry, and Rick did Sótano de los Lobos.

28 May—Spent the morning in Matehuala and then headed north on México 57 to San Roberto, then east over the mountains to Linares (this route passes through some very impressive valleys). We then drove from Linares to Montemorelos on Rte. 85, then northeast to Reynosa—crossed the border about 9:00 p.m.

29 May to 1 June—The group traveled back to Maryland via Chattanooga, Tennessee, where some of the group did Neversink, Valhalla, and the 510 ft at Ellison's, all courtesy of Buddy Lane.

Date: 22 November to 1 December 1974

Destination: Ejido Purificación, Grutas de California, and Rancho Nuevo Area, Tamps.-N. L.

Persons: Jim McLane, Bill Sherbourne, Tom Iliffe, Ralph Batche, Jeff Ethridge, Theresa and Mike Connolly

Reported by: Mike Connolly

22 November—Everyone got together at Bill's house Friday evening and after some delay wondering if Jeff's van could make it, the trip got underway in two vehicles. Jeff's van ran out of gas somewhere before Brownsville so everyone spent the night beside the highway.

23 November—Crossed border without difficulty. Jeff's van had carburetor problems, but everyone made it to Cd. Victoria by nightfall. Spent the night on the Rfo Purificación near the Pan American Highway.

24 November—Weather turned bad in the morning as a very strong norther blew through the area. Jeff's van was left at El Carmen and everyone piled into Bill's van and onto motorbikes for the trip into the mountains. The weather became colder and it began to rain as the ascent into the high country continued. By the time they reached Ejido Purificación the bike riders were thoroughly drenched and sought refuge at Sr. Grimaldo's house. A short conversation with Sr. Grimaldo indicated that no cavers had been by for quite a time and he provided several new leads. It was decided to continue on to Corrales despite the intolerable conditions and the group took about three hours to cover the nine miles or so. Everyone camped in the big

field at Corrales that night.

25 November—The rain had stopped but it was miserably cold and much time was spent around the campfire trying to stay warm. All agreed that it would be warm in the caves so everyone but Theresa went to do Cueva del Brinco. Most of the group did the entire cave but chickened out on exploring the lower levels due to cold water. The group also avoided the most delicate areas of the helictite passage after noting evidence of recent visits by locals whose curiosity has probably been aroused by the visits of cavers. On our first visit to this area in 1973 we were shocked by the unrestrained vandalism on the part of the local people when guiding us through Cueva des Montes. I think it wise to avoid revealing new cave locations or the existence of well-decorated passage to the townspeople. After leaving the cave the rest of the day was spent checking pits and unsuccessfully trying to locate Cueva del Borrego. The night was colder than the one before.

26 November—A guide was found to locate Cueva del Borrego so that a quick survey could be made. The only problem was that Tom pushed a lead into a new passage. After a break for siesta and supper, Tom, Mike, Bill, and Ralph returned that evening to finish surveying. Upon leaving the cave around 12 PM everyone noted how COLD it was outside.

27 November—After standing around the morning campfire until it was warm enough for the human brain to function everyone broke camp and set out for Rancho Nuevo. Bill's van rolled into Rancho Nuevo early in the afternoon and someone noticed a leak underneath. While Bill attempted to save some of the antifreeze from his radiator everyone else spread out to visit the sinks and pits around town. Later it was decided not to spend the night at Rancho Nuevo due to its elevation (about 9,000 ft) so the van limped back down the road and everyone camped near La Cueva. La Cueva is the local name for a group of buildings at one time associated with a mine in the area. After much manipulation with carbide lights, Swedish gas stoves, and homemade solder (Lead Ore), the radiator was repaired with fabric reinforced epoxy glue.

28 November—Thanksgiving—All of our water jugs (1 & 1-1/2 gallon) were frozen *solid* when we mustered enough courage to crawl out of the sack. During the usual aimless huddling about the fire an old Mexican joined us and explained that he was living in the nearby buildings and working a mine. Most of the group took him up on an offer to tour his workings which proved quite interesting. Afterwards things got organized and everyone went to visit Grutas de California. Several cavers spent some time hiking about trying to locate Nueva California which is reported to be nearby and even larger than California. They were unsuccessful, however, and everyone returned to camp for Thanksgiving supper. Shortly after supper Mike Padgett and several PASS cavers rolled into camp. They had come down for the Thanksgiving weekend and planned to do California.

29 November—The Houston group got everything together and started for Revilla with the intention of checking leads near Yerba Buena while the PASS group went to do California. At the turnoff to Yerba Buena part of the group continued in the van to Revilla where they checked several small caves near town. The bike riders reached Yerba Buena but were unable to locate anyone knowledgeable of the caves in the area. After an hour of frustration they set out to rejoin the others at Revilla. It was decided to spend the night at Tinaja due to its lower elevation. Several small caves near town were checked but found to be insignificant.

30 November—An old Mexican carrying a spoon showed up for the breakfast campfire with information on caves in the canyon to the west. After thanking him by sharing breakfast everything was made ready for the journey back and the group departed. One of the bikes ran out of gas partway down the mountain and there was more than usual delay before the bike riders caught up with the van. Back in El Carmen the Mexicans were complaining of the severe frost that had wiped out their crops. Everyone but Jeff gladly spent the night in the hotel in

Cd. Victoria. Jeff preferred sleeping in his van in the hotel parking lot.

31 November—Both vans headed back for Houston and all arrived eventually in one or more pieces.

Date: 7-9 October 1972

Destination: Galeana, N. L.

Persons: Billy Campbell, Jim McLane, Wayne Saunders, Bill Sherbourne, Rick Sauter, Mike Connolly

Reported by: Mike Connolly

The objective of this trip was to check out several caves in the mountains about 15 miles north of Galeana. The local people reported caves in this area near a town called La Joya. These reports proved to be accurate with one of the caves consisting of two, thirty-foot drops to water and a small lake. It was decided to call this pit Pozo de la Ropa, due to the suit of clothes found at the bottom (no bones).

The other cave explored begins with a stooping horizontal passage for about 100 ft. A 40 ft drop is then encountered, which leads into a passage running at right angles to the first. This runs into a series of stooping and crawling passages, winding back and forth for a considerable distance. In all, several hundred feet of passage were explored. It is planned to return at a future date for surveying. With no local name, the cave was named Cueva Sinuosa.

Date: December 1972

Persons: Jim W. Gordon, Jack W. Hart, Bill Horn, Anne Knox, Marion O. Smith, David Stidham, Doug Strait, David Teal, B. C. "Tommy" Thompson, Ted Wilson, and Jim Youmans.

Destination: Ayutla and Ahuacatlán, Querétaro

Night of December 10-11—People in three vehicles congregated at the bridge over the Río Conca near Ayutla. Doug Straig (Ga.), Anne Knox (Ga.), and Bill Horn (Pa.) arrived about 11 P.M.; Marion O. Smith (Ga.), Jim W. Gordon (Ga.), David Stidham (Tenn.), and Ted Wilson (Ind.) about 1 A.M.; and Jim Youmans (Ga.), Jack W. Hart (Ga.), B. C. "Tommy" Thompson (Ala.), and David Teal (Ala.) about 6 A.M.

December 11—Plans fell through to acquire burros to carry gear to Rancho de Barro so the day was spent as a reorganization and rest day by some and as a "breaking-in" walk by others. Wilson, Stidham, Strait, Horn, Knox, Smith, and Gordon spent 3-1/2 hours walking on the mountain north of the village of La Purisma searching in vain for two reported pits.

December 12—A guide and seven burros were obtained and the hike was made to Rancho de Barro. Permission was given by Judge Gregorio Gonzalez's son Guadalupe to camp in the school and schoolyard. Arrangements were made with him for pack animals to take the gear up to El Sótano.

December 13—The last leg of the journey to El Sótano was made by 11:30 A.M. and the pit was rigged a couple of hours later. The drop rigged was probably the 1,181-footer done by the Texans on the first descent. Three people did the drop: Smith, Teal, and Thompson.

December 14—Ten descents and ascents of El Sótano were made in this order: Horn, Youmans, Stidham, Gordon, Wilson, Knox, Strait, Hart, Thompson (2nd descent), and Smith (2nd descent). Teal, Thompson, and Smith earlier searched unsuccessfully for Craig Bittinger's deep crack in rocky brush near the campground, finding a 12-13 ft deep, 10 ft long "cave" with

a mummified cow at one end and hundreds of black granddaddy longlegs-type spiders at the other. At 1:30 P.M. it was noted that the temperature at the top of El Sótano was 87° F.

December 15—It drizzled rain in the morning and was generally cold and foggy. De-rigging El Sótano was greatly delayed because the rope got snagged around a tree on the bottom. Strait made the descent (2nd descent) and untangled it. Finally by 3 P.M. the pit was de-rigged and camp broken. Gonzalez arrived with the burros and the group returned to Rancho de Barro. At 3:30 P.M. the temperature at camp was 38° F.

December 16—All members of the group returned to Ayutla. Gordon, Wilson, Knox, Thompson, Teal, and Strait stayed with the burros and went over the mountain pass. The rest made an interesting walk through Cañón de Ayutla, “checking” a couple of horizontal caves along the way. Camp was again made at the bridge. The total cost for guides and animals was 614 pesos (230 at Barro, and 384 at Ayutla).

December 17—Operations were shifted to the Ahuacatlán (Querétaro) area. Dr. John P. Sevenair of Louisiana was added to the group near Jalpan. No burros were available in Ahuacatlán so it was decided to physically carry the 1500 ft Bluewater rope up the mountain along with full backpacks. In time there were three groups instead of just one. Thompson, Youmans, Hart, Wilson, Stidham, Strait, and Horn got ahead with the rope. Not understanding that they were supposed to turn to the right once the mountain top was reached, they carried the rope down the other side of the mountain and an hour’s walk past the village of Guilotla before realizing their mistake. They turned around and spent the night in the schoolhouse at Guilotla. Gordon, Teal, Knox, and Smith spent the night in one two-man tent next to the large dolina near Sotanito de Ahuacatlán, and Dr. Sevenair spent the night by himself down on the main trail.

December 18—The group re-united and by 3 P.M. rigged the Sotanito. Then three two-man teams took their turns bottoming the 946 ft tube-like second drop: Hart and Youmans, Stidham and Thompson, and Wilson and Smith. The rest set up camp next to the entrance. The last person was out of the pit by 3:30 A.M.

December 19—David Teal bottom the Sotanito early in the morning and by 11 A.M. he, Youmans, Thompson, and Hart left for Aquismón. During the afternoon the Sotanito was de-rigged and the 1500 ft rope was hauled to 420 ft Sótano de Aguila. Strait, Horn, Knox, Sevenair, Smith, Stidham, and Wilson made the drop and by 6:15 P.M. returned to camp. Since food and water were almost exhausted it was decided that if any other pits were to be done in the area it had to be that night. So at 7:30 P.M., after supper, the rope was transported around the large dolina to Macho del Rey where Smith, Strait, Stidham, and Horn did the 300 ft and 348 ft drops, and Knox did the 300 ft drop. A weary crew returned to camp at 3:45 A.M.

December 20—The group lugged the rope and all other equipment off the mountain and returned to Ahuacatlán. There, after a much-needed meal, the group dispersed for hotels in Ciudad de Valles. Along the way Smith and Stidham did roadside 376 ft Sótano de Pozo, and most of the others washed in the Río Huichihuayán near Xilitla. That night many of the group ate at the La Condesa in Valles where Texas cavers Neal Morris and Barbara Vinson, and F.R.O.G. (S. Ala.) caver Ken Branson happened to be. They had just returned from the El Abra where they had located an estimated 600 ft pit, Sótano de los Coati Mundis. Meanwhile Youmans and crew hiked to Sótano de las Golondrinas.

December 21—More Texans (Dr. Stanley, Steven, and Craig Bittinger and others) were met in the La Condesa for breakfast. They soon left to check out a pit near La Florida. Wilson returned south by bus to the Xilitla turnoff to meet his wife; Youmans and crew did Golondrinas, and the rest headed north.

December 22—Strait, Knox, Horn, and Sevenair visited Grutas de Quintero and Cueva del Abra south of Mante; Smith, Gordon, and Stidham visited Pozo de Gavilán near Galeana; and Hart, Youmans, Thompson, and Teal walked back to Aquismón. Then all but Dr. Sevenair returned to the States.

Date: 5-9 December 1974

Destination: Salto de Agua, San Luis Potosí

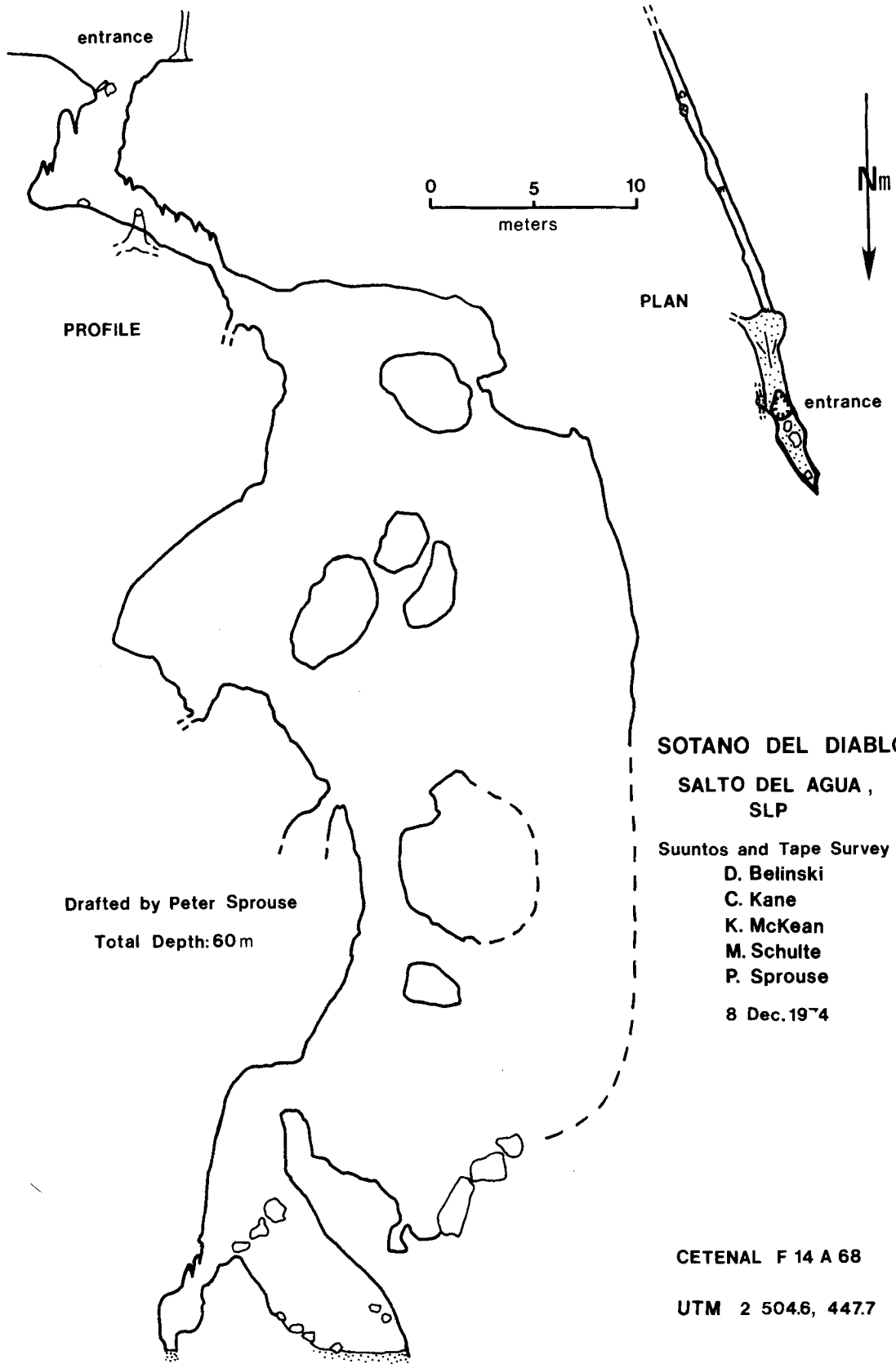
Persons: Dave Belinski, Cindy Kane, Keven McKean, Mike Schulte, Peter Sprouse

Reported by: Peter Sprouse

Following a trip into the Aquismón area, the four of us decided to check out some named map leads northwest of Salto del Agua, S.L.P. Picking up Dave in Los Sabinos, we drove to Ojo de Agua de Tierra Nueva and camped. The next morning (December 6th) we secured permission from the town Juárez and obtained a guide to our first objective, a sink named “Hoya el Agua Escondida” on the topo map. After a few hours on vague, pinolillo infested trails we crested the ridge of the Sierra Ojo de Agua at a small sink named Hoya el Tigre, according to our guide. It did not appear on the map (UTM 2 509.8, 445.8) and it contained only a few tiny dirt collapse holes. Continuing a bit further west through a pleasant oak forest we eventually came to the sink at Hoya el Agua Escondida. It was a sheer-walled sink 15 m wide and deep and contained no passage or water. So we returned to Ojo de Agua de Tierra Nueva. The following day our guide failed to meet us as planned, having apparently gotten quite *borracho* the night before on the wages we had paid him. So we elected to find our own way up to our next destination, Hoya El Diablo, using the topographic map.

About 5 km south of our previous hike, this climb was quite miserable and a constant uphill battle against agave and loose karren. Halfway up the ridge a small-mouthed pit (25 m?) blowing air was located and flagged but not descended. Finally topping the ridge, we found the Hoya to be a wide, gently sloping dolina 1/2 km across. To our disappointment the large pit in the middle of it we had envisioned did not materialize: only an open oak wood uncut by any arroyos. The next day (Dec. 8) we located a small pit (5 m) to the west that didn't go, and another to the east that did. It appeared promising as the entrance pit (6 m) blew air, so we surveyed in and found ourselves in a well decorated room that sloped into a long canyon pit, narrow and deep. Our survey ended at -60 m when the fissure became plugged with dirt fill. The cave was named Sótano del Diablo (see map), after the Hoya. Another entrance just to the south was partially explored to a fissure that probably connects, which may account for the air movement at the entrance to Sótano del Diablo.

The following day turned wet and miserable as we headed due east off the mountain. We paused not in our retreat to investigate several very interesting collapse entrances halfway down the steep slope. This slope of the sierra just north of Cañón el Tinajeño looks promising and ought to be investigated someday.



PROFILE

PLAN

Drafted by Peter Sprouse
Total Depth: 60m

**SOTANO DEL DIABLO
SALTO DEL AGUA ,
SLP**

Suuntos and Tape Survey by
D. Belinski
C. Kane
K. McKean
M. Schulte
P. Sprouse
8 Dec. 1974

CETENAL F 14 A 68

UTM 2 504.6, 447.7

ARTICLES

VISITS TO SOME CAVE AND KARST BIOLOGY LOCALITIES IN EL SALVADOR AND MEXICO IN 1971

by Stewart B. Peck

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In June and July, 1971, I had the opportunity to make some observations on caves and cave faunas in El Salvador and México. The field work was generally aimed at zoogeographic and taxonomic studies of upland forest beetles, and time was spent mostly in the states of Oaxaca and Durango. Only cave-related observations will be reported here. During the full field trip I was accompanied by Dr. H. F. Howden, Department of Biology, Carleton University, and in México by Dr. D. F. Bright, Agriculture Canada, Entomology Research Institute, Ottawa. Some of the sites visited on this trip I had previously visited in 1969 (reported in AMCS News., 4:63-70).

El Salvador. Most of our field localities here have already been described (1972, *Coleopterists Bulletin*, 26:63-72). Several years ago Russell Gurnee (in the *NSS News*, I believe) mentioned a lava tube region in this country. Large lava flows, one to two thousand years old occur 8 km S of Metapán, and the road to Cerro Verde passes through an older lava flow area. Both these regions may have lava tubes.

A 10 m long crawl cave was found at the base of a cliff 40 ft from the north side of the highway, a few km east of La Libertad. The cave seems to be in volcanic strata, and to have been formed by wave cutting along a joint, at a time of higher sea level. The cave was occupied by vampire bats, but the fauna of their guano consisted only of fly larvae.

Limestone caves in El Salvador will be few if there are any at all. The only limestone exposed in the country is in and at a quarry at Metapán.

MEXICO, Oaxaca, Valle Nacional Road. Highway 175 going north from a point a few miles outside of Oaxaca crosses two mountain ranges before entering the lowlands of the Gulf of México at Valle Nacional. In the more northerly of these ranges, closest to Valle Nacional, the road crests at 10,000 ft in a pine and oak forest, 52 mi north of Oaxaca. The region is called Llanos de las Flores. Limestone is abundant here with many sinks and limestone knolls and knobs. I found no actual caves in the sinks I searched, and was unable to find any locals to ask about caves.

From Llanos de las Flores the road eventually descends through many undisturbed forest habitats. But the road paving program in progress during our visit may serve as an attraction for more settlers, resulting in deforestation. One site, 15 mi from Valle Nacional at 4000 ft

yielded interesting arthropod collections in the cloud forest litter, including the only known continental North American terrestrial amphipods, and a blind scorpion of the same genus as those occurring in caves in México. An epigeal *Ptomaphagus* beetle here is the closest known relative of *P. cavernicola* which is widespread in caves in the United States.

Oaxaca, Puerto Angel Road. South of Oaxaca City on highway 175 (going to Puerto Angel) at km post 114, a cave is visible at the roadside on a barren hill slope, at a culvert drain with no. 5.81.1, 7100 ft elevation. This is exactly 7.2 mi S of the S edge of Miahuatlán. In the rocks above the road is a vertical slot which was possible to enter, and to gain access to the cave at the roadside. A breakdown goes deeper, but no other passage was observed. No fauna was found in this relatively dry cave, which must take a lot of roadside drainage in rains.

Oaxaca, Puerto Escondido Road. We were told of a cave lying about 70 km south of Oaxaca City on road 131, going to Puerto Escondido at Río de la Y. This is one of the few places where the road crosses a river. One is to go upstream along a lane about 8 km to a SAG gate and village of San Sebastian Fieste. Go through town, cross the bridge, and park, walk to stream resurgence, and cave mouth is above this. This has been reported with better directions as Grutas de San Sebastian in AMCS Newsletter, 3:70-71.

Querétaro. On Route 120 north of San Juan del Río the highway 12 mi N of Vizarron climbs out of a desert valley into the spectacular limestone mountains at Tejamanil. I checked a cave lead along the road 1/4 mi W of Tejamanil and found it to be shallow, and a small cave with a roadside entrance in a culvert drain a bit above Madroño. A small mine about 2 mi E of Pinal de Amoles at the roadside (in AMCS Bull. 1) that I collected in 1969 was revisited. White terrestrial isopods, collembola, red harvestmen, blind trechine beetles, small white and larger blue millipeds, rhagidiid mites, and a pale snail were collected. One of the millipeds has been described by Shear (1971, Mus. Comp. Zool. Bull., 144:151-352) as *Mexiterpes metallicus*.

Laguna Colorado region, 5500 ft, E of Landa de Matamoros (AMCS Bull., 1:86). I looked into several small caves in the broad limestone valley just to the east of the road crest. Dung baited pitfall traps in sinks took many *Agonum* carabids and some catopid beetles. A *Chirop-terotriton* salamander was found in a 20 ft sink chimney, with a 30 ft deeper shaft at the bottom.

Cueva del Salitre, Xilitla, S.L.P. The cave was visited to find more of the blind *Proptomaphagus* beetles I collected in 1969. None were found, but some other unimportant fauna was collected.

Valle de los Fantasmas, S.L.P. This limestone karst region is at 7500 ft on route 70, 27 mi E of San Luis Potosí. Six *Agonum* carabids were found in a sink bottom. I also set dung baited traps in a sink, and took sink litter for Berlese funnels, but the collections were poor.

Cueva de la Boca, Nuevo León. No phosphate mining activity was evident. Eight eucinetid beetles were found in guano in the twilight zone. In the dark zone, *Agonum*, staphylinid, and *Ptomaphagus* beetles were collected. Guano was not as abundant as formerly, and the large mold shroud over the guano was absent. Centipedes were abundant and no adult crickets were seen. In the small mine to the eastside of the trail below the cave entrance and east of the ore cart track, 11 asellid and 2 cirolanid isopods were collected in the mine water on sticks. It had filled from a stoopway to a hole just big enough to slide into on a soil and pebble slope in only two years. The cirolanids were identified by T. Bowman as *Sphaerolana affinis* Cole and Minckley, known otherwise only from a site 100 miles to the west. The asellid is undescribed, and is one of the few eyeless species known from México.

Chipinque Mesa, Monterrey. The cave at the east end of the field, in which Rusty Norton and I caught the eyeless trechine beetle was visited. The cave had been nearly filled with debris and beer cans since 1969. No fauna of note was found.

**ARCHEOLOGICAL NOTES ON CUEVA DE LAS MANOS AND
CUEVA CERAMICA, SIERRA DE EL ABRA, S. L. P.**

by John W. Greer

In July, 1972, I visited Ventana Jabalf on the east face of the range near Estación Tamuñ. At that time Genaro Cruz, who presently lives by the school at the Mina San Luis turnoff on the road from Estación Tamuñ, guided me to two nearby small horizontal caves containing archeological materials. Although both are nearly beside Jabalf, apparently neither had been reported by AMCS cavers. Since the caves have no local names, new names are presented here: Cueva de las Manos (contains handprints and ceramic sherds) and Cueva Cerámica (contains sherds only). In addition, a Cueva de los Indios (local name) was reported toward the top of the east face, also slightly south of Jabalf and just south of Ladera Blanca (a white scar marks the cave).

Las Manos and Cerámica are located in the Municipio de Tamuñ, San Luis Potosí, 21 km northeast of Cd. Valles and 17 km north-northwest of the town of Tamuñ. They are on the east face of the Sierra de El Abra, about 215 m above the base of the range and 150 m below the ridge top. Their location is readily marked by the large oval entrance to Ventana Jabalf, plainly visible for many miles from the eastern plain and locally known as La Mina San Luis. Both caves are just south of Jabalf and on about the same level, and likewise both face east overlooking the extensive coastal plain.

Cueva de las Manos is about 230 m south of Jabalf and about 45 m higher on the hill than the mine. Cueva Cerámica is about 45 m south of Jabalf and about 18 m above an exceedingly dim trail running from Jabalf to las Manos.

CUEVA DE LAS MANOS

Description. The cave consists of a single, relatively straight, high oval passage 45 m long and averaging 4.5 m wide. Development appears to be phreatic with very little possible vadose enlargement. Presently there is a breccia plug in the oval entrance indicating that the passage at one time was partially blocked. Walls are all limestone with almost no flowstone. The rare formations consist of a few small stalactites and columns and a couple of small soda straws. The almost level dirt floor rises gradually from the entrance to the back. Bats are few and are only in the back room. No other biota was observed. See map, page 66.

Pictographs. Two small rooms contain dark orange negative handprints (the same shade as in Cueva Pinta on the west side of the Sierra de El Abra) on nearly vertical walls. The prints are outlined with a dark, circular homogeneous background dimming toward the edge, indicating a spatter technique utilizing very fine paint evenly applied.

An enlarged joint 62 m in from the cave mouth contains three adult prints, two on the south wall and one on the north. All are 2.1 to 2.4 m high, and although they can be reached, presumably notched log ladders or something similar were used when the prints were made.

A small circular room on the east side of the main passage 76 m from the entrance is 1.5 m in diameter and 2.4 m high and contains nine easily reached adult prints: five right hands, two left hands, a right hand and forearm to the elbow, and a left (?) hand and forearm to the elbow. A small test pit 1.1 m deep below the paintings contains no cultural debris. Paintings are on the grayish limestone wall and on a thin white flowstone layer—locations were selected for their color.

Pottery. Sherds extend from the cave mouth back at least 19 m and are from jars and bowls of several sizes, mostly small plainware vessels. Jar rims vary from everted to direct.

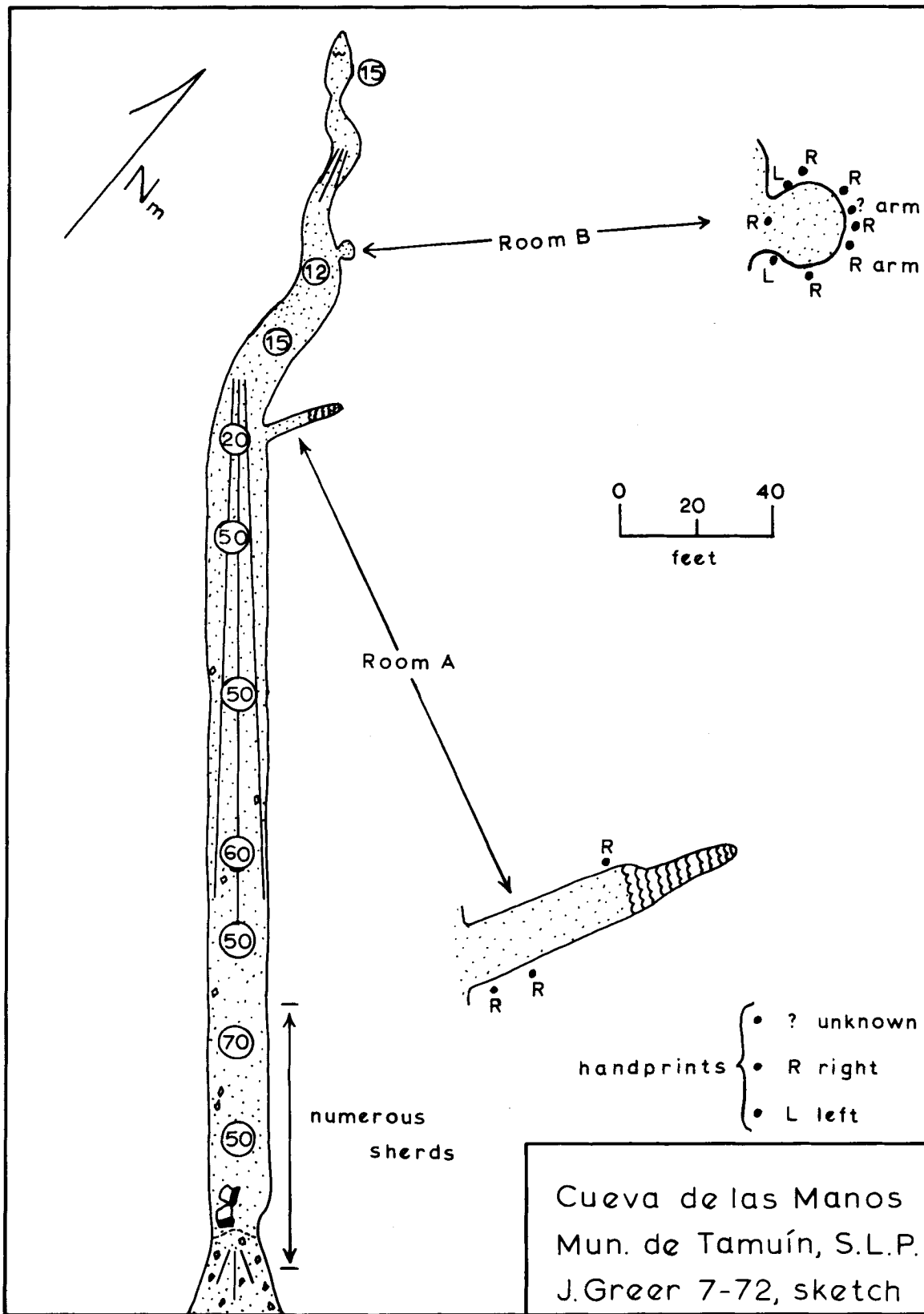


Fig. 1. Site plan of Cueva de las Manos showing locations of pictographs. Circled numbers are ceiling heights.

Several sherds were individually examined:

- (1) Four decorated sherds, representing at least a shouldered bowl and two jars, have light beige or cream surfaces and black, broad-line designs painted on a well-smoothed surface, perhaps at one time lightly slipped or washed. The nonpainted surface also is moderately well smoothed. The beige paste is homogeneous and exceedingly hard and contains very very fine-grained rolled quartz (?) sand temper. A few small white inclusions appear to be lime or limestone.
- (2) A plainware vessel has moderately well-smoothed beige surfaces and a light brownish-gray core with angular clay and grog temper.
- (3) A polished orange bowl has a monogeneous, orange paste containing a fine, rolled quartz or granite (?) sand temper with a few minute, unidentified black fragments.
- (4) A large beige jar with an uneven but well-smoothed to floated surface has a porous paste profusely tempered with finely ground calcite crystals.
- (5) A jar with a slightly everted, thickened rim has a friable, medium gray paste (seemingly a manganese clay) tempered with finely ground calcite crystals. The paste also appears to contain a few rounded quartz (?) crystals.
- (6) An unidentified body sherd contains crushed calcite crystals, some of which appear to be finely rolled, like a calcite silt.

CUEVA CERAMICA

Description. A circular entrance 1.5 m in diameter opens immediately to a passage 1.5 m wide and 2.1 m high, continuing westwardly (60 degrees) 23 m into the hillside. The passage averages 1.2 to 1.5 m wide, 0.6 to 0.9 m wide at the floor, and 1.5 to 2.1 m high. The dry dirt floor is nearly level throughout, rising gently from front to back of the cave. No formations are in the cave. Development appears mainly phreatic with some later vadose deepening and enlargement.

Pottery. Sherds and broken ceramic vessels are abundant at the entrance and occur throughout the entire passage. Most are plainware jars, though a single decorated black-on-cream sherd was found at the entrance. Several sherds were individually examined:

(1) Two similar large, beige jars have dark gray cores containing a medium amount of crushed calcite temper. One vessel from the entrance is a rounded olla with a smoothed surface and a highly everted, horizontally protruding rim with a rounded lip. The body is 41 cm in diameter and 36 cm tall, the short neck is 28 cm in diameter, and the rim is 31 cm in diameter. Sherds from 15 m inside the cave are from similar vessels.

(2) At the entrance is an entire, broken orangeware plate 35 cm wide and 1.3 cm deep. It is broad and nearly flat with turned-up edges and a pinched lip. The interior surface is covered with a thick, dark red slip. The orange, oxidized paste is a noncarbonate clay containing quartz sand and orange feldspar (?) grains. There is no apparent temper—the few calcite crystals probably are indigenous to the clay.

(3) A broad-line, black-on-cream jar with thin, very hard walls is similar to decorated vessels from las Manos. The cream paste with very fine-grained igneous sand apparently contains very little carbonate and no obvious temper.

(4) A moderately thick, well-smoothed plainware jar is of a porous beige clay containing a large amount of crushed calcite temper.

(5) A thin, well-smoothed jar is of porous orange clay full of feldspar grains. White noncarbonate grains possibly were added as tempering agent.

(6) A small body sherd is of porous gray paste with a few noncarbonate (feldspar?) sand grains and profuse crushed calcite temper.

(7) A relatively thick jar body sherd has a black porous core of laminated clay containing profuse crushed calcite temper.

DISCUSSION

The proximity of Cerámica, las Manos, and Jabalf to each other suggests the caves in this group might have been in some way culturally related. The large amount of pottery in the entrances of Cerámica and las Manos seem to suggest that they might have been at least partially used as temporary habitation areas. Unfortunately, phosphate mining activities in Jabalf have removed the upper several meters of deposit, therefore removing whatever cultural evidence which might have been present.

The sherds in the passageways of Cerámica and las Manos, as well as such other El Abra caves as Cueva Pinta, clearly show that local caves were used far beyond the range of natural entrance light. Both caves appear always to have been dry and therefore presumably were not used as water sources. Both also lack constructed features of any kind.

Only las Manos contains rock art, and then only localized negative handprints in alcoves off the main passageway. All prints appear very much the same and quite likely were all made at approximately the same time. No evidence was observed to help explain the presence or meaning of the prints. Similar prints also occur at Cueva Pinta and Cueva de El Abra.

An interesting distinction between handprints was inadvertently provided by the local guide. From memory he recalled white and green prints outlined in red, and in the cave he reluctantly agreed that no longer were any prints green because the green paint had all faded away. Actually no green paint had ever been used in the cave, but his distinction was a good one and originally overlooked as insignificant. The white prints were on carefully selected patches of a perfectly white thin flowstone deposit. The so-called "green" prints were placed on carefully selected patches of the naturally grayish limestone wall. When outlined in red, this grayish wall appears to have a greenish tint.

Analysis of the ceramic tempering agents indicates two, probably overlapping, traditions. Most sherds seem to be of a noncalcareous paste containing small grains of igneous material. Half the sherd sample, including the decorated and polished vessels, also is tempered with igneous sand which could have come either from igneous intrusions to the east or from sands of the Río Tamuín (Río Tampaón). The other half of the sherd sample, consisting mainly of plainware jars, is tempered profusely with crushed calcite crystals, most likely obtained from caves along the east face of the range. No sherds were found definitely tempered with either calcite sand or crushed limestone, both tempering agents at other El Abra cave sites. Nearly all vessels in both Cerámica and las Manos were jars.

It seems likely that at least some of the finely made bowls and painted vessels may have been obtained from areas to the east, while utility wares were manufactured locally. Certainly pottery must have been manufactured locally at such nearby large religious centers as occur in the Tamuín area, and that tempering agents were gathered from various places for use in different wares.

**ARCHEOLOGICAL NOTES ON HOYA DE HIGUERON,
SIERRA DE EL ABRA, S. L. P.**

by John W. Greer

Higuerón is in a large depression about 365 m east-northeast of Sótano de los Monos in the jungle region on top of the El Abra range. The sink is a large oval depression 45 m across lined with vertical limestone walls 4.5 to 12 m high containing several narrow, unoccupied rockshelters. A steep breakdown-soil slope at the west end of the depression drops through an entrance about 9 by 9 m into a long, elongated room with a breakdown and dirt floor. Large square boulders lie along and at the bottom of the seemingly terraced entrance slope. The room comprising the cave is about 153 m long and 18 to 40 m wide and averages about 15 m high in the front two-thirds and 6 m high in the remaining back portions. One can nearly always see dim light from the entrance, but nearly the entire room is in total darkness. See map, page 70.

The walls are all mainly steep, smooth, exposed limestone in the front. Especially in the entrance sink, the entrance slope, and the entrance area of the large room, the walls are extremely suitable for paintings, although none are present.

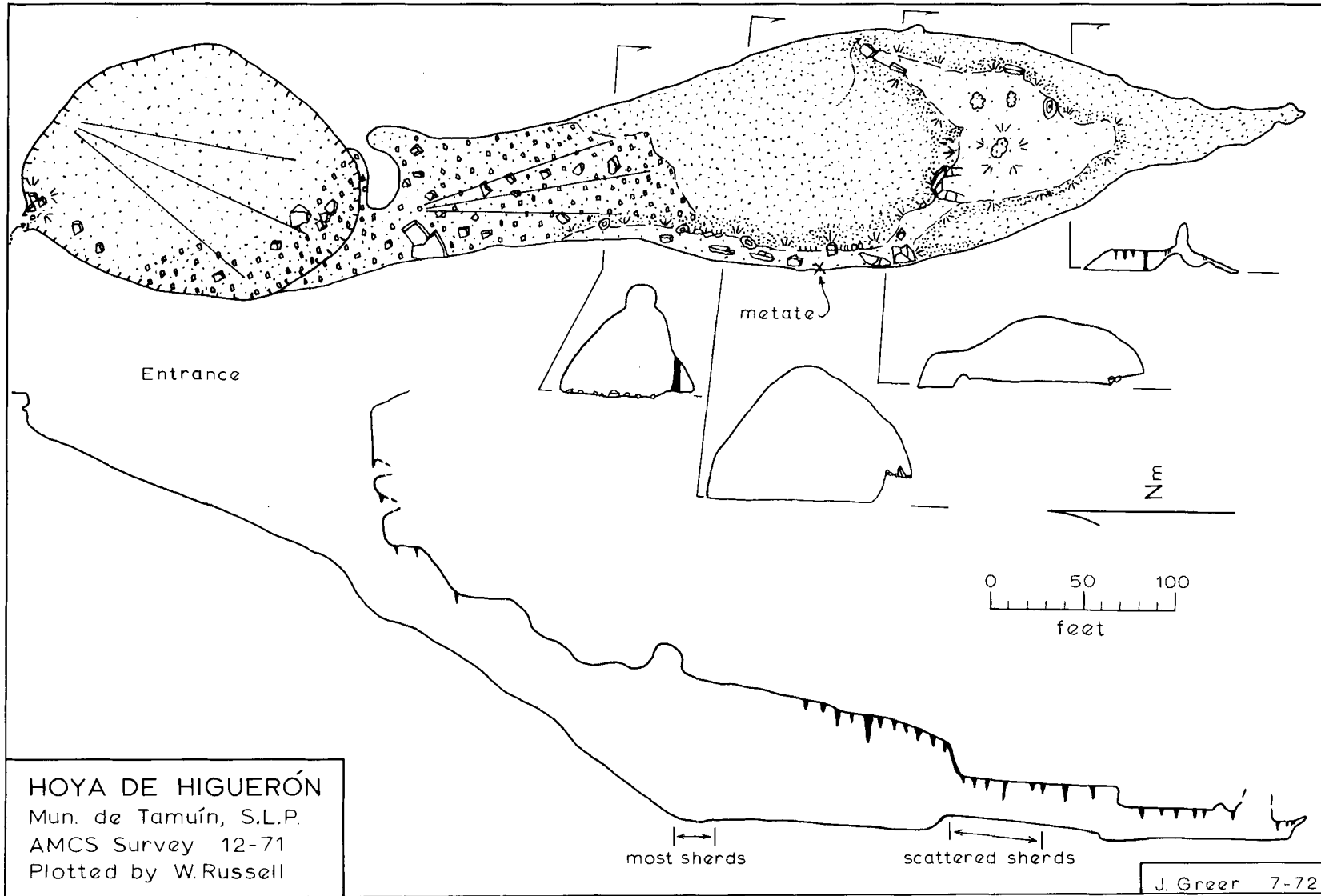
Flowstone and formations are common in the rear portions of the large room. Many or most low stalactites of clear, fine-grained calcite crystal have been broken off. Almost none are on the floor—seemingly they have been taken from the cave. It remains possible that they have been broken by floodwaters and buried in the silt, though this does not seem the most reasonable explanation. From the formations, water drips constantly, sometimes into small, shallow pools.

The floor is quite uneven—the lower parts in the front portion of the cave contain much large breakdown, while back portions contain mainly modern washed-in silt. Along the edges and in a raised area (the “mountain”) in the center of the room, the floor is flowstone and old soil. Apparently the cave also floods periodically, judging from washed-in silt and wood fragments at least 1.2 m high on wall ledges.

A milling slab near the “mountain” beside the west wall is a nearly unaltered tabular piece of crystalline flowstone. The nearly circular slab is 40 by 40 by 12 cm and has a somewhat uneven, shallow circular grinding basin with a pecked surface 27 by 3 cm. Sherds were found nearby.

A few sherds are scattered around the floor, especially near the entrance. Most of the lower floor is covered with modern silt, thereby probably covering whatever sherds might have been present. The higher areas, such as the “mountain” about 90 m inside the entrance, are flowstone and dry, nonwashed dirt and rock and contain scattered sherds (and tigre tracks).

All of the 16 analyzed sherds are from jars. Half are tempered with crushed calcite, one with calcite sand, the rest with igneous sand. All the igneous sand tempered sherds and three calcite tempered sherds have paste containing igneous sand. These sherds follow the general thickness pattern of sherds from other El Abra caves in that calcite tempered sherds are thicker than sand tempered—calcite tempered sherds average 8.4 mm, sand tempered average 7.1 mm.



HOYA DE HIGUERÓN
Mun. de Tamuín, S.L.P.
AMCS Survey 12-71
Plotted by W. Russell

**ARCHEOLOGICAL NOTES ON CUEVA DE EL ABRA,
SIERRA DE EL ABRA, S. L. P.**

by John W. Greer

Cueva de El Abra is located in northern San Luis Potosí high on the northwest side of the northern El Abra pass beside the Cd. Mante–Cd. Valles highway. It is well known to most AMCS cavers.

The cave is an extremely large phreatically enlarged fissure with an oval, dome-shaped entrance with much interior flowstone-stalactite formation along cracks. The south-facing entrance is 21 m wide, 18 m high, and slopes gently downward to the large passage back 183 m toward the 20 m pit leading to the lower levels. The passage widens at the base of the entrance slope to about 25 m; the floor here is relatively flat.

Shrine. A shrine is on a high ledge just outside the east side of the entrance and faces south toward the valley bottom. It consists of a wooden cross wrapped with white paper and attached artificial and natural flowers and dried leaves. No other items are present.

Bees. Sticks from honey collectors line the cliff face, walls, ceiling, even the tops of the highest domes in the entrance area. This indicates unbelievable climbs across, around, and up smooth, overhanging limestone walls into dome tops probably 30 m above the floor.

Trails. A trail enters the cave from the valley bottom below, while a second trail goes up the near vertical limestone wall about 15 km east of the entrance and appears easily climbable to the ridge top. Both trails are frequently used.

Pictographs (Fig. 1). Pictographs occur in a small alcove room on the west side of the entrance at the bottom of the entrance slope. The alcove is about 5.5 by 9.0 m, and walls are mainly flowstone formations. A small hole 30 by 30 by 21 cm deep in the center of the floor contains clear water, though presently there is none dripping. At the south end is a small hole in the wall 0.36 m in diameter leading into a small room 3 m long by 0.7 m high with a limestone pebble and cobble floor. No pottery was observed.

The paintings are all 4 to 5 m above the floor on a section of clean, smooth, white limestone wall. To draw them it was necessary to use notched log ladders or to climb flowstone projections and precariously balance oneself. The following figures are present:

1. Two red negative handprints, both an adult right hand, were applied with thin red paint using a spattering technique. They are a medium dark red, approximately the same as at Cueva Pinta farther down the range.
2. The larger man is a light orange liquid paint applied by brush or finger.
3. The smaller man is a darker reddish-orange like the handprints, a liquid paint applied by brush or finger.
4. A zig-zag line is of thick, reddish-orange liquid paint applied by finger. An adjacent, elongated rectangle contains a negative zig-zag line—thick reddish-orange liquid paint applied by brush or finger.

Pottery. Several sherds of modern salt-glaze jars and large bowls were found in the front section of the cave. Only one aboriginal sherd was observed. It is an incised rimsherd from the flat floor at the base of the entrance slope just below the pictograph alcove. It has dark gray paste with limestone sand temper and probably is from a small olla with a short neck, a very slightly turned-out rim, and a rounded lip. The upper neck just below the rim is incised around the vessel with two discontinuous parallel lines. The dark gray surfaces are well smoothed.

Soil sample. A soil sample was collected from just beside the phosphate test pit at the back of the entrance room. The appearance—color, texture, grain size, weathered calcite sand inclu-

sions, etc.—looks identical to the paste of crushed calcite tempered sherds from such Sierra de El Abra caves as Pinta, Higuierón, Cerámica, and las Manos.

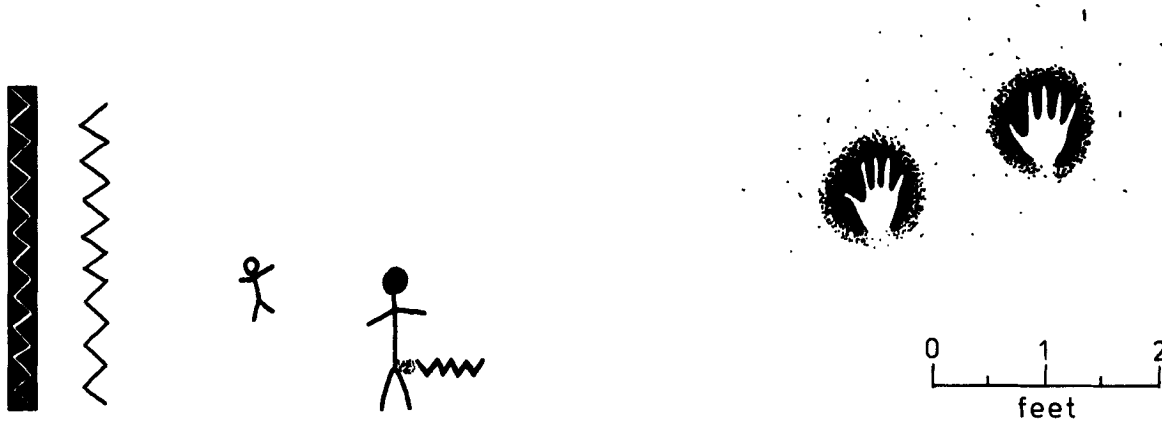


Fig. 1. Aboriginal pictographs in Cueva de El Abra.

A SPELEOLOGICAL RECONNAISSANCE OF THE LOWER CANYONS OF THE RIO GRANDE, STATE OF COAHUILA, MEXICO

by Ronald G. Fieseler

As it follows its long path to the Gulf of Mexico, the Rio Grande is primarily a lazy, sluggish river with occasional stretches of turbulent, roaring whitewater. Most of these are located in the canyons of the Big Bend Region, where they add another hazard to an already harsh environment. However, with skill and common sense, most canoeists and kayakers can safely negotiate the various canyons and enjoy a wilderness experience difficult to rival.

One of the least-traveled stretches is the area known as the "Lower Canyons." No more hazardous than the other canyons, the Lower Canyons' difficulty lies in the distance involved (about 90-100 miles) and the time required (5-10 days). The logistics of such a trip can be a problem, not to mention the long, always-hated car ferry from put-in point to take-out point and back again. This is not your average weekend outing.

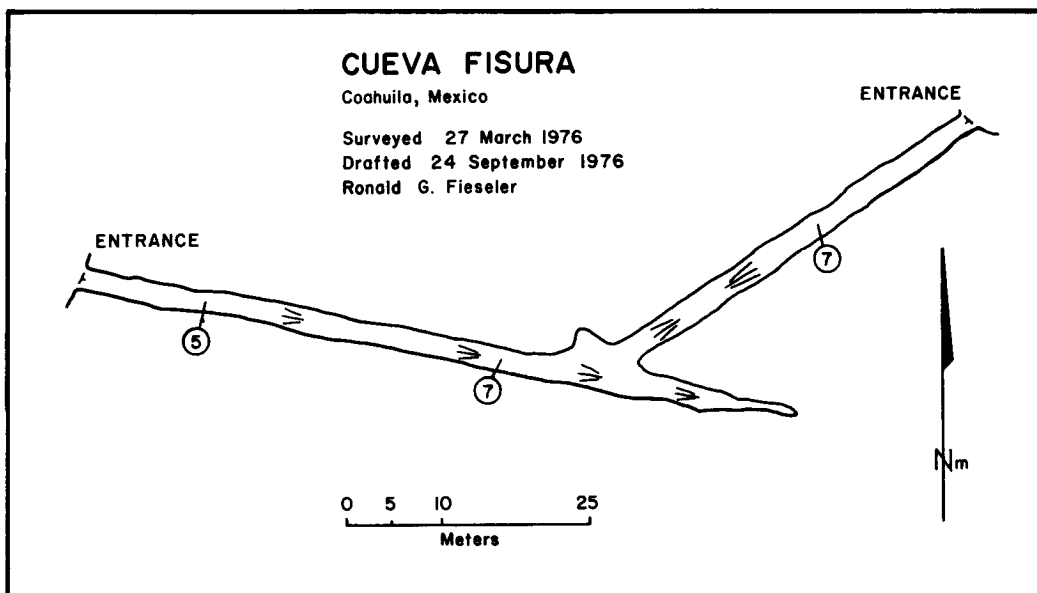
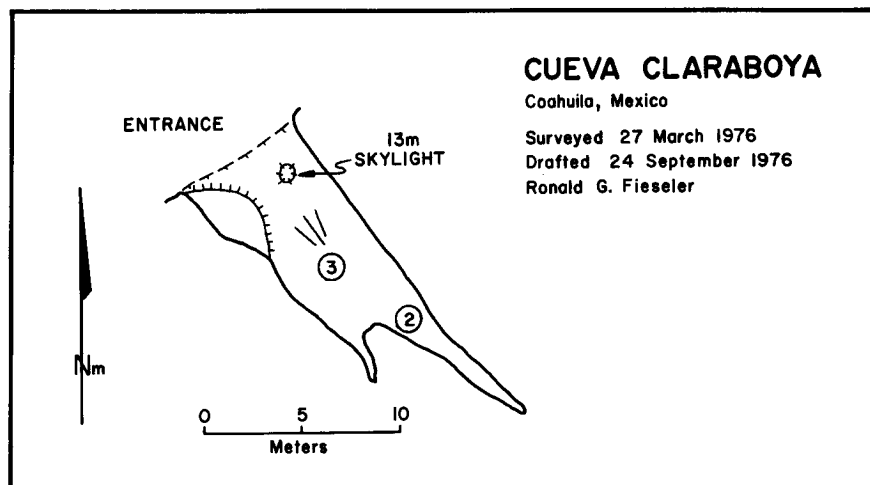
In late March, 1976, I was fortunate enough to be part of a large expedition through the Lower Canyons. The trip was sponsored by the Texas Natural Areas Survey and was scientific in nature. Along on the trip were botanists, geologists, archeologists, zoologists, photographers, and a speleologist—namely, me. My job was to assess the speleological resources of the Lower Canyons, both on the Texas and Mexican sides of the river.

From the beginning, it was painfully obvious that I would only be able to scratch the surface. The vastness of that country is staggering. Once in the canyons, the sense of futility grows day by day as canyon follows canyon, entrance follows entrance, and the terrain restricts access to all but the most determined. It was difficult enough to muster the desire and energy to check out the easily accessible and largest entrances, let alone the small or hard to get to entrance. Imagine a 2 meter in diameter entrance, 300 meters above the river and 1-3 kilometers by foot through a waterless, scalding, thorn-covered, snake-infested desert, and all this after paddling for hours, beaching the boat, dragging it high on shore to insure against possible

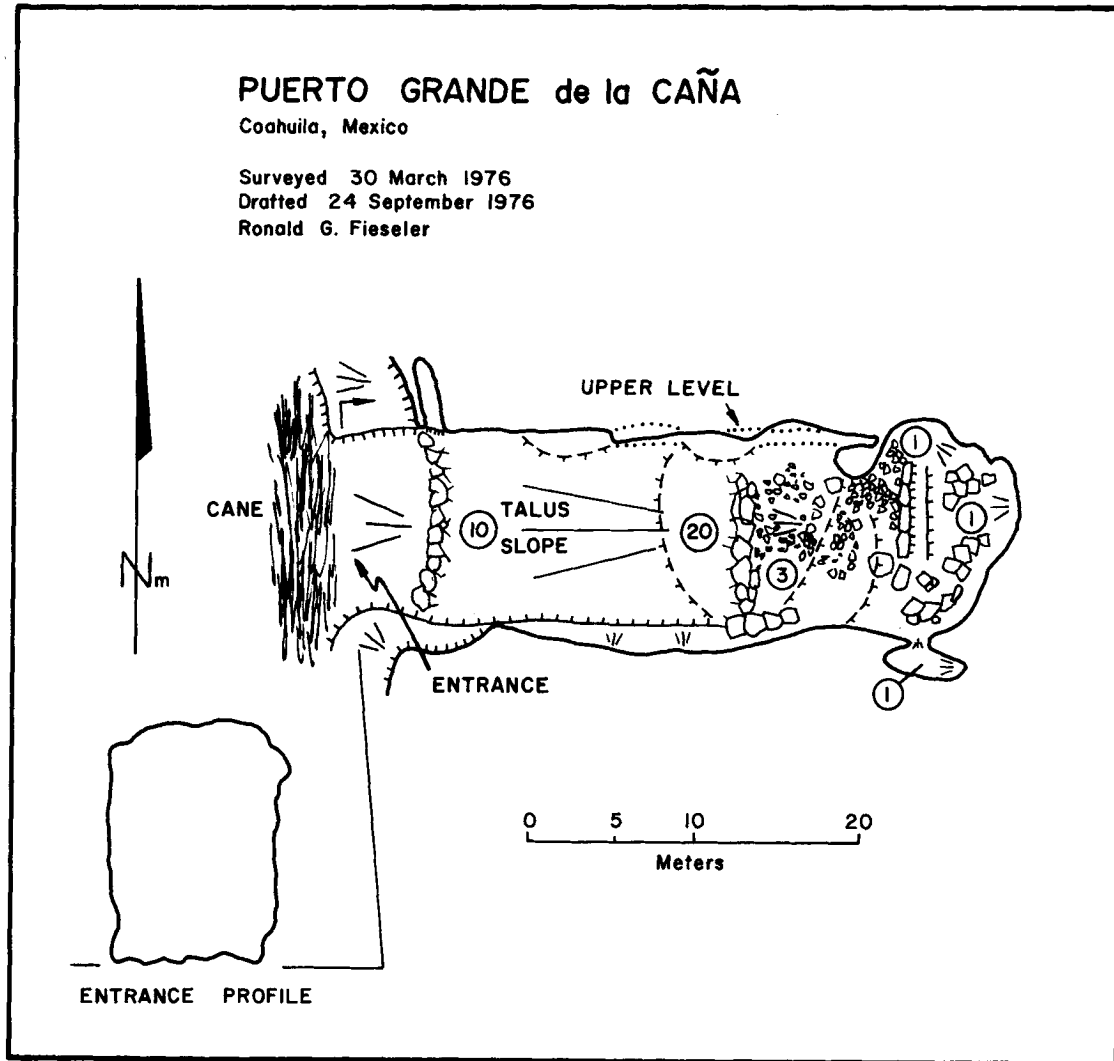
rises, digging out your gear, and finally heading up the mountain to what might be a large cave—or maybe a dark shelter. Do this 2 or 3 times a day, and you too will say, “the hell with it.” We left several 10-15 meter high entrances unchecked, something I didn’t think I would ever do.

We put in the river at La Linda in the Black Gap Wildlife Management Area and spent 12 days on the river, leisurely working our way downstream to the take out point at Dryden Crossing (John’s Marina). There was hardly a mile of river that failed to produce possible cave entrances. A conservative estimate of the number of possible entrances observed during the trip would be in the vicinity of 2000. I have never seen an area with so many holes. They ranged from narrow crevices and small holes to huge entrances up to 25 meters high. My binoculars were invaluable in checking out entrances since I was able to eliminate obvious shelters, but there were still an awful lot of black holes left as possibles. I managed to check out several holes on both sides of the river. A brief review of the Mexican results follow.

Two small and easily reached entrances were checked out in the second canyon down from La Linda. Both were small, See maps, below.



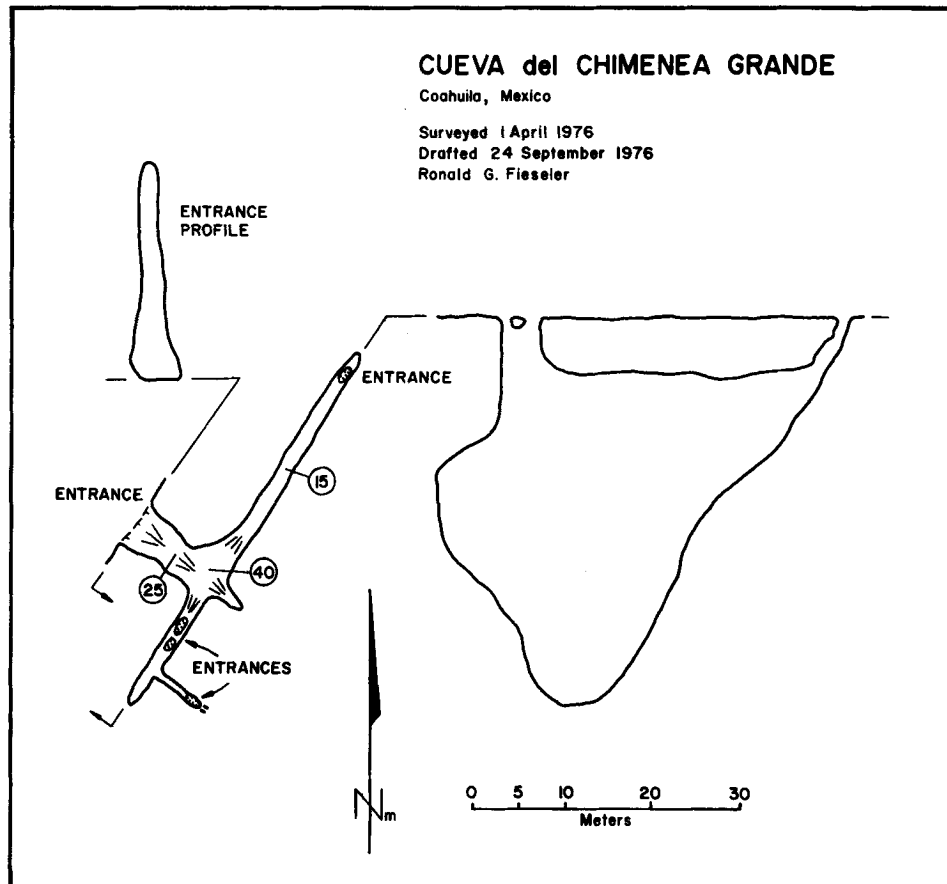
Maravillas Canyon down to Reagan Canyon is relatively caveless except for some far-off cliffs. Downstream from Reagan Canyon several entrances can be seen. Approximately 3 miles below Reagan Canyon a large entrance was encountered near river level. Measuring about 17 meters by 13 meters it is located behind a nearly impassable stand of river cane. It was explored and surveyed by myself and others of the party. Archeologists observed burned rock, sticks, and cane in the back of the cave, but feel it is a relatively minor site. We named it Puerto Grande de la Caña. See map below.



Many possible entrances were observed on the cliffs and side canyons as we paddled to Hot Springs at the mouth of Arroyo San Rosendo. About one kilometer of the canyon was checked out and several entrances located, but not entered as they needed a rappell from above.

Another large entrance was checked out just below the second side canyon on the Mexican side downstream from Hot Springs. Located at the base of the second cliff (Santa Elena limestone, Georgetown equivalent) it involved a tricky climb up a side canyon and a traverse around the base of the cliff. The entrance is very impressive, measuring about 25 meters by 5 meters and leads into a 30 meter long upward sloping passage intersected by a 50 meter long fissure

passage. Skylights are visible at each end of the fissure and are estimated to be 40-50 meters high. Another fissure with a skylight entrance intersects the west end of the main fissure. We observed 20-30 Western Lump-nosed Bats high in the fissure. We named it Cueva de Chimenea Grande. See map below.



Many promising entrances were spotted all the way down to San Francisco Canyon, some of relatively easy access, some of nearly impossible access. None were checked out (except by binoculars) due to lack of time and to fatigue. Ben Everitt and David Sleeper reported a cave on the Mexican side directly across from San Francisco Canyon and 20-25 meters above the river. They estimated it to be 25-35 meters long and said it was easy to get to. Unfortunately they did not sketch it and I did not visit it.

From San Francisco Canyon to Dryden Crossing the limestone dips down and the Del Rio Clay forms the low canyon. Cave and possible entrances are very scarce in this stretch of the river. None were sufficiently promising to lure us off the river. Finally we arrived at Dryden Crossing and the take-out.

It is doubtful that this cave area will ever be thoroughly checked out. There are simply too many leads to check and too many difficulties to overcome. Most work will probably be done in a fashion similar to mine; that is, haphazard checking of convenient or interesting leads. Most of the time the caves will be small and rather uninteresting, but the possibility of large, significant, relict caves remain. There is undoubtedly a few of these scattered in the canyons and mountains of the Lower Canyon to lure and reward the diligent and persevering explorer.

SIERRA DEL BURRO ROADLOG

by Tony Mollhagen

On the dates 5-11 September 1968 I, along with Dale Berry and Bob Martin, traveled through some portions of the Sierra del Burro in northern Coahuila. In the course of the trip several caves were brought to our attention that are worthy of report to the AMCS.

Being Zoology students, the emphasis of the trip was naturally oriented toward things biological and for that reason our notes may have some omissions not seen in an experienced spelunker's field book. Never-the-less we do have some mileages, landmarks and names that may be of some use in finding the caves.

Miles

- 0.0 South city limits of Ciudad Acuña. Driving on México 57 toward Morelos.
- 34.5 Zaragoza. It being the rainy season, we chose to take the paved road to Múzquiz, rather than the dirt road cross-country from here.
- 40.5 Morelos.
- 45.4 Allende.
- 83.0 Entering Nueva Rosita, going now to Múzquiz.
- 98.8 Palau.
- 105.5 Leaving Múzquiz, taking Boquillas road.
- 106.1 Sign saying Boquillas 235 km.
- 113.1 One of several low-water crossings in the vicinity. This particular one is deeper and should the water be up, there is a trail going south along the stream that leads to a narrow wooden bridge, where a vehicle may cross easily.
- 153.5 Junction. Signs saying Boquillas road left and a road back to Zaragoza to the right. There is an unmarked trail in the center going to Rancho Las Margaritas, one of our objectives. We did not know it at the time, but we were very fortunate to find the gate across this road unlocked as the landowners up the valley are very touchy about having strangers on their property unknowingly. There was a house a little way back toward Múzquiz where one might get permission and/or a key, should the gate be locked in the future. We do not know this but it might be a place to start if previous arrangements had not been made. Most of the ranchers are radio operators and are in contact once or twice a day.
- 166.5 Stock tank on north side of road. The roads in this area do quite a bit of branching but they all merge again.
- 173.3 Sign and mailbox (?) indicating trail to the right leads to Hacienda Las Margaritas.
- 176.1 Hacienda Las Margaritas. We didn't talk to the owner because he wasn't there at the time but in talking to his wife we got the impression that we were welcome but before we did anything we should talk to the Señor. The people on this particular ranch have seemingly been receptive to biologists in the past because Rollin H. Baker, in writing on the mammals of Coahuila, cited a number of collecting localities on and near this ranch.
- 178.9 On the main road again and heading north.
- 180.3 Turned off the road and looked for mammal sign.
- 180.7 Back on road again.
- 183.2 Well-constructed gate. Left the road and drove to the canyons to the northwest.
- 190.7 Back on the main road again at the well-constructed stone and iron gate. We later

learned that this marked the entrance to Rancho La Enfante.

199.7

Hacienda La Enfante.

212.3

Hacienda Las Pilas. Owned by Sr. Guillermo Osuna, Apde No. 31, Múzquiz, Coah., México. He was not home when we arrived and again we were instructed to wait before we started exploring. We found him very agreeable to our activities and expressed more than a landowner's interest in what we were doing. He speaks English and told us of other students and scientists that had visited the valley. He suggested we visit a cave in a canyon west two miles of the house that he had only partially explored himself. His directions to the cave are: leave the house and go back across the wooden bridge to the gate by the hangar; follow the trail through the corral and into the pasture west of the house; stay on the trail for about a mile where you will cross a stream bed and break into an open area where there are some small concrete water troughs; the trail ends here but continue a short distance west around some trees where there is a large concrete water tank fed by a spring, via a pipe, in the canyon; the pipe is buried but the trees have been removed above it, leaving a well-marked trail that can be driven for a good distance; once in the canyon, there is a foot trail that crosses the pipe several times; after a walk of about 20 minutes there is the first of two concrete structures for funneling water into the pipe, it being square and about 4 ft high; the second is around the corner and up the canyon a little bit; this structure is also concrete but flat; the cave opening is between these two structures and up the south slope of the canyon about 40 yds; the opening can be seen from right spot on the canyon floor. The entrance is essentially a shelter with water dripping over the front edge. It is approximately 80 ft wide and varies in height from 2-10 ft because of irregularities in the floor. The depth is probably no more than 50 ft. There are several columns behind which, in the southeast corner of the shelter, is the opening to the cave itself. This opening is about 4 ft high but almost immediately after passing through, we were able to stand upright among some hanging columns whose bases had been washed free of the floor after their formation. Some of these columns are a foot or more thick at the base. The passage here is ovoid and 6-10 ft high. Both here and farther back the temperature is cool, probably in the low 60's. A single *Myotis velifer* was collected from the ceiling. No other bats were seen at this point. This part of the passage continued relatively straight for 40-50 yds where a sharp right turn was taken. Here the passage increases to about twice the size and continues for 40-60 yds. In many of the domes in the ceiling there were clusters of *Plecotus townsendii*, some specimens of which were collected. There was a moderate amount of guano on the floor, but far in excess of that expected from the 50-75 animals we saw. When we neared the end of this passage we found two holes that spanned the width of the floor which had narrowed to about 5 ft. The ceiling was 15 ft high above the holes. We decided against going into the lower levels without proper equipment. Sr. Osuna later told us that he had visited two levels below and that it continued deeper still. We estimated the first drop to be about 10 ft to a narrow ledge, but beyond that our estimates would be unreliable. Sr. Osuna was unable to recall further distances, but he indicated that he was very interested in having someone completely explore the cave in the hopes of finding a source of water. Before leaving the ranch he gave us his mailing address (see above) and a way he could be reached on shorter notice should we or anyone else want to return. He has no telephone but is in radio contact with Sr. Guillermo García, No. 40680, Múzquiz, Coahuila, at 8:00 AM or 6:00 PM. He further gave us gasoline, a compass,

- a meal, fresh fruit, and a letter necessary to get a key to open a gate at the north end of the valley, all unsolicited. A word to the wise, he also hinted that he and other ranchers had known we were in the valley before we met him.
- 214.6 Leaving Hacienda Las Pilas.
- 234.3 Gate marking boundary of Rancho Las Pilas.
- 247.7 Locked gate to public road for which we needed the key. Still required a two mile walk west with the letter to Hacienda Guadalupe. The roads from Rancho Las Pilas to here are quite passable in dry weather but unfortunately we were blessed by some showers that elicited an unpleasant experience with a shovel handle. Once the gate was opened, we turned right toward Acuña. To the left was some small mining towns and Boquillas. We have no mileage, but we shortly encountered a border station.
- 262.6 Locked gate on east side of road leading to a hacienda for which we had no name. The roads seemed suddenly to get worse and appeared to be a detour around the rancho.
- 267.4 Crossed a cattle guard and headed northeast toward mountains. Road improved.
- 275.4 A series of openings in a bluff on the north side of us caught our attention. We were assured by a ranch hand we had picked up that there was indeed a long cave up there as well as in the bluffs on the opposite side of the road. The latter information we did not pursue but one opening of the first series was enough larger than the others (about 30 ft wide) to warrant investigation. After climbing 45 min. we found we could not climb safely to the larger openings without a rope. Foot-holds crumbled beneath our feet. The caves entered were dry and formed by breaks in the strata at the apex of an anticline. Three adjacent caves were entered at ground level. The east-most opening was narrowest as a result of some break-down. Entry was gained to a depth of only 25 ft where to go farther one would have to wedge himself into a fissure. The middle cave was 6-8 ft wide at the front and gradually narrowed to nothing after 50 ft. Scattered guano was seen on the floor. The fissure was 10-12 ft high. The east cave is a larger model of the middle one, being about 100 ft long. It too had some guano on the floor as well as a blackened ceiling.
- 301.7 Dirt stock tank on south side of road. Road goes over spillway and dam. Saw a number of shelters in the bluffs on either side of the road while still in the mountains but our spelunking initiative suffered a setback in the long climb to the last caves.
- 306.2 Hacienda Chupadero del Caballo. The road runs by the hangar and the house is in a draw to the south. Some English spoken. We were told here that the road would fork soon and that we should take the right or south fork as it was the better of the two roads. Both go to Acuña. We have no notes to this effect, but it seems shortly after we turned we were following a fence south and then east for a little way. There may have been a hacienda in the distance too.
- 332.2 Hacienda San Miguel. The road winds right through the headquarters. There is a gate by a corral.
- 367.7 Intersection with paved highway just west of Acuña airport. Wooden sign saying in Spanish, "the road to all the ranches," and pointing back the way from which we had come.
- 368.3 West edge of Ciudad Acuña.

SOTANO DE SAUZ

by Peter Sprouse

The existence of this unique cave was brought to light through a tale of a deep pit south of Lajitas, Texas, that reached the ears of Dr. Dwight Deal (Alpine, Texas). An American explorer had descended an arroyo-fed pit as far as his 100-foot rope would reach. Dr. Deal passed this lead on to AMCS cavers in Austin who, due to the fact that the cave was in a completely unknown area speleologically, immediately began planning an expedition.

Over Thanksgiving 1975 a truckload of 7 cavers left Austin and crossed easily into México at Ojinaga. Following Deal's general directions the cave was located with the help of a local guide, whose description was the most tantalizing of all: "Entre un arroyo y no sale." The entrance lies in a mining area approximately 30 km northwest of the Ejido M. Benavides and 20 km south of Lajitas. A large arroyo, draining perhaps 4 km², is pirated into the joint-controlled collapse passage entrance sink, bounded by vertical walls of gently dipping brecciated limestone.

Questioning of the locals (what few there were) revealed that the cave was not named. So it was decided to call it Sótano de Sauz, after the name of the rancho on which it was located. Upon approaching the entrance, the stench of bat guano is immediately apparent. Directly beyond the dripline of the cave proper is the lip of a 50 m drop of a long, narrow, canyon-like nature. Off of the bottom leads a high ceilinged guano and cobble floored passage—immediately recognizable as the vadose joint-controlled kind that typifies many deep Mexican caves. The passage continues linearly, dropping occasionally down short climb-downs, and the floor contains patches of sandy guano in places that fills the air with dust, illuminating a distinct wind. The air is hot and dry.

After 130 meters the cave makes an 85 degree bend to the left, having intersected another joint that causes the passage to descend more steeply. Soon an 18 meter drop is encountered along this trend that must be rigged. Soon afterwards the passage turns 80 degrees to the right, which restores the cave to nearly the same joint trend. As the passage drops steadily in several climb downs the air temperature becomes stifling hot.

At a depth of 130 meters below the entrance the fissure-like nature of the cave changes. The passage widens into a room averaging 12 meters wide by 15 meters high, nearly rectangular in cross-section. Two prominent joints cross this room. Hundreds of bat corpses litter the room, lying in a matrix of guano and guano ticks. Samples taken identified the bats as Old Man Bats (*Mormoops megalophylla*). This room, prematurely named the "Sala Grande," ends in a 3 meter drop leading to a cobble floored crawlway. Beyond this crawlway the cave undergoes a drastic transformation. The passage becomes immense, averaging 30 meters in diameter, stretching in a vast tunnel beyond the reach of lights. The floor is covered with dessicated bat corpses, all in the same state of decay, and thousands of them still cling to the cave walls. The temperature in this lower chamber climbs to 106° F. The passage still drops gently for 700 meters to a level stretch that is evidently a great sump, floored in sedimented guano with mud cracks up to 30 cm deep. The cave simply ends when the ceiling arches down to meet the dry, crumbly floor, 1226 meters from the entrance and 220 meters below it. (See map, plate V.)

Summary

Sótano de Sauz is the only cave in its immediate area and the only one like it known in the world. There is very little limestone in the area and, indeed, seemingly barely enough to

contain a cave of its size. The cave obviously contained an enormous bat colony, whose demise is a great mystery. A few hundred bats still live near the entrance, but nothing to compare to the thousands of well-preserved corpses that are present throughout the cave, and that fill the final chamber. The cause of this natural catastrophe is a subject of much conjecture. It is possible that a great flood filled the cave, as apparently it does at infrequent intervals, yet observations in the cave suggest this was not the cause. The cave does not appear to have flooded since the bats died as most are still in their natural death positions on the floor and walls. It would also not explain why no bats have reinhabited the far reaches of the cave. More likely is the possibility of disease striking the colony, a phenomena recorded in at least two other cases. A third possibility is that a sudden igneous intrusion could have raised the cave temperature to a lethal level, of which the present temperature may be but a fraction. Though why the bats would stay until death in a decaying environment is a mystery—perhaps they were trapped by a lingering water siphon in the lowspot present before the first “Sala Grande.” But again this seems improbable by the strange extreme dryness of the cave. Certainly Sótano de Sauz is a treasure chest of natural phenomena deserving of the study of specialized biologists and geologists. But be forewarned: Sauz is a place of death, and the unprepared will quickly find a place amongst the mummified corpses of fellow mammals. It is **ABSOLUTELY NECESSARY** that anyone contemplating entering this cave first contact the AMCS members who explored and mapped it.



Fig. 1.—Sótano de Sauz in the foreground with Big Bend National Park, Texas, on the horizon. Photo by Peter Sprouse.



Fig. 2.—Entrance of Sótano de Sauz. Photo by Peter Sprouse.

THE CAVES OF CHIHUAHUA AND DURANGO

by James R. Reddell

The north-central Mexican states of Chihuahua and Durango have been little investigated by the Association for Mexican Cave Studies, despite the potential for large, important caves. Part of the reason for this neglect has been the distance from Austin and the difficulty of reaching the caves in a rather hostile environment. A more likely cause for neglect, however, has been the unlikely prospects for finding deep cave systems. The recent discovery of the 220 m deep Sótano de Sauz in northern Chihuahua may well inspire more attention to this part of México.

Attracted by the fame of Grutas de Arteaga near Mapimí in Durango, Bill Russell visited Cueva de los Riscos, which may be the same cave. This cave and others near Parral, Chihuahua, were visited by John Fish, Terry Raines, and James Reddell in July 1965. Caves south of Gómez Palacio, Durango, and in the Sierra Madre Occidental near Creel, Chihuahua, were located by Bill Bell and James Reddell in February 1966. In July 1968 Richard Breisch, Tom Meador, and Lee Skinner located and partially mapped Cueva del Alamo south of Zaragoza, Chihuahua. In June 1972 Bill Elliott, Carl Kunath, and James Reddell mapped Cueva del Guano, Cueva de los Riscos, and the newly discovered Cueva de la Siquita in Durango and began a map of Cueva del Diablo in Chihuahua. During Thanksgiving 1975 Peter Sprouse, Terry Sayther, Gill Ediger, Steve and Donna Bittinger, John Omnaas, and Maureen Cavanaugh located and partially explored Sótano de Sauz. This cave was mapped in 1976 by Gill Ediger, Dino Lowery, John Omnaas, Ron Ralph, Terry Sayther, Peter Sprouse, Beth Everett, and Steve Zeeman.

Eastern Chihuahua and northeastern Durango lie within the Northern Basin and Range Province. This region is characterized by high steep mountain ranges of Cretaceous limestone separated by deep bolsons, largely filled with non-cavernous deposits. Caves tend to be located along the flanks of the mountains or else on cliff-faces, although Cueva del Diablo and Cueva de los Muchachos are developed in a gently-rolling range of hills.

Western Chihuahua and southwestern Durango comprise part of the Sierra Madre Occidental. Most of this area consists of igneous rocks, although "islands" of limestone appear in several places throughout the range. The eastern face of the Sierra Madre Occidental rises gently from the east, but the western face is abrupt and the range is cut by enormously deep gorges, the most famous of which is the Barranca del Cobre near Creel, Chihuahua. Numerous large shelters have formed in various igneous rocks in this region. One of these, Cueva del Salitre, was investigated by the AMCS and is sufficiently long to be considered a true cave. Doubtless many others similar to this exist. These large shelters have served as the homes of the Tarahumara Indians for thousands of years and many are still utilized by the Tarahumara.

Access into this part of México is not unusually difficult, although visits to the caves themselves may involve hikes up the sides of steep mountain faces for several hundred meters. The known caves are all comparatively accessible and, except in bad weather, do not require 4-wheel drive. There are, however, doubtless many caves in the less accessible parts of Chihuahua and Durango which will involve both 4-wheel drive and long hikes.

The following descriptions of the caves of Chihuahua and Durango include all of the caves which have been visited by members of the AMCS. It is supplemented by a list of the caves which have been reported, either by cavers making local inquiries or by published articles by non-cavers.

CHIHUAHUA

Cueva del Alamo. This cave is described by Tom Meador on page 53 and the map is published on page 54.

Cueva del Cañón de la Chiva. This cave is visible from the road west of Candelaria, Presidio County, Texas. The entrance is about 5 km SW of the road on the face of the mountain that parallels the road and in Cañón de la Chiva. An 8 m high, 8 m wide entrance leads into a passage up to 21 m high and 27 m wide. This passage extends for about 80 m to a 5 m drop. It was not explored beyond this point, but the cave continued large with bats in the inner part. A Mexican reported that the cave had another entrance on the other side of the mountain. It was explored by Tom Dillon.

Cueva del Diablo. To reach Cueva del Diablo drive west of Jiménez to the small village of Salaices. The cave is located about 4 km west of Salaices and a few hundred yards north of the highway to Hidalgo del Parral. The cave entrance is on the gentle slope of a low hill and is a sink-hole about 30 m in diameter (see Fig. 1). A slope along the southwest edge of the sink leads down to the bottom of the sink. A passage to the right circles the sink and continues as a narrow fissure for at least 75 m, at which point it becomes very narrow and exploration ceased. The main part of the cave is reached through a low passage along the vertical back wall of the sink. After about 100 m a pit at least 15 m deep is crossed by a ladder. At the base of the ladder is a 3 m wide, 2 to 5 m high passage developed in beautiful white limestone. This main passage extends past several major passages to the right before ending in a 5 m high steel ladder leading up into a very complex maze area which remains largely unexplored. To the left at the base of the ladder a passage leads into a maze of fissure-like passages connecting back into the main passage near the ladder. This area contains several hundred meters of passage. At the lower part of the fissures low crawls lead down into small crystal-lined solution rooms, some of which have pools. The cave is poorly explored and will probably contain more than a kilometer of passage when it is surveyed. A partial map of the cave is included with this report as Plate 1.

The cave was first reported by Spieth (1953). He gives a brief account of a trip to the cave by Dr. Willis J. Gertsch of the American Museum of Natural History. Gertsch collected a new species of spider in the cave. The next recorded trip to the cave was on 22-23 July 1965 when it was partially explored by John Fish, Terry Raines, and James Reddell (Fish, 1965). A second trip to the cave was made by Bill Bell and James Reddell on 25 February 1966 (Reddell, 1966). The cave was partially mapped on 11-12 June 1972 by William Elliott, Carl Kunath, and James Reddell.

Cueva del Diablo is of some biological interest, although the dryness of the upper levels is not conducive to troglobite habitation. Of greatest interest are unidentified cirolanid isopods found dead in one of the lower-level pools. The nearest population of cirolanids is at Cuatro Ciénegas in Coahuila and the species in this cave is almost certain to be undescribed. The only terrestrial troglobite known from the cave is a spider, *Psilochorus diablo* Gertsch, which is known only from this cave.

Cueva de los Muchachos. This cave is located on a small rolling hill about 1 km south of Salaices. A 1 m in diameter sink drops about 23 m to a walking horizontal fissure which ends abruptly after about 70 m (Fish, 1965). The cave is named for two Americans who were killed and their bodies thrown into the entrance several years ago. The cave was located and explored by John Fish, Terry Raines, and James Reddell on 22 July 1965.

Cueva del Salitre. Cueva del Salitre is located near the town of Las Cuevas southeast of Hidalgo del Parral. The entrance is 12 m high and 10 m wide and the floor slopes up for 33 m to meet the ceiling. The cave is inhabited by a colony of cave swallows. It is formed in



Fig. 1.—Bill Elliott at the entrance to Cueva del Diablo. Photo by Carl E. Kunath.



Fig. 2.—James Reddell (L) and Ed Alexander in Cueva de los Riscos. Photo by Carl E. Kunath.

ignimbrite. The cave was located and explored on 24 July 1965 by John Fish, Terry Raines, and James Reddell.

Los Socavones de Santo Tomas. These caves were marked on the Shell Oil Co. highway map of México and are also mentioned in Almada's (1945) book on the geography of Chihuahua. They are located 8 km northwest of Santo Tomas in the Sierra Madre Occidental and about 500 m from the road which goes from Santo Tomas to the Rancho de las Manzanas. Almada describes the main cave as being at the end of two arroyos running from the mountains, the waters of which emerge as springs feeding the Río Papigochi near Carichi. He reports that, although the first gallery is easily accessible, others are reached only by ropework. On 26 February 1966 Bill Bell and James Reddell visited Santo Tomas. Investigation and inquiry led to an island of heavily karsted limestone emerging from the surrounding igneous rocks. The area consists of literally dozens of openings, some very recent. The largest of these, which the guide referred to as "El Socavón," was a snow-floored sink with a narrow crevice at one end. A chimney down led in turn to a succession of narrow crevices, small dusty rooms, blocked domes, and highly unpromising passages, but with names covering the walls. Whether this is indeed the famed Socavón de Santo Tomas is not known, but it is very doubtful that the correct entrance was located. Other entrances led into caves even less promising; the area remains very poorly checked.

Sótano de Sauz. This cave is well-described by Peter Sprouse on pages 79-80 above.

Rumored Caves

Boquillas Canyon Cave. This cave is reported to be located in Boquillas Canyon on the Río Grande. The cave is found by taking a small side canyon just downstream from a small shelter in the cliff. A trail leads to the cave which is reported to be a guano mine.

Grutas de Coyame. This cave is reported to be in the immediate vicinity of the town of Coyame in El Cerro de la Cueva. It is reported to be very large with many formations, but has been seldom visited.

Grutas de Chumachi. This cave is located on the margins of the Arroyo de Chumachi, an affluent of the Río Chalaca (Río Conchas) in the Sección Municipal de Sisoguichi, Municipio de Bocoyna, and about 24 km SE of the Cabecera of the Sección. The cave is reported to consist of a successive series of galleries. A famous legend is associated with the cave which is very well-known (Almada, 1945).

Cueva del Ermitano. This cave is found in the Sierra de El Paso immediately south of Ciudad Juárez.

Grutas La Gloria. This cave is located in the Sierra del Diablo in the Municipio de Jiménez. The only thing known about it is that it contains notable crystals.

Cueva de la Mina Lepanto. This cave was encountered during mining operations in the famed Naica Mines at the town of Naica. Foshag (1927) reports that the cave contains one chamber in which the front and right walls are covered with gypsum crystals for about two-thirds of their height. The crystals from this cave are entirely of the long-bladed type.

Cueva de la Mina Maravilla. This cave is also located in the Naica Mines. Foshag (1927) describes the cave briefly and discusses the remarkable crystals found in it. The cave is on the third level of the mine and is guarded by a heavy wooden door. "A short passage leading from the door takes one to a chamber lined on walls and ceilings with numerous colorless crystals of gypsum from six inches to over a foot in length. The floor of the cave is littered with blocks of limestone that have sluffed off the roof and are now covered with a coating of botryoidal calcite and scattered over with long, blade-like or short stumpy crystals of gypsum. In the grottoes be-

tween these boulders of limestone are usually one or more clear selenite crystals like figures in niches.... From this chamber a stairway leads down into an extension where the gypsum crystals have grown to an enormous size. Many of them are four and five feet long and a few probably reach six feet... They grow from the floor of the cave in a manner resembling the maguey plants so common on many of the hills of Mexico.... Further on, the way leads thru a narrow opening, just large enough to permit the passage of a man, completely lined with blade-like crystals and forming a veritable corridor of swords. These crystals reach a length of two to three feet and are opaque white in color. From this passage one descends a few feet into the largest chamber of the cave. The floor ahead rises at an angle of about 30° and is completely banked with myriads of selenite blades one to three feet in length. At the crest of the floor there arises a remarkably fine radiated group of crystals over four feet high, gray in color but tipped with white and glistening brightly in the light of the lamps. Nearby is the only huge crystal of the stumpy type noted, a crystal that must weight sixty pounds. From this single crystal grows a long blade of selenite almost four feet long. Beyond these the cave rapidly narrows until it becomes a mere crack." (Foshag, 1927).

Cueva de la Pluma Colorado. This cave is supposedly located south of El Porvenir.

Grutas de Santo Domingo. This cave is located near the confluence of the Ríos de Santo Domingo and Placeres in the Municipio de Guadalupe y Calvo. The cave has a small entrance which leads into a 5 m high, 2 m wide passage containing an abundance of nitrates. A sloping floor leads in an east-west direction for 500 m. The passage is at times narrow and at times wider with many cross-passages. After 500 m a gallery with numerous formations is reached. Continuing along this gallery one encounters a large room whose upper part has the form of a half orange of white with numerous small, incrustated black rocks. This cave is reported by Almada (1945) as being one of the "mas grandes maravillas que encierra la Sierra Madre Chihuahuense."

Caves near Camargo. Numerous bat caves are reported in the limestone hills east of the highway between Jiménez and Camargo, but none have been visited by cavers.

Cave in Fern Canyon. Judd (1967) reports a cave in Fern Canyon about "13 miles northwest of the village of Santa Elena." He reports that it has a ceiling height of about 7 m at a point 10 m from the entrance. The extent of the cave is unknown.

Other Caves. The following localities are listed by Almada (1968) as being named for caves. Whether these are true caves, shelters, or mere place names is not known, but some will doubtless prove to be worthy of a visit:

La Cueva. Rancho del Mpio. de Belleza, Dto. Jud. Hidalgo.

La Cueva. Rancho del Mpio. y Dto. Jud. Camargo.

La Cueva. Rancho de la Sec. Mpal. de la Joya, Mpio. de Satevó, Dt. Jud. Morelos.

Cueva Ahumada. Rancho del Mpio. de Bocoyna, Dt. Jud. Benito Juárez.

Cueva Ahumada. Rancho de la Sec. Mpal. de Tomochi, Mpio. y Dto. Jud. Guerrero.

Cueva Blanca. Rancho de la Sec. Mpal. de Escobedo, Mpio. de Hidalgo del Parral, Dto. Jud. Hidalgo.

Cueva Colorada. Rancho del Mpio. de Belleza, Dto. Jud. Hidalgo.

Cueva Colorada. Rancho del Mpio. de Urique, Dto. Jud. Andrés del Río.

Cueva de Abajo. Rancho del Mpio. de Rosario, Dto. Jud. Hidalgo.

Cueva del Cabrestante. Rancho del Mpio. de Satevó, Dto. Jud. Morelos.

Cueva del Ermitaño. Rancho del Mpio. de Morelos, Dto. Jud. Andrés del Río.

Cueva del Herrero. Rancho del Mpio. de San Francisco del Oro, Dto. Jud. Hidalgo.

Cueva de León. Rancho de Mpio. de Coronado, Dto. Jud. Jiménez.

Cueva del Burro. Rancho del Mpio. de Chnipas, Dto. Jud. Arteaga.

- Cueva del Epazote.* Rancho del Mpio. de San Francisco del Oro, Dto. Jud. Hidalgo.
- Cueva del Toro.* Rancho de la Sec. Mpal. de Pichachí, Mpio. y Dto. Jud. Guerrero.
- Cueva de Pérez.* Rancho del Mpio. y Dto. Jud. Guerrero.
- Cueva de Puerto Colorado.* Rancho del Mpio. de Guazapares, Dto. Jud. Arteaga.
- Cueva de Tierra.* Rancho del Mpio. de Riva Palacio, Dto. Jud. Morelos.
- Cueva Oscura.* Rancho del Mpio. de Nonoava, Dto. Jud. Benito Juárez.
- Cueva Parada.* Rancho de la Sec. Mpal. de Sisoguichi, Mpio. de Bocoyna, Dto. Jud. Benito Juárez.
- Cueva Pinta.* Rancho del Mpio. de Carichí, Dto. Jud. Benito Juárez.
- Cueva Pinta.* Rancho de la Sec. Mpal. de Pichachí, Mpio. y Dto. Jud. Guerrero.
- Cueva Pinta.* Rancho de la Sec. Mpal. de Yoquivo, Mpio. de Ocampo, Dto. Jud. Rayón.
- Cueva Tiznada.* Rancho del Mpio. de Urique, Dto. Jud. Andrés del Rfo.
- Las Cuevas.* Rancho del Mpio. de Morelos, Dto. Jud. Andrés del Rfo.
- Cuevas Blancas.* Rancho de la Sec. Mpal. de Pinos Altos, Mpio. de Ocampo, Dt. Jud. Rayón.
- Cuevas de Abajo.* Rancho del Mpio. de Matamoros, Dto. Jud. Hidalgo.
- Cuevas de Armenta.* Rancho de la Sec. Mpal. de Tomochi, Mpio. y Dto. Jud. Guerrero.
- Cuevas del Cantil.* Rancho del Mpio. de Morelos, Dto. Jud. Andrés del Rfo.
- Cuevecillas.* Rancho del Mpio. de General Trías, Dto. Jud. Morelos.
- Cuevecillas.* Rancho del Mpio. de Rosario, Dto. Jud. Hidalgo.
- Cuevecillas de Abajo.* Rancho del Mpio. de Hidalgo del Parral, Dto. Jud. Hidalgo.
- Cuevecillas de Arriba.* Rancho del Mpio. de Hidalgo del Parral, Dto. Jud. Hidalgo.
- Las Cuevitas.* Rancho del Mpio. de Batopilas, Dto. Jud. Andrés del Rfo.
- Las Cuevitas.* Rancho del Mpio. de Casas Grandes, Dto. Jud. Galeana.
- Las Cuevitas.* Rancho del Mpio. de Guadalupe y Calvo, Dto. Jud. Mina.
- Las Cuevitas.* Rancho del Mpio. de San Francisco de Borja, Dto. Jud. Benito Juárez.
- Las Cuevitas.* Rancho del Mpio. de Satevó, Dto. Jud. Morelos.
- Las Cuevitas.* Rancho del Mpio. de Urique, Dto. Jud. Andrés del Rfo.
- Las Cuevitas.* Rancho de la Sec. Mpal. de Vergel, Mpio. de Balleza, Dto. Jud. Hidalgo.

DURANGO

Cueva de la Cucaracha. This dry cave is located across the canyon from Cueva de los Riscos and at about the same level. It consists of a single room about 15 m in diameter (Fish, 1965). It was explored on 21 July 1965 by John Fish and James Reddell.

Cueva del Guano. This cave is probably identical to Cueva de la España, Cueva de los Indios, Cueva "La Joya" de Lerdo, and a cave reported by Baker (1956) as being southeast of Torreón in Coahuila. It is located near the Coahuila-Durango state line northwest of Picardías and about 33 km south of Torreón. The entrance to the cave is an impressive horizontal opening 8 m high and 25 m wide. A passage averaging 10 m wide by 5 m high extends for 100 m before narrowing to 5 m. This entrance passage is floored with guano-covered breakdown and is inhabited by a large bat colony. The narrower passage extends for about 30 m to a major intersection. To the right a steep slope leads down into a chamber 60 m long, 7 to 10 m high, and up to 20 m wide. It slopes steadily down over small breakdown before terminating abruptly. Two passages lead from this room. One to the right extends about 30 m to a Y-intersection. The passage to the right ends after 10 m, while that to the left descends very steeply to an end after about 20 m. The other passage from the large room is a steep slope which leads up and intersects the entrance passage after about 20 m. This intersection constitutes a five-way intersection. Besides the passage back to the entrance and that into the large room, one to the right extends about 30 m

before ending in a small room. The other two passages run parallel to each other. One is about 6 m wide and 4 m high and ends after 35 m. The other opens into a room 35 m long, 15 m wide, and 7 to 8 m high. The cave has a total surveyed passage length of 549 m and the deepest point below the entrance is 59 m (see map, plate II). Air temperature in the bat chamber was recorded at 26.5° C, while that in the larger inner room was 24.5° C.

Cueva del Guano was mined for guano until 1961 when a serious lung disease (histoplasmosis) in the miners (leading to the death of one or more men) resulted in the cessation of mining operations. The cave was explored on 24 February 1966 by Bill Bell and James Reddell. It was revisited and mapped by Ed Alexander, William Elliott, Carl Kunath, and James Reddell on 16-17 June 1972.

The cave is of particular biological interest because it harbors a fairly large population of the relict ricinuleid *Cryptocellus mitchelli* Gertsch. It is also inhabited by the unusual spider beetle, *Niptus abstrusus* Spilman.

Cueva de los Riscos. This cave is located about 330 m up on the side of a canyon 4 km south of Mapimí. It has been heavily prospected for nitrates, but was apparently never actively mined. The entrance is a small opening about 2.5 m wide and 1.5 m high. This quickly opens into a large, heavily-decorated chamber more than 20 m wide, 8 to 10 m high, and 120 m long. The floor is very irregular with large breakdown boulders, numerous largely unexplored pits up to 15 m deep, and great masses of flowstone, numerous stalactites, stalagmites, and columns (see Fig. 2). At the end of the main chamber a slope leads up to a continuation of the room. This extends over massive breakdown boulders for about 30 m before terminating in a steep slope of loose rubble. A test pit about 8 m deep has been excavated at the base of the slope. A second passage is also located at the end of the main entrance chamber. This is reached by way of a steep flowstone slope. At the top of the slope a series of small rooms at various levels is encountered. Exploration was ended at the top of a 5 m deep unclimbable pit (see map, plate III). With the exception of the small rooms at the back of the cave, which are somewhat moist, the cave is dry throughout.

Cueva de los Riscos is presumably identical to the cave reported by the Pemex Travel Club (1964) as the "scarlet grottos" of Mapimí. It was first visited by cavers in August 1964 when Bill Russell located and explored it. It was revisited on 19 July 1965 by James Reddell, Terry Raines, and John Fish. The cave was mapped on 15 June 1972 by Ed Alexander, William Elliott, Carl Kunath, and James Reddell.

The inner rooms of the cave contain a rich troglobitic arachnid fauna. Most notable is the highly cave-adapted ricinuleid, *Cryptocellus reddelli* Gertsch. Other troglobites include the spiders, *Leptoneta limpida* Gertsch, *Pholcophora exigua* Gertsch, and *Psilochorus delicatus* Gertsch.

Cueva de la Siquita. Cueva de la Siquita is located near Rancho Descubridora about 45 km northwest of Mapimí. A now-abandoned mining road leads to its entrance and it is possible to drive almost to the cave entrance. The entrance to the cave is an opening about 7 m wide and 5 m high located on the side of a large hill. A metal platform has been constructed at the entrance (see Figs. 5 and 6). The entrance opens into a passage 8 to 20 m wide, which descends at an angle of about 55° to a depth of 64 m (see Fig. 7). Although part of this slope is climbable, part of it is not and a rope is required for the descent. Wooden ladders on the lower part of the slope are still usable, but it is easier to descend the entire drop by rope. To the left at the bottom of the entrance drop the passage continues as a high fissure with up to 10 m of fill having been removed from the floor. A continuation of the main passage could be seen high above the floor but could not be reached. A steep slope leads down to a pool up to 1 m in depth and inhabited



Fig. 3.—Ed Alexander at the entrance to Cueva de la Siquita. Photo by Carl E. Kunath.



Fig. 4.—James Reddell at the entrance to Cueva de la Siquita. Photo by Carl E. Kunath.

by troglobitic amphipods. To the right from the entrance a passage about 15 m wide and high continues as a fissure for about 40 m before turning sharply to the left. It narrows to 10 m and continues over large breakdown blocks to open into a chamber 10 to 15 m high, 20 m wide, and 15 m long. A passage at the back of this room extends an additional 20 m before ending (see map, plate IV). The larger inner room is inhabited by a large bat population and the floor is covered with guano. The water temperature was 25.5° C, while the air temperature was 22.3° C.

Cueva de la Siquita has been mined extensively for phosphates and much of the original floor of the lower part of the cave has been removed. The cave was located and mapped on 14 June 1972 by Ed Alexander, William Elliott, and James Reddell. The only species of unusual interest found in the cave was the troglobitic amphipod *Mexiweckelia mitchelli* Holsinger.



Fig. 5.—Bill Elliott (top) and Ed Alexander at the entrance to Cueva de la Siquita. Photo by Carl E. Kunath.

Rumored Caves

Cueva de los Riscos. A second cave with this name was reported near San Luis del Cordero. It is reported to be entered by a small opening, which then enlarged into an “endless” series of passages and rooms.

Fissures and small caves near La Pila. Numerous fissures and small “openings” are reported by Baker (1960) as being located 4 mi SW of La Pila in the Guadiana Lava Field.

Caves near Mapimí. Numerous caves have been reported as near Mapimí. A large, possibly natural, opening was seen near the entrance to Cueva de los Riscos. It is the scene of a large mining operation and may be an enlarged natural cave.

Mine-cave near San Luis del Cordero. A mine supposedly intersected a large cave a few kilometers from San Luis del Cordero.

Cave near Santa Ana. This is reported by Jones (1964) as being a small cave at Santa Ana at an elevation of 1300 ft.

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Fig. 6.—Bill Elliott in Cueva del Diablo. Photo by Carl E. Kunth.

RECENT PUBLICATIONS IN MEXICAN SPELEOLOGY

Abstracts

- Bowman, T. E. 1975. A new genus and species of troglobitic cirolanid isopod from San Luis Potosí, México. *Occ. Pap. Mus. Texas Tech Univ.*, 27. 7 p.
This paper describes a new genus and species of troglobitic cirolanid isopod, *Mexilana saluposi*, from Cueva del Huisache, 4 km NW Micos, San Luis Potosí. This new genus is found to be quite distinctive, but probably derived from an isopod resembling *Speocirolana* or *Creaseriella*.
- Bowman, T. E. 1976. Three new troglobitic asellids from western North America (Crustacea: Isopoda: Asellidae). *Internatl. J. Speleol.*, 7:339-356.
In addition to the description or redescription of species of isopod from California and Canada, this paper includes the description of *Caecidotea chiapas*, new species, from Cueva de los Murciélagos and Cueva de los Llanos, 15 km ESE of San Cristóbal de las Casas, Chiapas. This troglobite is most clearly related to the troglobitic *C. pasquinii* (Argano) from wells in Veracruz. It extends the range of the family Asellidae south almost to the Guatemalan border.
- Brignoli, P. M. 1976. Beiträge zur Kenntnis der Scytodidae (Araneae). *Rev. Suisse Zool.*, 83:125-191.
This review of the family Scytodidae includes the records of all species of the genera *Loxosceles* and *Scytodes* collected by the Italian biospeleologists in México and Guatemala. It also lists all of the species of the family known from the world, including many known from Mexican and Guatemalan caves.
- Coons, D. 1976. The river caves. *Canadian Caver*, 8(1):34-41.
This article recounts the exploration and mapping of Gruta Cacahuamilpa, Cueva del Río San Jerónimo, and Cueva del Río Chontalcoatlán in Guerrero. These famous caves (the later two famed as Las Dos Bocas) form a remarkable system with a total of almost eight miles of surveyed passage. A map is included which shows the three caves in relation to each other.
- Delamare Deboutteville, C., and C. Juberthie. 1975. Mission en République de Saint-Domingue et au Guatemala (8 avril au 29 avril 1975). *Ann. Spéléol.*, 30:767-771.
In addition to describing the results of study in several caves in the Dominican Republic, this reports briefly on four caves visited and collected in in Alta Verapaz, Guatemala. Explored were Cueva Chiacam, Cueva de la Candelaria, Jul'Pec Beneack Yaj, and Cueva del Cerrito.
- Fernandez Ruiz, G. 1976. Montañas y cavernas. Donde la vida parece imposible. *Rev. Geogr. Universal*, 1:696-718.
This popular article describes the life of caves and mountains in México. It includes a very brief discussion of the origin of cave life and describes, with excellent photographs, some of the more distinctive species which inhabit Mexican caves.

Gascoyne, M. 1976. M.U.C.C.C. Mexico/Guatemala report, Christmas 1975. *Canadian Caver*, 8(1):41-51.

This article records the finds of a trip to Chiapas and Guatemala in 1975. The Chiapas part of the trip primarily included cave hunting in the highlands. An 89.1 meter deep pit (Shaft 1) was mapped and the map is included in the report. A map is also included of the "Sector de la Salida Chicja." Two large sinks, El Ojo Grande and El Ojo Chiquito, were found near Barillas in Guatemala. El Ojo Chiquito is about 200 meters deep, while El Ojo Grande is about 250 meters deep. Both are entered by enormous entrances. Maps of the two caves and an area map is included.

Harmon, R. S., P. Thompson, H. P. Schwarcz, and D. C. Ford. 1975. Uranium-series dating of speleothems. *Bull. Natl. Speleol. Soc.*, 37:21-33.

This important article on speleothem dating includes speleothems from Sótano de Tinaja, Cueva del Arroyo, and Sótano de Soyate, San Luis Potosí, México. The speleothems are dated and their growth rates calculated. It was found that the oldest stalagmite in Cueva del Arroyo was 108,900 plus or minus 4,200 years old.

Hoffman, R. L. 1976. A new lophodesmid milliped from a Guatemalan cave, with notes on related forms (Polydesmida: Pyrgodesmidae). *Rev. suisse Zool.*, 83:307-316.

This includes the description of a new species of pyrgodesmid milliped from Cueva Chirripeck, south of Cobán, Alta Verapaz, Guatemala, as *Lophodesmus petrinus*. The species is also recorded from Cueva Agua Escondida, Huehuetenango, Guatemala.

Kawakatsu, M. 1976. Mexico: Its nature and landscape. *The Heredity (Iden)*, 30(3):34-45. (In Japanese).

This paper by a Japanese flatworm taxonomist relates his experiences and impressions of two trips to México with Dr. Robert W. Mitchell and other Texas cave biologists. His photographs include several of Mexican caves and their fauna.

Opell, B. D., and J. A. Beatty. 1976. The Nearctic Hahniidae (Arachnida: Araneae). *Bull. Mus. Comp. Zool.*, 147:393-433.

This revisionary study includes the description of a new species, *Neoantistea unifistula*, from Sótano de Botella Chica, 2 miles NW of Tequila, Veracruz, México. This species is not adapted for cave life and is probably an accidental.

Rowland, J. M. 1975. A partial revision of Schizomida (Arachnida), with descriptions of new species, genus, and family. *Occ. Pap. Mus. Texas Tech Univ.*, 31:1-21.

This paper includes the description of 4 new species of cave-inhabiting schizomids. A new family, the Protoschizomidae, is erected to include a new epigeal genus and the genus *Agastoschizomus*. *Agastoschizomus* includes the species *A. lucifer* from caves in the Sierra de El Abra and *A. huitzmolotlensis*, new species, from Sótano de Huitzmolotitla, S.L.P. *Schizomus trilobatus*, new species, is described from Grutas del Coconá, Tabasco; *S. pallidus*, new species, is a troglobite known only from Cueva Macinga, Tlilapan, Veracruz; and *S. lanceolatus*, new species, is known only from Cueva del Diablo, Veracruz.

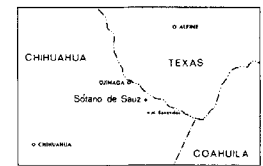
SOTANO DE SAUZ

EJIDO M. BENAVIDES

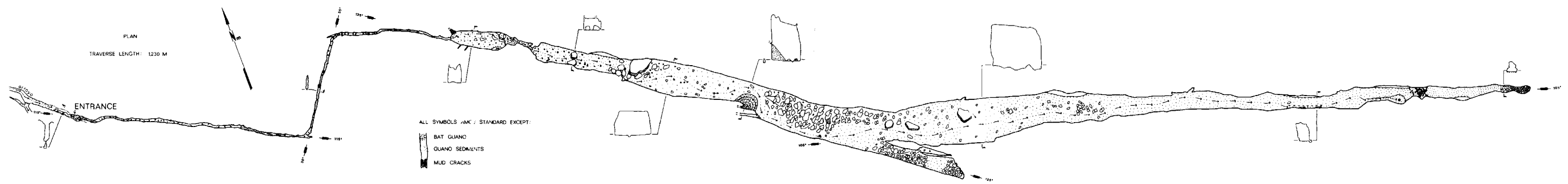
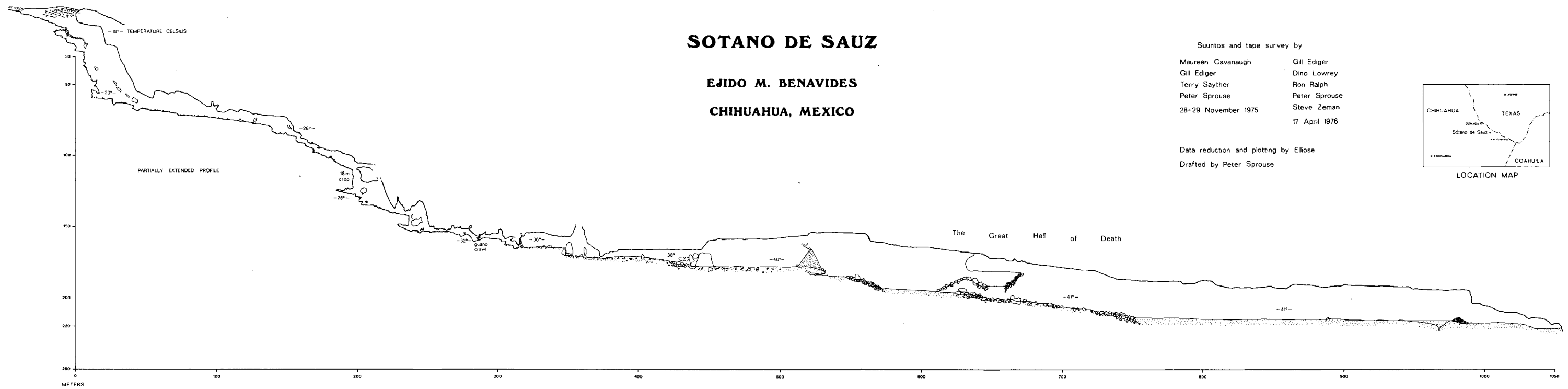
CHIHUAHUA, MEXICO

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Gill Ediger Dino Lowrey
Terry Sayther Ron Ralph
Peter Sprouse Peter Sprouse
28-29 November 1975 Steve Zeman
17 April 1976

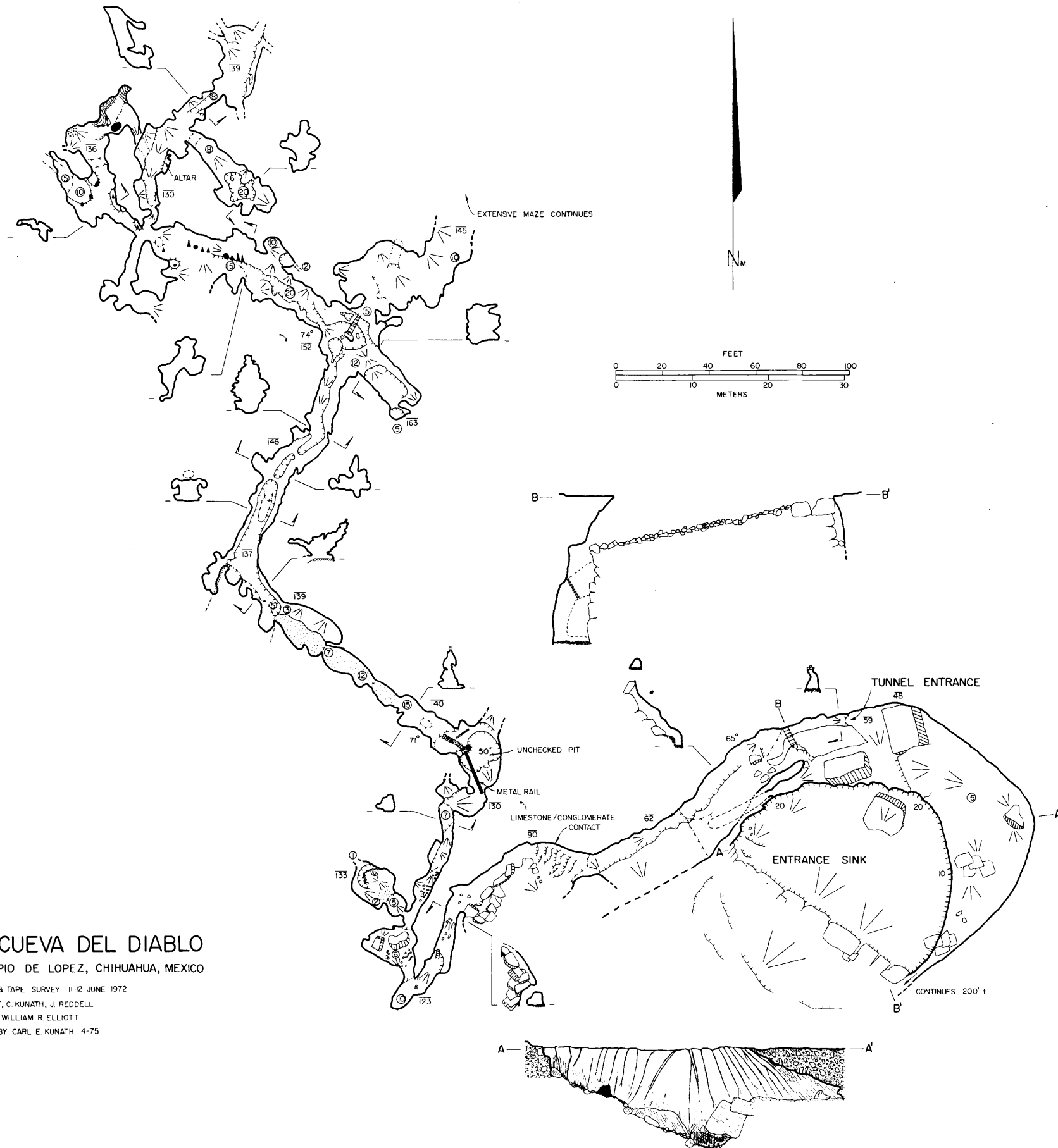
Data reduction and plotting by Elipse
Drafted by Peter Sprouse



LOCATION MAP

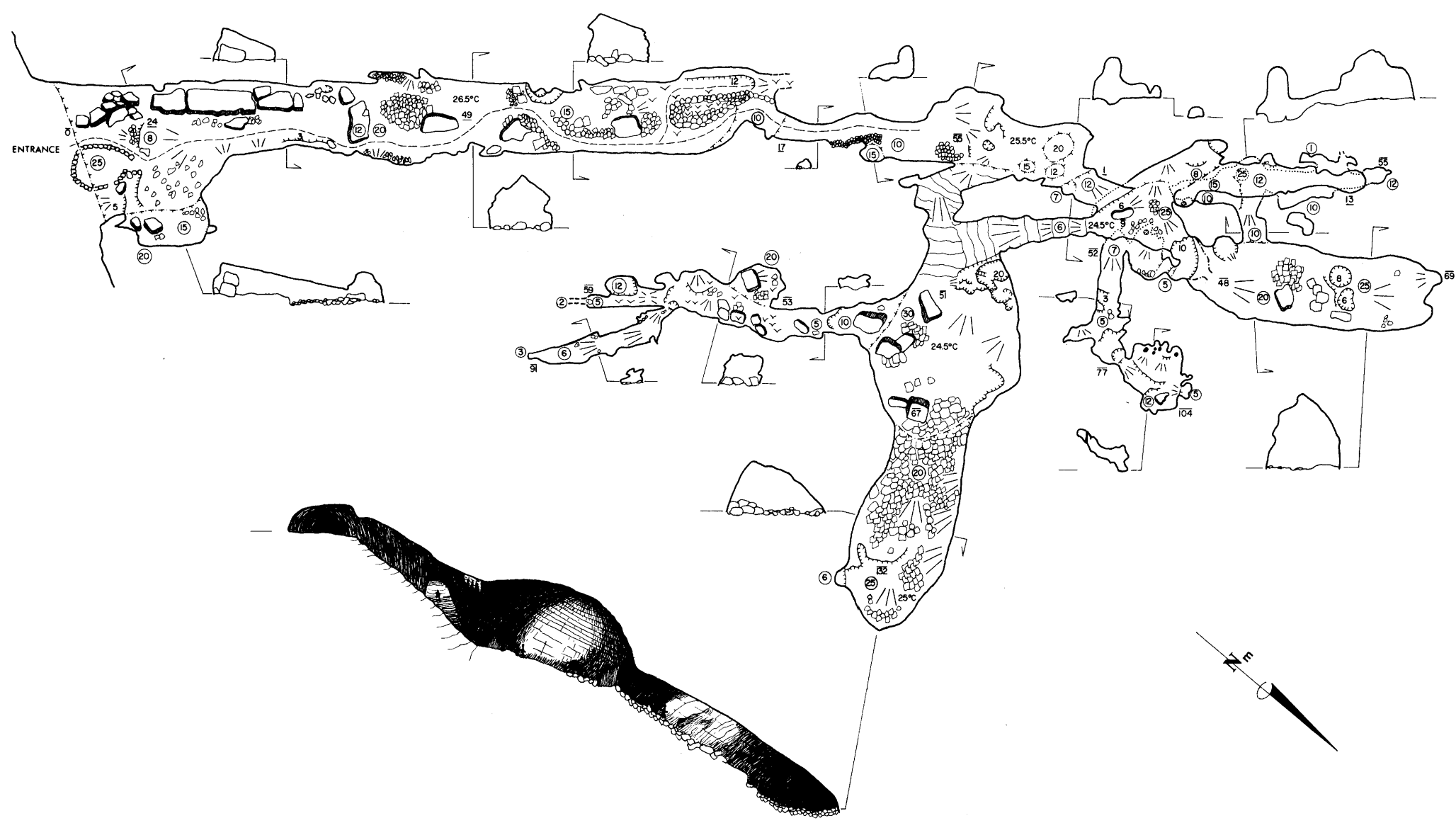
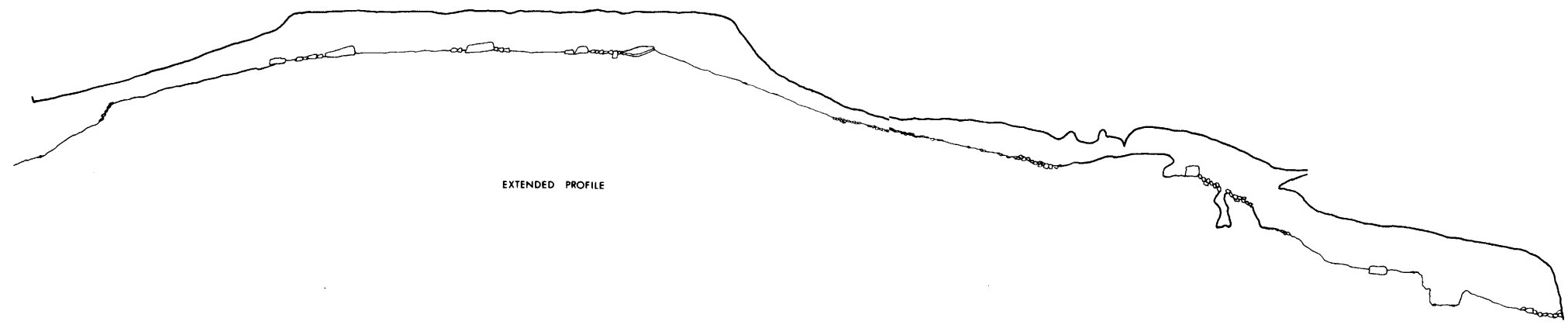


Association for Mexican Cave Studies



LA CUEVA DEL DIABLO
 MUNICIPIO DE LOPEZ, CHIHUAHUA, MEXICO

BRUNTON & TAPE SURVEY 11-12 JUNE 1972
 W. ELLIOTT, C. KUNATH, J. REDDELL
 DRAWN BY WILLIAM R. ELLIOTT
 DRAFTED BY CARL E. KUNATH 4-75

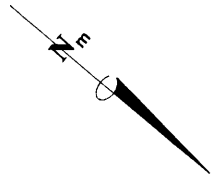
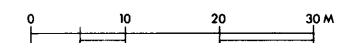
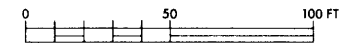


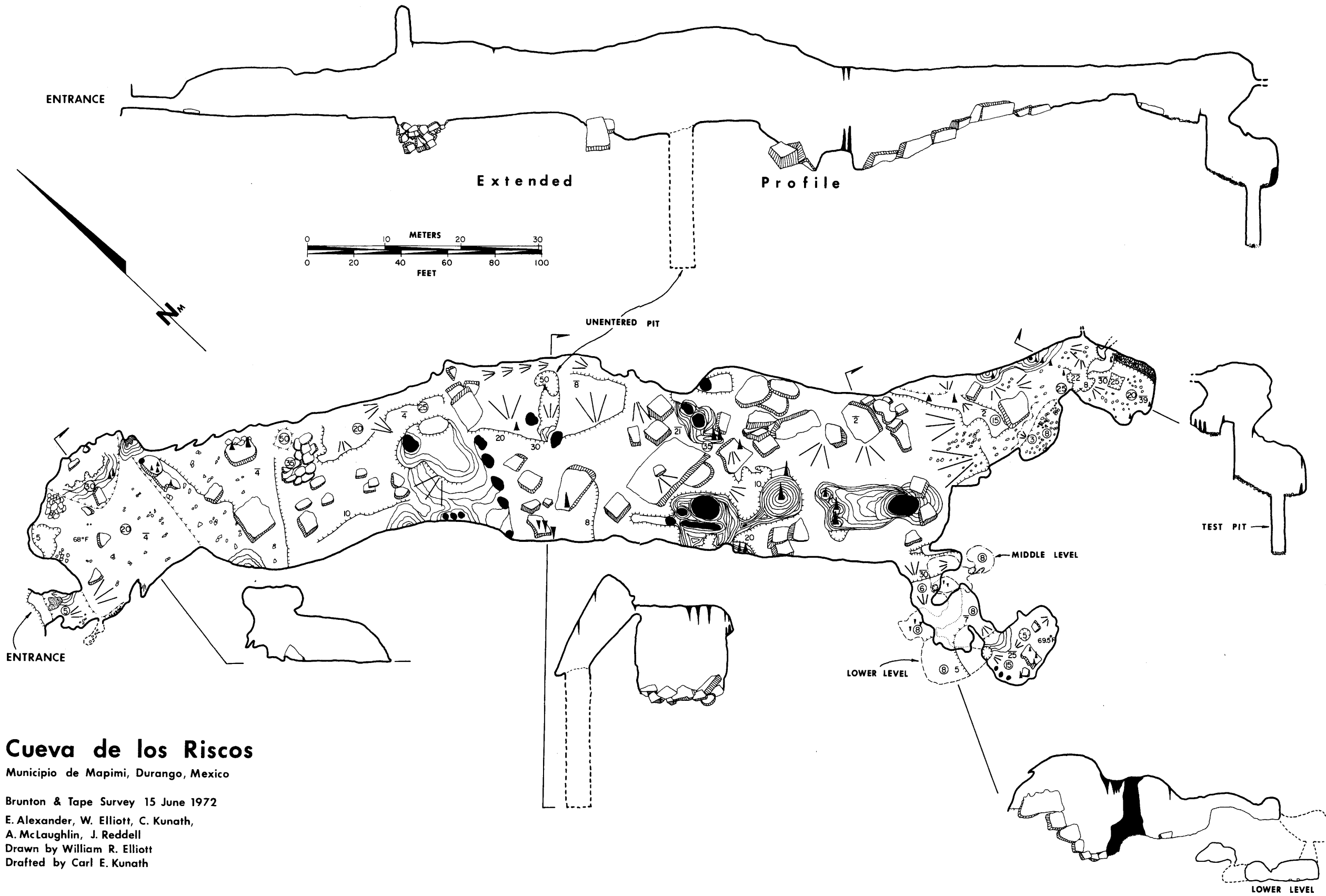
Cueva del Guano

Municipio de Lerdo, Durango

Brunton and tape survey, 16-17 June 1972, by
E. Alexander, W. Elliott, C. Kunath, and
J. Reddell. Drafted by W. Elliott

- NOTES: 1. CEILING HEIGHTS, ETC., ARE IN FEET
2. SURVEY TOTALS 1800 FT (549 M), HORIZONTALLY
3. RELIEF IS 193 FT (59 M)



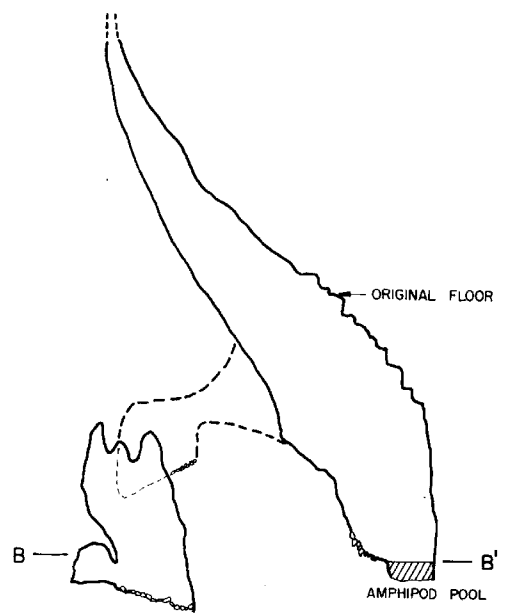
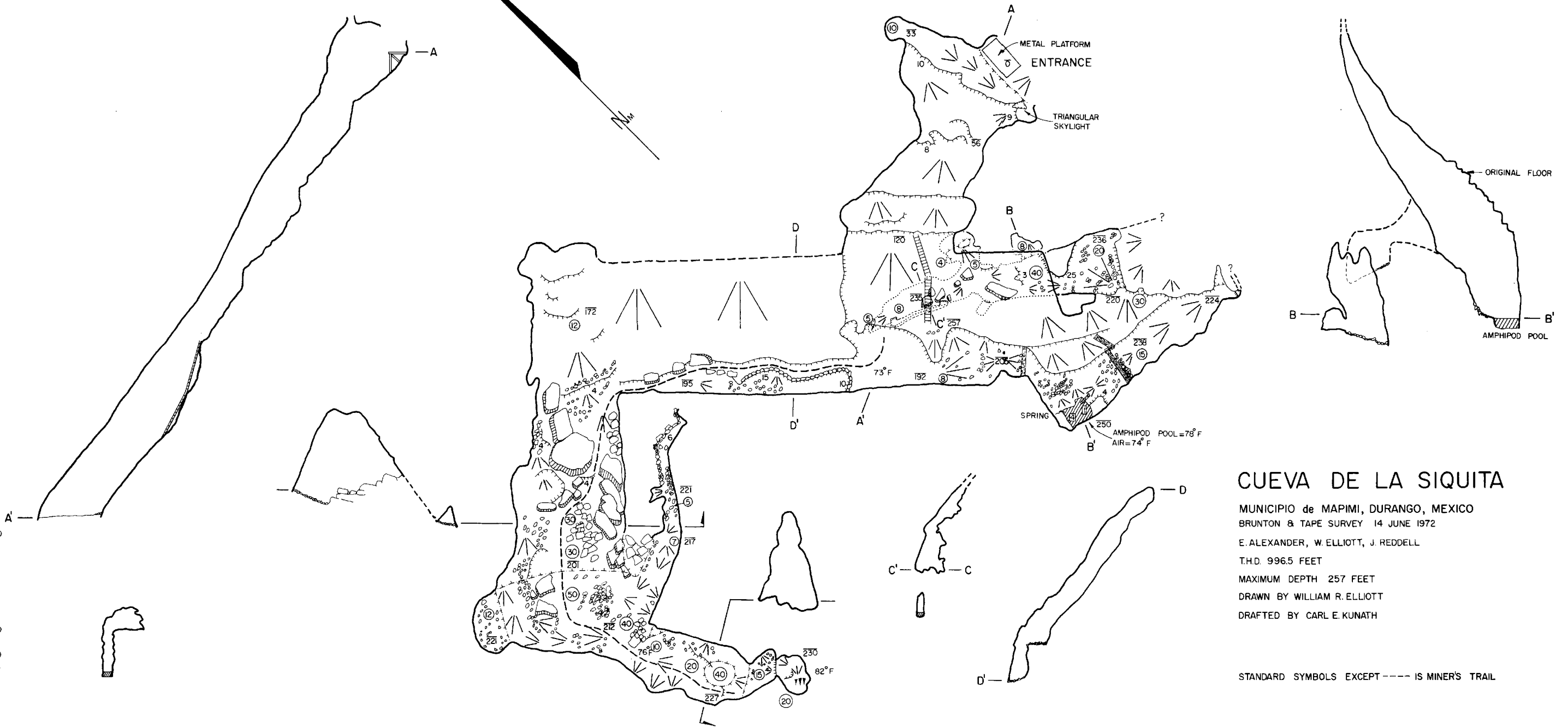
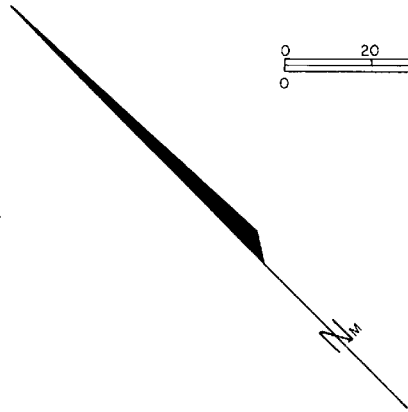


Cueva de los Riscos
 Municipio de Mapimi, Durango, Mexico

Brunton & Tape Survey 15 June 1972
 E. Alexander, W. Elliott, C. Kunath,
 A. McLaughlin, J. Reddell
 Drawn by William R. Elliott
 Drafted by Carl E. Kunath

FEET
 0
 50
 100
 150
 200
 240
 250
 257

0 20 40 60 80 100
 0 10 20 30
 FEET
 METERS



CUEVA DE LA SIQUITA

MUNICIPIO de MAPIMI, DURANGO, MEXICO
 BRUNTON & TAPE SURVEY 14 JUNE 1972

E. ALEXANDER, W. ELLIOTT, J. REDDELL

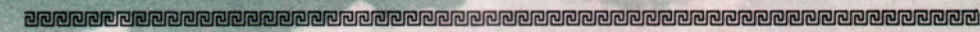
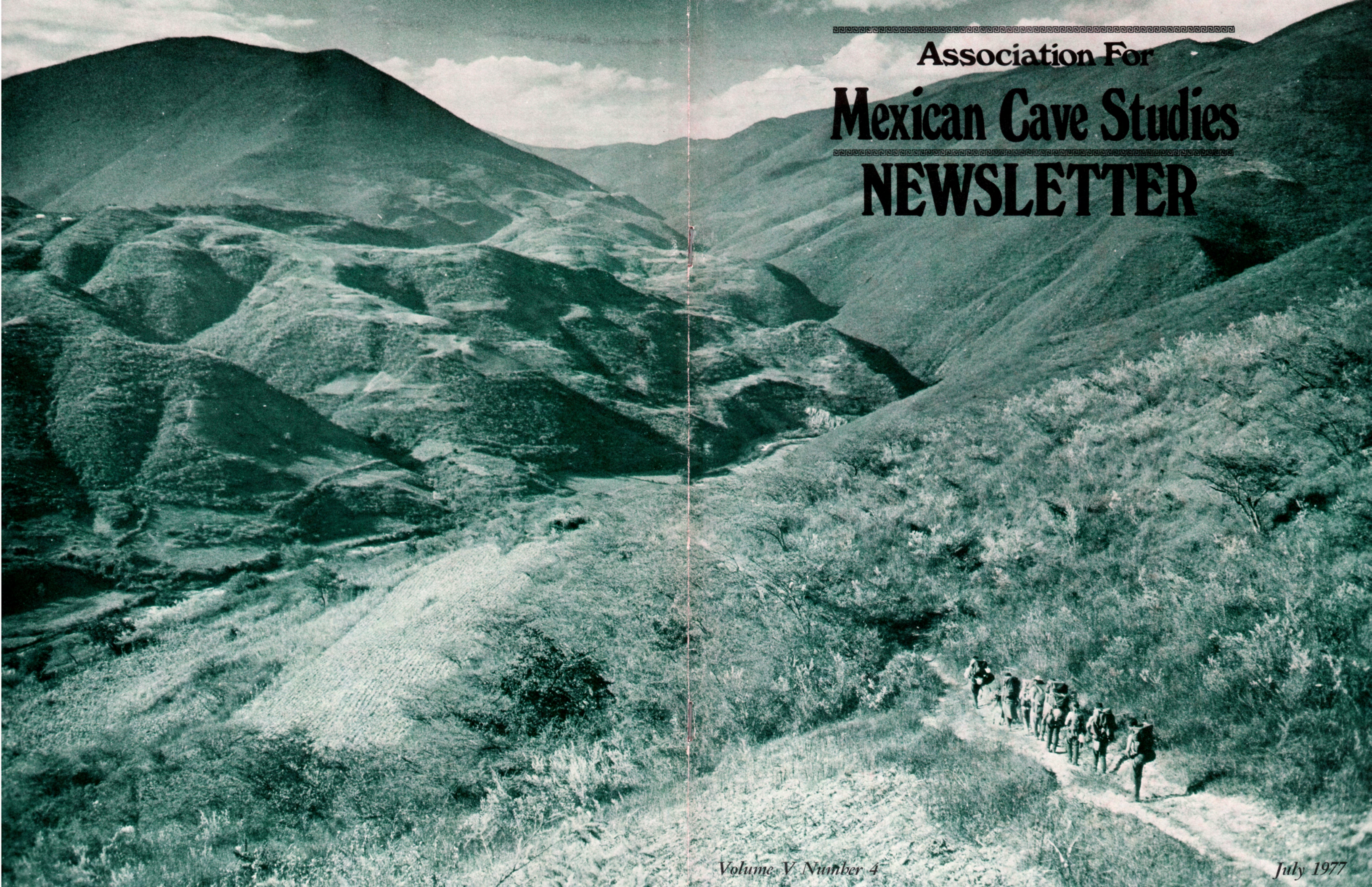
T.H.D. 996.5 FEET

MAXIMUM DEPTH 257 FEET

DRAWN BY WILLIAM R. ELLIOTT

DRAFTED BY CARL E. KUNATH

STANDARD SYMBOLS EXCEPT ---- IS MINER'S TRAIL



Association For
Mexican Cave Studies
NEWSLETTER



The Association for Mexican Cave Studies is a non-profit organization whose goals are the collection and dissemination of information concerning Mexican caves. The AMCS publishes a Newsletter, Bulletin, and Cave Report Series which are available to any sincerely interested conservation-minded person. The AMCS Newsletter is published six issues per volume as frequently as necessary at a cost of \$5.00 US per volume. Information concerning the other publications is available upon request. Potential contributors are urged to submit articles for publication. The article may cover any phase of Mexican speleology. Trip reports are requested from all trips. All correspondence and orders for publications should be sent to:

ASSOCIATION FOR MEXICAN CAVE STUDIES
P.O. Box 7037, University Station
Austin, Texas 78712 USA

Material for publication in the Newsletter should be sent to James Reddell or Terry Raines at the above address.

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Cover Photograph—

The Río Atrejea winds its way through arid mountains in western San Luis Potosí. Just downtrail from the village of El Limoncito we paused for this view of the river and our destination of the day, Rancho El Barro (upper left). The next day we would climb another mountain and make the first descent of El Sótano (see AMCS Newsletter, Volume III, Number 5). (Photo by Terry Raines)

Association For
Mexican Cave Studies
NEWSLETTER

Volume V Number 4

July 1977

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You're not going to believe this. As our country stands on the verge of a depression, with the economy going to hell in a handbag, as the government and corporate powers band together to kill us with nuclear power or if that doesn't succeed a nuclear war, we here at AMCS headquarters are going to do our best to turn the situation around and at least help out fellow cavers. Our first step is to make the AMCS Newsletter FREE TO ALL CAVERS! Yes, that's right. Free to any caver who's a member of the NSS or organized caving anywhere, anyone who wants to be a caver, or just anyone who wants to read about caving and is in tune with our conservation policies.

Of course we will have continuing expenses. For this reason we will most certainly accept any donations of either money, things of value, or even things of no value. Our main goal is to get the Mexican news out to all cavers. Happy reading.

FUTURE PUBLICATIONS

Three AMCS Bulletins are in the planning stages now, all hopefully to be published by the 1981 International Congress of Speleology in Kentucky.

Further Studies on the Cavernicole Fauna of Mexico and Adjacent Regions—this is the fourth volume of a series of bulletins in which new species of cave animal are described. It will include primarily species collected by AMCS cavers during the last five years.

The Caves of the Sierra de Guatemala—this bulletin will include all maps and other information available on the caves of this important karst region. The Sierra de Guatemala contains, among other notable caves, the still incompletely explored Sotano de la Joya de Salas. Anyone having information on this region is urged to send it to James Reddell, Texas Memorial Museum, University of Texas, Austin, Texas 78705.

The Caves of Yucatan—this bulletin will include descriptions and maps of numerous Yucatan caves, as well as a summary of archeology, geology, biology, history, etc. This major karst region has been the subject of three lengthy expeditions and a fourth is in the planning stages. Information on this region can also be sent to James Reddell.

TRIP REPORTS

Date: 6-18 July 1967

Destination: San Luis Potosí and southern Tamaulipas

Persons: John Fish, James Reddell, Philip Russell

Reported by: James Reddell

6-7 July—Left Austin about 11:30 p.m. and drove to a campsite five miles east of San Juan del Río on the road to Jalpan.

8 July—In the early morning we collected for a short time and then drove on toward Jalpan. We turned left off of the main road and drove down into a deep canyon and then up to the end of the road, about a half-mile from the mining town of Río Blanco. We made many surface collections and then walked to town where we obtained a guide to take us up to the cave region we hoped to investigate. We were taken to a small nacimiento which helps to turn the Río Blanco into a permanent stream. The nacimiento emerges from bedding-planes in a thin-bedded limestone, but proved to be a good collecting site. After a heavy rain about 4:00 p.m. we walked up to the car and spent the night there.

9 July—We left Río Blanco about 9:00 a.m. for the long walk up to Puerto del León, where we hoped to find caves and pits. Along the trail we were shown a small sótano about 20 ft deep, which we called Sótano de Dos Arañas Grandes after two large tarantulas we collected inside. The cave consists of a single fissure passage 40 ft long, 1 to 3 ft wide, and 20 to 30 ft high. It ends in breakdown at both ends. From here we walked on up to a pass, Puerto de la Lagunita. Here we obtained a guide who showed us a sótano with a 3 ft in diameter entrance dropping down a steep handline slope over loose rock for 50 vertical feet. At this point it drops vertically as a pit 40 ft long and 20 ft wide for 100 ft into a large room. We had only a 100 ft rope with us so we were unable to descend the drop. This pit we called Sótano de la Lagunita. From here the trail led up a beautiful park-like canyon and gradually entered high, beautiful forest. When we arrived at Puerto del León, at an elevation of 10,000 ft, we were shown a cave (called locally La Mina). A small entrance leads down a slope through a narrow opening and to a junction. The right-hand passage ends quickly but a tube to the left slopes down into a room about 20 ft in diameter and 8 ft high. A slope up leads into a slightly larger breakdown-floored room from which no passages lead. A slope down to the right, however, leads into a room 40 ft in diameter and 10 to 15 ft high. Numerous helictites and other attractive, if vandalized, formations decorate the room. The cave apparently contains mercury ore and is formed in very thin-bedded limestone. Collecting in the cave was good, although troglodites were scarce. We left the cave and walked back to the car. This area promises to contain many caves and pits, but care should be chosen in picking a guide who knows the area well (ours did not). At the car we were greeted by several Mexican hunters with several cases of beer so our departure was delayed until rather late. We drove a few miles down the canyon and camped.

10 July—From our campsite we drove on to the highway and then along the highway to the small village of Tejamanil. Here we were taken to a small cave, Cueva del Mercurio, below Tejamanil on the north side of the highway. A 30 ft wide, 20 ft high entrance in the side of an arroyo leads down a breakdown slope for 40 ft. A low crawlway over a slope of loose breakdown apparently formed by mercury prospecting leads an additional 40 ft before ending in a small chamber floored with 3 inches of water. From here we returned to Tejamanil, going to a small road-cut cave west of Tejamanil. This cave was triangular in cross-section and extended for 30 ft as a 3 ft crawlway before ending. From near Tejamanil we left the highway and ascended a steep paved road. This road leads to the ranch, La Trinidad, which is owned by the governor of Querétaro. Here an old man took us first to Cueva del Judío and then to a sótano, which we named Sótano del Gobernador. The cave is entered by two sturdy sets of steps and drops into one end of a room 150 ft long, 60 ft wide, and up to 50 ft high with a skylight near the center. We mapped the cave and made a careful collection which proved to be quite interesting. Camel crickets and some types of beetles were abundant, but the principal items of interest were two species of blind carabid beetles of the genera *Mexaphaenops* and *Paratrechus*. From here we went to the sótano. An opening 15 ft long and 8 ft wide drops vertically for 57 ft to a slope which leads down an additional 15 ft and back 40 ft. From here we drove to Pinal de Amoles and slept in a park-like area above the town.

11 July—Leaving Pinal de Amoles we drove towards Jalpan, stopping first at a place called El Tigre. Here we were taken to a sótano high on the mountainside. The entrance is about 20 ft by 10 ft. A slope leads down to a fissure dropping about 90 ft to a ledge and then 64 ft to the bottom of the cave. No passages lead out. From here we went to the Río Jalpan and walked across the Puente de Dfos, visiting one small cave (Cueva Puente Natural) along the way. This cave was entered by a steep sloping passage leading under a natural bridge about 50 ft high. It drops on down to a deep pool which was not crossed. The area above the Puente de Dfos is covered with karst pinnacles and caves. John and Philip walked all of the way down to the lower entrance of the Río Jalpan and then went upstream for a short distance. The cave is interesting and should be mapped. From here we drove to El Madroño and slept.

12 July—Early in the morning we collected in two small caves at the campground. These caves (Cueva de las Tablas and Cueva del Niño) had been visited on our previous trip to the area. Collecting was good in both. From here we drove on to Ahuacatlán and then to the Rancho de Potrerillos. We first visited Cueva de Potrerillos, which was described in Bonet's book on the caves of the Xilitla area. Collecting was good. We then went up to a 125 ft deep pit which John entered and sketched and which we named Sótano de Potrerillos. From here we drove on to Valles where we spent the night.

13 July—We spent the morning in Valles and then drove to Ocampo where we inquired about caves, went to a movie, and then spent the night.

14 July—We first went southeast of Ocampo to the village of El Puente where we were guided to Grutas de El Puente about one hour walk away. This cave is impressive and should be surveyed. An opening on the river leads into a passage about 60 ft wide, 10 to 50 ft high, and 600 to 800 ft long, ending in two other entrances. There is a sizable bat colony and collecting was good. From here we drove north from Ocampo to El Refugio. This is a long hard pull in four-wheel drive up the western side of the Sierra de Guatemala. At El Refugio we were guided to the Sótano de El Refugio. This is a spectacular pit, 180 ft by 150 ft dropping 400 ft on the shallow side and 475 ft on the high side to a level floor with no leads extending out. Small green parrots and huge military macaws abound in the pit. We camped here.

15 July—We drove from El Refugio towards Cuevacillas but missed the turn and ended up in La Gloria instead. The road in places is unbelievably bad. We looked for caves near La

Gloria without success and, almost out of gas, drove on to Mante where we spent the night.

16 July—We drove west towards Ciudad del Mafz, checking on cave leads as we went. We picked up many leads but all were several miles from the highway. We stopped at the William R. Blagg Ranch to look for crayfish in Cueva de La Lagunita. While looking for Cueva de La Lagunita we found another cave, which we named Cueva Mosca. Two entrances lead over breakdown into a passage 130 ft long, 10 ft high, and 15 ft wide. A duck-under leads into a room 100 ft long, 40 ft wide, and 5 to 20 ft high. Thirty feet from the end a passage to the left leads as a stoopway-crawlway for 80 ft to a room 50 ft long, 15 ft wide, and 10 ft high with a guano-covered lake 2 ft deep. A passage to the right leads from the entrance passage for 30 ft to a pit 50 ft deep and 3 ft in diameter. It was unexplored but leads down to water. Collecting in the cave was excellent. We then visited Cueva de La Lagunita, about 200 yds downstream from Cueva Mosca. From here we drove to Sumidero Piedra Paloma and looked for crickets without success. We drove on to Ciudad del Mafz picking up good leads along the way. We drove north to the turnoff to El Guayalote where we slept.

17 July—We drove across a horrible sandy desert to the Rancho La Libertad (El Guayalote) to check a promising lead. Instead we found a poorly developed desert gypsum karst. We entered four small caves in gypsum. The largest (Cueva de Dos Cuartos) was about 100 ft long. Other caves certainly exist in this same region. We returned to the highway and drove along the highway to Tula. En route we stopped at a cave by the highway (Cueva Abajo de la Carreterra). This was a sink partially covered by the new highway. A 6 ft high, 3 ft wide entrance leads into a passage about 100 ft long. Crickets and rhadinid beetles were collected. From here we drove northwest to the top of the mountains just outside Ciudad Victoria where we picked up cave leads and located two of them before going to bed.

18 July—In the morning we checked three sótanos. One was an opening about 2 ft in diameter and leading down into a fissure 3 ft wide sloping over breakdown until the floor is reached about 90 ft below the pit. The air in the cave was bad so we named it Cueva Aire Mal. The other cave, Sótano Bonita, was entered by a small hole leading to a slope to a drop about 75 ft deep. The third cave was under the edge of the highway and was small with much probably recent breakdown. From here we returned to Ciudad Victoria and then to Austin.

Date: 3-12 April 1968

Destination: Acuitlapán, Guerrero

Persons: Miles Abernathy, Jerry Broadus, Bill Calvert, Joe Cepeda, Dennis Fortessan, Russ Harmon, Donna Lovelace

Reported by: Russ Harmon

3 April—Departed at 7 p.m. after the usual two-hour delay that accompanies most caving endeavours. An hour or so later we passed Michael A. Sanborn outside of San Antonio as he sat drinking beer in the back of his "Landrover." After a short stop in San Antonio to pick up some last minute gear we arrived at the border just after midnight.

4 April—Michael A. was waiting for us there and we talked for a few minutes before we headed south once again. Passed through Monterrey at about 5:30 and Saltillo at about day-break. Then the trouble began. About an hour outside of Matehuala Jerry's car began leaking transmission fluid and in no time at all we had ourselves a real neat engine fire. Got the ole' Merc' back on the road and into Matehuala for repairs when my overloaded little Dodge Dart took a nasty rut and the next thing I know, I'm leaking gas from the fuelline-gas tank connec-

tion. Well, about this time we seriously were considering taking a look at the gypsum sinks in the area. Just then a Mexican passerby suggested using some soap to plug the leak. Don't laugh—it worked! Were back on the road at 2:30 after getting the gas tanked fixed for a mere 30 pesos. Arrived in San Luis Potosí at 5:30 and headed for Querétaro and Toluca, stopping about 30 mi outside of Toluca for the night.

5 April—The next morning after we had received a “Peso Blessing” from a wandering “Holy Man” our troubles really began. My car refused to start and after a futile attempt at pushing it down the winding road in an attempt to start the car, we put Bill Calvert, the biologist turned mechanic to work, and within an hour he had us headed south again. Then Jerry's car developed ignition trouble but again Bill (with some help from Miles) was able to turn the mechanical trick and by 3:30 we passed through Ixtapan de la Sal. The moral of this experience is to be careful about those “Peso Blessings” cheerfully dispensed by wandering holy men! We finally arrived at the village of Acuitlapán by 4:30 and eagerly inquired about “Grutas de Acuitlapán” and received an immediate response. Hired a guide for the steep price of 25 pesos and off we went with high hopes. After changing clothes and packing for at least a couple of nights at the cave we took off on a 45 minue “forced march” and wearily arrived at what one can really call a VIRGIN CAVE, for there over the entrance was inscribed the name “Acuitlapán” with a trail of confetti leading down into the cave. Disregarding the late hour we decided to start mapping that evening and mapped about 800 ft before finally calling it quits.

6 April—We awoke kind of late the next morning and continued the mapping but soon to our dismay, we had run out of cave with just a little over 3000 feet of passage mapped. Well, the cave turned out to be a small scale “Bustamante” type of cave. The entrance was about a 15 ft slope into a solution cavity. It then develops into a series of five rooms with passageways leading over and around the rooms. The cave, as Bustamante, is a place of worship for the local people, as was evidenced by the burning candles we observed on our first trip into the cave. Our maps indicated that the cave had just over 1000 ft of passage which included some very nice formations. That afternoon we concluded our mapping and photography and hiked back to the cars and drove back to Acuitlapán to try and find a lead to the cave which John Fish had been told of on an earlier visit to the area. On our way out we met a group of Mexican cavers from Mexico City who told us of a large cave with a river running out it called “Las Granadas” and off we went with high hopes (and another 25 peso guide). Arrived at the American hacienda which is about 100 yards in front of the cave after a trecherous five kilometer drive over a “road” that is only fit for horses, jeeps, and other such types of transportation—not passenger cars. Well, this was the cave which we were looking for. The entrance was a 5 x 15 meter opening at the top of a pile of tremendous breakdown blocks with a river flowing in the entrance room. Decided to save the exploration for the next day and took off to find a place to camp for the night. We hiked down into the valley into which the river ran and what awaited us was a really fantastic sight..... The river ran over a 150 foot waterfall of really super weathered limestone and travertine dams onto a flat area covered with eight or nine pools and then down over another 50 foot waterfall into a small lake and finally over a couple of smaller waterfalls before the river went underground again. On our way down we met some students from Mexico City who led us to a really nice little campsite at the bottom of the second set of falls.

7 April—The next morning we eagerly began the survey of the cave, when after about 500 ft we ran into the “Lake Room.” We retraced our steps to the entrance room and began looking for other possible leads. Miles and I found three small passageways about 50 ft up the wall of the room, but they all led to the “Lake Room” at different levels. The “Lake Room” was about 100 ft across and 50 ft wide with what appeared to be 20 to 30 ft of water in it. Miles was elected to swim across the room and to try and determine where the passage leading out of the room led. He was able to walk in water about 5 ft deep down about 300 ft of passage until the water got

too deep to allow further exploration. So our exploration had ended for the lack of a couple of inner tubes. We proceeded to break camp and were all set to leave when we discovered that the brake fluid had leaked out of one of my brake drums. Bill managed to jury-rig the emergency brake and we proceeded out until I hit a chunk of limestone and broke my tie rod. Well, Joe, Jerry, Bill, and I walked into the village and caught a bus to Taxco where we hired a mechanic to come out early the next morning.

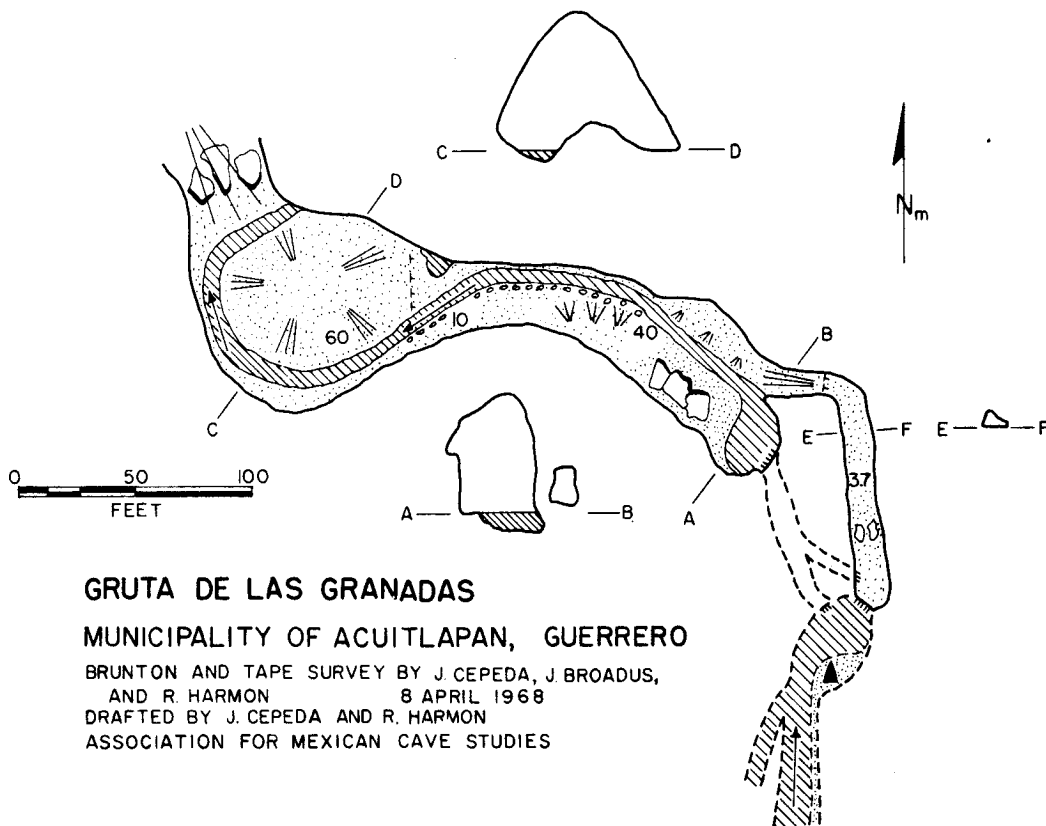
8 April—The next morning our mechanic had the car put back together and in operating condition by noon and after paying the man the modest sum of \$10.00 we spent the rest of the day in Taxco sightseeing and later that evening left for Acapulco.

9 April—Arrived in Acapulco after a blowout and a bad spare at 2 a.m. where we dropped in on Squire Lewis and Nancy and Jonathan Davis and Jan who were enjoying a leisurely vacation there. The rest of the day was spent getting the cars fixed and enjoying the sun and sand of Acapulco's best beaches. That evening we drove out north of Pierre Marques to the real Pacific surf and spent the night around a campfire drinking rum and coke and listening to the roar of the surf.

10 April—Rose for an early morning swim and then the cars separated—Jerry, Joe, Dennis, and Bill going back through Cacahuamilpa and Dos Bocas while Miles, Donna, and I went back stopping to spend Good Friday in Mexico City.

11 April—Left Mexico City about 1 p.m. and without a bit of mechanical trouble crossed the border at about 6 a.m. the next morning.

12 April—Back in Texas already planning for another trip to the area the next Christmas with rubber rafts to see if this cave—"Grutas de las Granadas" is really the largest cave in Mexico as legend has tell.



Date: 30 August - 7 September 1969

Destination: Tlaxiaco, Oaxaca

Persons: Duane Faith, Ed Fomby, Logan McNatt, Joe Sumbera

Reported by: Logan McNatt

Deciding we needed a Mexico caving trip before school started, we four hurriedly threw some stuff together and met in Austin. We took Duane's car to Nuevo Laredo, but from there on it was bus all the way. With no trouble at customs, we waited two hours for an express to Mexico City. Leaving Laredo at 8:00 p.m. on the 31st, we rumbled into Mexico City seventeen and one-half hours later.

We quickly found a four dollar motel room where we left our packs. We were horrified to find that all the southbound bus stations were about two miles across town. The next morning, Sept. 2nd, the taxi routes were all fouled up because of a big parade honoring President Ordaz. Backpacking two miles through a city of five million is really an experience!

We caught a bus to Cuernavaca and thence to La Grutas de Cacahuamilpa. Las Grutas were very impressive, as were Dos Bocas, about one-half mile below the entrance to Cacahuamilpa.

Munching on coconuts, we caught a bus to Acuitlapán, between Cacahuamilpa and Taxco. We slept inside the small store which also serves as a bus stop. The next morning, Sept. 3rd, we got a guide to take us to La Cueva de Quicholapa, about 5 km west of Acuitlapán. The cave is located about halfway up a hillside overlooking the small village of Cuapango. The entrance is about 6 ft high by 15 ft wide, and opens almost immediately into a large room 70 ft long. A narrow walkway, at the far end of the room on the right side, leads into the rest of the cave. The cave is very heavily vandalized, with a trail of confetti and used carbide marking most of the way.

La Cueva del Diablo is located on the hill above the schoolhouse in Acuitlapán. We entered it the same day. (Our guide, Joel Escobar, went into both caves with us.) A small stream was flowing out of the entrance, but Joel said the cave is dry during the dry season. After several hundred feet of primarily walking passage, there was a narrow 15 ft long pool which we had to swim. Forty feet past the pool was a 12 ft pit which Joe and Duane chimneyed, only to find a 20 ft pit which required rope. We didn't have any in the cave, so we turned back. Joel said that other cavers had been down the second pit, only to be stopped by a lake which no one had crossed.

We caught a bus to Taxco, where we spent one night, lots of money, and saw a Frankie Avalon "Beach Party" movie. wow

September fourth, we headed for Huahuapan de León, where we were to meet David Honea from the University of Texas. We spent one night there, but Dave hadn't come in by the next morning, so we headed for Tlaxiaco.

The area around Tlaxiaco had looked good on topographic maps, and the main purpose of our trip was just to check the area for potential, and pick up any cave leads if we could. We arrived there late in the afternoon of the fifth, and were fortunate to learn of an American who has a summer home there. Mr. Alan Downs and his wife Anita knew of several caves in the area, but most of them required half a days hike to reach, and we were running out of time. Most of the caves seem to be located around Yosanduo and San Miguel el Grande, two small towns south of Tlaxiaco. We did go to Cueva del Pájaro, located three hours (by third class bus) south of Tlaxiaco on the road to Putla. The cave is situated immediately off the left of the road, about three-fourths of a mile before some massive cliffs, out of which flow the Rfo del Pájaro. The cave is just one room, about 60 ft long with a ceiling height of perhaps 25 ft. Lots of bats. About one mile farther down the road, another cave which may require rope is supposed to be located, about 1-1/2 km to the left of the road.

Needless to say, we were disappointed. We had traveled an awful long way, but had entered only one cave in this new area. The region does seem to have considerable promise, as we picked up several interesting cave leads. We spent one more night at Tlaxiaco and started the long trip home. Meanwhile, Joe proceeded to lose his billfold with all his money, identification, and (horrors) tourist card. After several frantic hours at the American Embassy and the Mexican Immigration Control in Mexico City, he got permission to leave the country. Which we did.

Date: 1-6 June 1967

Destination: Between Monterrey and Saltillo and Matehuala, San Luis Potosí

Persons: Miles Abernathy, Duane Faith, Bill Miller, and Joe Sumbera

Reported by:

We left from Bishop, Texas, and crossed the border at Laredo. Drove straight for the canyon between Monterrey and Saltillo where was supposed to be located Cueva de Casa Blanca (reported earlier by John Fish). A map was located on the wall of the restaurant across from the canyon where the cave was located. From the map it appeared that the cave had several rooms and we were told that it was up the canyon about 1.5 km. We drove up the canyon and camped across from La Cueva del Aguila. The entrance to Casa Blanca is up the hill from an abandoned white guard house and is partially obscured by small trees. The entrance is 10 ft high and 8 ft wide and immediately drops 15 ft. We came back the next morning and explored it. Beyond the entrance drop there was another drop of 90 ft into a room 100 ft long by 50 ft wide and had no leads going off. That afternoon I went into La Cueva del Aguila and went down about 100 ft where I ran out of rope. This crevice cave is quite dusty and narrow and I'm not sure if anyone has been to the bottom. That night we camped outside of Saltillo in a small canyon.

The next day we arrived in Matehuala and drove out to the gypsum caves west of town. There we met the owner of Sumidero de Matehuala and he gave us permission to visit the cave. We explored that Sumidero and two more just immediately south of it. All three appear to be of the same drainage system.

The next day we were led to a limestone cave outside of town by a local caving group. We dubbed the cave, Cueva de Matehuala, as there was no local name. The entrance is a small hole about 3 ft in diameter and drops 13 ft, climbable, into a passage 8 ft high and 9 ft wide. We explored about 1000 ft of dry, dusty walking passage to an unclimbable 25 ft deep pit. There was a wind blowing through the entire cave, especially in the restricted passages and at the entrance.

After saying goodbye to the Mexican cavers, we left the next day for home, going back by way of Dr. Arroyo, Galeana, and Linares. We spotted one cave just outside of Iturbide on the right hand side of the road. The entrance was 30 to 40 ft high and 20 ft wide and sloped steeply for 150 ft to water and no way was found around the water.

ARTICLES

ARCHEOLOGICAL RECONNAISSANCE IN A LIMESTONE KARST REGION IN NORTHERN QUERETARO

by John W. Greer

Abstract

Archeological evidence noted during a speleological survey in northern Querétaro consists of sherds in several caves, whole vessels in one pit, and charcoal at the bottom of a deep freefall shaft. Surface evidence includes several stone ruins, old stone walls, a possible tomb, and scattered sherds and obsidian flakes. Observations are made of water sources and other geographical features.

Introduction

During reconnaissance for caves and the exploration of pits and cavern systems, cavers often encounter archeological evidence. This may take the form of a few sherds in horizontal cave entrances, human skeletons exposed during mining activities, small surface camps, or large complexes of open sites. Since cavers generally are more concerned with geology, biological collection, or just caves for caves' sake, archeological evidence usually is overlooked or at least not reported.

This paper describes and partially discusses archeological evidence encountered during one such speleological exploration project in central México, conducted by members of the Association for Mexican Cave Studies (AMCS, Austin, Texas). Although such reports cannot be something on which to base concrete conclusions, notes such as these may help future workers returning to the area. This type of report may also help researchers interested in particular problems, types of areas, or types of sites. It is a gathering and partial salvaging of information.

Reconnaissance

In January 1972 Craig Bittinger and Logan McNatt entered the Rancho El Barro area just north of La Ciénega while on reconnaissance and located Sótano de los Cocos (El Sótano de Rancho Barro). The pit presently is the world's deepest and largest natural shaft, measuring approximately 1300 x 700 ft at the entrance and with an initial drop of 1345 ft. With the deep pit potential clearly established, Craig Bittinger, Clark Lillie, and I returned to El Barro in April 1972 and continued reconnaissance trips from that base camp. One such sojourn was southward to La Ciénega where several deep pits were known to exist.

We returned to Austin with tales of profundity and, in May, AMCS members descended on La Ciénega with the necessary credentials and carried out exploration of several pits and caves. Reconnaissance was continued for new pits, archeological sites, and geological data. Survey members included Frank Binney, Ernie Garza, Walt Rosenthal, William Russell, Barbara Vinson, and myself. The procedure was simple: a guide was acquired whenever possible and local people questioned. Notes were taken and locations recorded on sketch maps. A 1:100,000 topographic field map proved ineffective and somewhat inaccurate. Knowledgeable guides included Maximino Rosas of Santa Aguida and Encarnación Real at Las Tinajitas in the canyon above Sótano de Buque (no. 7 of this list).

The Area

The area is a mountain-foothill area southwest of the small pueblo of La Ciénega de San Juan, Municipio de Pinal de Amoles, Querétaro (Fig. 1). Permission for cave research was obtained from governmental officials in Pinal de Amoles and Ahuacatlán and from the local administrator in La Ciénega. The easiest access is from Highway 120 at Ahuacatlán, northward along burro trails for a difficult 4-7 hr walk. It is also possible to enter from Ayutla, up the river canyon to Los Cocos, then uphill to La Ciénega in a more difficult, perhaps 8 hr walk.

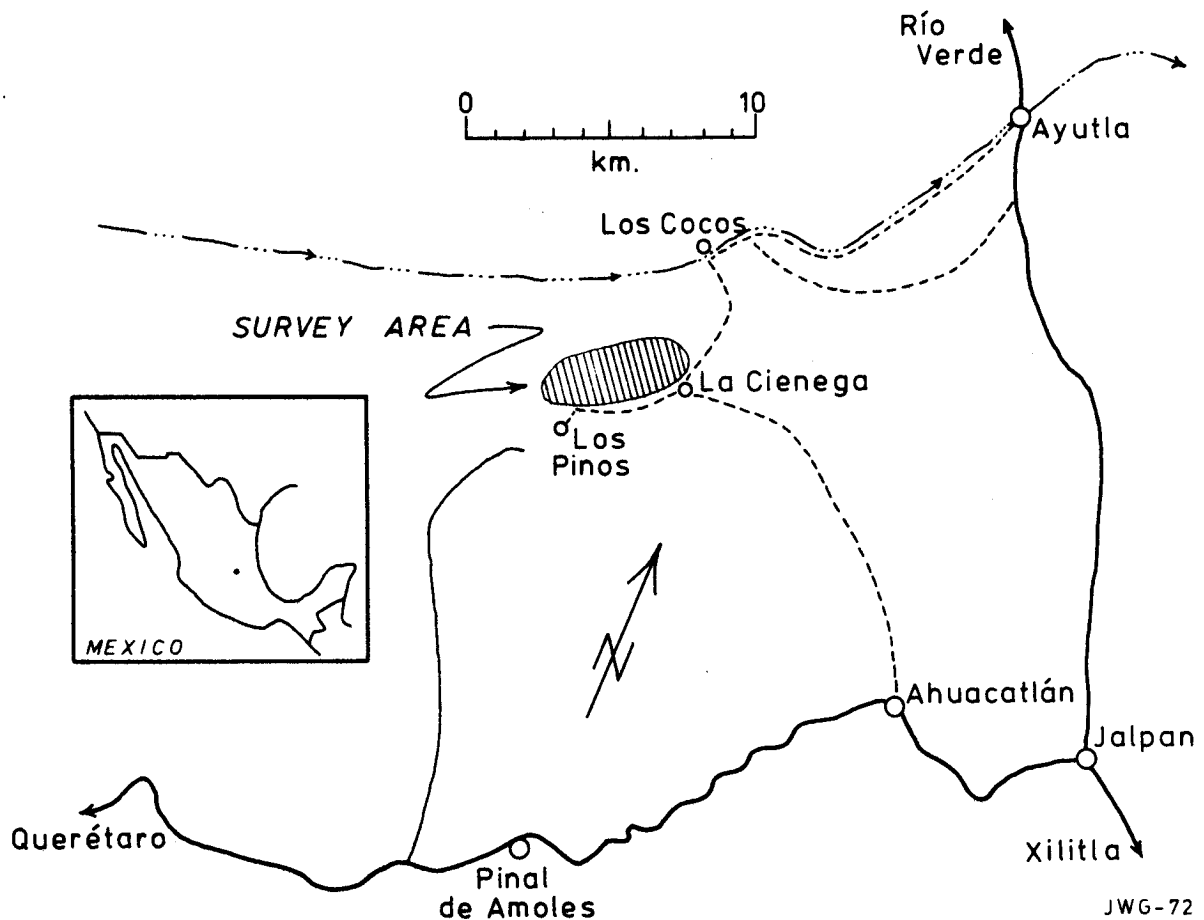


Fig. 1. General location map showing area surveyed in northern Querétaro.

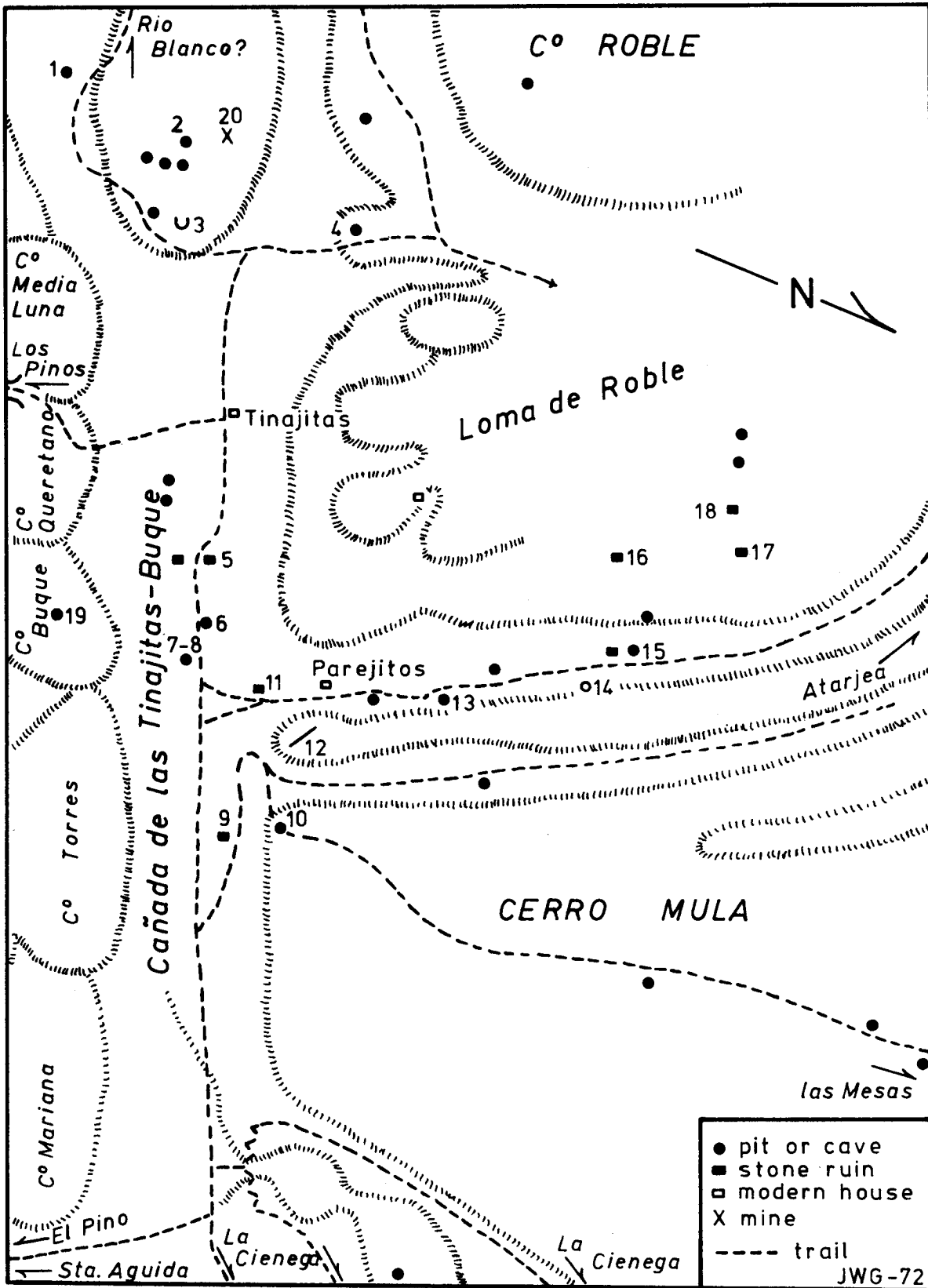


Fig. 2. Sketch of Area A of the speleological survey showing locations of recorded features. Numbered locations are described in this text. Non-numbered locations are speleological features, usually vertical pits, containing no archeological evidence.

The area around La Ciénega is one of very high rounded hills and extreme vertical variation. The town is located at approximately 1450 m elevation, while the river, only about 4 km to the northwest, is at 700 m. The area in which most archeological evidence was encountered is approximately 4 km southwest of La Ciénega and is probably 1700 m elevation in its canyon bottoms. The sierras to the south and west rise immediately to over 2900 m.

Many hills around La Ciénega are capped with Soyatal shales, while some hills and lower areas of exposed limestone and surface dirt sinks and fields are in the upper El Doctor formation. Upper areas on the higher hills are marked with large limestone karst pinnacles (*queres-tones*) and variable-sized limestone sinks. Most sinks are used for agriculture and the soil appears to be exceptionally fertile. All larger hills appear to be heavily eroded uplifts of the El Doctor and are especially characterized by numerous deep vertical shafts. Many nearly horizontal caves are steeply sloping and are formed along dipping bedding planes. Valleys are nearly all closed and are composed of chains of shallow sinks.

Archeological Evidence

Archeological evidence was found only in the area around Sótano de Buque (Area A of the survey, Fig. 2). The present economy is based on concentrated milpa agriculture in sink areas and presumably was so in the past. Stone walls abound, and sherds and obsidian flakes occur in many areas. Following is a list of archeological localities, renumbered for this report with original speleological survey numbers in parentheses. Since the recording of archeological evidence was incidental to the primary activities of deep pit exploration, the present list and following discussion serve as a partial guide and not a systematic survey. A report on the entire project is on file at AMCS headquarters in Austin. The symbol † preceding the number indicates a cave or pit which was entered during the project. Project members entering pits described here include Frank Binney, Don Broussard, Ada Browne, Eileen Cragle, John Greer, Ron Ralph, William Russell, Peter Strickland, and Barbara Vinson. Illustrations accompanying the descriptions are drawn using standard speleological symbols and are from measured sketches by the author in June 1972.

†No. 1(1). No name. Cave (Fig. 3).

Location. Upper part of Cañada de las Tinajitas, 7 ft above canyon bottom, N bank.

Description. Fairly narrow passageway 2-10 ft wide, begins in rockshelter and runs N-S (195 degrees) along a joint and downward 45 degrees with dipping limestone beds. Entrance dry, but water enters cave on left side of main passage and continues for entire length of cave, finally continuing downward through small hole at bottom. Small flowstone dams and pools entire length of cave. Total length 250 ft, total depth 177 ft.

Biota. Blue millipedes, white millipedes, white spiders, black "tumblebug" beetles, brown salamanders, small gray moths, brown cave crickets, 1.0 mm long white jumping bugs on top of water.

Archeological evidence. One plainware sherd with gray exterior, pink paste and gray core, covered with flowstone; 50 ft inside entrance.

Evaluation. Cave possibly used as water source, although tinajitas throughout canyon in immediate area. Entrance overhang suitable as temporary shelter.

Remarks. Entered 6-2-72 by J. Greer.

†No. 2 (5). No name. Cave (Fig. 4).

Location. Upper part of main canyon, fairly high on hillside on point between canyon forks.

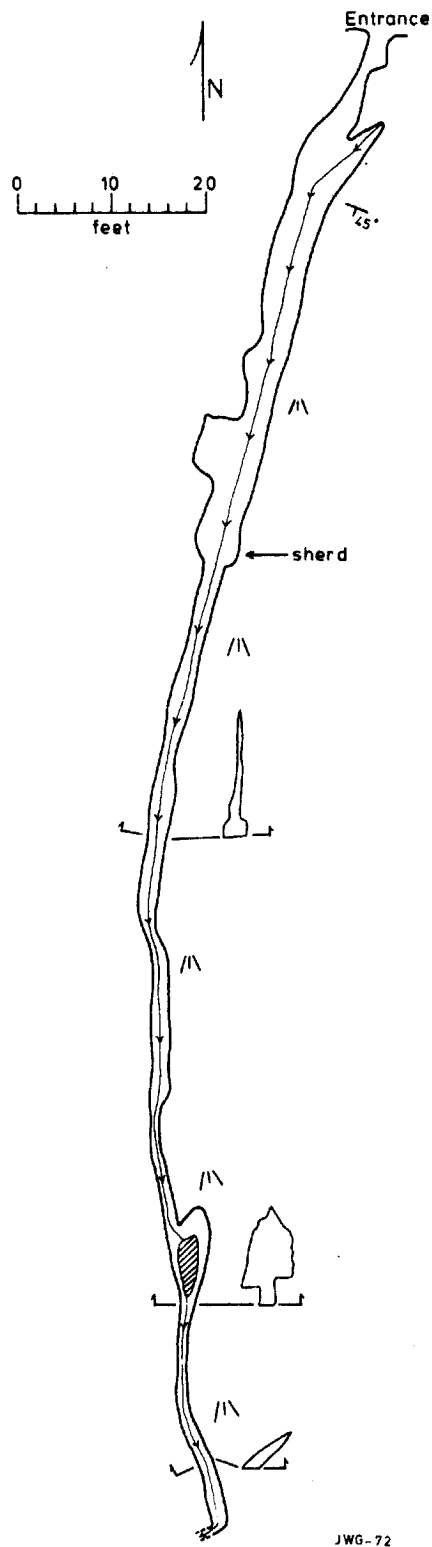


Fig. 3. Plan of Site No. 1, showing sloping flowstone floor passage with water running to end; diagonal shaded area is a pool of water.

About even with old mine; 350 ft above canyon bottom. At head of shallow gully running up hillside.

Description. Small passage 40 ft long, 7 ft wide, runs SW (244 degrees) downward into hill along dipping bedding planes. Dirt floor throughout.

Archeological evidence. Plainware sherds near bottom of cave.

Evaluation. Appears to be no water in cave at any time; possibly cave used as temporary shelter while working in hillside fields. Several vertical pits in immediate area.

Remarks. Entered 6-5-72 by J. Greer, W. Russell.

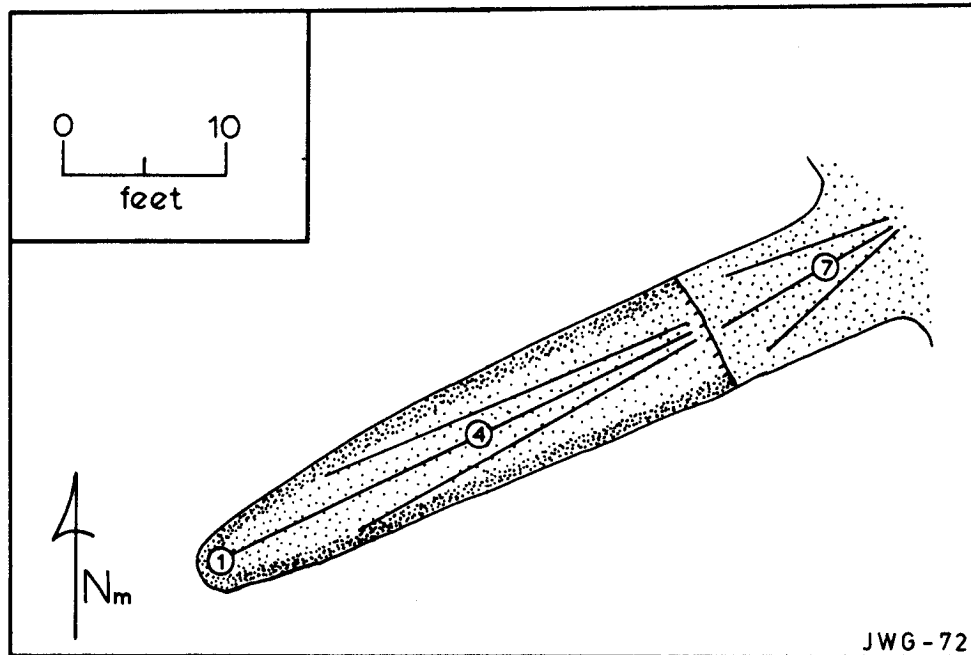


Fig. 4. Plan of Site No. 2, a small horizontal cave with a sloping dirt floor. Numbers indicate ceiling height in feet.

No. 3 (7). No name. Wall or tomb.

Location. On steep hillside 150 yds downhill from cave No. 2. Dim trail used by local Encarnación Real family passes over this wall.

Description. Well made, slightly curved stone wall 10-15 ft long, 6-8 ft high. Appears complete, filled in behind. Slabs 4-6 inches thick, laid horizontally, some chinking. No wall continuation or any type of structural attachment.

Evaluation. Isolated wall, not part of house or wall system, complete in itself. Possibly a tomb, such as a closed small horizontal cave. No attempt made to explore construction, discern what was enclosed, or question local guide of its function.

No. 4 (10). No name. Reported cave.

Location. Somewhere on small rounded hill referred to by Rosas as El Bordo de la Carbonera; said by Real son (who lives adjacent to hill) not to have a name.

Description. Said by Rosas to be extensive horizontal system. Real boy did not know of cave; older Real presumably knows of cave but was not asked.

Archeological evidence. Nothing known of cave, but if follows pattern of other similar caves in area, probably used for shelter and possibly water source.

No. 5 (13). No name. Stone houses.

Location. Bottom of main canyon above Sótano de Buque (No. 7) at point where trail leaves canyon bottom and goes onto N hillside toward Real home. Canyon narrows sharply at this point (going upward).

Description. Medium-sized stone house on S side of arroyo; larger house or possibly two large houses on N side. Rosas reports more stone houses in larger, more complex group just up hill N of this (not checked).

†**No. 6 (14).** No name. Cave (Fig. 5).

Location. N bank of main canyon, 200 yds upstream from Sótano de Buque (No. 7), 15 ft N of arroyo bottom.

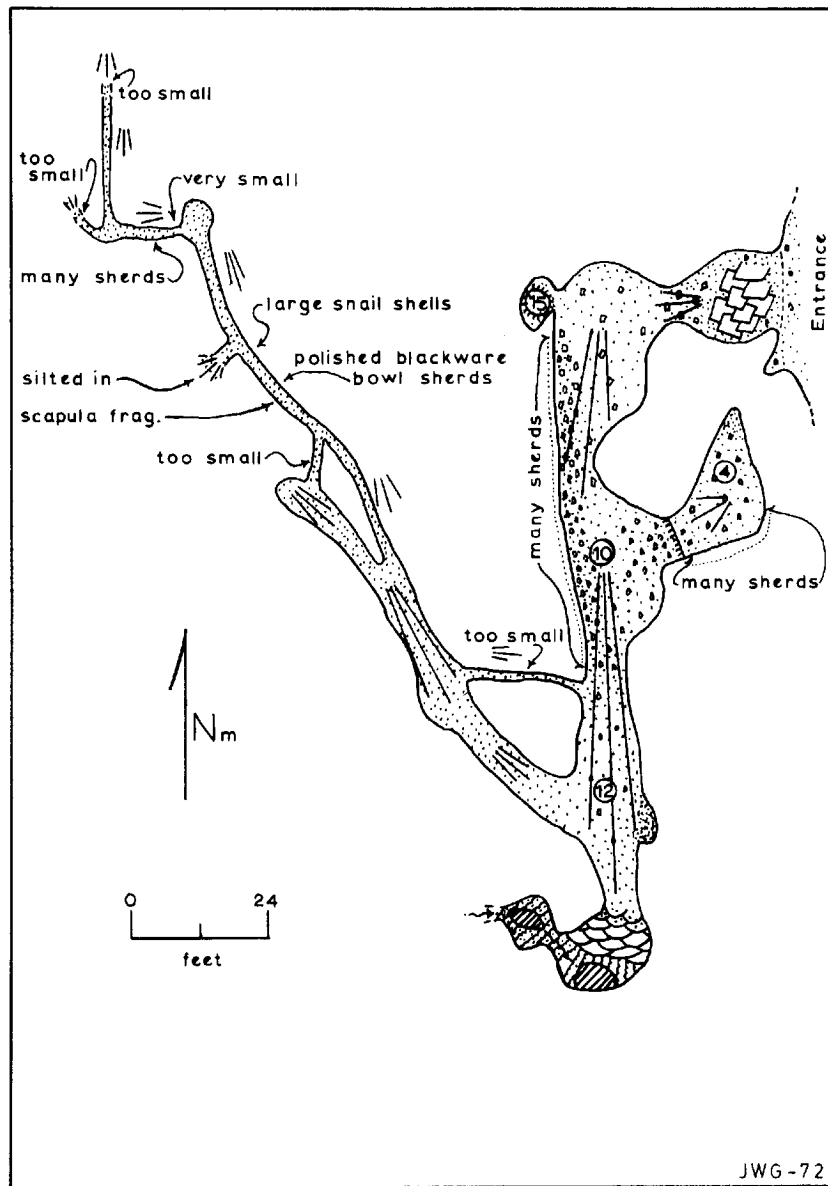


Fig. 5. Plan of Site No. 6, a horizontal cave with sloping dirt floor through most of passageway; flowstone dams and pools of water in the lowest portion.

Description. Entrance room drops westward over several large breakdown blocks into moderately flat-floored area; passage turns S, runs down to moderately large room, then S a few more feet, turns into small room (holds water after rains). During wet season, water flows from small hole in lowermost room. From lower large room another long passage splits off WNW, continues some distance as small crawl. Passage becomes too small toward end of crawls for average size person to continue. Nearly all floors silt; all walls limestone.

Biota. Blue millipedes, spiders, crickets, phalangids, pack rat, snail shells, moths.

Archeological evidence. Sherds exceedingly numerous throughout main passage down to last room (with flowstone dams), mostly under thin layer of recent rock fill, continue downward over a foot in dirt and fine rock fill. Sherds also excessive in moderate-sized room on E side of second room from entrance; obviously intentionally placed here in great numbers. Sherds also common in flowstone dam area of last room and throughout crawlways in back portions of cave. Numerous sherds in all enterable areas; mostly gray to pink plainware jars, a few the type of large brushed jars as at pit No. 13. Also from small thin jars 15-20 cm tall; medium-sized rounded bowls; carinated bowls (well-smoothed orange or pink and polished black). No definitely decorated sherds. One square milling slab of black limestone 40 x 40 x 10 cm in third room of main passage.

Evaluation. Possibly used as water source during wet season. It would seem that cave water preferred, since tinajas abundant in nearby creekbed and thereby more accessible. Cave importance seemingly more than just water: 1) many bowls, especially shouldered blackware bowls; 2) sherds numerous throughout back crawlways where no water, very difficult to carry pottery or sherds.

Remarks. Entered 6-3-71 by J. Greer, R. Ralph; later visits by W. Russell.

†No. 7 (15). **Sótano de Buque.** Cave-pit.

Location. Bottom of main canyon, about 3 km above mouth. Entrance very large, easy to find, serves as local landmark. Cañada de los Parejitos enters from N just below Buque entrance.

Description. Large entrance 20-30 ft diameter. Large high passage 20-30 ft wide runs S at right angles to canyon through series of climbable drops now with notched log ladders; several tinajas. 40 ft drop into large room 60 ft in diameter circumvented by using ledge around right wall and climbing down steep dirt slope and very short vertical section. Up to this point passage adequately lighted by main entrance, small skylight, and large pit entrance beside large room. Climbdown on E side of large room leads to moderately short passage with rimstone dams and white flowstone. Main cave system continues S from large room, downward through series of unclimbable drops (longest 300 ft); siphons at about 1545 ft. Detailed description and discussion of cave to appear in separate report.

Archeological evidence. Notched log ladders on several entrance drops, including 15 ft drop on E side of big room. A few gray plainware sherds in dirt fill in big room, all that have withstood seasonal flooding. Tinajas still used as water source.

Remarks. AMCS exploration-mapping project under general direction of Terry Raines; participation by many AMCS members, June 1972.

No. 8 (15A). Shelters above Sótano de Buque.

Location. 15-20 vertical ft above Buque entrance under limestone layer running N to edge of main canyon. Reached by climbing steep slope on W side of Buque entrance.

Description. Several shelters and small caves with adequate headspace; 6-20 ft wide, 10-25 ft deep. Dirt floors, possibly with several feet of deposit.

Archeological evidence. Gray plainware sherds on floors and into deposits. Modern use: beans, corn, charcoal, hearths, miscellaneous scratched drawings on walls (mainly churches with crosses).

Remarks. Probably long history of temporary use. Served as AMCS base while mapping Buque.

No. 9 (16). No name. Stone house.

Location. About 300 yds below Sótano de Buque (No. 7), N side and in bottom of main canyon. Base of hill almost directly below Cueva Encantada (No. 10), beside trail to Encantada. Mouth of small side canyon between Cañada de los Parejitos and Encantada.

Description. Stone house partly in ruins, most of four walls still standing, 25 ft square, made of thick (13-18 cm) tabular limestone with chinking, no mortar.

Evaluation. Possibly related in some way to Cueva Encantada. Stone houses or house groups common at such key locations as canyon mouths.

†No. 10 (17). Cueva Encantada. Cave-pit (Fig. 6).

Location. 250-300 vertical ft above bottom of main canyon, N side. On heavily karsted hillside with large limestone pinnacles. Directly uphill from stone house no. 9; trail begins behind house. Barely visible from canyon bottom; overlooks canyon, trees in mouth of Sótano de Buque (No. 7) visible from here.

Description. Entrance 7 ft wide, 16 ft tall, faces SW. Passage goes back 35-40 ft (drops vertically 16 ft) to small room. Shallow pit on left, 3-5 ft water, reportedly a few feet of mud. Pit on right drops 107 ft (20 ft to first side room and ledge; 40 ft to second ledge) to small, blind room, essentially dirt floor with rocks, big logs thrown in while making or repairing platforms at top of pit; many draperies in SW section of room, little seepage in S corner, rest dead (not re-entered after intensive summer rains began).

Biota. Scarab-like beetles, 3 species of crickets, black beetles, large and small spiders, moths, flat blue millipedes, gray salamanders, some bat guano, rodent bones. Collections taken.

Archeological evidence. A few sherds and pieces of black chert just outside cave entrance. Five footholds carved in flowstone on left side of entrance passage at entrance room; now partially covered with flowstone, very smooth. In main pit: room and ledge at -20 ft and ledge at -40 ft, large numbers of sherds, mainly gray to pink plainware jars, some with pink cylindrical curved handles. Ledge at -40 ft along vein of black chert which appears to have been mined. Bottom room: a few sand-tempered plainware sherds, a few salt-glazed sherds of wheel-turned pottery; end portion of cylindrical mano of a fine-grained grayish-brown, presumably igneous, material.

Evaluation. Attitude of local people regarding cave's importance, along with its name, suggest it has long been important site. Left-hand pit with water reportedly contains coins and other objects from its use as a wishing well; mud at bottom of pit not checked because of social relations which unquestionably would result. Footholds suggest long use as water source. Old log platform to keep visitors from falling into right-hand pit and notched logs used to descend into entrance room possibly very old. Some sherds on two ledges in right-hand pit possibly result from being thrown in, many intentionally placed there (not able to land there from above). Presumably pit entered during preSpanish times, pottery left, and black chert mined.

Surrounding area heavily karsted. Many limestone pinnacles with rockshelters at their bases; could have served as temporary shelters or storage areas (some so used today).

Remarks. Also known as *Sótano Encantado*. Entered 6-1-72 by F. Binney, J. Greer, R. Ralph, B. Vinson. Reentered 6-2-72 by R. Ralph, E. Craigle.

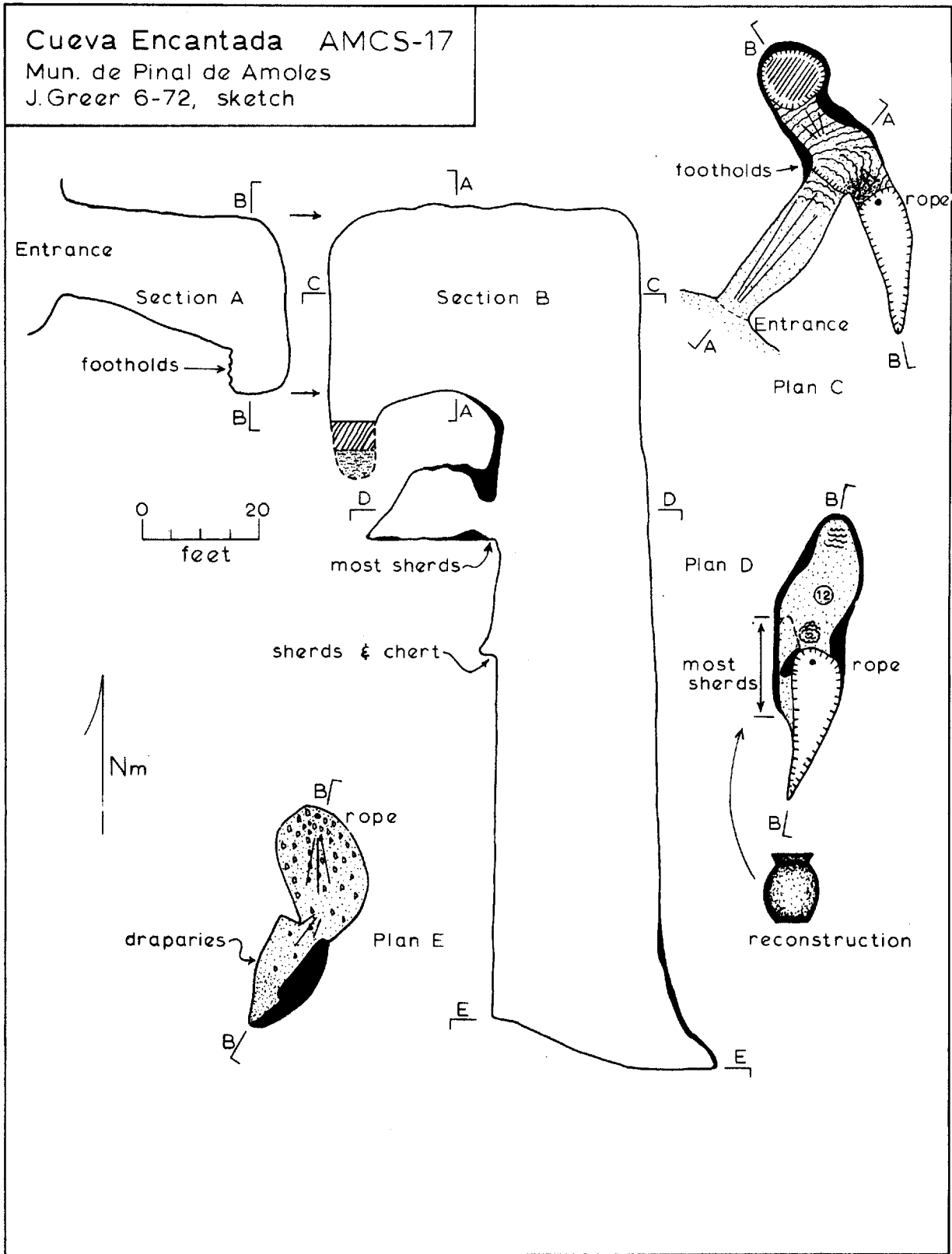


Fig. 6. Plan and cross-section of Site No. 10, Cueva Encantada.

No. 11 (18). No name. Stone ruins (Fig. 7).

Location. Mouth of Cañada de los Parejitos. 500 yds SW of Cueva Encantada (No. 10) on first high terrace above and just N of main canyon. Bordered by milpas.

Description. Large group of stone ruins—several houses, some contiguous rooms. Rooms square or nearly so. Most walls fallen over or covered. Construction of fairly thin stone slabs (thinner than other stone ruin sites on this survey) with stone chinking.

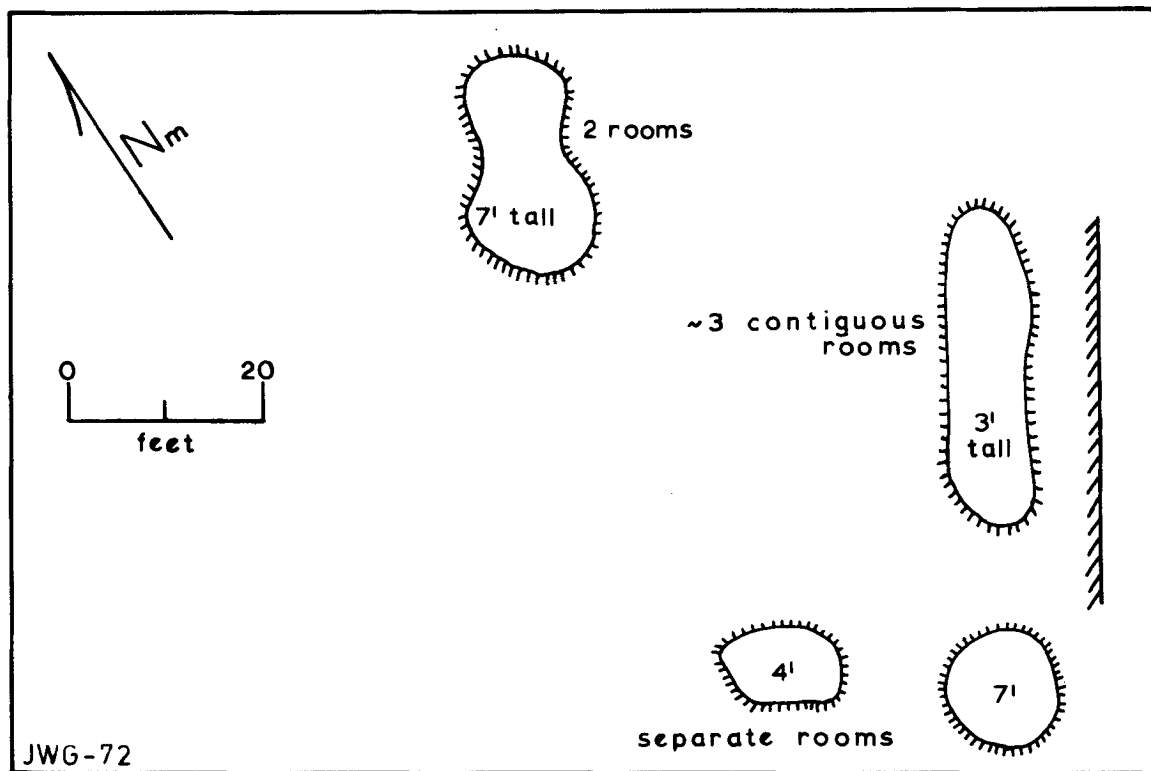


Fig. 7. Plan of Site No. 11, an open site with stone ruins. The diagonal dash line on the right is probably an old wall.

No. 12 (19). No name. Stone walls.

Location. Area between Cueva Encantada (No. 10) and Sótano de Buque (No. 7), around mouth of Cañada de los Parejitos.

Description. Many stone walls or portions thereof apparently very old. One unique wall section in particularly overgrown, nearly inaccessible area high on S side of hill between mouth of Cañada de los Parejitos and next canyon E beside Cueva Encantada. Most of wall now 3-4 ft tall, but composed of large rounded rocks, mostly 2-4 ft across. Only wall section of its type observed.

Wall bases appear older than successive rebuildings, often composed of very large rocks. More recent walls have smaller rocks, usually 1 ft or less diameter throughout wall down to ground level.

Evaluation. Oldest walls probably preSpanish, many composed entirely of very large rocks or had large rocks in base with successively smaller rocks upward. Thus, slightly sloping sides (e.g. section just over and NE of pass from upper end of Cañada de los Parejitos).

†No. 13 (21). No name. Pit (Figs. 8-9).

Location. Up Cañada de los Parejitos 550 yds from mouth. In bushes 20 ft E of trail.

Description. Entrance 10 x 18 ft drops nearly vertically (difficult climb with handline) 54 ft to steeply sloping floor of dirt and small breakdown. Passage continues SSW, dropping into nearly flat-floored room containing pottery vessels. At end of this room, small notch leads to small room with pack rat nests, no pottery. Floors mainly soft dirt with some exposed limestone. Walls mainly limestone, little flowstone. No rimstone dams; no evidence of active seepage, even during rainy season (formations in end room might become active after heavy rains).

Biota. Crickets, insect larvae, rodent bones, pack rat, blue millipedes, spiders.

Archeological evidence. Six large empty jars and one medium-sized bowl on the surface or slightly buried in soft brown humus in narrow middle room. Vessels Nos. 1-5 and 7 refer to jars (Fig. 9, b); No. 6 a bowl (Fig. 9, a). All jars approximately same size, varying only about 3 inches in length; rounded bodies, rounded bottoms, evenly curved necks, everted rims, and very slightly rounded to nearly flattened lips. Exteriors smoothed and brushed, mainly diagonally from upper-left to lower-right. Fragmentary indented base (only one present) from another large jar found near Nos. 5-7. Measurements: total height 48-58 cm, body width 43-51 cm, neck diameter 15-23 cm, neck height 6-10 cm, mouth diameter 23-28 cm, wall thickness 1 cm.

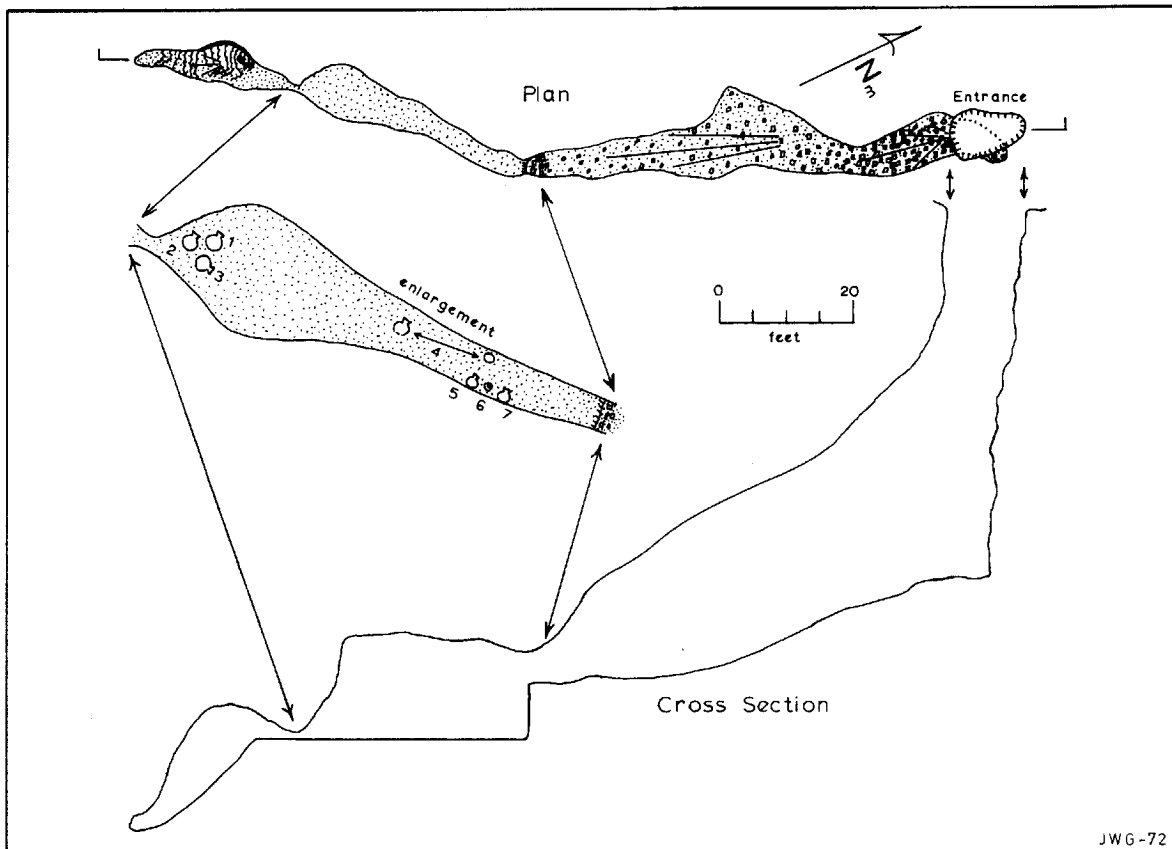


Fig. 8. Plan and cross-section of Site No. 13 with enlargement of room containing pottery. Vessel numbers refer to text descriptions.

Vessel No. 6: shouldered bowl, polished blackware, 25 cm diameter, 10 cm deep, flattened lip, convex base. Neck 3 cm wide, contains three unbroken, longitudinal incised lines parallel to rim around neck.

Evaluation. Vessels brought into cave whole or nearly so and intentionally placed on floor of middle room. At least two jars (Nos. 5, 7) placed upside down. Since their original placement, at least a foot more dirt deposited in room as part of natural drainage toward lowest point in cave. Other vessels likely buried—No. 6 and base of No. 4 totally covered, Nos. 1-3 nearly so. Jars possibly intended to be placed in cave for water collection, though presently cave dry; temporary water available at Tinaja Redonda (No. 14) 100 yds N. Jars possibly stored in cave or used as storage containers there.

Remarks. Entered 6-4-72 by A. Browne, J. Greer, P. Strickland. Reentered later by D. Broussard and others.

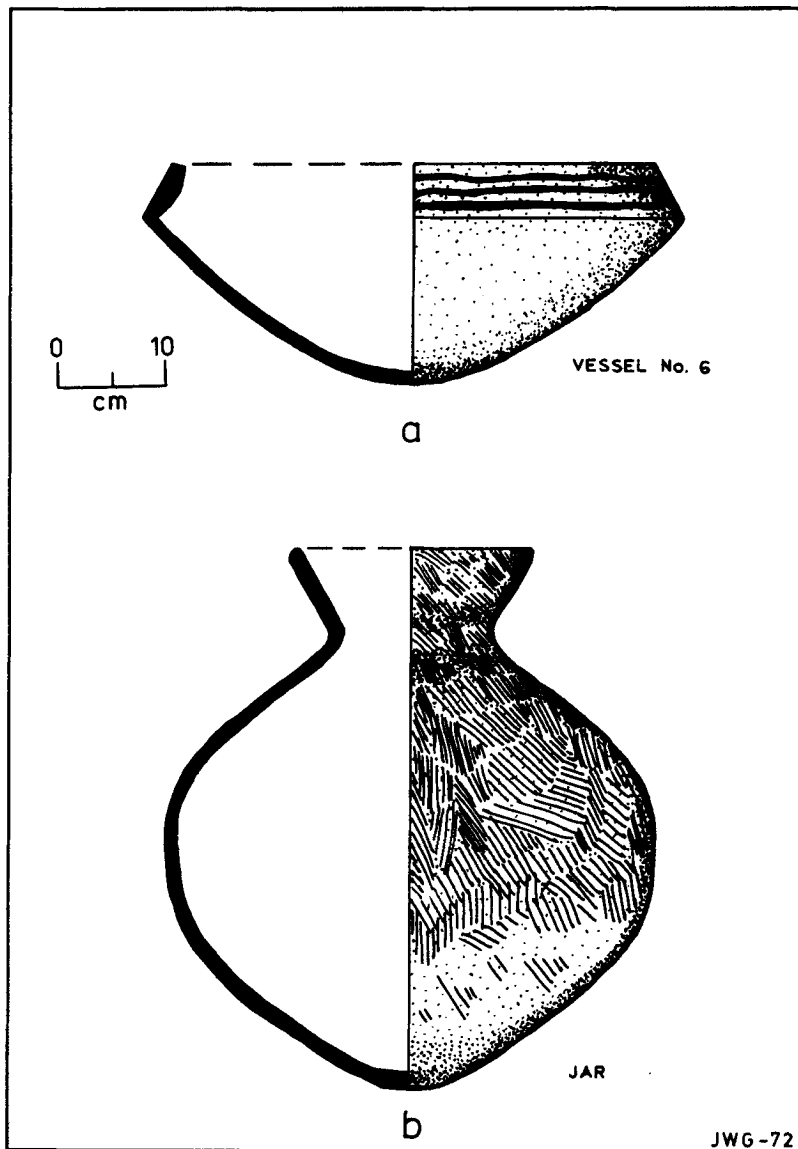


Fig. 9. Vessels from Site No. 13. All jars had the same form.

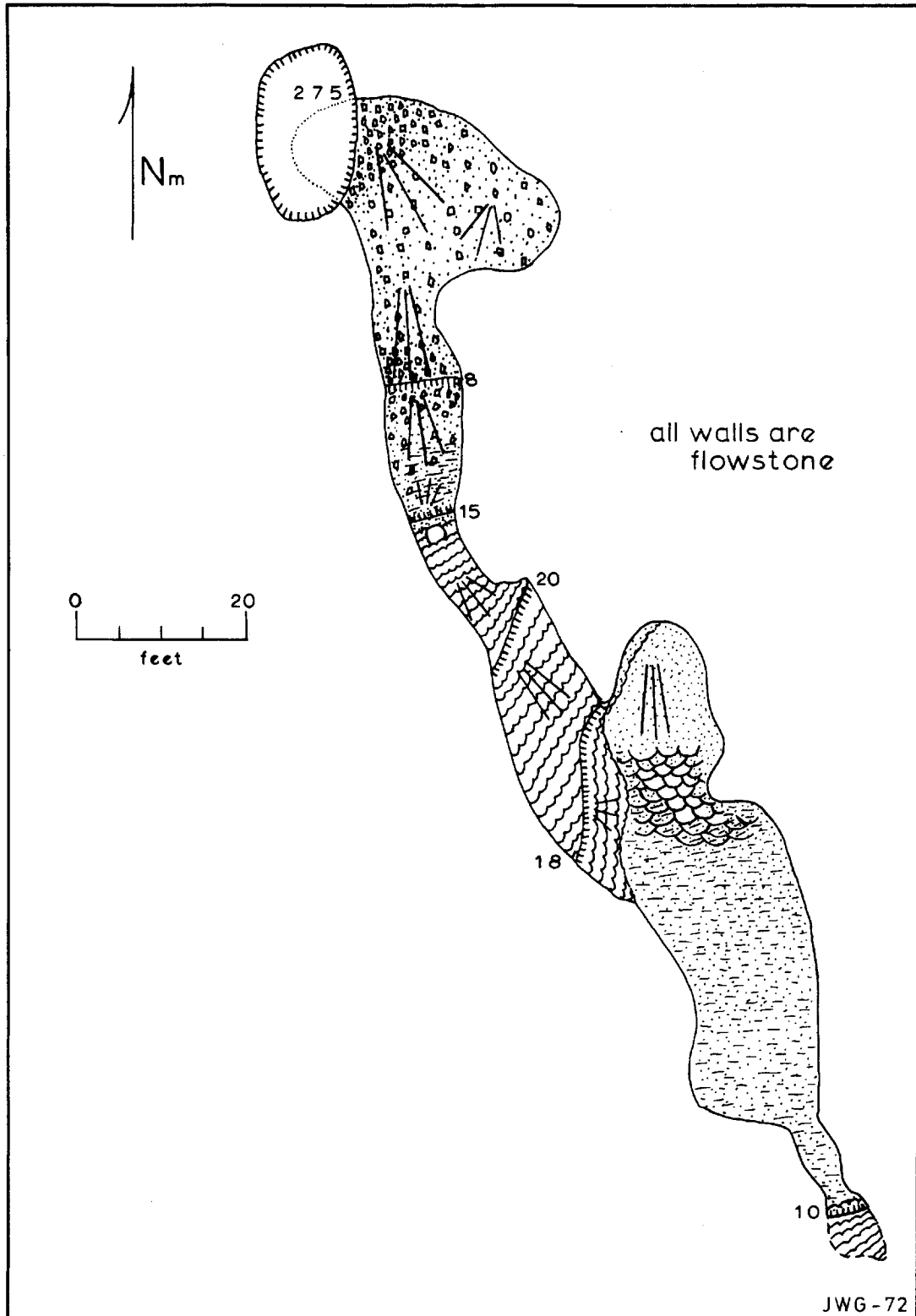


Fig. 11. Plan of lower passage of Site No. 15, Sótano de Meco. Charcoal back to the bottom of the 8 ft drop could have resulted from torches thrown down the shaft.

Description. Pit entrance nearly circular opening 12 x 20 ft (immediately opening to 25 x 30 ft), in limestone bedrock. Initial drop 275 ft, nearly all free; shaft 35-40 ft diameter. Additional drops total 61 ft in lower cave; total depth 336 ft. Room at bottom of entrance drop with dirt and small breakdown floor, slopes downward to unclimbable 8 ft drop to dirt floor, then up difficult 15 ft climb on overhanging dirt wall to large, dry rimstone dam and flowstone shelf. Then 20 ft drop down flowstone wall immediately followed by 18 ft drop down flowstone to mud floor. Portions of dirt here covered with thin flowstone crust—here, at 15 ft dirt bank, and elsewhere, appears that cave periodically has contained dirt for periods long enough to form flowstone crusts, then more sedimentation or erosion; then cycle repeated. At S end of this mud-floored room, short climb into another small room, but passage pinches down from flowstone along joint making further progress apparently impossible. Cave beautifully decorated throughout entrance shaft and lower levels with very large flowstone formations; ground water activity probably excessive during rainy season.

Biota. Black beetles, spiders, brown salamander.

Archeological evidence. a) Burned sticks and small charcoal fragments in lower levels of pit to backmost passageways. b) Ruin apparently of single-room stone house 90 ft down canyon S of pit. No walls standing.

Evaluation. a) Charcoal and burned sticks possibly from torches thrown into shaft; fragments washed to back, lower levels. No bones or ceramics found in shaft or eroding from exposed silt deposits. b) Adjacent stone house possibly related to pit. c) Obsidian flakes and sandy-paste plainware sherds common in nearby fields and trails.

Remarks. Entered 6-4-72 by J. Greer.

No. 16 (26). No name. Stone ruins.

Location. Hillside near top of Cerro Tinaja Verde.

Description. Stone ruin group, apparently several houses. Reported by Rosas; not visited.

No. 17 (27). No name. Stone ruins.

Location. High on hillside, SW end of Ladera de la Mesa, N of Cerro Tinaja Verde, 300 vertical feet above bottom of Cañada de los Parejitos.

Description. Large, seemingly complex stone ruin with walls 6-7 ft high, thick limestone slabs and chinking, no mortar. At least three large houses, retainer wall. Plainware sherds in adjacent milpas.

No. 18 (28). No name. Stone house.

Location. Uphill from ruin group No. 17; milpa area high on hillside on way up to Cerro Roble. Beside fields belonging to Rosas.

Description. Individual stone house in partial ruins, 12-15 ft square, relatively thick limestone slabs with chinking, no mortar.

No. 19 (34). No name. Reported cave.

Location. Somewhere on Cerro Buque. Encarnación Real found the cave and has entered it and may be reluctant to take visitors.

Description. Cave presumably somewhat horizontal; contains pottery and human and animal bones. Reported by Rosas (Real not questioned); future reconnaissance should work through Rosas.

No. 20 (35). Mercury mine.

Location. On point in upper Cañada de las Tinajitas.

Description. Mineral suitable for red pigment. Could have been used during early times as source of red paint if it occurs on surface or in accessible caves.

Additional Remarks

1. Small obsidian flakes and sandy-paste plainware sherds relatively common, though not plentiful, in Cañada de los Parejitos and parallel canyon toward Cueva Encantada (No. 10). Flakes or sherds occasionally found in upper hillside milpa areas and up Cañada de las Tinajitas (Cañada de Buque). Entire area milpa agriculture—open hillsides, hillside sinks, and canyon bottoms (mainly interconnected shallow sinks).

2. Only obsidian blade observed is small midsection fragment 1 cm wide; beside trail in mouth of Cañada de los Parejitos, 60 yds SE of ruin No. 11.

3. Rather crude form of black chert fairly commonly used throughout survey area. No definite tools observed, although use marks seemingly from heavy chopping-pounding activities. At least some black chert apparently mined at Cueva Encantada (No. 10).

4. Water reasonably accessible, at least in small tinajas in canyon bottoms. Several bedrock tinajas in entrance passage of Sótano de Buque (No. 7). Rimstone dams and other formations seasonally active and full of water in Buque and other caves; permanently running water in such small caves as No. 1. Higher elevation water sources at such localities as Tinaja Redonda (No. 14), Tinaja Verde W of Sótano de Meco (No. 15), and spring on Cerro El Gordo de Ojo de Agua on NE side of Cerro Roble.

Discussion

Presumably in preSpanish times daily life was very much as it is now. Undoubtedly the old base was milpa agriculture, probably using at least the same fields as are now used. Some present trails and walls (see No. 12) may have their beginnings in preSpanish times.

Today water is available in numerous canyon-bottom tinajas, at least two hillside tinajas (Tinaja Redonda and Tinaja Verde), a spring (El Gordo de Ojo de Agua), caves which contain ground water in rimstone pools during the rainy season (e.g. No. 6), at least one cave with permanently flowing water (No. 1), and another with a permanent tinaja (No. 10). Sótano de Buque (No. 7) could have been used for its water in potholes and in rimstone dams below the big room, but it would have been impossible in previous times to negotiate drops down to permanently running water.

Other natural supplies also exist. Fibrous plants, cacti, and thatching material abound. Thickly wooded areas yield woods of all sizes and shapes. Pine, oak, and other hardwood trees up to over 80 ft tall abound on the upper slopes, and chert is common to fashion large wooden objects. Red mercury ores occur on the surface, at least just outside this survey area at Los Pinos and Rfo Blanco, and could have been a source of red paint. Deer, armadillos, squirrels, skunks, coatimundi, and other animals abound, especially in the upper wooded areas.

Several rockshelters and small caves occur in such places as beside Sótano de Buque (No. 8), at the limestone pinnacles or *querestones* around Cueva Encantada (No. 10), in the main canyon between below mine No. 20, and in the upper canyon area around cave No. 1. These could have served as temporary shelters and storage areas.

Stone houses or house groups may represent either everyday habitation dwellings, or they may have had more formal functions. Undoubtedly perishable material also was common for

family quarters and field houses. Most modern houses are of log frames with stick walls and thatched roofs, and foods commonly are stored on the walls and above the ceilings. Stone houses, both recent and very old, occur in most nearby villages.

Nearly all pottery found during reconnaissance was plainware. The large jars in pit No. 13 and some of the large olla sherds in cave No. 6 had brushed surfaces, probably the result of a finishing technique and not an intentional decoration. The only intentionally decorated vessel observed was the incised blackware shouldered bowl from pit No. 13. Shouldered bowls from cave No. 6 were well floated to polished plainware. A few additional sherds in cave No. 6 had minor applique, but decorative intentions are uncertain.

Stone work is represently mostly be fairly small flakes of a somewhat translucent obsidian (translucent gray when held up to the light). Only one obsidian blade fragment was found. Black chert is preesent and may have been used for heavy tools, such as for chopping wood. It appears that black chert was mined in Cueva Encantada (No. 10).

Future work should concentrate most on locating more stone ruins in an attempt to discern their function. Notes should be taken of their relationship with fields and geographic features, details of construction, and accompanying artifacts. Horizontal caves should be checked closely for sherds, other artifacts, and possible specialization (e.g. No. 19; also, no rock art was observed). Vertical pits also should be closely checked for artifacts, since shallow pits could have been entered (e.g. No. 13) and all could have been used as dump areas of various types (e.g. No. 15). Surface artifact concentrations might be used to discern possible settlement patterns if distinctions can be made between assemblages originating in fields, field houses, and primary habitation dwellings. Researchers constantly should be aware of the possibility of tombs and walled horizontal entrances (see No. 3).

Traditionally this area was inhabited by Otomí groups, possibly with some Huastecan entry or influence. Artifactual distinctions between the two groups is uncertain, and it is impossible to accurately place the archeological evidence here into such a scheme. No decorated pottery or artifacts definitely from other areas was encountered.

PRELIMINARY REPORT ON VALLE DE GUADALUPE, QUERETARO

by Walt Rosenthal

Whether one approaches the Xilitla region from Cd. Valles or from Landa de Matamoros, the high skyline of the Sierra Madre Oriental is dominated by the broad summit of Cerro Peña de la Cruz. From its 2750 m summit plateau, the western escarpment of the range plunges 1000 meters into the Valle de Guadalupe, a ten kilometer long, deep closed valley running roughly north-south. I arrived in the valley on April 2, 1973, following reports of a Golondrinas-type pit in the high Sierra to the east.

Being west of the crest, and hence in the rain shadow of Peña de la Cruz, the Valle de Guadalupe is extremely dry. Its western wall is wide open and brush covered, with some sparse scrub cedar growth. The eastern, comprising the summit cliffs of Peña de la Cruz, is also sparsely vegetated but with heavier cedar growth, particularly in the relatively shallow arroyos. During my stay there, the valley was an inferno.

The second thing which strikes a visitor is that the entire floor of the valley, some 15 square kilometers, is cultivated. There is, therefore, no reason for the people to resort to hillside milpas as a means of growing crops, and there are few in the area. For this reason, with one apparent exception, the residents of the valley are not at all familiar with the high country to the east.

Located in the Municipio de Landa de Matamoros, the valley contains three ranchos: Tres Lagunas, La Margara, and Valle de Guadalupe, which, with over 160 inhabitants, is the largest of the three, and takes its name from the valley, itself. The delegados of the two former towns are Juan Chavez and Abram Coca, respectively. Valle de Guadalupe is divided into two sections, one in the northwestern slopes of the valley and one in the northeastern, and has two delegados: Frumenzio Loreda in the northwest, and Valente Hernandez, the Juez Superior, in the northeast. I was made a guest in the home of Valente's brother, Conrado.

In Tres Lagunas Sr. Chavez and others had told me of several gigantic pits in the mountains above Valle (as the valley residents refer to the rancho Valle de Guadalupe), but had insisted that they did not know the Sierra and suggested that I look in Valle for a guide. In Valle as elsewhere in the valley, people referred to Remundo Loreda as the man most knowledgeable about the high country. Unfortunately, Remundo had been out of the valley for some time on business, and his return date was unknown. None of the people I talked with knew of any gigantic deep pits in the region. Both Valente and Conrado know of 'deep' pits, but all have small entrances. After I explained how we determine pit depth by rock free-fall time, both men emphasized that they knew of no pits anywhere near the depth of Golondrinas, though Valente did describe a five-second sôtano in the mountains above El Lobo. They offered to take me to it, but I declined since it was a full day's hike to the sôtano from Valle, and only about three hours from El Lobo. They offered to show me the pits they knew of, but since they would not be free to do so until two days later, I decided to leave the valley to report back to Austin.

The water supply for the entire northern two-thirds of the valley is a small pond of Joya de Salas type green water. This water DOES produce the dreaded La Florida-La Cienega Crud (incubation period of 5.5 days), against which halazone may be ineffective. No refrescos are available at La Margara or Valle, only beer and pulque. The water is green and murky in the glass, and has a pleasant tang. **THERE ARE NO SPRINGS IN THE VALLE AREA.** At the refresco stand in Tres Lagunas (on the right as you drive into town) I discovered a few refrescos, and learned of a few small springs in the mountains above the town, and a couple of seasonal ones in the valley floor, itself.

FINAL OBSERVATIONS, ETC.

1. There are no roads leading out of the valley, but several trails leading up to separate parts of the "Xilitla Plateau."

2. The region is best visited during the Christmas period when such springs as exist should be running. During the Easter period the valley is an inferno when there is no cloud cover.

3. Parties going onto the plateau should try to leave from the communities of the Valle de Guadalupe. Animals are available and the people are both very friendly and interested in the exploration of the sôtanos.

4. All expeditions will have to be organized along El Abra lines—plan on bringing all of your water into the valley.

5. The climb from the valley floor to the main part of the plateau is 500 to 700 meters, and to the summit of the range, 1000 meters.

6. Since the plateau is neatly cloven by the Querétaro-San Luis Potosí border, prior permission should be obtained from both Landa de Matamoros and Xilitla, if it seems likely that the party will be ranging over a wide area.

7. A.M.C.S. should raise such funds as are necessary to obtain aerial topographic photos of the Sierra. Valle residents can then be helpful in locating people in the highlands to serve as guides in areas of interest.

**MORE SOTANOS ABOVE AHUACATLAN DE GUADALUPE,
QUERETARO**

by Walt Rosenthal

While riding the bus to the road going into Valle de Guadalupe, I met Sr. Macedonio Montoyo, on whose rancho is located El Sótano de la Escondida (Macho Rey). He invited me to his rancho to see a pit in the Huilotla arroyo that we had heard about in May 1972, in La Cienega. After leaving Valle de Guadalupe, I traveled to his home on el Rancho del Puerto Colorado, and visited the following pits:

Sótanos Cuates. A fifteen minute hike from the Montoya house and to the southeast, near the top of the ridge overlooking Ahuacatlán. Sótanos Cuates consists of two small pits (1 meter entrances) about 5 meters apart, which empty into the same large fissure. The fissure, which runs north-south, is about 2 meters wide and extends considerably about 7 meters down.

South pit times:

- 1) many bounces to 11.
- 2) 2.5; many bounces to 10.5.
- 3) many bounces to 11.5.
- 4) 3; many bounces to 8.5.

North pit times:

- 1) 3.5 to dirt floor.
- 2) several bounces to 3; free from 3 to 5; many bounces to 7.
- 3) 3.5 to floor.
- 4) many bounces to 6.5 to a dirt floor.

The name means that the same sótano has two entrances.

Sótano de los Cuervos. Perhaps 5 minutes from Cuates on a spur of the ridge to the west of Ayutla. The pit, which is overhung by several trees, is located in bare karst and rocks are somewhat hard to find. Beware the Mala Mujer. The entrance measures 10 meters by 15 meters, with deep fissures radiating from it. Although located on the western slope of the ridge, the western side of the entrance is considerably higher than the eastern. The east wall of the pit drops straight, while the western walls radically.

Times:

- 1) 3 seconds; many 1 and 1.5 second bounces to 17. All bounces were off a rock surface.
- 2) 3.5; many bounces to 12.
- 3-5) same as number 2.
- 6) 3.5; many bounces to 16.

Sótano del Aguacate. Known locally as *the* sótano that blows air, it was sucking when I visited it. The entrance is in the arroyo below the Montoya home, and evidently takes a lot of water. The opening is only 1.5 ft wide, opening into a shaft measuring 2.5 X 5 ft and sloping downstream. The shaft is clean, with all rocks rattling off of solid rock surfaces and landing on rock. All rocks fell for 5 seconds, with a free drop between 2 and 4.

Sótano without a name. 100 meters downstream from Ahuacate and 10 meters above the stream bed is a 1 X 2 meter elliptical shaft down which rocks bounce for 5 seconds to a dirt floor.

Sótano without a name. In the Huilotla arroyo about 50 meters upstream from its junction with the one running down from the Montoya rancho, and 3 meters above the bed. There is a small hole in the rubble of a collapsed shaft.

Sótano del Arroyo de Huilotla. This sótano was visited but not entered by SWTG people about a year ago, according to Sr. Montoya. Though not particularly impressive, it is known at least as

far away as La Cienega. Returning to Ahuacatlán, I was overtaken by a gentleman from La Cienega who told me that revolutionaries threw money taken from the duenos into the pit. He claims that it has been entered by Mexicans using four 20 meter ropes, and contains a series of 3 pits. The pit is located about 1 km downstream from the previously mentioned junction, about 5 meters above the bed in the west bank. This entrance is a cave 2 meters high and 1 across. After 6 feet the passage pinches to about 1.5 feet across. The immediately opens into a downclimb of 6 feet to a drop down which rocks rattle for from 5 to 7 seconds to a dirt floor. There is bat guano at the brink.

During all of this hiking, Sr. Montoya's brother Guadalupe acted as a guide. Back at the house I met the third Montoya brother, Dionicio, and a ranch hand. I learned of several other large and deep sótanos north of Sótano de los Cuervos on the Rancho de la Tinaja. Macedonio said that he did not know the country well enough to take me to these pits.

While returning from Cuervos, we stopped by Sótano de la Escondida to throw rocks in. The pit is known at least as far away as La Cienega as la Escondida, and by some as Sótano de la Mora. Macedonio and Guadalupe complained that they often do not know the names that the gringos give to the pits. The tasteless name of Macho Rey had best disappear from the gringo lexicon.

New Road from Ahuacatlán. The trail from Ahuacatlán to the interior is being widened into a road by the government. Work was begun in late January. Though not now open for travel due to workmen and blasting, it now reaches about 1/3 of the way to the crest. When completed it will connect Ahuacatlán to Huilotla, Maguey Blanco, La Cienega (Sótano de la Paila), Santa Aguda (Sótano del Buque), Santa María de los Cocos (El Sótano del Barro), and the road from Pinal to Los Pinos. Work is scheduled for completion in about two years, and residents are eagerly looking forward to it.

April 4-5, 1973

RECENT PUBLICATIONS IN MEXICAN SPELEOLOGY

Abstracts

Birney, E. C., J. B. Bowles, R. M. Timm, and S. L. Williams. 1974. Mammalian distributional records in Yucatán and Quintana Roo, with comments on reproduction, structure, and status of peninsular populations. *Bell Mus. Nat. Hist. Occ. Pap.*, 13. 25 p.

Fifteen species of bat are identified from collections made in caves and cenotes in Yucatán and Quintana Roo.

Causey, N. B. 1975. Desert millipedes (Spirostreptidae, Spirostreptida) of the southwestern United States and adjacent Mexico. *Occ. Pap. Mus. Texas Tech Univ.*, 35. 12 p.

This review of the milliped genus *Orthoporus* in the Southwest and in northern México includes new records of the species *O. mimus* Chamberlin from four caves in San Luis Potosí and Tamaulipas. The species *O. linares* Chamberlin and *O. lenonus* Chamberlin are placed in the synonymy of *O. mimus*.

Condé, B. 1975. Description du premier Campodéidé cavernicole du Guatemala. *Rev. suisse Zool.*, 82:421-424.

Juxtacampa hauseri n.sp. is described from Cueva Chirrepeck, Guatemala. This is the first cavernicole campodeid dipluran described from Guatemala and only the second species of the genus *Juxtacampa*, which is otherwise known only by the species *J. juxtlahuacensis* Wygodzinsky from Grutas de Juxtlahuaca, Guerrero, México.

Dreux, D. 1974. Recherches du C.E.R.S.M.T. au Guatémala. *Trav. Inst. Spéol. "Emile Racovitza,"* 13:205-211.

This paper gives a brief summary of the results of an expedition by the Centre d'études et de recherches spéléologiques en milieu tropical, a French speleological organization. In 1968 12 new caves were explored and 1 mapped in Alta Verapaz. In 1971-1972 160 caves were explored, of which 20 were mapped. This report summarizes their findings in the fields of biology, geology, archeology, etc. A map of Grotte de Bombil'Pec, Alta Verapaz, is included.

Keirans, J. E., and C. M. Clifford. 1975. *Nothoaspis reddelli*, new genus and new species (Ixodoidea: Argasidae), from a bat cave in Mexico. *Ann. Entomol. Soc. America*, 68:81-85.

This paper describes *Nothoaspis reddelli* new genus and new species from Grutas de Xtacumbilxunam, Campeche. This remarkable tick represents only the fifth genus in the family Argasidae. It was found in association with two species of its closest related genus, *Antricola*.

Magniez, G. 1976. Contribution à la connaissance de la biologie des Stenasellidae (Crustacea Isopoda Asellota des eaux souterraines). Thèse présentée à l'Université de Dijon. 228 p.

This doctoral thesis includes a discussion of the taxonomy and phylogeny of all members of the isopod family Stenasellidae, including the four described species of the genus *Mexistenasellus*. This group of Mexican troglobites ranges from Coahuila south to Veracruz.

- Rosen, D. E. 1975. A vicariance model of Caribbean biogeography. *Systematic Zool.*, 24:431-464.
This important paper discusses the biogeography of the Caribbean region. Included among many other examples are the fish of the genus *Ophisternon* which includes the Yucatán blind eel, *O. infernale* (Hubbs). The distribution of this genus includes Central and northeastern South America, the west coast of Africa, and Southeast Asia and Australia. This distribution pattern is determined to be the result of vicariance rather than dispersal.
- Rosen, D. E., and H. Greenwood. 1976. A fourth neotropical species of synbranchid eel and the phylogeny and systematics of synbranchiform fishes. *Bull. American Mus. Nat. Hist.*, 157:1-70.
This revisionary study includes additional data on the anatomy of the Yucatán blind eel. It is removed from the genus *Furmastix* and placed in the genus *Ophisternon*. *O. infernale* (Hubbs) is, therefore, found to be more closely related to a group of eels occurring in Central and South America, Africa, Southeast Asia, and Australia than to the members of the genus *Synbranchus*, in which it has been placed by some authors.
- Vásquez-Yanes, C., A. Orozco, G. François, and L. Trejo. 1975. Observations on seed dispersal by bats in a tropical humid region in Veracruz, México. *Biotropica*, 7:73-76.
This study of the seeds rejected during a year by a colony of *Artibeus jamaicensis* Leach in Cueva de Puente de Piedra, Los Tuxtlas, Veracruz, provided much information on the fruit species on which these bats feed, their degree of utilization, and the preference of bats for some fruits.

Cave and Place Names Index for AMCS Newsletter, Vol. 5

G. L. Atkinson – June 2007

I used the abbreviations guide provided in the AMCS Activities Newsletter Index for Nos. 16-25 (2003). Known caves have their associated state in parentheses; place names without parenthesis. Note is particular that the entries alphabetized starting with “Cueva de” and similar are place names, not caves.

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People Index for AMCS Newsletter, Vol. 5

Bill Mixon – June 2007

Only the first page on which people in a trip report are mentioned is listed. In general, following pages of the same report or article should be consulted. Page numbers for authors formally cited in articles refer to the bibliography, not the location of the citation. m1, m2, etc. are the map plates. mh means the name appears in one or more of the mastheads on the reverse of the front covers.

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