

December 1969

## **Association of Mexican Cave Studies Newsletter, Volume 3, No. 2, December 1969**

Association for Mexican Cave Studies

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ASSOCIATION FOR  
MEXICAN CAVE STUDIES

*NEWSLETTER*

TRIP REPORTS

Sótano de las Golondrinas, S. L. P.

Sótano de San Agustín, Oaxaca

Unexplored caves near Cd. Mante, Tamps.

ARTICLES

Physiographic Divisions of Mexico

1967 TRIP REPORT SUMMARIES

ASSOCIATION FOR MEXICAN CAVE STUDIES  
NEWSLETTER

Volume III Number 2

Publication Date: December 1969

The AMCS NEWSLETTER is published six issues per volume as frequently as possible by the Association for Mexican Cave Studies, P.O. Box 7672 University Station, Austin, Texas 78712, USA. The AMCS is a nonprofit organization whose goals are the collection and dissemination of information concerning Mexican caves. Membership is open to all interested, conservation-minded persons at a rate of \$5.00 US per volume.

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.

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## NEWS NOTES

- At the time of this publication, all AMCS Newsletters (both Vol. I and Vol. II) have been reprinted to a total of 400 copies per issue. Of these, approximately 300 have been distributed. After considering the time spent on re-printing these issues to meet their demand (time which could have been spent on a new issue), it has been decided never to reprint and to offer the remaining Newsletters on a first-come first-serve basis. It also should be noted that only 10 copies of Bulletin 1, "Caves of the Inter-American Highway" remain. If you desire any of these early AMCS publications, write immediately.

Vol. I (1965) Publications - 12 Newsletters & Bulletin 1 - \$6.00

Vol. I without Bulletin 2 - \$3.00

Vol. II (1966) Publications - 6 Newsletters & Bulletin 2 - \$5.00

- Three well-known Italian biospeleologists, Dr. Valerio Sbordoni and Dr. Roberto Argano of the Instituto di Zoologia in Rome, and Prof. Dott. Vittorio Parisi of the Instituto di Zoologia in Milan, are in Mexico on a two month trip to study different aspects of the biology of Mexican caves. They briefly visited Austin in October en route to Mexico City.
- In June 1966 an AMCS reconnaissance trip to Huautla de Jiménez, Oaxaca, located Sótano de San Agustín. During the following two years several exploration and surveying trips penetrated to a depth of 1473 feet. Then, in December 1968, cavers from Texas, Tennessee, West Virginia, and Ontario combined to reach the bottom of the cave.

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NEW PUBLICATION POLICY

Due to the increasing time lag between the date of a trip and the publication of a report in the Newsletter, the AMCS has completely changed its publication policy. In the future all trip reports will be published in the next Newsletter following their receipt. Volume III will cover no specific time period but will still contain six issues. As a result the Newsletter can present the latest explorations by those persons who promptly send in their reports, while at the same time record the reports that have been delayed for one reason or another. In order that the chronological organization of previous issues may be maintained, and thus minimize confusion, we will annually publish a summary of trips during the previous year. Each entry will have the date of trip, places visited, members of the group, summary of work accomplished, and location of the published trip report. If the report has not been published a blank will be left for later entry by members.

This issue contains the 1967 trip report summaries. The following Newsletter will cover 1968 trips and any 1967 additions promptly sent in by members. If you have made any caving trips into Mexico which have not been reported, please send them in and bring the AMCS up to date. We need your material for the next Newsletter.

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## NEWS NOTES (continued)

The entrance to Sótano de San Agustín is in the bottom of a large dolina, over 1 mile long and 1/3 mile wide. A stream runs into the entrance and several other streams are encountered below. A complicated system of steep drops and small horizontal passages lead to the top of a large fissure at -849 feet. The fissure descends via a series of waterfall drops to -1736 feet and levels off for 350 feet. A large horizontal passage is encountered at -1786 feet which appears to be blocked by breakdown after about 1500 feet. Where the large passage is first met, the water enters a passage averaging 4 feet wide and 15 feet high, which leads about 950 feet to the lowest point in the cave, 2006 feet below the entrance. Thus, Sótano de San Agustín has become the first cave in North America to be explored and surveyed beyond 2000 feet. Complete details of the exploration will appear in the next AMCS Newsletter.



● Date: 29 March - 8 April 1967

Destination: Sótano de las Golondrinas, Cueva de Ochtalja, Hoya de las Guaguas

Location: Sierra Madre Oriental; Aquismón; Golondrinas, Agua Amarga, Tampaxal. Aquismón, San Luis Potosí

Persons: John and Sandy Cole, Bill Cuddington, Bill Deane, T.R. Evans, Dan Hale, Bob Hugill, Squire Lewis, Jon Morse, Sandino Techo, Nancy Walters, Sid West

Reported by: T.R. Evans

Immediately after returning to Ft. Detrick, Md. after the December 1966 trip to the Aquismón region (AMCS Newsletter, v. 2, n. 6, p. 163), we began making plans to return in order to investigate the Sótano de las Golondrinas that we had been shown. Chuck Borland and Ronald Stearns who were along on the first trip to the area decided that they would be unable to return in April (coincident with the University of Texas' spring vacation); however, there were several other members of the FTA Grotto who could go at that time. We wished to return as early as possible to avoid the rainy season. Thus, four of us planned to go: Bob Hugill, Jon Morse, Sid West and I. We were to be joined by John and Sandy Cole, Bill Cuddington, and Dan Hale from Huntsville, Ala. Bill Deane planned to go from Austin. Cuddington had heard about the pit and offered the use of his rope. The trip would have hardly been possible without it as all of the Austin cavers were planning a big push in the Sótano de San Agustín at Huautla, Oaxaca which would require every foot of rope they could lay their hands on.

Having timed rocks falling down the pit, I was interested in predicting a depth for the pit. Solving a differential equation and running the solution on a computer I found that the pit could not be less than 800 feet deep. We had timed rocks at 10 1/2 to 11 seconds (free fall to bottom... no bouncing) and allowed 9 1/2 seconds for the fall and allowing one second for the sound to reach the top. All concerned waited for the trip with great anticipation.

Bob and Jon had begun caving since arriving at Ft. Detrick, while Sid had been in several caves in California. Sid had done some vertical work but the others from the FTA had not, and I hadn't done much recently. Upon receiving our order from Recreational Equipment we began practicing. Weekends found us at Hell Hole in West Virginia or at Harper's Ferry going off the cliff. During the week we practiced on a 300 foot rope run over a tree limb and were able to Jumar 300 feet at a time in that manner. I saw to it that Bob, Jon, and Sid became proficient at prusik knots as well. I figured if they could make it to the top, they could haul me up. The Huntsville group and Bill Deane were all well-versed in vertical work.

Prepared and ready, we of the FTA got a military hop from Washington, D.C. to San Antonio, Texas courtesy of the Air Force. My father met us there and drove us on to Austin for supper and a repacking session. Later that same night, March 29, I borrowed one of the family

cars and we set out for Laredo. Arriving in the wee hours of the 30th we parked the car and hiked across the bridge to the Mexican customs house and got our tourist cards then went directly to a bus station and got a bus to Monterrey. In Monterrey we made immediate connections for Valles. Around 2 pm while the bus was stopped in Cd. Victoria for a break, we noticed the group from Huntsville driving by and hailed them down. We agreed to meet for supper in Valles and also found out that Squire and Nancy were coming down from the east and picking up Bill Deane in Austin on the way. Later that evening we all rendezvoused at one of the hotels in Valles and planned to meet the next morning to go on to Aquismón.

The Huntsville group went down to Xilitla in order to get a friend of John Cole's, Sandino Techo, who came along and helped us translate. Squire took the rest of us directly to Aquismón where we talked with the Presidente and inquired about getting some mules to haul some of the packs and rope up to the pit. We found that no mules would be available until the following morning. Squire, Nancy, and those of us from Ft. Detrick had planned to hike up with our packs, so gave 500 feet of our rope to the others who were hiking up the next morning with the mules. Squire and Nancy carried the remaining 300 feet of our rope. Bill's "python" and another 1000 feet of rope went on the mules.

Having hiked in the area before and realizing how hot daytime hiking gets, I suggested that we start up that evening around 6 pm or so. After purchasing several liters of caña, an alcoholic liquid distilled from sugar cane that serves as a beverage-maker or fire-starter (it burns with a smokeless blue flame), we started up the trail. By the time we reached La Laja, roughly halfway to the pit, we had been joined by a couple of locals and stopped to have a few relaxing drinks of a caña-refresco variety before retiring for the night in a small hut there which serves as a refreshment stand. In fact, the few drinks developed into quite a party. The following morning we completed the hike to the pit after collecting millepedes near La Laja and having breakfast there.

We arrived in the vicinity of the pit in the early afternoon and arranged to stay at a house about a mile below the pit. We had the woman of the house cook our food for us and prepare the odd pot of coffee. Several chickens, a dog or two, and the odd pig shared the hut with us. There is a small hut at the pit but it was not large enough to accommodate our entire group.

The remainder of the party arrived with the mules and the rest of the gear a few hours later. All had a look at the pit and no one was disappointed. Squire produced his timepiece and we timed several rocks. He got consistent times of 11 to 11 1/2 seconds. Since we were all tired from the hike, we sacked out rather early that evening in preparation for the rigging and descending of the pit the next day.

The following morning, April 2, we rigged the pit with Bill's 2-in-1 Samson, and I being the only one along on this trip who was a member of the discovery group, went down first. Assisted over the edge by several people, I began the descent on a single breakbar rappel. After five feet of virtual free-fall I let my prusik safety catch and again with assistance added another carabiner and breakbar and continued on down. With a double breakbar rig I had no trouble at all; however, as Bob Hugill found out, two breakbars for a light-weight person can cause feeding problems.

Bob had to feed the rope for several hundred feet. The best answer is the rappel rack designed by John Cole (see NSS News, v. 24, n. 6, June 1964). These racks worked very well.

Reaching the bottom after 1/2 hour I talked with the group on top via walkie-talkie (excellent items to have along) and headed out across the floor of the pit which is all well-lighted by daylight from the top of the shaft. After ten minutes or so, the top called and asked me to return to the foot of the rope to safety Bill Cuddington down. I turned around and couldn't see the rope and after a couple of minutes of looking, still couldn't see it and told the people topside the trouble I was having. Finally I got the wise idea of retracing my footprints back across the dry bird guano and did just that. The immensity of the pit finally dawned upon me. Bob Hugill and Dan Hale followed Bill Cuddington in. With some difficulty a second rope was rigged giving us one for rappelling and one for prusiking or Jumaring. The second rope consisted of three tied together. Bob and I went out the same day while Bill Deane rappelled in to spend the night with Bill Cuddington and Dan Hale. We threw in their down sleeping bags after untying them and they were quite a sight as they drifted down the shaft. It took more than a minute for them to reach the bottom. The following morning John Cole, Sid West, and Jon Morse made the descent. Sandy Cole was busy along with Sandino keeping watch over things topside. Sandy also occupied a lot of her time trying to undo two 500 foot ravel of parachute cord which were to be used in measuring the pit. Squire and Nancy, having helped carry gear up and having assisted during the first day, returned to Aquismón.

By the evening of the third day at the pit (3 April) we were all safely back on top and out of what is certainly quite an awesome pit. The depth of the pit from our rigging point turned out to be 1094 feet. The pit is roughly 200 feet in diameter at the top, bellling out on all sides until at the bottom the pit is 1000 feet long and 440 feet wide, containing 10 acres. There is 246 feet of relief on the floor of the pit alone. Virtually the entire floor of the pit is lighted by daylight and a person on the bottom can be seen from the top...as a speck. The tremendous size and depth, the hundreds of green parrots, and the thousands of swallows all contribute in making a trip to the pit worthwhile. One's clearest impression of the size is gained on the way out. No cave passages were found at the bottom. See AMCS Bulletin 2 for a complete description of Sótano de las Golondrinas.

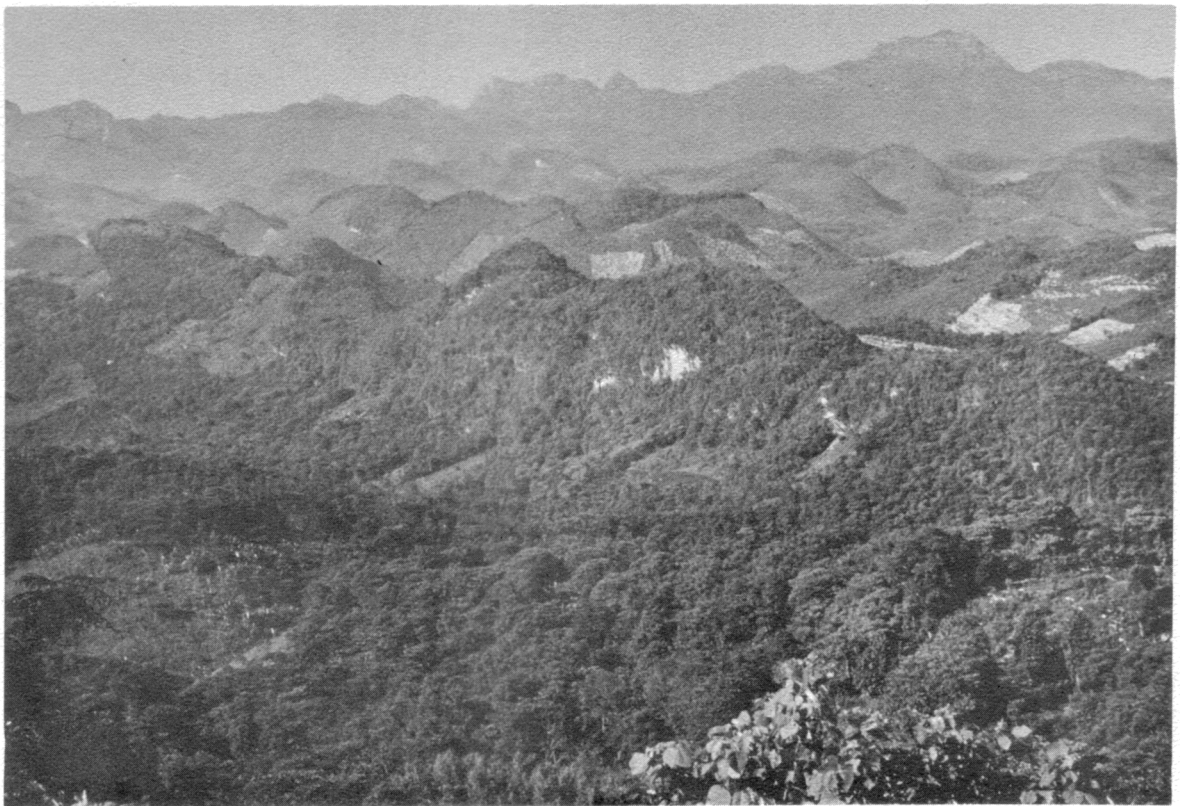
The morning of 4 April found us packing and getting ready to hit the trail. The pit was derigged the previous evening and the ropes fed directly into duffle bags as they were pulled up. The mule driver and mules arrived at 8 am and were loaded up. We from the FTA gathered our gear and headed on to Tamapatz for some more caving. We hired a local Huastecan to carry our 500 feet of rope and draped the 300 foot chain across our shoulders. The others headed back towards Aquismón and thence to Austin and Huntsville.

Bob, Jon, Sid, and I arrived in Tamapatz in the early afternoon and waited for the Jefe to arrive to get permission to explore several caves in the immediate vicinity of Tamapatz. We also arranged to stay at the same shop we stayed at during the December 1966 trip. After talking to the Jefe

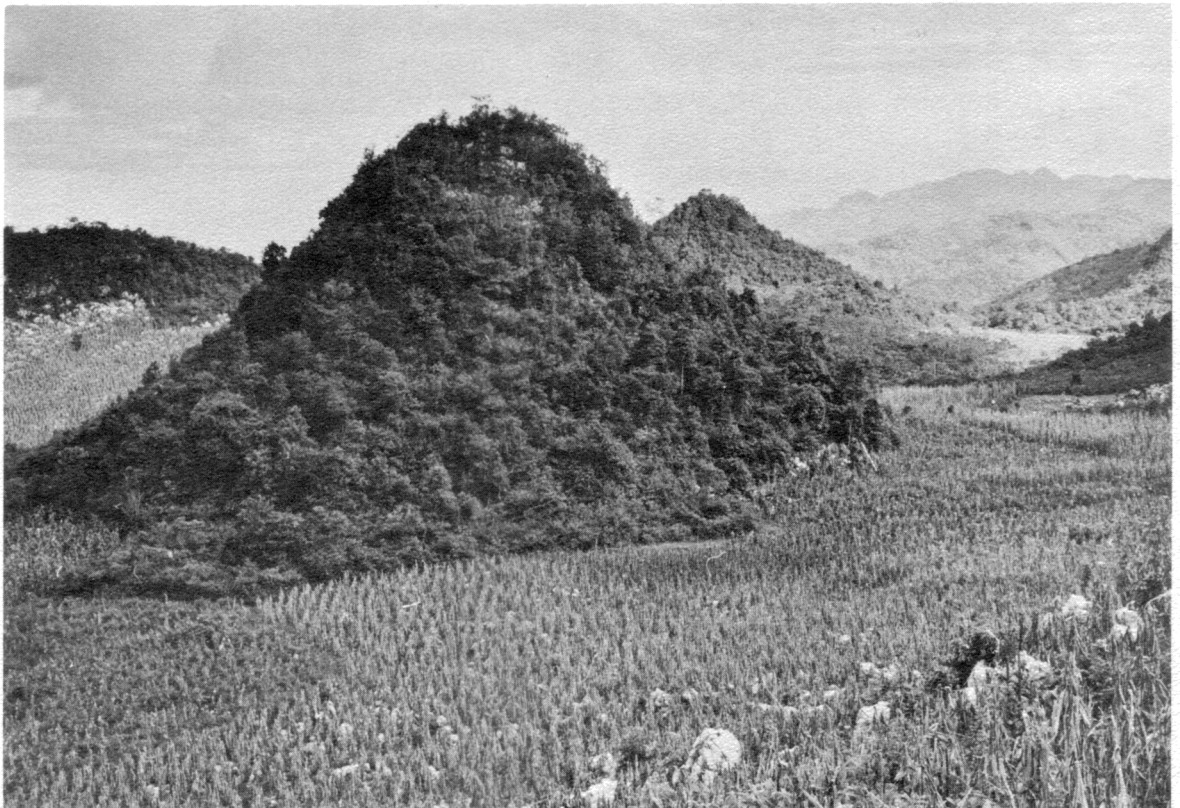
we had supper, then that evening went down to have a look at the cave near Tamapatz we found in December with the small arroyo entering it, named Cueva de Ochtalja (See AMCS Newsletter, v. 2, n. 6, p. 166 and photos on page 20 of this issue). Bob, Jon, and Sid rigged a rope at the entrance which is a passage about 30 feet wide and 20 feet high which descends about 75 feet very steeply over polished boulders and flowstone. They followed the passage from the bottom of the entrance several hundred feet to a 15 foot undercut drop which required equipment. They found the cave to be extremely promising and plans for exploring the 6-second pit found in December were cancelled. The following day we returned to the cave for more serious exploration and took some short lengths of rope for small drops. The passage is a stream passage that follows the contact of the El Doctor and Agua Nueva Limestones. The passage averages 20 feet wide and 10 feet high but enlarges in places to 75 feet wide and as high. One large room is developed to the left of the main passage going in, about 300 feet from the entrance. The room is roughly 100 feet long and as wide and 40 feet high with a breakdown slope angling down from the ceiling of one side to the floor of the other. The room contains some formations. Between the main passage and this room is an area of beautiful rimstone pools.

Continuing on to the 15 foot drop, we rigged it and went down. The cave passage enlarges considerably here (from 15 feet wide and as high to 40 feet wide and as high) and continues to enlarge gradually for several hundred feet where the passage abruptly descends at  $-45^{\circ}$  for about 200 feet over cemented boulders and flowstone to one of the smallest parts of the main passage explored -- a tube affair about 10 feet in diameter which continues on down several climbable drops to a lake room 20 feet in diameter and as high. From this room a passage continues about 30 feet to a drop estimated to be 50 to 75 feet which drops into a pool of water. We were not able to descend this drop and dragging 300 feet of rope back to this point to rig a 50 foot drop was not considered worthwhile. This drop is about 1000 to 1500 feet from the entrance.

The next day, 6 April, we got the same bearer that carried our rope from the pit to Tamapatz and headed toward the Inter-American Highway, planning to stop off and have a look at another pit we heard about, the Hoya de las Guaguas. After several hours of hiking we reached the pit. The Guaguas pit is much the same as Golondrinas, large enough to be deceptive. It is 150 to 200 feet in diameter and appears to be 250 to 300 feet deep, but in fact it is nearly 500 feet deep. The bottom of the pit is clearly visible during daylight and vegetation covers much of the floor. Having both a 300 foot and 500 foot length of rope, we played it safe and rigged the 500 foot length and were pretty sure it was on bottom. Sid was given the honor (actually the rest of us were too tired) of going down to investigate. When he was about 1/2 way down, we noticed that there was a four-foot long, black and white animal of some sort wandering around on the bottom. We yelled down to Sid who finally saw the animal and continued on down. Sid never saw the thing after he reached the bottom but saw numerous trails crossing the pit floor. From its markings it is thought that the animal is a tayra, a weasel-type animal that inhabits southern Mexico. The animal's presence in the pit is most striking since the Hoya de las Guaguas is bell-shaped just like Golondrinas. Reaching the bottom after 15 minutes or so, Sid de-rigged

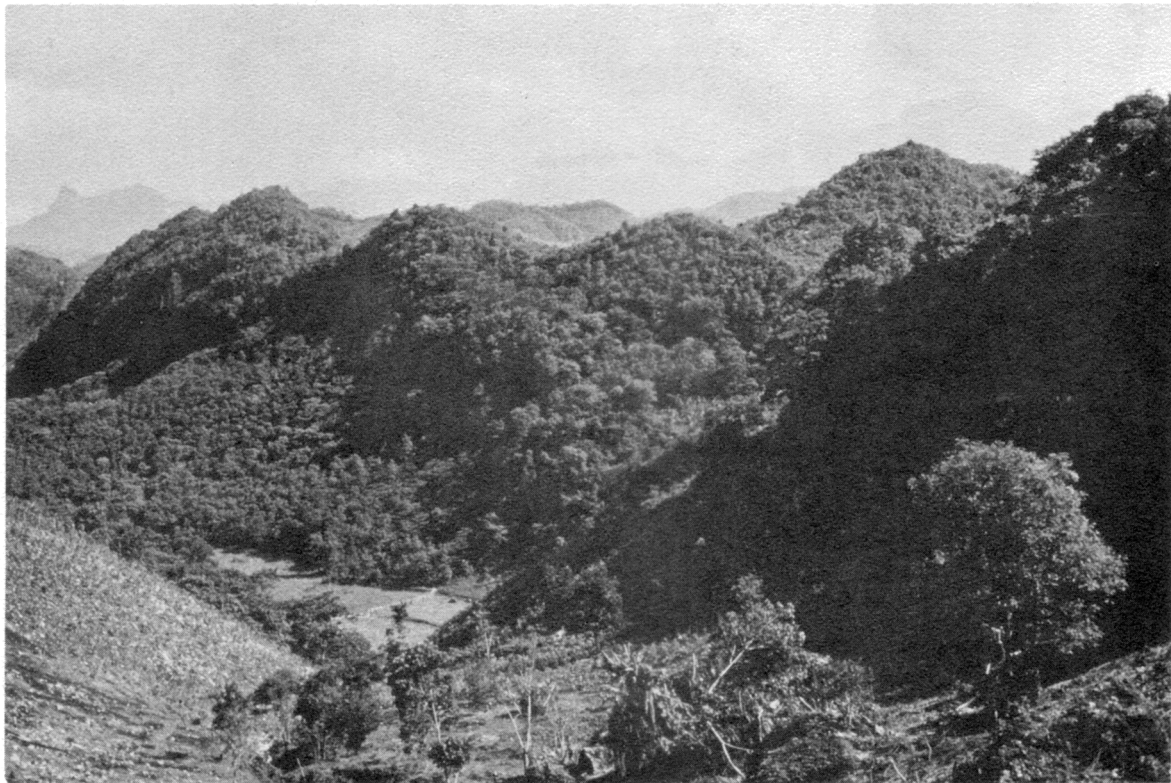


View south from Tamapatz. Limestone mountains in background rise to over 9000 feet. The peak, La Silleta, at left edge of photo.



Haystack hills in karst southwest of Tamapatz.





Hoya (dolina) Ochtalja. Cueva de Ochtalja is developed at the base of the mountains in center. Overthrust sheet of El Doctor Limestone forms right wall of the hoya.



Cueva de Ochtalja. Streams drain the relatively impervious Agua Nueva Formation and flow into cave entrance.



One of the many refreshment stands on the Aquismón-Tamapatz trail.



Town of Tamapatz. Aerial view.





# EXPEDITION OF '67

Front row: Tommy McGarrigle(r), Jonathan Davis, Bill Bell, Tom Tracy,  
 Laurie Cameron, Terry Raines  
 Back row: Orion Knox(r), Ed Alexander, Bob "Rooney" Burnett, Bob Thren,  
 John Fish, Dave Brison



to find himself at the top of a long slope. He wandered down the vegetation-covered slope several hundred feet and disappeared into a large opening visible from the top. The floor of the pit sloped into this area and Sid found himself in a room of "Carlsbadian" dimensions...but without a floor. He tried to throw rocks across to the far wall but was unable to do so. The rocks fell to the bottom first, requiring between 6 and 7 seconds. Sid Jumared out and we recharged the rope and continued on down to the Highway, arriving after 3 more hours. We caught a bus to Tamazunchale and spent the night there after taking in a fiesta of some kind that was taking place at the plaza. The next morning we caught a bus to Mexico City for a couple of days of sightseeing, rest and recuperation.

Accomplished on this trip were the exploration of Sótano de las Golondrinas and the investigations of Cueva de Ochtalja and Hoya de las Guaguas. Needless to say, much work still needs to be done in this promising area.

● Date: 1-8 April 1967

Destination: Sótano de San Agustín

Location: Oaxacan Mountain System; Huautla; San Agustín. Huautla, Oax.

Persons: Ed Alexander, Bill Bell, Dave Brison, Bob Burnett, Laurie Cameron, Jonathan Davis, John Fish, Tommy McGarrigle, Orion Knox, Jr., Terry Raines, Bob Thren, Tom Tracy  
(see photo on opposite page)

Reported by: Orion Knox, Jr. Austin, Texas

On 31 March, Terry Raines, Tommy McGarrigle, and I left Austin in Terry's truck. We proceeded on past Mexico City with few stops. It was on the road south of Tehuacán that we caught up with Dave, Bob, and Laurie. The weather was fine until we started up into the mountains. By the time we reached Plan de Guadalupe, it was almost impossible to see the road for the fog and rain. We camped beside the road and woke up to rain early the next morning.

Driving on, we arrived at Huautla about noon, drove through town, and finally reached San Agustín after lunch. By now the weather had cleared somewhat which provided a chance to hike in the immediate area before the remainder of the crew arrived. We hiked across to San Miguel then by a round-about way back to camp at San Agustín. Numerous sinks were located.

By the time we returned, John Fish and Ed Alexander had arrived with their vehicles filled with people and equipment. It was too late to start into the cave. Also, we wanted to let the amount of water entering the cave decrease.

Our plans were to assault the cave in teams, with each team carrying equipment in and pushing to the next deeper point. Early in the morning of 3 April Bill, Jonathan, and Tom took the first load of equipment and started rigging the first drops. A few hours later, Roonie, Ed, John, and I started into the cave, while Terry and Tommy followed making photos of the assault on the cave.

Part way down we ran into the first team returning to the surface. Their report was that the water was extremely high all the way down. Hoping to find a way to rig around the waterfall further down, we continued on. The first crew had rigged the pits to the top of the fissure at the -849 foot level and it was here that we were to continue rigging. We paused for a brief lunch, then continued with the rigging of the next drop of 71 feet. Due to the very rough texture of the rock we spent some time placing and padding the rope. We rappelled down the 71 foot drop; then, using the rope as a handline, we climbed down an additional 10 feet to about the 930 foot level. We had re-joined the main flow of water at this point and were at the top of the next drop. The water was flowing through a "V" slot in the floor and on down to the ledge below. We spent much time surveying the situation, trying to figure some way to rig the drop out of the main force of the waterfall. Due to the narrow condition at this point we finally decided that it was going to be impossible. We returned to the 849 foot level and there, after some discussion, decided that due to already large quantities of water flowing into the cave and as it appeared that we were faced with an unusually heavy and early rainy season, it would be best to abandon hopes of going deeper into the system this trip.

Gathering up all the gear we could carry, we started back out and shortly met Terry and Tommy. We explained the situation and then all continued our exit.

The next morning Jonathan, Roonie, Ed, Dave, Bob, and Laurie re-entered the cave and exited about noon with the ropes. We loaded all the equipment into the cars and began the long drive out of the mountains. On the way we stopped in Huautla and had a very friendly talk with the Presidente, who said the next time we returned he would show us some pits on his farm.

● Date: 26-30 November 1969

Destination: Previously unexplored caves near Ciudad Mante, Tamps.

Location: Sierra Madre Oriental: Sierra de Guatemala - Chamal and Gómez Farías areas; Sierra de El Abra - Quintero-Pachón area

Persons: Janie Evans, T.R. Evans, Louis Hembry, Ron Rossburg, Carol Russell, Bill Russell

Reported by: Bill Russell Austin, Texas

The trip left Austin about 8 pm Wednesday and drove straight through, arriving at the Nacimiento del Río Frío, 20 miles north of Cd. Mante, about noon Thursday. The rest of Thursday was spent checking the various springs and looking for caves in the area. The Río Frío flows from a large spring, the Nacimiento del Río Frío, and shortly is joined by the Río Nacimiento. The Río Nacimiento flows along the base of the Sierra de Guatemala and is named for a series of large springs, or nacimientos, that combine to form the river. About one-half mile northwest of the Nacimiento del Río Frío is the Nacimiento de La Florida, located where a gully draining the face of the range enters the Río Nacimiento. Another large unnamed nacimiento is located just southwest of the La Florida Nacimiento. The Río Nacimiento itself flows from a spring called simply "El Nacimiento", located 1 1/2 miles northwest of the Nacimiento del Río Frío. We explored a cave at the end of

a gully that leads into the Río Nacimiento for a few feet to where it narrowed to a series of impassably small fissures. This cave appears to discharge large amounts of water during floods. Above the cave another entrance was discovered that a few feet to a fissure dropping about 40 feet to water. This drop was not descended due to lack of equipment.

The weather was unusually cold and the clouds hung low on the mountains, but as it had not rained all afternoon we decided to camp at the nacimiento. We made it through the night with only a few sleep-disturbing drizzles, and left next morning just as a light rain began. The clouds continued but the rain did not last, so we drove west to Chamal (northwest of Mante on the Ocampo highway) and then north and west on dirt roads to Rancho de la Barranca at the southern end of the Sierra de Guatemala, near where it joins the Sierra de Nicolás Pérez. Just north of this ranch a large pit had been spotted from the air in the midst of a thick jungle. After asking directions at the ranch we set out into the jungle. An old, now somewhat washed out, road leads into the canyon north of the ranch and we followed this road up into the Sierra de Guatemala through dense jungle overgrown with bamboo. A short distance into the mountains T. R. noticed a cave entrance in a low cliff above the road and clambered up to investigate. The entrance led to a short climb up into a passage that opened back on the cliff face and continued on into the mountain, averaging 10 feet wide and 15 feet high. A short distance inside a shallow pit temporarily blocked progress, but a way was found to pass the pit and T. R. explored the cave for several hundred feet with a flashlight. He concluded that the cave was promising and returned to the entrance. Following the map drawn from the air and the local instructions, we walked to the lip of the pit. From the air it had resembled a large green funnel, and from the ground it could be seen that the pit was actually larger, as trees and undergrowth grew thickly on the sides and overhung the pit. The top of the funnel is about 500 feet across, and slopes steeply downward. The pit is overhung on the north and east, but by carefully working our way around the side to the south edge of the pit, we found a steep, dry stream channel that could be climbed down 200 feet to underneath the north overhang. Here there is a sort of pocket formed on the top of a massive white limestone and the stream channel drops into a fissure about 10 feet wide, heading north under the overhang. Unfortunately the base of the fissure was over 100 feet below and we had left our rope at the car. It was already late, so exploration had to be postponed. We then returned to the car, ate, and lit our carbide lights to walk back through the night to the cave beside the road that T. R. had located earlier. This cave led through passages from 10 to 15 feet high, except for several domes that extended up out of sight, to an unclimbable 30 foot pit. Returning to the entrance we discovered it was raining, and this caused considerable worry as we had crossed several miles of dirt roads to reach the ranch. Abandoning all ideas of exploring the pit, we drove to Mante and spent a luxurious night in a hotel. The local name of the pit is Sótano de Caballo Moro and the cave, reportedly used by missionaries, is called Cueva de los Misioneros.

The next morning we again braved the weather and this time we hoped to locate a deep pit reported to lead to an underground river. This pit is on the top of the Sierra de El Abra between the small towns of Quintero and

Pachón just south of Cd. Mante. We decided to try to reach the pit from Quintero and found several school kids to guide us. They also knew of a cave that required no rope that was on the way, and informed us the pit was about an hour's walk and the cave was only a few minutes away. However, after struggling up the almost vertical face of the mountain with our 400 feet of rope we revised their estimates. After an hour we reached the cave, a large sink about 1/4 mile southwest of Quintero that had been seen from the air but not yet visited by cavers. This cave, Cueva de las Colmenas, has a large pit entrance about 250 feet across and 75 feet deep with a vine covered pile of breakdown in the center. It was possible to climb down into the pit over breakdown on the northwest side and exploration began. The main cave led west about 100 feet below the surface for several hundred feet. This passage consisted of a series of high rooms connected by low crawlways. On the way back from the end of this passage a small inconspicuous crawlway on the left (going out) was checked. It led into a low room with two small holes that dropped into a pit. Rocks dropped into the holes bounced on down. The pit did not appear deep, but as we only had a single 400 foot length of rope we lowered it down and rappelled in. The two small entrances soon joined and the pit enlarged to about 8 feet wide and 15 feet long and continued on down for 155 feet to an offset, then down about 20 more feet to another offset. At this point rocks bounced on down for several seconds and could not be heard to hit bottom. As it was late and the trackless top of the El Abra was shrouded in fog, further exploration was postponed and we recharged the rope and headed back. Half-way back our guides conferred and decided we were lost, but by sounds from the highway below, and our compass, and luck, we reached the trail and slid down into town. From Quintero we drove north, heading to Austin.

## PHYSIOGRAPHIC DIVISIONS OF MEXICO

by William H. Russell

Many times the usual practice of locating Mexican caves by state and municipio (equivalent to a U.S. county) does not give the required location precision. It frequently groups together caves in strikingly different areas, with different geological and geomorphic histories, or it divides into several groups caves in a single homogeneous region. To supplement the state and municipio locational system, a system based on physiographic regions is outlined in this article. Thus, caves that could be expected to have a similar history are grouped together, and the influence of rainfall, elevation, and other factors can be more easily examined. This system is not intended to replace locations by state and municipio, but only to group together caves in a locally similar area. Both the physiographic and political divisions will be listed in trip reports and in the cave files.

The largest division is the province, a large area of generally similar topography, such as the mountainous Sierra Madre Oriental. The next largest division is the region, usually a large area of continuous outcrop of caverniferous rock, or several closely related outcrops. Regional boundaries enclose areas throughout which there is no sharp physiographic break. When regional boundaries cross caverniferous areas they follow narrow zones of relatively rapid local change, such as a change in elevation, structure, or rainfall. The smallest division is the area, a small region of relatively uniform conditions only a few miles in extent.

### PHYSIOGRAPHIC PROVINCES

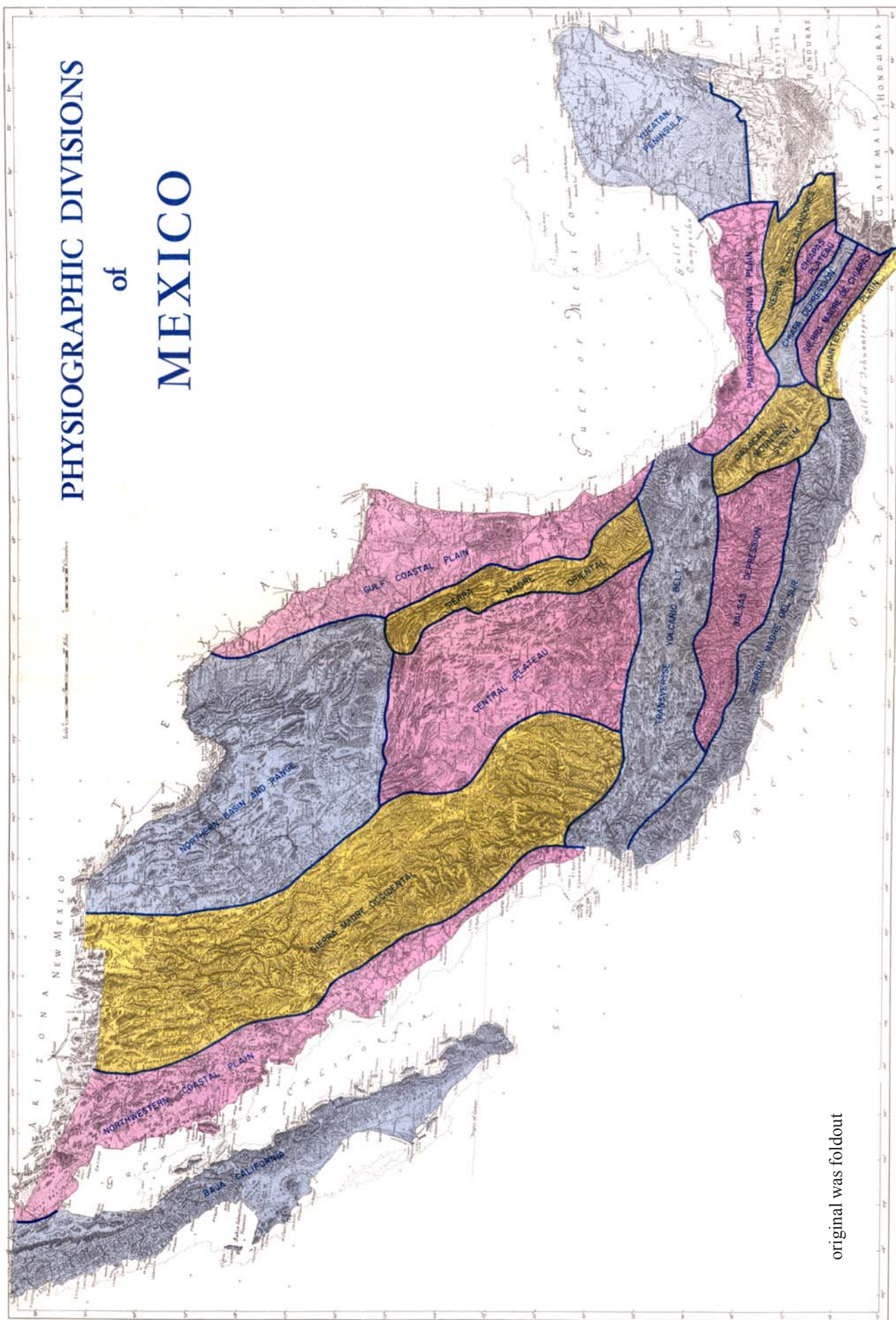
These provinces are modified from the system proposed by Ramón Alcorta Guerrero in his *Esquema Geográfico de México*, in Caminos de México. These provinces have been divided into local divisions areas where the AMCS had sufficient field data. (See map on page 29).

1. Northern Basin and Range (Planicie Septentrional) - An area of folded and faulted ranges separated by wide intermountain valleys and basins. Located in north-central Mexico and bounded roughly by Cd. Acuña, Monterrey, Torreón, Parral, Chihuahua, and Cd. Juárez.
2. Central Plateau (Altiplanicie Central) - A high mountainous plateau of central Mexico bordered roughly by Saltillo, Pachuca, Guadalajara, and Durango.
3. Sierra Madre Oriental - A mountainous zone extending along the Gulf Coastal Plain from the Saltillo-Monterrey area south to Pachuca.
4. Gulf Coastal Plain (Llanura Costera del Golfo de México) - A generally level plain with a few relatively isolated mountain ranges. This area extends from Nuevo Laredo and Matamoros south along the Gulf of Mexico, and from the Gulf west to Cd. Victoria and south to near Jalapa.

5. Sierra Madre Occidental - A zone of principally volcanic mountains in northwestern Mexico extending north from east of Tepic to near Cd. Juárez and Nogales. It lies to the east of Culiacán and Hermosillo, and west of Durango and Chihuahua.
6. Baja California - The peninsula of Baja California.
7. Northwestern Coastal Plain (Llanura Costera del Noroeste) - The coastal plain along the eastern edge of the Gulf of California from Tepic to Nogales and Mexicali.
8. Transverse Volcanic Belt (Sierra Volcánica Transversal) - A band of volcanic mountains that extend from south of Tepic on the Pacific Coast through Mexico City to Veracruz and Jalapa on the Gulf of Mexico.
9. Papaloapán-Grijalva Plain (Llanura del Papaloapán-Grijalva) - A generally flat plain along the Gulf of Mexico from Veracruz to the Yucatán peninsula.
10. Oaxacan Mountain System (Sistema Montañoso Oaxaqueño-Poblano) - A mountainous area extending south from Orizaba, east of Tehuacán, and south to beyond the city of Oaxaca.
11. Balsas Depression (Depresión del Balsas) - A relatively low area extending along the Río Balsas from near Tehuacán on the east into the state of Jalisco on the west. Bounded approximately by Iguala on the north and Chilpancingo to the south.
12. Sierra Madre del Sur - Rugged mountains in southwestern Mexico, extending from near Colima along the Pacific Coast south to Tehuantepec.
13. Tehuantepec Plain (Planicie de Tehuantepec or Planicie Costera de Chiapas) - A narrow coastal plain along the Pacific Coast from Tehuantepec southwest through the state of Chiapas and into Guatemala.
14. Yucatán Peninsula (Península de Yucatán) - The relatively flat limestone plain in Campeche, Yucatán, and Quintana Roo.
15. Sierra Madre de Chiapas - Volcanic mountains extending from southeastern Oaxaca state along the coastal plain southeast into Guatemala.
16. Chiapa Depression (Depresión del Chiapa) - A relatively low area along the Río Chiapa (Grijalva) from northwest of Tuxtla Gutiérrez southeast to Cd. Cuautémoc on the Guatemala border.
17. Chiapas Plateau (Altiplanicie de Chiapas) - A high limestone region extending southeast from San Cristóbal through Comitán into Guatemala.
18. Sierra de los Lacandones.- An area of folded mountains extending from south of Villahermosa southeast into Guatemala.



# PHYSIOGRAPHIC DIVISIONS of MEXICO



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## DATE

28 Jan - 5 Feb

## NORTHERN MEXICO

29 March - 8 April Sierra Madre Oriental; Aquismón; Golondrinas, Agua Amarga, Tampaxal.  
 Municipio de Aquismón, S. L. P.  
 John & Sandy Cole, Bill Cuddington, Bill Deane, T. R. Evans, Dan Hale, Bob Hugil, Squire Lewis, Jon Morse, Sandino Techo, Nancy Walters, Sid West  
 First descent of Sótano de las Golondrinas.  
 Cueva de Ochtalja explored for 1000-1500 feet. First drop in Hoya de las Guaguas explored.

AMCS Newsletter v. III, n. 2, p. 15.

1 - 8 April

## SOUTHERN MEXICO

Oaxacan Mountain System province; Huautla region; San Agustín area. Municipio de Huautla de Jiménez, Oaxaca.  
 John Fish, Terry Plemons, Ron Ralph  
 Exploration and surveying continued in Sótano de San Agustín from -920 to -1473 feet. San Agustín now second deepest cave in North America.

AMCS Newsletter v. III, n. 1, p. 3.

Oaxacan Mountain System; Huautla; San Agustín.  
 Huautla de Jiménez, Oaxaca  
 Ed Alexander, Bill Bell, Dave Brison, Bob Burnett, Laurie Cameron, Jonathan Davis, John Fish, Tommy McGarrigle, Orion Knox, Terry Raines, Bob Thren, Tom Tracy  
 First organized assault by a large group on Sótano de San Agustín. A drop at the previously-surveyed -930 foot level was reached before high water, due to an early rainy season, halted progress.

AMCS Newsletter v. III, N. 2, p. 23.

June

Sierra Madre Oriental; Aquismón, Golondrinas.  
Aquismón, S. L. P.  
Ed Alexander, Jonathan Davis, John Fish,  
Dick Mitchell, Ted Peters  
Surveyed Sótano de las Golondrinas.  
AMCS Newsletter

1 - 6 June

Sierra Madre Oriental; Monterrey region.  
Central Plateau; Matehuala region.  
Miles Abernathy, Duane Faith, Bill Miller,  
Joe Sumbera.  
Explored Cueva de Casa Blanca and Cueva  
de Aguila del Oro near Monterrey, explored  
1000 feet in Cueva de Matehuala, and visited  
several gypsum caves. Talked with Mexican  
caving group in Matehuala.  
AMCS Newsletter

1 - 7 June

Sierra Madre Oriental; Sierra de Guatemala  
region; Rancho del Cielo, San José. Sierra  
de El Abra region; Taninul, El Pujal, Pachón-  
Quintero.  
Dr. Francis Abernathy, Dr. Robert Mitchell,  
James Reddell, Dr. Pierre Strinati.  
Biological collections in Mine Cave, Cueva de  
Taninul n.1, Cueva del Pachón, and Grutas  
de Quintero.  
AMCS Newsletter

6 - 13 June

Sierra Madre Oriental; Aquismón; Golondrinas.  
Aquismón, S. L. P.  
Ronnie Aycock, Dan Chase, Kirk Holland, Jon  
Resager, Richard Schreiber, Marion Smith  
Visited Sótano de las Golondrinas  
AMCS Newsletter

## NORTHERN MEXICO

## SOUTHERN MEXICO

6 - 18 July

Central Plateau; Jalpan region. Sierra Madre Oriental; Xilitla, Sierra de Nicolas Peréz, and Sierra de Guatemala regions.

John Fish, James Reddell, Philip Russell.

Biological collections. Located numerous caves including Gruta de El Puente near Ocampo and Sótano de El Refugio, a 180 x 150 foot pit, 400 feet on low side and 475 feet on high side.

AMCS Newsletter

30 July - 27 Aug

Oaxacan Mountain System. Chiapa Depression. Chiapas Plateau. Central Plateau. T.R. Evans, John Fish, James Reddell, Mills Tandy

The principal purpose of this trip was to make biological collections in caves in the general vicinity of Orizaba, Veracruz, and Huautla, Oaxaca, and to make the first reconnaissance by AMCS members of Chiapas. In addition to this the famed Grutas de Tonoltongo, near Ixmiquilpan, Hidalgo, was visited for the first time. Many new caves, some quite large, and several spectacular new pits were located. New biological discoveries included the second blind scorpion in the world and a new species of ricinuleid.

AMCS Newsletter

1 - 10 Sept

Sierra Madre Oriental; Aquismón and Tancoyol regions; Golondrinas, Agua Amarga, Rancho Nuevo, La Cuchilla, La Parada areas.

Bill Calvert, T.R. Evans, John Fish, Terry Raines, Bill Russell

Photographed Sótano de las Golondrinas. Located

Cueva de Muhaut, Cueva del Nacimiento de San

Miguel, Sótano de San Isidro, and Cueva de Santaxol.

AMCS Newsletter

23 - 26 Nov

Sierra Madre Oriental; Sierra de El Abra region; Tantobal, Los Sabinos, Venadito, Pachón-Quintero areas.

AMCS Sierra de El Abra Project (about 50 people)

Started survey of Sótano del Tigre and Sótano de Venadito, discovered blind fish in Sótano del Tigre, first visited

Cueva de La Florida, and mapped in Cueva  
de Tantobal.  
AMCS Newsletter

20 Dec - 7 Jan

Oaxacan Mountain System; Huautla; San Agustín.  
Alan Ball, Bill Biggers, Mike Boon, Ian Drummond, Keith Kennedy, Titch & Monica Morris, Pete Thompson.  
Explored the Río Iglesia System to a depth of 1755 feet, a new North American record.  
AMCS Newsletter

22 - 31 Dec

Oaxacan Mountain System; Huautla; San Agustín.  
Ten persons  
Entered Sótano de San Agustín to -1473 foot level and were turned back by high water. Located several new caves and pits.  
AMCS Newsletter

24 - 30 Dec

Sierra Madre Oriental; Xilitla region; Tlamaya area. Aquismón region; Golondrinas area.  
Jay Arnold, Norm Kettering, Steve Klein, Leigh Lawton, and Bill Tozer.  
Visited Sótanos de Huitzmolotitla, Tlamaya, and Golondrinas  
AMCS Newsletter

15 - 30 Dec

Sierra Madre Oriental; Xilitla; Silleta.  
John McLean, Dave Nelson, Chuck Pease, Cort Schuyler, Cameron Suttles  
Returned to Sótano de La Silleta at base of La Silleta pinnacle and explored to an approximate depth of 725 feet.  
AMCS Newsletter