

July 1966

Association of Mexican Cave Studies Newsletter, Volume 2, No. 4, July-August 1966

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THE ASSOCIATION FOR MEXICAN CAVE STUDIES

NEWSLETTER

TRIP REPORTS

Xilitla, S.L.P.

Xilitla, S.L.P. ; Guerrero

Cueva del Diablo, Sabinas Hidalgo, N.L.

HISTOPLASMOSIS

PARQUE NACIONAL DE LA GRUTA DEL PALMITO

THE ORDER RICINULEI IN MEXICAN CAVES

MEXICAN CAVE BIOLOGY: ANNOTATED BIBLIOGRAPHY

THE ASSOCIATION FOR MEXICAN CAVE STUDIES
NEWSLETTER

Volume II Number 4

July - August

Publication date: March, 1967

The AMCS NEWSLETTER is published six times a year by the Association for Mexican Cave Studies, P.O. Box 7672, University Station, Austin, Texas 78712. Membership in the AMCS is \$5.00 for the calendar year, with memberships starting at the first of each year. Persons joining after the first of the year will receive all publications for that year. Also, publications for the year of 1965 are still available by writing to the AMCS.

Members are urged to submit articles for publication. The article may cover any phase of Mexican speleology. Trip reports are requested from all trips.

Editor..... Terry W. Raines
Assistant Editor..... John Fish
Treasurer..... Philip Winsborough

NEWS NOTES

- Dennis Barrett and John Fish are beginning a rock-throwing program. Many data points are needed to plot a graph of depth of pit versus time. The accumulated data and a theoretical curve will be published in the NEWSLETTER when enough information is available. We need your help in this project.

Specifically, we want the total time of fall for a rock plus the time for the sound to return to the top. Data may be taken either in a vertical shaft or on a cliff face or tower (choose a calm day). Select pits that are at least ten feet in diameter and that do not "trap" the sound because of a large room below. Use moderately rounded limestone rocks approximately three inches in diameter, and time their free fall with a stopwatch. Take ten good measurements (discard misreadings) and send all data to the AMCS in Austin. Briefly describe the pit with a few words and/or profile sketch, or indicate data collected on the surface. Be sure to include an accurately determined depth, to the nearest foot if possible. Contributors will be acknowledged in the final report.

- Now available from the AMCS at no cost is a "Mil-to-degree Conversion Table". On a 5" by 8" card is printed readings from 0 to 6400 mils, at increments of 20 mils, with their corresponding equivalents in degrees (0° to 360°). To those owning and using army surplus Brunton compasses (which are calibrated in mils) this card should prove very useful. With your order please include a 4 cent stamp to cover postage.

TRIP REPORTS

Persons: Lew Bicking, Mark Blumenstein, Bob "Rooney" Burnett,
Kenny Laidlaw, Squire C. L. Lewis, Joe Pendleton, Terry
Raines, Rick Rigg, Stanley Spencer, Bob Thren, Sam and
Diane Young

Date: 1-9 July 1966

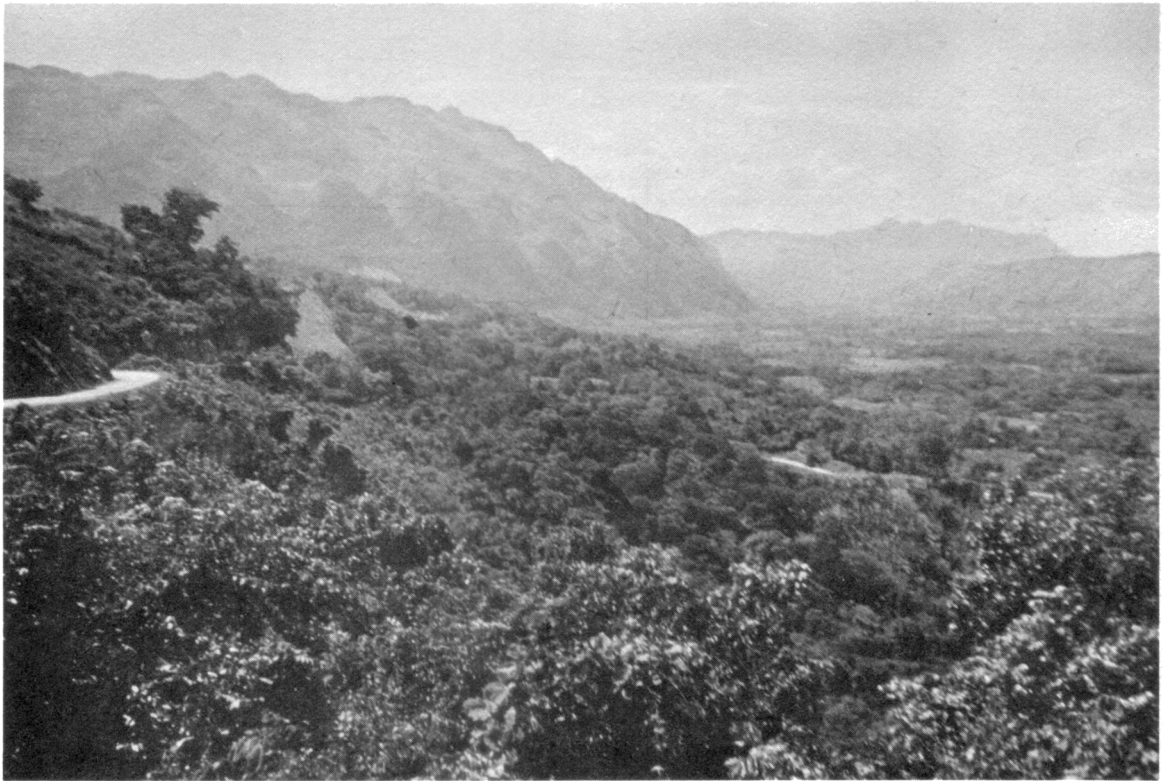
Distination: Sótano de Tlamaya and the Xilitla area

Reported by: Terry Raines Austin, Texas

During the 1966 National Speleological Society Convention at Sequoia National Park, California several groups of cavers finalized plans for a trip to Mexico. They arranged to meet at Terry Raines' house in Austin, Texas and from there drive to the Xilitla area and Sótano de Tlamaya. Everyone arrived on Friday, July 1st as planned and out of this large number of people four groups were condensed: Kenny, Rick, and Lew in Kenny's 4-wheel drive pickup; Mark and Stan in Mark's car; Bob, Squire, and Joe in Bob's car; and Terry, Rooney, Sam, and Diane in Terry's pickup. Late that night the party left Austin.

2 July About 3:30 AM Saturday morning we crossed the Río Grande and encountered the greatest mass of confusion at Mexican Customs that any of us had seen in a long while. It seemed as if every gringo tourist in the United States was trying to cross the border at once and get to Monterrey. (This was the 4th of July weekend.) Five hours later all of our groups had their papers and we left town heading south. Nightfall found us just outside Ciudad Mante driving along a dirt road toward El Nacimiento del Río Mante, an excellent camping spot. But we quickly discovered that the dirt road was impassable due to the heavy rains a week previous. In fact, all the way from Monterrey we had been noticing that every arroyo and river, which was usually dry, contained raging torrents of water. In lieu of camping at the Nacimiento, we slept by the road below the large cliff-entrance of Cueva de El Abra, located only a few miles south of Mante. (For a description and map of Cueva de El Abra see AMCS NEWSLETTER, Volume I, Number 2, page 17.)

3 July The journey was continued on south through Ciudad Valles to the turnoff of the new road to Xilitla. This road follows Arroyo Seco and passes through some extremely promising mountains which remain completely unexplored as far as caves are concerned. We were passing a point approximately halfway between the turnoff and Xilitla when a most unfortunate incident occurred. Rooney, who had been sleeping in the back of the truck, decided to ride on the rear bumper in order to get a better view of the spectacular canyon and surrounding mountains. As he was climbing over the tailgate and onto the bumper, as he had done a hundred times before, his foot slipped and he fell. For a moment he was able to hang on and was dragged by the truck, but soon had to let go and went tumbling to a stop in the middle of the gravel road. Injuries sustained were a severely torn knee, and several other much less serious cuts and scrapes. He was rushed to Xilitla where a doctor did the best job he could with the facilities he had available. With Rooney now patched up, the group continued on to Rancho de Huitzmolotitla near Tlamaya, where we camped with the permission of Sr. Ismael Larios, the ranch foreman.



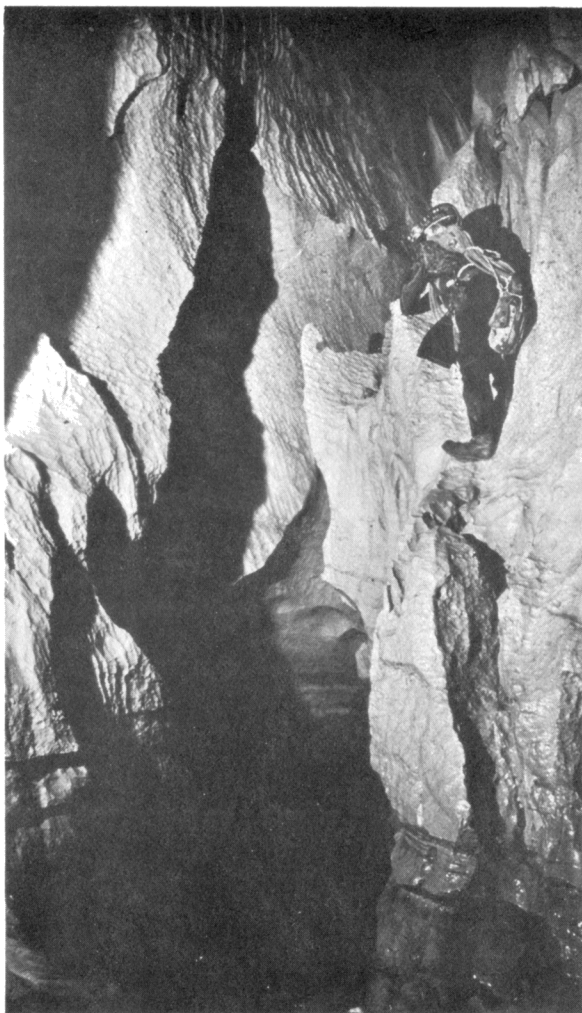
View north along valley of the Inter-American Highway. The Xilitla-area caves are located in the mountains to the left (west).



The Tlamaya solution valley, about one kilometer across, with the prominent peak of La Silleta in the background; view looking west.

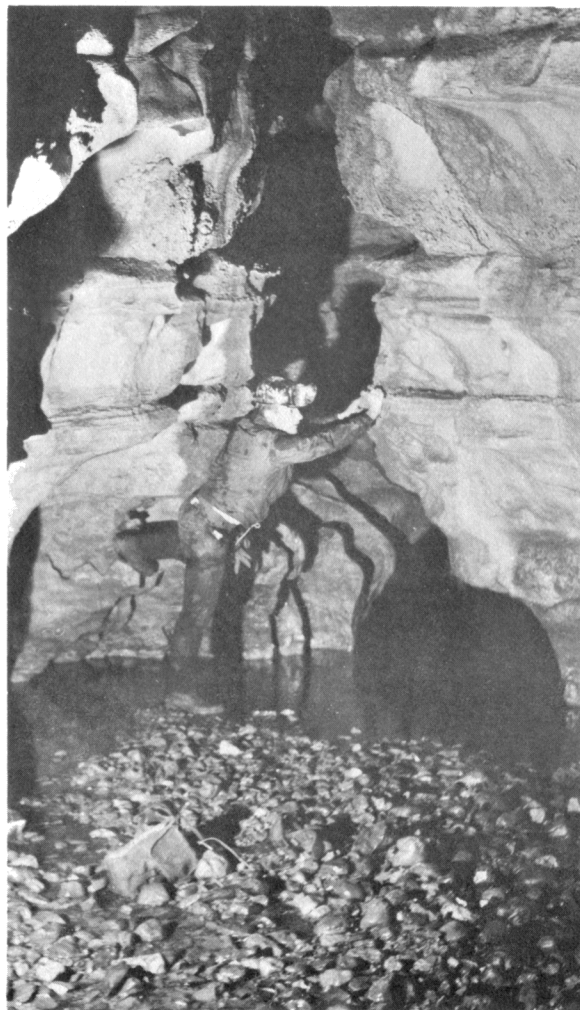
4 & 5 July The night was passed with great pain and discomfort for Rooney and the next morning it became apparent that he would have to return to Austin immediately. With Bob's car being the fastest vehicle available, the Good Squire volunteered to drive and so the two departed early that morning. The remaining group continued on as planned. Equipment was organized and we headed down to Sótano de Tlamaya. Seven would go into the cave: Joe, Rick, Bob, and I to the end, Sam and Diane to the top of Junction Pit, and Mark to the bottom of the entrance drop. The main purpose of the trip was to take pictures and collect insects throughout the cave. Upon arriving at the cave about 9:30, we noticed that the arroyo leading into the entrance was washed clean and from the local people we learned that it had been raining almost steadily for the past week. This was the reason for the high level of the rivers we had noticed on the trip down. We began the descent of the entrance pit and everything continued smoothly from then on. The water level was surprisingly low, considering the recent rains, which indicates that the system drains very quickly. Bob, Joe, Rick, and I left Sam and Diane at the Junction Pit and continued on into the cave. Picture taking was slow work, but finally the Big Room was reached and we took a short rest. From the far end of the room we made a side trip into the Upstream Passage. (There are two stream systems in the cave. The first begins in the Entrance Room and siphons just before the Big Room while the other begins in the Upstream Passage, runs tangent to the far end of the Big Room, then continues on to the end of the cave.) The Upstream Passage is unusual in that it is of an oval cross-section, (not a fissure type as in the rest of the cave; see photographs on page 76) which averages 20 feet high and 40 feet wide. (See photograph of Upstream Passage on page 77.) This passage is well decorated with formations and continues 481 feet from the Big Room to a point where the formations almost block the passage. By continuing through a short water-filled crawlway, one can explore several hundred additional feet of passage before it is blocked completely by breakdown. While in the process of making photographs we were pleased to notice that the almost transparent worms, as yet undescribed, have not been killed off by the many people visiting the cave since their discovery. From here we back-tracked to the Big Room then continued on downstream. In this downstream section of the cave much chimneying is required to avoid the deep pools of water. The passage averages no more than 10 feet wide and usually the ceiling is well out of sight. After descending a 40 foot drop a short rest stop was made, then we continued on. Although the distance from the Big Room to the Pinnacle Drop is only 2717 feet, the constant climbing and chimneying became very monotonous. Also, fatigue was beginning to show on all of us and when we reached the 32 foot drop immediately preceeding the Pinnacle Drop, all unanimously voted to rest. Ten minutes later Rick and Joe decided it best if they not continue on. So Bob and I pushed ahead in hopes of finding the cave beetle, *Sphodrini*, which had been reported to live near the end of the cave. Descending the 32 foot drop, we followed the passage a short distance further to the top of the Pinnacle Drop. Peering over, we expected to see only blackness and mist from the waterfall, but instead we were extremely surprised to find that the drop was filled with water! We knew that it had been raining heavily in the area for the past week but didn't expect to come upon anything like this. Evidently the rains had been so great that the local water table had risen. In the

Typical fissure passages in Sótano de Tlamaya. Photos by Terry Raines

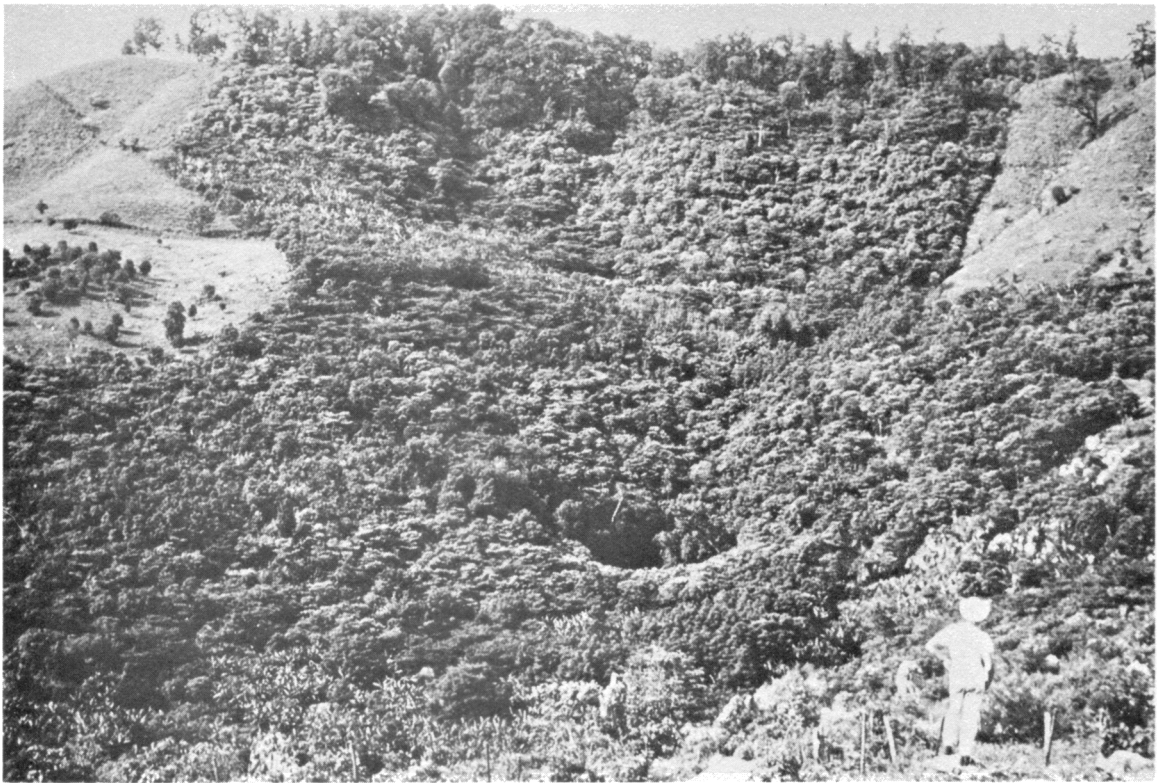


Bottom of Junction Pit.

Between Fossil Pit and Big Room.



Downstream from the Big Room.



Entrance to Sótano de Huitzmolotitla, 150 feet to 200 feet
in diameter and 364 feet deep. Photo by Terry Raines



Upstream Passage in Sótano de Tlamaya near its junction
with the Big Room. Photo by Terry Raines

valley below the resurgences were discharging very large amounts of water, another indication of the unusually heavy rains. We rappelled on down the drop as far as possible to find that the water level was within 30 feet of the top. This means that approximately 105 vertical feet of cave passage were submerged. So ended our search for the Sphodrini and any other insects that may have been past the Pinnacle Drop. We retraced our steps to where Joe and Rick were waiting at the top of the 32 foot drop. The return to the Big Room was slow, as we were still taking pictures. (I was anyway, Joe had dropped himself and his camera into a ten foot deep, water-filled hole.) The rest we took at the Big Room was most welcome. Each of us tried to keep warm as best we could, as we were soaked to the skin. Joe went to the trouble of sitting over his carbide light while resting his head on his knees, but Bob, Rick, and I just lay on whatever was available (ropes, packs, and other equipment) in order to keep off the cold rocks and damp ground. By the time an hour had passed we realized that to rest any longer would accomplish nothing, as all had become victims of spasmodic shaking. Moving quick so as to loosen up cramped muscles, each reorganized his equipment and began chimneying on towards the next drop. From the Big Room, just under 1000 feet of prusiking is necessary to reach the entrance. (For a profile map of the cave from the entrance to the Big Room see AMCS NEWSLETTER, Volume II, Number 1, page 18.) As we wanted to leave the cave as quickly as possible we left the ropes rigged down to the 800 foot level, planning to retrieve them in a day or two. By noon the last man had prusiked the 279 foot entrance drop and we were all back on the surface. We had spent approximately 26 hours in the cave. That afternoon we relaxed while relating our discoveries to the rest of the group. During the day that Rick, Joe, Bob, and I had spent in the cave, Lew and Kenny had headed a Brunton and tape survey of the Tlamaya area. Surveying mainly along the roads, they located Sótano de Huitzmolotitla and most of the other pits in the area. The finished map should prove to be very useful.

Squire had arranged a rendezvous at the border checkpoint with Sue Emory, Philip Winsborough, and Dennis Barrett, who rushed Rooney the rest of the way to the Austin hospital. He made it back to the patio at ten o'clock this night after a wild 1100 mile trip.

6 July After a slow start, Bob and I descended into Sótano de Tlamaya once more to recover the ropes we had left the day before. We were accompanied to the top of the Junction Pit by Lew and Stan, this being the first time either of them had been in a deep vertical cave. We made good time throughout the whole operation (down to the 800 foot level and back), even though rains during the night had caused a rise in water level. By nightfall we had hauled the last of the heavy, water-soaked ropes out of the cave, and glad we were.

7 July Everyone loaded into one truck and we headed to Xilitla for a good meal at a restaurant. Afterwards we drove just outside of town to Cueva del Salitre where we planned to finish the map which had been begun on an earlier trip. (See AMCS NEWSLETTER, Volume II, Number 2, page 40, 43-45.) This project took the better part of the afternoon and we did check out and map all rooms and passages. From the cave we drove back through Xilitla then on to Rancho de Huitzmolotitla, a distance of about ten miles.

8 July Early in the morning we met with a man named Antonio as previously arranged. He had agreed to show us the caves on Rancho de Suchallo, located immediately to the south of Rancho de Huitzmolotitla. The resulting hike through the jungle and orange groves to the various caves proved to be rewarding. Of the seven or eight pits visited, most seemed to be close to 200 feet deep. We were postponing actual exploration until later so as not to take up too much of Antonio's time. About noon we returned to Tlamaya and thanked Antonio for his help. Then, that afternoon we went back to the ranch and managed to explore three of the pits before dark. The first, named Sótano de Suchallo, was 15 feet by 20 feet at the top and dropped completely sheer for 205 feet to a flat dirt floor; no leads. The drop was made very spectacular by the large, green, moss-covered flutings that extended the entire length of the pit. Next explored was a pit, located near the first, that had a small entrance and was only 116 feet deep. Nothing of interest. The last pit had an even smaller entrance, three feet in diameter, and the following 192 foot drop did not enlarge to any extent. Like Sótano de Suchallo, the other two pits had no leads at the bottom. So ended a typical day of Mexican pit checking.

9 July Sam, Diane, and I had to leave and return to Austin, but the rest of the group spent several more days in the Tlamaya area. They made additional surface surveys and explored the balance of the pits shown to us by Antonio. Descriptions of these are in the continuation of this report. Maps of the various pits and the Tlamaya area will appear in later AMCS publications.

Notes on photographs:

The two photographs on page 74 are of scenes in the Xilitla area. The upper picture views the valley through which the Inter-American Highway runs. It is taken from the old road to Xilitla (seen at left center) at a point near where the road leaves the main north-south valley and climbs toward Xilitla. The high mountains shown at the left rise 2000 to 3000 feet above Tlamaya (just off the left-hand side of the picture) which is at an elevation of 1800 feet above the main valley shown here. Also, located at the base of the mountains are several large resurgences such as the Nacimiento del Río Huichihuayan. The greater portion of these high mountains remain untouched in the search for caves, as access is limited to rugged foot trails.

The lower picture shows the Tlamaya solution valley. This flat-floored valley is surrounded on all sides except to the east by the same high mountains as seen in the previous photograph. To the east the valley narrows to a pass which slopes out into the valley containing the Inter-American Highway. The entrance to Sótano de Tlamaya is located just above the valley floor off the left-hand side of the picture.

The other two pages of photographs, pages 76 and 77, are devoted to two caves. The upper picture on page 76 shows the entrance to Sótano de Huitzmolotitla, which is perhaps the largest pit so far discovered in Mexico. Estimated to be 150 to 200 feet in diameter, the pit tapers in only slightly until its bottom is reached, 364 feet below. The surrounding jungle vegetation continues down into its mouth for over one-fourth of the depth, and from this

point on, green mosses cover the walls. Leading from one corner at the bottom, a second pit drops 156 feet to a horizontal fissure passage slightly less than two miles long. Note the Xilitla-Tlamaya road which skirts around the entrance halfway between the pit and the top of the ridge.

The lower picture on page 76 and the three pictures on page 77 were taken at various points throughout Sótano de Tlamaya. They emphasize the predominant fissure-type passage development in the cave.

Report continued:

Date: 9-12 July 1966

Reported by: Squire Lewis

9-11 July With Terry gone the 9th and Mark and Stan taking off the 10th, we all promptly played hookey for the next three days. During this period we took the time to develop public relations and friendships with the residents of Tlamaya and feel that we left them with a far deeper understanding and feeling of rapport for cavers. It is to be hoped that future groups visiting the area will work towards maintaining the respect and good will we have always been accorded by our Tlamayan friends.

12 July We resumed work on the new pits and surface surveys from Huitzmolotitla to Rancho de Suchallo. Descended and surveyed were four additional sótanos, 157 to 211 feet deep. Also surveyed were two new caves, one a small sewer cave, the other with reasonable passage, not too long, and although a nice enough cave, not of special interest by general area standards. Extra caution should be used in any attempt to visit this cave as Antonio and others emphatically warned us of a heavy concentration of Cuatro Narices (fer-de-lance snake) in the rather dense jungles surrounding it. We named the cave "Cueva de Cuatro Narices".

While these eight new sótanos and two new caves are not of particular significance, the methods of getting them checked, tied in with the surface survey, and out of the way might be of value to future groups faced with a concentration of pits to be checked. A fresh climber was sent down each pit, who quickly checked and sketched it. The tape was stretched and ready to measure the rope as it was retrieved, then the rope immediately moved to the next pit ahead of the group, rigged, and was ready for the new descender. In only one instance did a second man go down as a backup man when one of the pits appeared to go. The surface survey team of Kenny and Joe followed up behind, tying in the pits' locations to the road survey. While the surface survey was being completed, a four man team quickly surveyed the two caves. Thus in the equivalent of an eight hour day, eight sótanos with a total of about 1400 vertical feet, about two miles of surface survey, and roughly 1000 feet of horizontal cave were completed and tied in with the main survey point at Rancho de Huitzmolotitla.

After completing the work, we thanked Sr. Larios for his hospitality then headed into Xilitla for a special banquet. Afterwards we continued down the road, camping south of the town of Huichihuayan. In the confusion, Bob, Joe, and I got separated from Kenny, Lew, and Rick and it was not until two days later in Mexico City that we learned that Kenny's beautiful four-wheeler broke down coming out the Xilitla road, delaying them several days in Cd. Valles and forcing them to alter their plans to travel with us down through

the southern areas. We learned this by accidentally running into Lew in front of the American Embassy. Lew joined up with us for several days in Mexico City, then just disappeared one afternoon, soloing off across the horizon.

13 to 28 July Thren, Pendleton, and Squire: The balance of our trip was spent meandering around the country south of Mexico City, poking around ruins and doing the tourist bit with a visit to Grutas de Cacahuamilpa and Dos Bocas near Cuernavaca, the only additional caving activity. We left Mexico the 28th of July, with our first stop in Texas being Big Bend National Park, then AMCS headquarters in Austin for a few days of fellowship, and finally we continued on to make the "Old Timers" Reunion at Franklin, West Virginia.

Medical Notes: Xilitla, Ciudad Valles, Ciudad Mante

There is a competent young doctor on the main square in Xilitla, however his facilities are extremely primitive by our standards and his supplies limited. We have not thoroughly checked the town but believe this to be the only available services. The nearest clinic (clinica in Spanish) is in Ciudad Valles, 65 miles from Xilitla with, of course the Xilitla and Tlamaya roads to contend with if time is a factor. The clinic is not new or large but is well equipped and there are competent doctors available in the town. To quickly reach the clinic: driving north on Mexico 85 (Inter-American Highway), turn left in Cd. Valles at the Goodyear "Oxo" station onto Calle Juárez, proceed five blocks to the Hotel Condesa, turn right at the hotel onto Calle Morelos and the clinic is on the left in the middle of the block, Number 59 Calle Morelos. An English speaking interpreter lives somewhere within the block and can be sent for on request.

In Ciudad Mante there is a large new modern clinic right on Mexico 85 as you enter the south end of town.

In the incident where it became necessary to rush Robert Burnett from Tlamaya to Austin, we called Austin from Ciudad Mante and arranged for a fast car and fresh competent help to come down from Austin and rendezvous with us at the twenty mile border checkpoint inside Mexico. This worked very smoothly and would be of special value in the event the original vehicle was a truck, particularly slow, or small and uncomfortable. In our case it solved passport and car paper problems, relieved the single driver, and permitted him to rejoin the trip at Tlamaya.

Persons: John Fish, David McKenzie, James and Janie Reddell,
Richard M. Smith

Date: 2-19 August 1966

Destination: Xilitla, S.L.P. and Guerrero

Reported by: John Fish and James Reddell Austin, Texas

2 August James, David, Richard, and John left Austin about 6 PM and spent the night with the sand burrs and mosquitos along the banks of the Río Sabinas just west of Sabinas Hidalgo, N.L.

3 August About 26 miles west of Monterrey on the Saltillo road, we stopped to locate one of F. Bonet's caves called Cueva de Casa Blanca. A crude sketch map is to be found on a wall of Restaurante Casa Blanca, and the map showed a large, horizontal cave. However, we found a different cave, Cueva del Aguila Oro (Gold Eagle), in a canyon just south of the villa. This cave is reached by climbing a few hundred feet up a talus slope to a small opening leading to a 3 to 5 foot wide fissure choked with dust. A series of short climbable drops go down to about 100 feet where further climbing without equipment was difficult because the fissure became narrower. A few minutes more searching did not reveal the entrance of C. de Casa Blanca, so we drove on to Matehuala. We turned east on the paved road to Doctor Arroyo to check out some rumored gypsum sinks. After a brief survey of the gypsum plains, we settled down beside a large gypsum sink for the night.

4 August This morning we explored Sumidero de Matehuala, located about one mile east of Matehuala. One entrance sink 50 yards from the road is about 100 feet long, 40 feet wide, and 25 feet deep and has a 40 foot deep shaft, 10 by 15 feet, at one end leading to a series of rooms connected by small passages. Another sink 200 yards away connects with the same cave. A small stream is encountered which soon siphons. Crickets, spiders, and eyed Rhadine were collected. Two other large gypsum sinks were found further south of the highway, but neither was checked because equipment was needed. Further east is a flat grassy plain with many shallow dirt and gypsum sinks averaging 30 feet across and 8 to 10 feet deep, but none we saw contained caves. It appears that water settles in the sinks during the infrequent rains and slowly drains through narrow cracks in the gypsum.

Driving south of Matehuala, we stopped briefly by kilometer post 556 and looked at a few dozen gypsum sinks but found no caves. We then drove to San Luis Potosí and took the new road to Cd. Valles. Soon we crossed a pass at 2900 meters elevation (9500 feet) and descended to Valle de los Fantasmos (8500-9000 feet). This valley is covered with lapies, karst pinnacles, sinks and caves, and a red earth (volcanic) topsoil. Most of the sinks are filled and the sótanos are usually 30 to 50 feet deep, seldom over 100 feet. We checked several pits with depths of about 30, 35, 40, 60, 80, 90, and 140 feet. Cueva de Aguacate and Cueva de Carnicería were also checked. Apparently they are the largest known caves in the immediate vicinity. They both are single rooms, roughly 50 feet in diameter and 30 feet deep, formed by collapse. Cueva de Aguacate has a large natural bridge and both caves have small alcoves among formations, but no passages. A good campsite at the high end of the main valley was located and we sacked out for the night.

5 August In the town of San Francisco, within Valle de los Fantasmos, is an arroyo with a small stream, a little less than one fire hydrant, which enters Sótano de San Francisco. The entrance to the

pit is about 15 feet in diameter with water cascading over the side. John entered the sótano and found that about 100 feet down it narrows to a 15 foot in diameter smooth pipe. Here the waterfall is broken up into droplets which completely fill the air. Fifty to seventy-five feet below a fissure 40 feet long and 15 feet wide is encountered, where it is possible to swing out of the waterfall. I descended another 75 feet to the point where another sewer pipe about 7 feet in diameter continued straight down. Using a large electric light I could follow the walls down for perhaps another 100 feet until the reflection from the water drops obscured further penetration. Noting that only 20 feet of rope remained, I returned to the surface.

We left San Francisco that afternoon and continued eastward toward Ciudad Valles. A few miles down the road we reached another valley floor. Inquiry led us to Cueva de La Rusias. The entrance to the cave is 3 feet in diameter and drops 8 feet into a small 10 foot high, 10 foot wide room. Three passages lead from this room. One is a short crawlway; another a low squeezeway that was not checked; and the main passage which extends 150 feet averaging 5 feet wide and 12 feet high, ending in a flowstone mound reaching to the ceiling. The cave is in the wall and near the bottom of a wide valley, most of the drainage of which appears to be subterranean. Another small cave with a stream entering it was located nearby, but remained unchecked.

We drove on past Río Verde and up into the mountains, where just before dark we were led to two caves about one mile east of the turnoff to Cárdenas. Cueva del Agua is located at the base of a sloping bluff a few hundred feet below the road along one side of a wide shallow valley. The walk-in entrance slopes down to a silt-floored room about 15 feet in diameter and 8 feet high. Two alcoves with short crawlways soon end, but immediately inside the cave to the left a flat dirt-floored passage 5 feet high extends 50 feet before entering a room 20 feet in diameter. A slope leads down to a lake which is up to 6 feet deep and contains eyed crayfish (*Procambarus*). Across the lake a passage leads to a small dome room where the stream siphons. Another narrow passage with running water extends 50 feet from the lake but becomes impassable. About 100 feet away is another small cave, Nacimiento del Agua Chica, through which the stream exits.

6 August The miserable night spent by the roadside with cactus, mosquitos, and trucks should have been a portent of the impending fiasco this day would bring. Our first stop was a large closed valley more than a mile long containing "muchos sótanos". A boy led us from dirt sink to dirt sink until we almost gave up. Then we found a small arroyo emptying into a pit about 8 feet in diameter and estimated to be 50 feet deep. We decided it wasn't worthwhile to come back with equipment to explore it because rocks hit a mud floor. As we left this valley we jokingly dubbed it "Valle de los Sótanos". From here we drove on until we hit an area of inviting dolinas. After an hour of being led through jungle to holes too small to enter, we continued onward towards Cd. Valles.

Fifty-five kilometers west of Cd. Valles we were told of a river and waterfall and of a large locally popular cave near Agua Buena. Our luck was due for a change, so we decided to check out the lead. We were in limestone mountains that looked as if there had been some karst development. A refreshing swim in the river below the waterfall renewed our spirits for more caving. From Agua

Buena, a dozen eager guides led us up an easy trail then onto a well-used path up a steeper slope. Shortly we turned off the good path to a faint "path" through the jungle until finally we made our way directly through the undergrowth to the cave. After resting we climbed among the formations, breakdown, fissures, and entrances for awhile. Then James and I were led to another cave a few hundred feet away which was a great complexity of more entrances, breakdown, and formations. Much of the cave we explored is climbable, but one entrance has a 150 foot drop into a large room, 60 feet wide and 100 feet long. Probably most of the cave remains unexplored. It is a one hour hike up to the cave and it should be checked more thoroughly. We were also told of a much larger cave which involved a three hour hike. Because darkness was rapidly approaching we returned to Agua Buena and drove to the Hotel Condesa in Ciudad Valles to recuperate for the night.

7 August This morning we drove to Xilitla, taking the new road. Sharp folds in roadcuts reveal some of the tectonic forces that have acted in the area. A large entrance on the opposite side of Arroyo Seco and to the east of Xilitla was spotted but not checked. Instead, we drove to Ahuacatlán and found two sótanos on the uphill (north) side of town which were not entered but estimated to be about 150 feet deep. A cave near the church in Ahuacatlán was explored. Named Cueva de Iglesia, the cave is entered through a jungle-covered sink about 15 feet in diameter. A slope to one side leads down 15 feet into a 10 foot high and 5 foot wide passage which extends in one direction about 150 feet to a dirt bank rising to the ceiling. In the other direction there is trash on the floor, a second entrance is encountered, and a short passage leads to a flow-stone alcove which contained salamanders.

About one mile west of Ahuacatlán we stopped momentarily to see Sótano del Pozo and Sótano de las Hoyas before continuing on about 10 miles to Madroño. A few very small caves were visited just at dusk. In Cueva de las Tablas (so called because of lumber stacked in the entrance) James caught a new species of sphodrini (beetle) and many salamanders were seen.

8 August Our planned destination was the mountains west of Jalpan, 55 miles west of Xilitla. A United States Geological Survey report on the Bernal-Jalpan area indicated some karst development. About 5 miles west of Jalpan we arrived at a high pass, Puerto Animás, beyond which lay the Río Jalpan and Puente de Dios. About one thousand feet below the road and one kilometer to the south of Puerto Animas, the Río Jalpan sinks and travels an underground course, emerging three kilometers away and 400 feet lower. We walked down a major trail then turned onto a switchback trail that drops to river level near the 400 foot thick "bridge" where the river plunges underground. The 3 foot deep, 20 foot wide river tumbles over a series of rapids before passing over a drop estimated to be 40 feet into a 100 foot high, 50 foot wide room filled with spray. We could not get close enough to the drop to see more than about 100 feet into the passage. After standing in awe for several minutes, we decided to look for caves on top of the Puente de Dios and perhaps visit the lower entrance to the river system. Exploration might be more feasible during the dry season.

Two caves above the river on the puente were found. Sótano de Puente de Dios del Río Jalpan has two small holes about 15 feet apart that drop vertically for 60 feet into a room 40 feet in diameter and 50 feet high. On the right side two holes drop an unclimbable 30 feet into a dirt-floored, dead-end room. On the left

side a steep talus slope of loose fist-sized rocks leads 15 feet to the lip of a 35 foot unclimbable drop. This drop intersects one end of a room 50 feet long, 20 feet wide, and extending up to a small hole at the surface 100 feet above. The cave is extremely attractive with walls covered with wet flowstone and many stalactites. The floor of the lower room contained a 5 foot in diameter dry pool several inches deep in which were found hundreds of cave pearls.

Located a few hundred feet away, the entrance to Cueva de Puente de Dios del Río Jalpan is a 3 foot in diameter hole dropping to a talus slope extending down about 40 feet. Here a passage to the right slopes up for about the same distance to a second entrance 2 feet in diameter. The main room is 40 feet in diameter and 4 to 6 feet high. A slope extends 100 feet horizontally to a 5 foot and 4 foot drop leading to a short dead-end passage.

This night was spent beside the road and from a nearby roadcut many camel crickets were collected.

9 August This morning we drove west of Puente de Dios towards Pinal de Amoles. In a roadcut on the left side we discovered Cueva Chevrón, a small cave in a concave down chevron fold. The cave is formed along the fold axis in thin-bedded limestone of the undifferentiated Soyatal-Mexcala formations. A 5 foot high and 4 foot wide triangular passage leads into a narrow fissure passage 100 feet long and averaging 12 feet high. The walls are covered with crystals and delicate crystalline helictites. The passage ends by abruptly becoming very small.

We continued the climb up to the pass at Pinal de Amoles (10,000 feet elevation), 20 miles west of Jalpan. From the pass the view westward was breathtaking. About one mile beyond the pass we inquired about caves and were shown two. Cueva de Tejamanil (named for a villa) has a 5 foot wide by 6 foot high entrance which slopes downward 15 feet to a 20 foot vertical drop into one side of a 10 foot wide by 40 foot long room. A small waterfall drops over flowstone-covered walls from a possible passage near the ceiling and opposite the cave entrance. Several inches of water collect on the floor and overflow to form a stream through gravel and breakdown. A 3 foot in diameter hole below the entrance slopes steeply for about 20 feet into a second room. No passages lead out. A log ladder is in the entrance and the other drops can be climbed.

Sótano de Tejamanil lies about one-half mile north of the highway at the end of a steep arroyo. The pit is approximately 25 feet in diameter and drops 100 feet to a gravel floor. A small passageway with water extends about 20 feet from the bottom and a small alcove with silt and debris on the floor can be reached by crawling over a formation. Of great interest were six specimens of blind beetles collected on a moist flowstone wall.

We were told that there were several other caves and pits in the vicinity. Six to ten miles northwest of Pinal de Amoles is a highland area reported to contain numerous sinks and internal drainage. Two large springs at the west base of the plateau carry most of the water. It is potentially a very promising area but hiking will be necessary.

Since we had to be in Mexico City on the 12th, we decided to return to Puerto Animas to check out a rumored large cave rather than spend several days hiking.

10 August We again descended to the Río Jalpan and walked two miles upstream from the Puente de Dios. Here we found Cueva de

los Riscos (see sketch map on page 87), only a few feet above the raging river. The main entrance ducks under a natural bridge to a large collapse skylight sink, then slopes steeply downward over boulders to the main cave floor about 60 feet below the river level. Straight ahead is a 300 foot long tunnel averaging 75 feet wide and 60 feet high. To the right of the entrance a large passage quickly ends in a breakdown mountain, through which we could find no way. The floor is made up mostly of silt, dried mud, and a little sand. Meander channels are present. Near the back of the main room a flowstone mound occupies the right-hand corner and has collapsed in one area. A few alcoves among formations are present, but no passages are known to lead out. On the left side the ceiling drops to about 7 feet then rises to about 20 feet. The passage continues about 150 feet more until flowstone-covered rocks terminate the passage. Near the entrance are two small passages leading further upriver. One fissure-like passage turns to a crawlway and comes out 2 feet above the river level. The other passage goes into a room, up a few drops, and finally comes out about 50 feet above the river. The river only has to rise two feet during storms to flood the cave. Not enough time was available to map the cave but it certainly would be worthwhile. After leaving the cave we drove to Madroño for the evening and located a few more caves after dark.

11 August In the morning we checked two small caves at Madroño. One dropped 10 feet into a small room with no passages. James and David explored Cueva de Camposantos which was a series of short drops in a fissure to the end, about 100 feet below. More sphodrini were collected.

After breaking camp we returned east to La Y Griega on the Inter-American Highway where David and Richard caught a bus for Austin, Texas. Of great importance to future work done throughout most of the Xilitla area is the highway under construction from La Y Griega to Highway 57 just southeast of Querétaro. Much of the highway is complete and construction is proceeding rapidly.

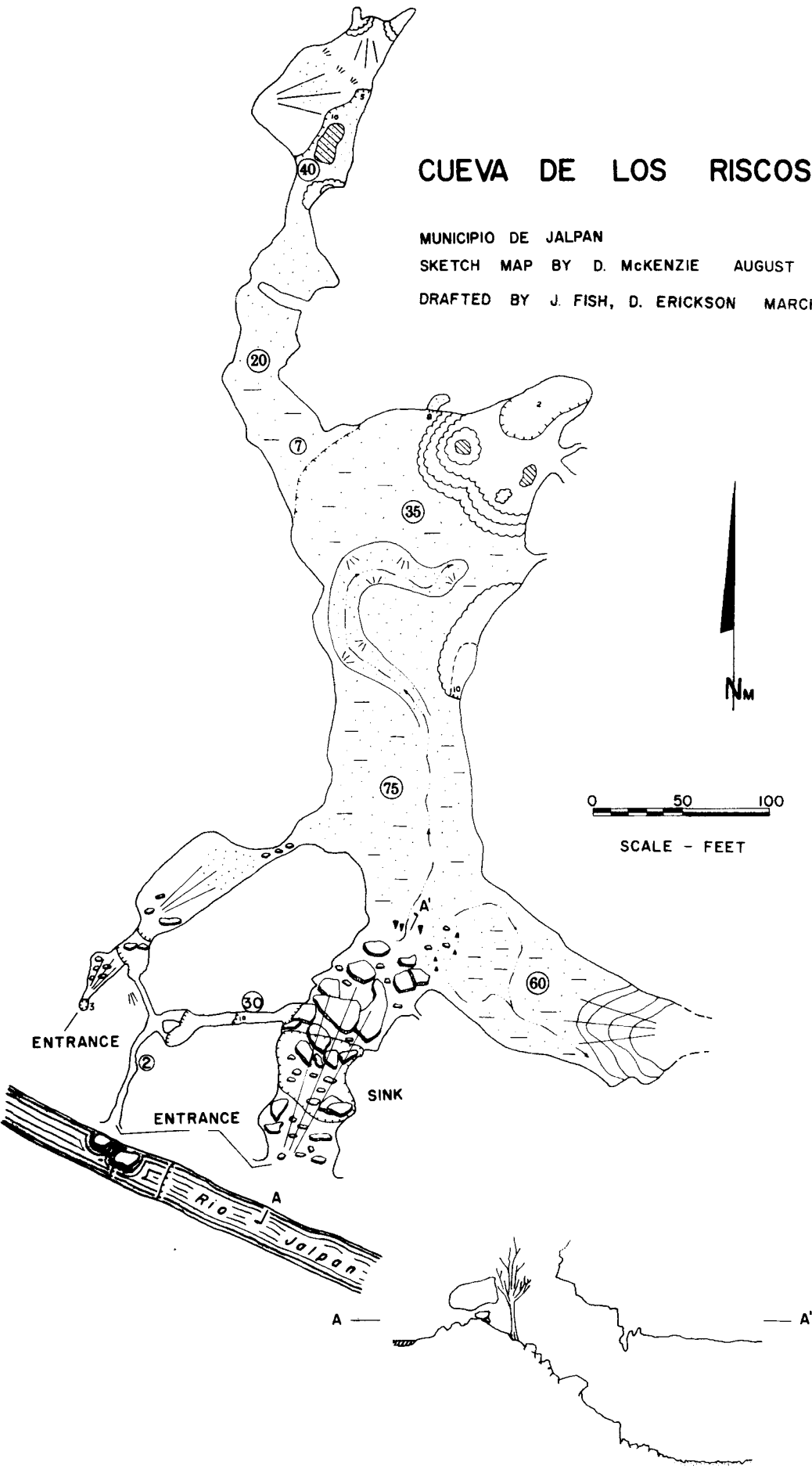
James and I turned south along the Inter-American Highway and continued driving up into the mountains. We stopped many times to ask about caves to find out how much cave development there was. Only a few small caves were visited. Apparently there are caves all along the mountain range, but pits do not seem to be predominant or well developed. Much more information is needed about the caves between Tamazunchale and Jacala.

12, 13 August James and I arrived in Mexico City, obtained a hotel room, and met Janie Reddell at the airport Friday night. Saturday we wandered around Mexico City sightseeing. The Museo de Antropología should be on everyone's itinerary.

14-19 August A more complete report on the caves of Guerrero will be published in the next AMCS NEWSLETTER. Briefly, we visited Grutas de Cacahuamilpa and Dos Bocas; Grutas de Juxtlahuaca, a very large and well-decorated cave near Chilpancingo; spent a day at Acapulco; and explored part of Grutas de la Estrella. Grutas de Juxtlahuaca and Grutas de la Estrella had not previously been visited by AMCS members and are not yet fully explored. We returned to Austin on the 19th with a large number of good biological collections and a little better knowledge of several of Mexico's more important caving areas.

CUEVA DE LOS RISCOS

MUNICIPIO DE JALPAN
SKETCH MAP BY D. MCKENZIE AUGUST 1966
DRAFTED BY J. FISH, D. ERICKSON MARCH 1967



Persons: Jim and Barbara Hershberger, James Mead,
Philip Winsborough
Date: 22 July 1966
Destination: Cueva del Diablo
Reported by: Barbara Hershberger Austin, Texas

On Saturday, 22 July, Jim and Barbara Hershberger, James Mead, and Philip Winsborough entered and explored a cave, the easternmost of three on the south face of the Sierra de la Iguana, in the Sabinas Canyon about 4.1 miles west of the town of Sabinas Hidalgo, N.L.

The cave entrance, about 500 feet above the Río Sabinas, was a large, dry, dusty room with passages leading north and east. The mouth, a hole about 20 feet high and 30 feet wide, can be readily seen from the highway below. See sketch map on page 90.

On speaking with the owner of the cave property it was learned that the air in the cave was dangerous, but no specific cause was given. The group was persuaded to wear protection, consisting of cotton and handkerchiefs tied over the mouth and nose.

The east passage is a joint controlled solution fissure about 50 feet long with a small breakdown room at the end. There were a few bats in the passage and the smell of ammonia was throughout. There was also considerable dust in the passage. The main part of the cave is a joint containing three sub-parallel passages on separate levels. All four persons explored the lowest passage which is horizontally divided into two levels by breakdown. It contains a damp, dirt-guano floor and much breakdown. This level ended after about 40 feet.

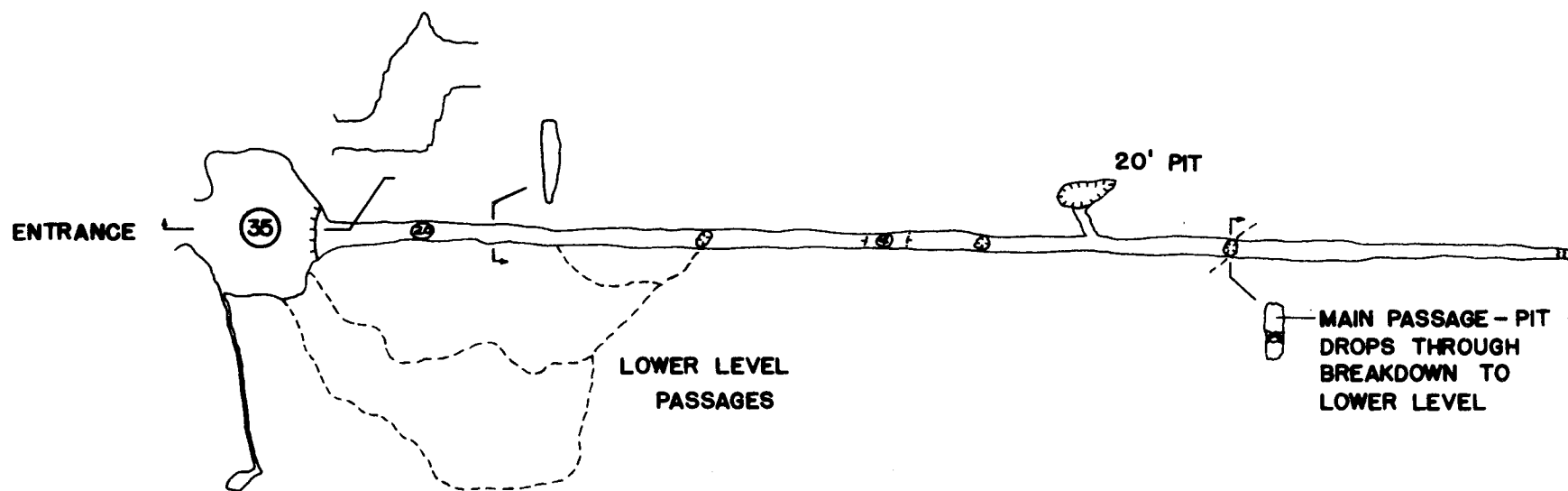
The upper passage was explored by Jim Hershberger and Jim Mead. It followed the joint for about 250 feet. This passage was cooler than the rest of the cave and active in some places. Several small rooms contained soda straws and stalactites. The floor was moist dirt. Barbara went into the upper section about twenty minutes later and met the other two almost at the back. Samples were taken of the guano at the back of the upper section and of the dirt at the entrance. These were given to Dr. Everett Rhodes of San Antonio, Texas for routine analysis in connection with his work with histoplasmosis.

From here the group went to Bustamante and to the Jarmon Ranch in the desert 26 miles west of Bustamante. They examined a bone site which contained Pleistocene elephant and camel bones. From here they returned to the Federal Park and canyon immediately west of Bustamante and climbed up to several caves near the top of the north face, opposite some Indian pictographs. The aim was to get to Boca del Diablo but a 100 foot vertical face of rotten, soft limestone stopped them.

Monday morning after arriving in Austin the cavers were told that eleven Mexicans who had been mining guano from Cueva del Diablo got sick and five died of histoplasmosis. On Wednesday, Jim Hersberger got sick and went to the doctor on Thursday. He was diagnosed as having the flu or a cold, given aspirin, and sent home. That Thursday James Mead also got sick and, like Hersberger, told the doctor about the histoplasmosis, but he was given x-rays and a skin test. The results were returned Friday and showed a positive reaction to the skin test and the fungus was visible in the lungs through the x-ray. Dr. Rhoades came from San Antonio the next morning and took blood from all four people, plus further tests. Jim Mead and Jim Hersberger were sick with the fungal disease for

several weeks. The skin tests and blood tests were also positive for Barbara but she did not get sick. Philip was positive for the skin test only.

It is advised that no one else go into the cave for any reason. There are no precautionary measures which are portable and still effective in preventing inhalation of the fungal spores. If not diagnosed and treated, the disease can be fatal.



0 20 50 100 FT.

0 10 20 30 M.

CUEVA DEL DIABLO

MUNICIPIO DE SABINAS HIDALGO, N.L.

SKETCHMAP BY JIM MEAD

DRAFTED BY DON ERICKSON, 20 MARCH 1967

AMCS

HISTOPLASMOSIS

In 1906 an organism, Histoplasma capsulatum, was discovered and named; and the accompanying disease was called Histoplasmosis. It was originally thought to be a protozoan but later proved to be a fungus. Further studies of the organism did not take place until 1934. Much research is needed before the fungus and its effects are sufficiently understood.

Histoplasmosis is very common in the Ohio and Mississippi River Valleys and in the eastern and central United States. The fungus lives in bird, especially pigeon and starling, dung and chicken dung as well as bat guano and other soils with high organic content. Indications are that it will not grow in dry, dusty soil. The fungus is circumglobal in distribution. It is estimated that 30 million persons now living have had Histoplasmosis and one-half million new infections occur yearly in the United States. The death rate is very small, because all but a small percentage of these persons develop an effective degree of immunological resistance very early in the disease.

Histoplasma capsulatum belongs to the group of fungi called Fungi Imperfecti. It is dimorphic, growing as a filamentous mold in the soil and as a yeast in animal and human hosts. In the soil it sends out hyphae which produce chlamydospores. These are the infecting agents. They are airborne and are distributed to the dry parts of the cave where they are picked up by inhalation. They get into the lungs and germinate, producing a yeast-like asexual stage in which the fungus is in individual, small, spherical, budding, thick-walled cells 3 to 5 microns in diameter. These grow mainly in the alveoli of the lungs, where they are frequently walled off by protective calcifying agents; i.e. the same mechanism that wards off tuberculosis, though many people have positive tests for TB. If this fails the yeast cells invade the spleen, liver, and bone marrow and can cause death.

Infection is frequently recurring, usually in a mild form. Sometimes it spreads rapidly causing severe illness or death. The majority of the infections remain entirely asymptomatic, and most of the rest are mild, during which time an effective degree of immunological resistance develops. Most of these cases are never diagnosed as histoplasmosis, and spontaneous cure results with no need for therapy other than general supportive measures. Even when more severe, the outlook is usually good. Symptoms appear within five to eighteen days after exposure.

The mycosis is characterized by irregular fever, emaciation, leukopenia, anemia, and splenomegaly. There may also be papular or ulcerative skin and mucous membrane lesions. It is diagnosed by the demonstration of the fungus in mucous membrane smears, in the blood system, in bone marrow, and by skin tests.

Amphotericin B (Fungizone) is an antifungal antibiotic useful in treatment of many mycotic infections. It is produced by a strain of Streptomyces nodosus. Fungizone is the most satisfactory treatment for histoplasmosis. It is administered intravenously for an average of three months. Use of the drug, however, is obviously limited to severe cases.

Barbara Hershberger
Austin, Texas

Editor's Note: The following proposal by Orion Knox, Jr. was submitted to the School of Architecture at the University of Texas for approval. It outlines Orion's tentative plans for a required thesis necessary for the completion of a Bachelor's degree in Architecture.

PROPOSAL AND REGIONAL PLAN FOR THE
PARQUE NACIONAL DE LA GRUTA DEL PALMITO

Municipio de Bustamante, Nuevo León, México
by Orion Knox, Jr.

SCOPE:

The scope of this project will be the planning in detail of a national park, including a regional plan, and all of the facilities required for the park's operation. The primary attraction in the park will be the Gruta del Palmito, a very large cavern noted for its size and beauty. The park will also include other outstanding features of the area, notably the rugged mountains and deserts which are so characteristic of northeastern Mexico. Facilities which will be designed for the park include a visitors' center complex at the cave, information stations at the park entrances, and facilities at park camp grounds. The following topics, which include the purposes of a national park, a regional study of the site for geologic, geographic and cultural elements, a regional plan for the area and the program of the facilities to be provided in the park, are hereafter discussed.

PURPOSE OF A NATIONAL PARK:

The primary objective of creating a national park is the protection of animals, plants, and scenery to the maximum feasible extent subject to compatible visitation. This means that while parks are for people, they were created by the people in order to protect the natural elements for their esthetic, scientific, and cultural values. The second objective, which must fall within the above framework, is to provide recreation for visitors to the park and surrounding area. The type of recreation that will be provided will vary according to the characteristics of and elements located in the parks, but one objective which should be included in all such parks is the education of visitors to the natural values which the park contains. This can be accomplished through exhibits, programs, and guided tours.

Parks can be broken into three major categories: natural, historical, and recreational. A park can fall into any one or possibly all three of these categories, depending on the features it contains. The natural category may include those parks which exhibit outstanding natural scenic beauty, unusual geologic phenomena, unusual biologic phenomena, or simply a wilderness area set aside for the enjoyment of future generations and for scientific study. The historical category includes areas and places which have significance due to events which have occurred there. The recreational category is usually an integral part of the first two, to an extent ranging from a small amount to being one of the prime reasons for the park. These

three categories can also be broken down even further into six classifications that are used by the United States National Park Service. These are:

- I. High density recreation areas
- II. General outdoor recreation areas
- III. Natural environment areas (with roads)
- IV. Outstanding natural areas
- V. Primitive areas (without roads)
- VI. Historical and cultural sites

Again, these can be found in combination within the same park.

A relatively new approach to park planning, and one which park planners have found increasingly more important in their work, is the regional plan involving not only the park itself, but also the surrounding area. Considering these additional areas in a plan can coordinate and incorporate additional natural features, provide additional recreational areas and, most important, relieve some of the load on the park itself during heavy periods of visitor traffic. Another problem which has beset the parks is the provision for and the overcrowding of provisions for overnight visitors. It has become a recent policy of our national park service and has been a policy of the Mexican National Parks Service to encourage private enterprise to provide these facilities in the form of hotels, motels, etc. This will not only relieve the park management from the additional problems involved, but will also allow the park to remain in a more natural state. Camping grounds are still being provided in parks since they have less impact on the natural features.

REGIONAL STUDY:

GEOGRAPHY:

The cavern and surrounding area which I am proposing to be developed into a national park is located in the Sierra de Gomas, which lies in the northeastern state of Nuevo León, México. It will cover an area running north-south for forty-five miles and east-west for a distance of ten to eighteen miles, depending on location. Its northern border will be eighty miles southwest of Nuevo Laredo and its southern boundary will be thirty miles north of Monterrey. It will parallel the Inter-American Highway and be some fifteen miles to its west. This is an arid region typical of much of northern Mexico and of the United States southwest. There are numerous mountain ranges with deserts in between and only a few permanent rivers. Vegetation consists of arid flora of many varieties, including various species of yucca, cactus, occatillo, and desert shrubs, while higher in the mountains, especially in canyons, can be found numerous varieties of large trees including elm, oak, and palmetto. In a few of these high canyons can also be found very lush vegetation commonly associated with cloud forest regions farther to the south. Animal life in the area is much like that of our southwest, consisting of bear, lion, javelina, deer, wild burro, coyote, fox, wolf, armadillo, opossum, raccoon, jack rabbit, and numerous other species of small mammals, birds, and reptiles.

Prominent natural features which will be within the park boundaries include the Sierra de Gomas, Sierra de Carrizal, Sierra de Enmedio, a major desert area between Sierra de Gomas and Sierra de Enmedio, and the Gruta del Palmito. All of the abovementioned fauna and flora can be found within the proposed park boundaries. The only

permanent river in the area is the Río Sabinas, which runs east-west through the park bisecting the Sierra de Gomas at one point, forming a very impressive canyon. The relief in the area varies from an elevation of 2000 feet in the deserts to 7300 feet at the higher points of the Sierra de Gomas. Sierra de Carrizal reaches an elevation of 6,300 feet and Sierra de Enmedio is 6,083 feet high.

The climate of the area varies with the seasons and also with altitude. The low deserts are generally quite hot during the summer months and mild the rest of the year, except for occasional cold fronts which get far enough south to effect the area. In the higher parts of the mountains, the summer temperature is milder than at lower elevations, although the sun is still very intense in unshaded areas. During the winter the high mountains are cool and sometimes covered with a blanket of snow. Vacationing in the park will be most comfortable in the spring, fall, and winter, although the primary attraction, the cavern, can be comfortably visited any time of the year.

GEOLOGY:

The geology of the Sierra de Gomas in which the cave is located is one of deposition and later orogenic uplifting. The mountains are formed of massively bedded Cretaceous limestone which has been folded to form an anticlinal range, dipping to either side into sediment-filled valleys of a more recent period. Steep canyons have cut into the mountains at numerous points and at their base have deposited alluvial fans. It is upon one of these fans that the primary facilities and visitors' center will be proposed. The Sierra de Enmedio has a similar geologic history, but the Sierra de Carrizal is of a completely different nature. It is igneous in origin, and rather than forming a long ridge of mountains such as the previous two, it has formed a large dome-shaped mountain mass. Also located within the park boundaries are other prominent geologic features, such as hog-backed ridges and mesas.

CULTURE:

The principal centers of habitation in the region surrounding the park are Sabinas Hidalgo, Villaldama, Bustamante, Potrero, and Candela. According to the 1960 census of the state of Nuevo León, the population of these towns are: Sabinas Hidalgo, 15,425; Villaldama, 4,337; Bustamante, 2,791; and Potrero, 500.

Most of the people from Sabinas Hidalgo work as farmers and cattle ranchers, but there is a minor amount of manufacturing of brooms and women's and children's clothing. It is the most important town of the region and has two elementary schools, a high school, and a normal school; there is a church, two movie theaters, many groceries, pharmacies, hotels, restaurants, social clubs, and two public pools.

The people from Bustamante, Villaldama, and Candela are farmers and cattle ranchers, although there are others employed in the distilling of a yucca-like plant (sotol) to make an intoxicating drink and in the extraction of fiber from the lechiguilla to make cords. Each of these towns has an elementary school, a church, a hotel, and small shops of various kinds. Judicial authorities representing the federal government are located at Villaldama.

There are telegraph, telephone, post office service at each of these towns and the National Railway from Mexico City to Nuevo Laredo traverses the entire area and has stations for or at Potrero,

Villaldama, Bustamante, and Candela.

At present there is a highway from Sabinas Hidalgo, on Mexico 85, to Villaldama and Bustamante and another highway which is soon to be completed that will parallel the railroad and form a new link between Nuevo Laredo and Monterrey.

REGIONAL PLAN:

The location of the Parque Nacional de la Gruta del Palmito would have many advantages as far as accessibility, due to the proximity of the Inter-American Highway (Mexico 85) and Mexico 57, which is also a primary route from the U.S. to Mexico City. There are also large population centers near enough to the park to provide weekend recreational enjoyment. Monterrey would be located thirty miles to the south of the southern end of the park and sixty miles from the cavern and visitors' center. Saltillo would be only fifty-five miles further. Monclova would be sixty miles west of the park and Nuevo Laredo and Laredo would be one hundred miles to the northeast. Other major population centers which would be within six hours driving distance would be Tampico, Ciudad Victoria, San Luis Potosí, Zacatecas, Durango, Torreón, Matamoros, Brownsville, Corpus Christi, and San Antonio, all of which have populations of 100,000 or more.

Due to the nature of a developed cave, people could come to the park and visit only the cavern, or they could spend more time in the area and take advantage of the many other features the park would provide. This short-visit potential offered by the cavern would attract many people traveling on Mexico 85 and Mexico 57. Its close proximity to the U.S. would provide a good opportunity for many people who would like to visit Mexico, but who do not care to travel deep into the country. In this respect there might be an agreement made between the U.S. and Mexican governments to permit free travel between the U.S. and the park by way of the Nuevo Laredo-Bustamante highway and to provide check points at the other exits to the park to prevent illegal entry into the country. A similar proposal is being considered for the proposed Big Bend International Park in west Texas and northern Coahuila.

The U.S. National Park Service has classified park visitors into three categories, all of which would use this proposed park. They are:

- A. Residents adjacent to park area whose visit does not involve overnight stay when recreation area visited, usually a day trip.
- B. People four to six hours driving distance from park, usually having a set destination where one or two nights will be spent. They may participate in several recreational activities, but usually stay close to their overnight stopping place.
- C. People who reside a considerable distance from the recreational region. They will usually spend one or two nights at different locations in the recreational region.

The concept which I propose is a multi-purpose use of the park, incorporating as many of the park features as possible and using them to their maximum potential. The proposed activities and aims of the park are as follows:

Develop the cavern and an access to its entrance. The entrance is some 1,200 feet above the area where the visitors' center will be located and will require a cable car system to transport people from the center to the cavern entrance. The ride will provide visitors with a spectacular view of the canyons and the desert beyond. The cave itself will be developed so as to exhibit and protect its natural beauty to the maximum extent possible. Trails are to be entirely ramped with no steps or stairs. This allows the visitor the opportunity to see the cave rather than having to watch his step while moving on the tour. All lighting will be indirect, and all wires and fixtures will be concealed. The exit from the cave will be through a tunnel at the rear of the cave into an adjoining canyon, where another cable car will return visitors to the center.

Another feature to be provided at the visitors' center is a cable car ride to the top of Cabeza de León, the highest peak in the surrounding area. From here can be had a spectacular view of the mountains, canyons, and deserts below.

The park's visitors' center is to be located at the base of the mountain below the cavern. It will provide an educational program through the use of exhibits, lectures, and displays, in order to acquaint the visitor with the park and what it has to offer. It will also provide for a fuller understanding of what it has to offer. A stop at the center before touring the park would best be done. The center will also provide a restaurant, curio shop, observation deck, and other facilities for the visitor. It will serve as the headquarters for the park administration, and contain the offices of the administrators, as well as storage areas for machinery and supplies used in the park.

Located in the same general area as the visitors' center will be the residential facilities for the park rangers and administrators. There will be relatively few rangers required to oversee the park and some of these will live near their posts, such as the information centers at the park entrances.

All of the above activities will form the heart of the recreational facilities in the park and could be classified as Type I or high density recreation area.

Two other high density areas are planned for the park, one in the canyon to the northwest of the visitors' center, on the Río Sabinas, and the other in a closed canyon on the eastern side of the Sierra de Gomas about ten miles south of the center. Both are to be camp areas which include shelters and restroom facilities. The latter will have a stable to provide horses for riding on the nature trails in the area.

Information centers will be provided at park entrances to give information to visitors, inform them of availability of camping areas, and control flow of traffic. Although small in scope, these centers will perform a very important function in the management of the park.

Within the park itself a system of roads will be provided to various points of interest and scenic beauty. This will occur primarily on the desert and foothills, as the mountains are too rugged for a road to be constructed.

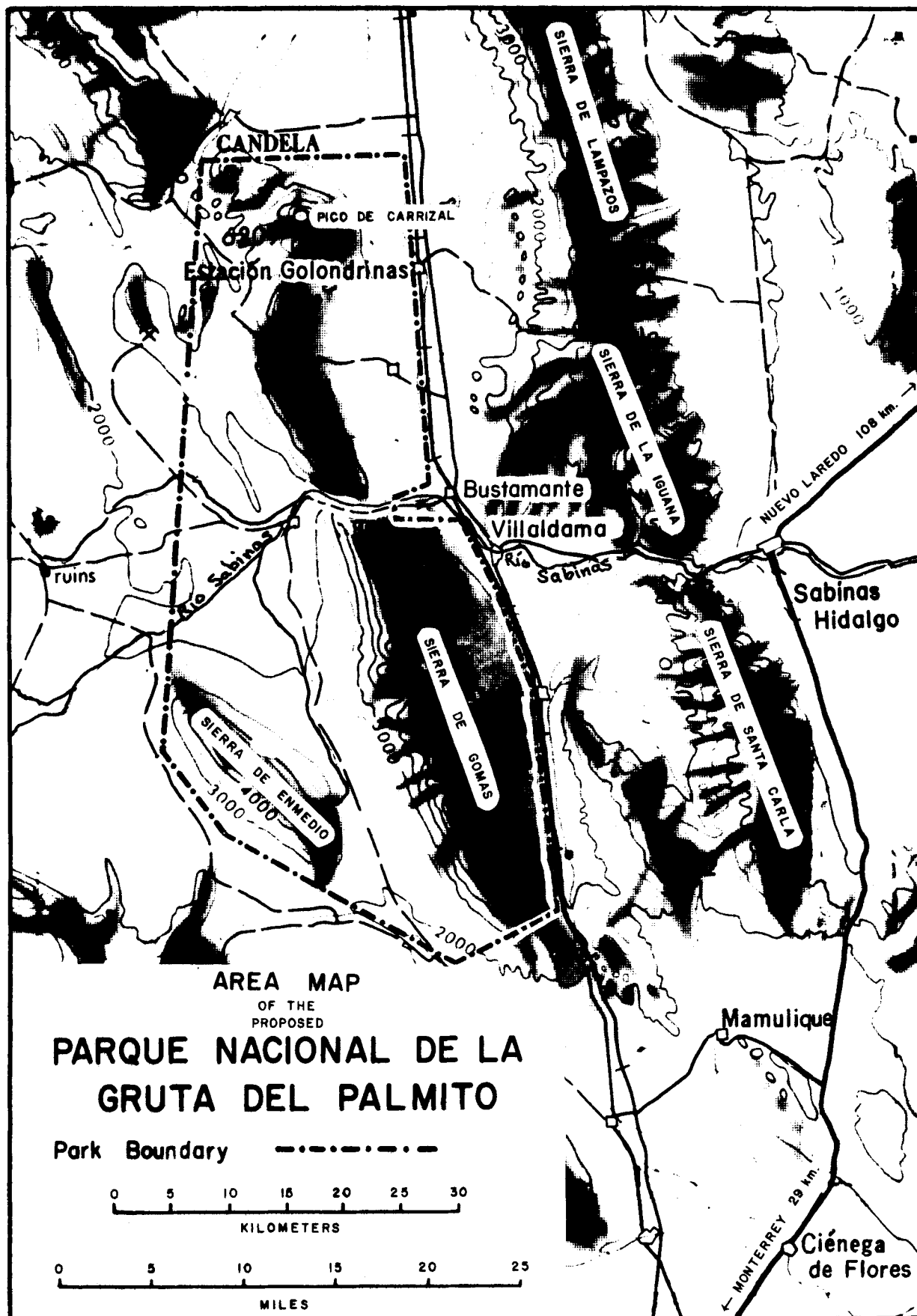
A public transportation system will be provided to transport people from a central gathering point, the visitors' center, to the major features of the park on a shuttle basis. They could remain on one coach and tour the entire park, or could stop at locations of interest to them and catch a later coach back. The value of this

would be twofold; first and most important, it would lessen the amount of private auto traffic on the park roads, and second, it would provide a means for those who come by train or bus to get around the park. This is especially necessary in Mexico because the majority of travel done by Mexicans is by bus and train.

The last concept which is proposed is for the government to acquire the land for the park, but to allow the ranching establishments located in the desert between Sierra de Gomas and Sierra de Enmedio to continue their operations as in the past. They would be prohibited from setting up any commercial establishments, thus keeping the ethnic character so typical of the desert ranching regions of Mexico.

With the park itself providing only facilities for campers and day visitors, there will have to be a cooperative effort among the towns that border the park, the state and federal governments, and the park administration to plan and finance public accommodations, such as hotels and motels in these towns. This should be closely coordinated to insure a high quality and the retention of the present Spanish character of the area. These facilities will provide an economic impact to the area, which will benefit the entire region.

As was stated in the scope, this project will include the design and coordination of the facilities within the park boundaries. Upon final and satisfactory completion of this proposal and plan, it will be submitted to the Mexican government in order to stimulate an interest in the area for such a project.



THE ORDER RICINULEI IN MEXICAN CAVES

by James Reddell
Austin, Texas

The Order Ricinulei is an unusual order of arachnids, regarded by most authorities to be the rarest of all arthropods. Although superficially resembling ticks and moving in much the same way as ticks do, they possess a number of characteristics which set them apart from all other living arachnids. They also represent a group far more abundant in the Carboniferous than today. All species lack true eyes and possess a hood, the cucullus, which fits down tightly over the chelicerae. A complicated copulatory apparatus on the third leg of the male is believed to aid in the transfer of the spermatophore to the female during mating. This has not, however, ever been observed.

Although described in 1838 by Guérin-Meneville from specimens taken in Africa, the order, in 1939, was represented in published accounts by only thirty-five specimens. The order is divided into two genera, Ricinoides in Africa and Cryptocellus in the Americas. H. W. Bate in a famed trip to the Amazon in 1861 collected the first American species, described as Cryptocellus foedus. Since that time additional species have been taken in other parts of South and Central America. One species, C. dorotheae Gertsch and Mulaik, has been described from the United States. It was found beneath sheet iron and other permanent cover at Edinburg, Texas, in 1939.

Chamberlin and Ivie (1938) described C. pearsei on the basis of two specimens in Balaam Canche Cave and Oxolodt Cave, Yucatan. This was the first species to be reported from a cave and the first Mexican species to be described. In 1941 C. Bolívar y Pieltain described C. boneti from Grutas de Cacahuamilpa, Guerrero (see figure, page 101). His description was based on two males taken in the end room of the cave. Yet a third species, C. osorioi, was described from a cave in 1946 (Bolívar y Pieltain, 1946). This species was described from Cueva de los Sabinos and was represented by eight specimens. One other Mexican species has been described. This is Cryptocellus spinotibialis described from a surface locality at Finca Guatimoc, Chiapas (Goodnight and Goodnight, 1952).

Despite the discovery of several hundred specimens of an African species of ricinulid the order in America has remained quite rare and probably less than one hundred specimens have ever been reported in the literature on the order. When compared with other orders, such as the mites and spiders, this is quite amazing. Several arachnologists have stated that the discovery of a single specimen of this order is an "event". It was with great shock that David McKenzie and I discovered that the "ticks" collected from Cueva de Taninul n. 1, Ciudad Valles, San Luis Potosí, were in this phenomenally rare group of animals. Even more exciting was the news that not only were specimens of Cryptocellus osorioi found but also specimens belonging to an undescribed species. Collected on June 7, 1964, only about ten individuals were taken. On January 24, 1965, Terry Raines collected a few specimens of C. osorioi in Sótano del Venadito, Tamaulipas, making this the only known species to be reported from more than two localities. In August 1964 Bill Russell found several specimens in a moist area near the end of Cueva de los Riscos, Durango. The appearance of this order in Durango, a desert

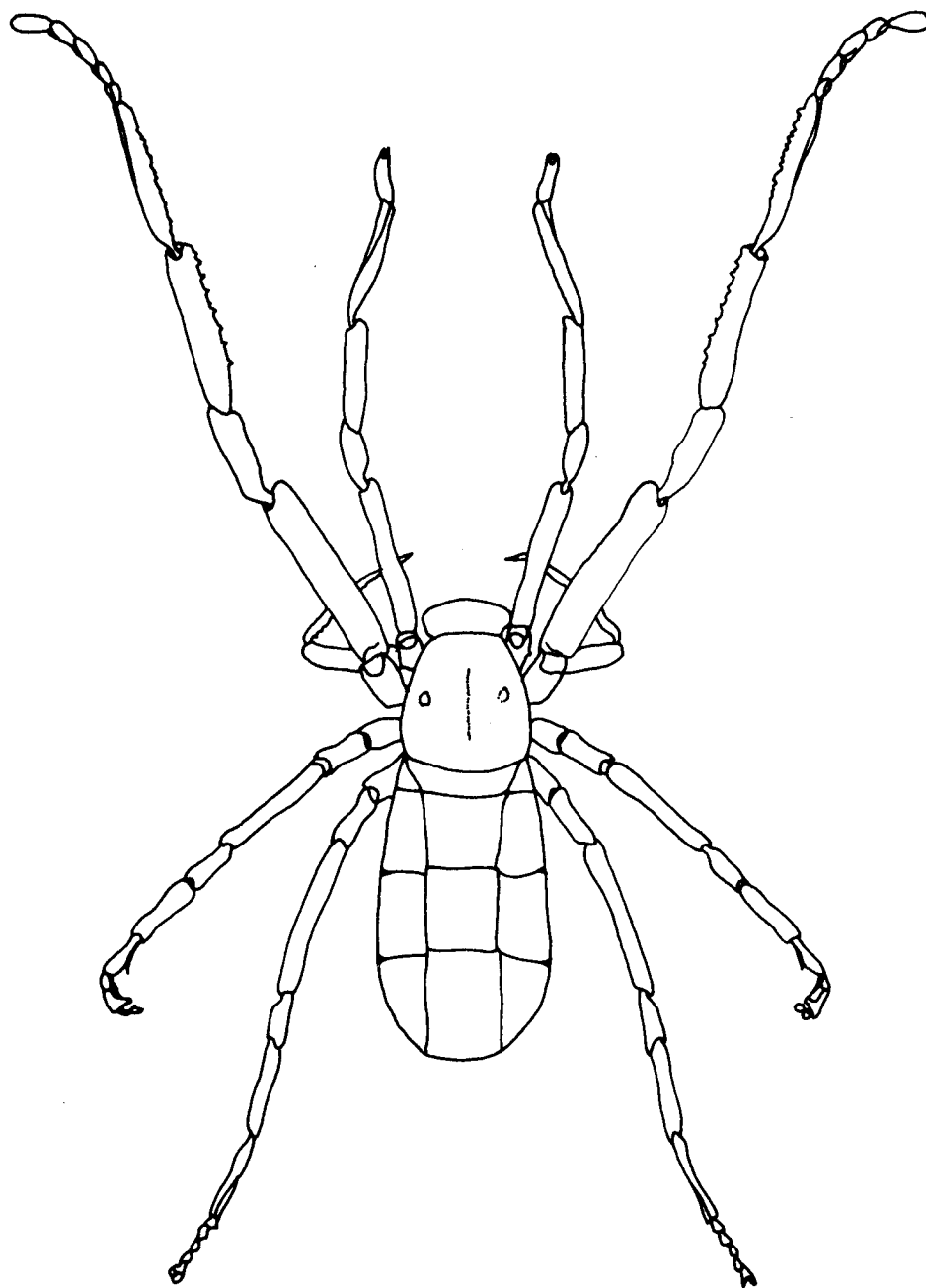
area, was rather surprising, since it was previously known only from moist tropical or semi-tropical areas. The Cueva de los Riscos specimens proved to be a second undescribed species. In August 1965 John Fish, William Bell, and James Reddell visited Grutas de Caca-huamilpa. About fifteen specimens of *C. boneti* were collected from off of flowstone in the terminal room of the cave, making this a reasonably well-known species. A trip back to this room in August 1966 by John Fish, Janie Reddell saw another fifteen specimens collected. Meanwhile on February 24, 1966, Bill Bell and James Reddell discovered a third undescribed species in Cueva del Guano, Durango, collecting about fifteen specimens. In three years as many specimens were collected as had probably been taken in the previous one hundred years. Later trips to Cueva de Taninul n. 1 by Robert W. Mitchell of Texas Technological College have resulted in the capture of over one hundred live specimens, which are now under study. It has, therefore, become apparent that caves in Mexico are among the richest sources for obtaining this rare group of animals.

It is not known if the species taken in caves are definitely restricted to caves or if they may also eventually be found in moist surface situations. Since the order characteristically lacks eyes this cannot be used to determine possible adaptation to the cave habitat. The cave forms do appear to have slightly longer and more slender legs, a common cave adaptation. Certainly the species taken in the caves of Durango may be expected to represent relicts of once-widespread species which survived the drier climate by retreat into caves.

Collectors in Mexico have a unique opportunity to see and to collect this fascinating group of animals. Under no circumstances should specimens taken in caves be retained for personal collections. If it is from a new locality it is probably a new species and should be studied by an expert to determine this. The order is usually found crawling on cave floors or walls or, rarely, on organic debris. Any tick-like animal should be collected on the chance that it is one of these animals. If it turns out to be a tick, it is even then probably of interest since many new and rare species of tick await collection in Mexican caves. They can be preserved in 70 per cent isopropyl (rubbing) alcohol and should be sent to the author in care of the Association for Mexican Cave Studies.

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Outline tracing of a ricinulid, *Cryptocellus boneti*,
from Grutas de Cacahuamilpa, Guerrero, Mexico

MEXICAN CAVE BIOLOGY: ANNOTATED BIBLIOGRAPHY

by James Reddell
Austin, Texas

1. Barr, Thomas C., Jr. 1966. "New species of Mexisphodrus from Mexican caves (Coleoptera: Carabidae)." Psyche, 73(2):112-115. Mexisphodrus tlamayaensis n.sp. is described from Sótano de Tlamaya, San Luis Potosí, and M. profundus n.sp. is described from Sótano de la Joya de Salas and a "sinkhole at Rancho del Cielo," Tamaulipas. Both are probably troglophiles, but M. profundus is considered to be an "incipient troglobite," with reduced wings, eyes, and pigmentation.
2. Bolívar y Pieltain, C. 1952. "Un Ozaeninae troglófilo de la Cueva de Los Sabinos, Ciudad Valles, San Luis Potosí (Mexico)." Ciencia, 11(10-12):295-296.
A troglophilic carabid of the subfamily Ozaeninae, Pachyteles urrutiai n.sp., is described on the basis of one male and one female collected in Cueva de Los Sabinos, San Luis Potosí, Mexico. This subfamily is small and no North American cave records have been previously published for it.
3. Bolívar y Pieltain, C., and J. Hendrichs. 1964. "Agoninos cavernícolas nuevos del género Rhadine de Nuevo León, Coahuila y San Luis Potosí (Mexico) (Col., Carab.)." Ciencia, 23(1):5-16, lam.I. Four new species of beetle of the genus Rhadine are described from Mexican caves: R. rotgeri n.sp. from Gruta de Cuevacillas, Coahuila; R. medellini n.sp. from Cueva Carnicero, Maroma, San Luis Potosí; R. pelaezi n.sp. from Cueva García, Nuevo León; and R. boneti n.sp. from Cueva de La Boca, Nuevo León. The two Texas cave species, R. howdeni and R. babcocki are considered to be subspecies of R. araijai, known only from Gruta del Palmito, Nuevo León. A key to the cavernicolous Rhadine is provided.
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The adult and larva of Agonum (Platynus) bilimeki n.sp. are described from Gruta de Cacahuamilpa. The carabid beetle, Bembidium unistriatum, also from Gruta de Cacahuamilpa, is redescribed and removed to the genus Tachys (Tachyura). The first species is also recorded from Gruta de Acuitlapan, Guerrero; the latter is also recorded from Gruta de la Estrella, Mexico.
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This paper includes records of the following bats in Mexican caves: Pteronotus suapurensis suapurensis from Cueva Laguna Encantada, 3 km. ENE San Andrés Tuxtla, Chiapas; Chrotopterus auritus from Zapaluta Cave, 1.3 mi. SSE Zapaluta, Chiapas; Leptonycteris sanborni from a cave 7 mi. WSW Ocozocoautla, Chiapas; Artibeus toltecus from Cerro Hueco Cave, 2 mi. SE Tuxtla Gutiérrez, Chiapas; and Artibeus aztecus from Zapaluta Cave, Chiapas. These all represent the first record for the state of Chiapas.
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... and it was great, as I rappelled down the last 76 foot drop into the Entrance Room. Just like that first time Benny, Bill, Rooney, and I had gone into the cave; the smooth, clean limestone walls, the many polished solution pockets, and the feeling of being the first to explore in an unknown sótano. But my thoughts crashed as I stared back at an automobile headlight...

I remember when T. R. Evans, James Reddell, Bill Russell and I were the first cavers from the University of Texas ever to visit the Xilitla area. We had heard of a six second pit and it was our intention to visit it. Most of our first day was spent obtaining a letter of introduction from the Presidente del Municipio de Xilitla. We also learned that the pit we sought was located on the Rancho de Huitzmolotitla, owned by Sr. Modesto Gómez. Hitch-hiking a ride to the Tlamaya turnoff, we hiked the remaining two miles through dense fog. At the ranch we were greeted by Sr. Gómez with such a warm display of hospitality so typical of Mexico that we were sincerely honored to stay at his ranch.

Since our first trip things have changed. As the people of Tlamaya got to know us we no longer had to spend valuable time obtaining the letter of introduction. At first some of them had never even seen a "gringo", and were naturally a bit uneasy. But as we always acted with the utmost respect and friendliness they soon never hesitated to guide us to the nearest sótano or cueva, asking nothing in return. Then, as the news of the discovery of a cave called Sótano de Tlamaya spread throughout the United States, cavers from every direction became excited and started seeing Tlamaya for themselves. This was all fine and good, as all were serious-minded cavers ... except a few. This latter group of "unfortunates" chose to flaunt their wealth, to display no respect or courtesy towards the local people, and even to intoxicate themselves to the point of annoying those whom they were with.

And conditions became no better in the caves. Some cavers, like most people, are not content with spreading their garbage all over the U.S.A., but insist on discovering new dumps abroad. This was the case in Sótano de Tlamaya. On our last trip we encountered Clorox bottles, waste carbide, air mattresses, plastic bags, empty cans, deteriorated sleeping bags, and even an automobile headlight; all of which the monster called "expedition" excretes as he gropes his way through the cave. It certainly is disgusting to think that National Speleological Society members, with their "leave nothing but footprints" motto, are to blame. So much for conservation - you get the point.

Looking to the future, if those responsible (and those who will be responsible) do not mend their ways both public relations and the caves of the Xilitla area, or any areas visited by cavers, will within a few short years be ruined for all who follow. In closing, it's perhaps trite but necessary to say that, "A hint to the wise is sufficient".

Terry W. Raines
Austin, Texas