



# AMCS ACTIVITIES NEWSLETTER

**no. 7**



# AMCS ACTIVITIES

## NEWSLETTER

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Copies of the AMCS Activities Newsletter Number 6 can be obtained from the above address for \$2.50 post-paid. Back issues Numbers 3 and 5 are still available for one dollar each. The next issue of the Activities Newsletter will cover the Thanksgiving and New Year's trips and should be available this Spring.

With this issue the format of the AMCS Activities Letter has been changed. The publication will continue with the name AMCS Activities Newsletter. Each issue will be larger and they will be sold by the issue. This new format will allow more photographs, longer articles and large maps. Articles and trip reports are solicited from all who cave in Mexico.

International News		2
The Ten Longest Caves in Mexico	Peter Sprouse	5
The Ten Deepest Caves in Mexico	Bill Stone & Peter Sprouse	6
Ten Days at La Grieta	Bill Stone	8
Map of La Grieta (Back pocket)		
Purificacion Area		
Summary of Exploration	Peter Sprouse	18
Discovery of Cueva de Infiernillo	Jean Ubico	18
Cueva de Infiernillo & Cueva del Brinco	Peter Sprouse	20
Further Exploration in Cueva de Infiernillo	Maureen Cavanaugh	23
La Sistema Purificacion: A Theory & a Goal	Peter Sprouse	27
Map of Purificacion System		
Between the Cold and the Glory	Terry Sayther	28
Back to the Bird Pits	Bill Stone	30
Poem in Honor of Returning Heroes	Cathy Rountree	31
Getting Down in Pena	Bill Stone	32

Front Cover: This spectacular photo of Cueva de Infiernillo was taken by Charles Fromen of Houston. To obtain the picture the photographer had to climb a tall tree in the arroyo.

Back Cover: "Long Drop" in Sotano de los Lobos, S.L.P. by Bill Stone

Correction: Cover photo on AMCS #6, Sumidero Yochib, was by Norm Pace. Our apologies to him for miscrediting his photo.

**ASSOCIATION FOR MEXICAN CAVE STUDIES**

1

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# International News

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THE SIERRA DE GUATEMALA caves have been closed, report the personnel at the Rancho del Cielo Biological Station. The newly formed ejidos on the mountain delivered a letter to the station last fall protesting visits by cavers in the last several years who had not secured permission in the villages. The biologists suggest that permission might still be obtained to cave by requesting such from the proper officials and carefully explaining the purpose of the visits, which has apparently been misunderstood. This does not affect Joya de Salas where arrangements are the same as always. All this suggests that caves could be closed in even the friendliest areas if your presence and purposes are not explained to the local officials. It is likely, however, that this incident is in part related to the recent formation of the ejidos and their corresponding assertion of power.

THE ITALIANS have surpassed Mexico in depth. A new upper extension in Antro de la Corchia pushed it to a depth of 935 m. (Paul Courbon)

BRAZIL'S LONGEST CAVE, Gruta de Sao Mateus, is now 20.5 km in length. (Paul Courbon)

WHERE DOES SAN AGUSTIN STAND: Paul Courbon writes that Sótano de San Agustín, -859 m, is probably the 14th deepest cave in the world. Apparently there are some problems with the surveys with other deep systems. The Sima GESM, Spain, is reputed to be 900 m deep but has only been surveyed to -415 m. In the Garma Ciega - Sumidero de Cellagua system (also Spain) the bottom survey at -970 m is lower than the known resurgence and an error

of 40 m has been discovered by Polish cavers in the first 500 m of depth. And finally the depth of Austria's Hochlecken-Grossshohle, -877 m, is in question by a 20 m difference in two surveys in the first 150 m. So, amongst all that is where San Agustin stands.

A NEW U.S. DEPTH RECORD has supposedly been established by a connection between California's Bigfoot and Meatgrinder caves, combined to be 363 m deep (Neff's Canyon cave, which has held the record for over 20 years, is 357 m deep). Hopefully, we will have a verification of this in our next issue.

IT WAS A GOOD TRY, but members of the Independent Grotto of Arkansas (non-NSS) "fell" somewhat short in trying to show a writer/photographer for Outside magazine the proper techniques of caving. Outside is a new magazine by Rolling Stone whose purpose is to purvey outdoor activities to the mass public. As the grotto was leading the writer through Rorie Cave, IGA member David Smith attempted to climb to a high lead above a pit without a belay and accidentally peeled off, hitting two ledges before landing 40 feet below (suffering bad cuts and bruises). Oh well . . .

CB RADIOS, which have been illegal to use in Mexico, (see Activities Newsletter #5) are now permissible. The change of policy came about in November 1976 - apparently the government decided that tourists needed CB's to summon the "Green Fleet" (tourist patrol) when in trouble.

FOOTPRINT CAVE is now Belize's longest at 4 km. The survey is part of



# International News

Tom Miller's master's research at McMaster University.

THE RUMOR we reported in issue 5 of a very deep Canadian cave has turned out to be little more than that - a rumor. The cave, D6, has actually been surveyed to +110 m by the Vancouver Island Cave Exploration Group. Meanwhile, Canadian caver, Paul Griffiths, apparently checking pits above the cave in hopes of a connection, has generated publicity in the new media claiming the existence of a 900 m deep cave. Sounds like counting your chickens before they hatch.

IN THE SAME VEIN, the first issue of the new Belgian publication SPEALP reports that Greek cavers have found a new deep shaft called Propantes. The Greeks claim it has a minimum drop of 418 m (El Sotano is 410 m) but they apparently have not even descended it yet!

THE 1978 NEW GUINEA EXPEDITION will return to the Atea Kanada river sink, reports Dr. Julia James of Sydney, Australia. The Atea Kanada is an awesome river cave with a low water flow of 12 cu-mecs (Yochib averages 1 cu-mec, or  $m^3$ /second), located on the remote Muller Plateau in Papua New Guinea. The Atea Kanada has a steep gradient and it is likely that many vertical pitches will be encountered in the exploration; these may have the full force of the Atea River flowing over them. The required perseverance to explore this ultra-technical cave is matched by its world-record depth potential from sink to resurgence. The Aussies are planning on fielding up to 60 people, including 30 active cavers, for 2-1/2 months. Anyone for a swim?

A 1000 METER SHAFT has reportedly been found in Austria. It has a large waterfall entering 150 m into the drop. A 500 m cable with 22 kg weight "swung free" in the shaft and based on this they estimate a drop of 500-1000 meters. It is so far undescended. (Jim Smith)

THE 1977 AMERICAN EXPEDITION TO GREECE has returned and correspondent, Jim Smith, has sent details of exploration on the Astraka Plateau. During the first two weeks they descended 25 pits in the 20-60 m range and extended "Hole of the Married Women" an additional 8 m past where the Brits claimed the passage was too tight! This impressive cave begins with three spectacular drops: 131 m, 52 m and 91 m, all free. In another area the group descended two more impressive virgin pits: Tripa Spera 63 m and Tripa Opedius 132 m freefall.

The group then hiked up the Provetina area and descended both Proventina and Epos Chasm. Smith describes Proventina "the first drop is 165 m sheer to a ledge. The next drop is 207 m freefall - a massive shaft." This totals to 372 m, less than the 376 m drop in Golondrinas.

Winding up the trip, they bottomed 158 m deep Gailo Tripa near Elephantopos, a large pit the Brits had located, but had descended only 30 m.

TAG BRIEFS: Alabama's Small Cave has been pushed to a depth of 156 m, making it the second deepest cave in the state just behind Fern.

Pushes by Marion Smith, Richard Schreiber, et al have led to a 3-1/2 second freefall pitch in Bloodstone Cave, noted for its shaky breakdown

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# International News

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in the entrance area. The latest attempt ended with Smith dangling at the end of a 75 m rope in a respectable sized waterfall - the drop still goes! Cavers are hopeful to connect this with Scotts' Barn Cave lower on the mountain for another 150 m+ cave.

E.T. Davis and crew are working on connecting Odyssey Cave with Elno's Canyon, another potentially deep system for the east. (Marion Smith)

ACCIDENT IN HUNDIDERO-GATO (Summary translated from the GESM Journal-Malaga, Spain) Ten to twelve hours inside Hundidero-Gato, a large Spanish river cave, the group encountered a heavy rapid. Jose Manuel Vera tied in and attempted to attain a ledge on the apposite side. The force of the water proved too much and Vera was carried downstream. At this point he called for help. His belayers pulled with all the force they could, but succeeded only in pulling Vera beneath the surface. An attempt was made to reach Vera on another line but the rescuer immediately realized he had no chance against the current, and it took 15 minutes of "titanic effort" to retrieve the rescuer. The group again tried to pull Vera out, until everyone had bloody hands. Finally the rope went slack and Vera's body disappeared. The overextended group then retreated to a dry chamber where they waited 2 days for the rescue party to help them out.

Overextension: just where is it when you've gone too far to get back again? When you can go down in a cave gravity helps you along. Drops are down. The biggest worry in rappelling is in going down too fast. But coming out is up. It's not easy and it's slower. Up ropes, up climbs and up-

stream.

Streams add an additional factor. Their currents fluctuate in strength with the width of the walls. Judgment must be sound in any spot dealing with a strong current or rapids. The Spaniards have learned a hard lesson. We've done a couple of large descending river caves in Mexico and have been fortunate in judging obstacles correctly. There have been close incidents to be sure. But hopes are that we'll never have to write a report like the one above.

SILVERTIP SUMMARY: With the 1977 summer season AMCS cavers again set up an extended camp beneath Silvertip Peak in the Bob Marshall Wilderness Area of Montana. The primary objective, Meanderbelt Cave, was explored to roughly -246 m before the passage pinched. Exploration of this cave the previous season had stopped at a deep pit, thought to be a sure connection with Getout Cave. This connection would have yielded the deepest cave in the United States. Undaunted, the cavers located Hole in the Wall high on the south side of the peak. This cave was pushed to an ice plug terminus at 118 m. The "dig" continued in Sunray Cave's amazing phreatic tube. After many sessions Mike McEachern finally broke through to a lower entrance - Sunset Cave. During the last few days a new cave was discovered between Meander Belt and Sunray which was pushed to -124 m despite its very narrow dimensions. The cave continues and may connect to the system, but due to the lateness of the season and difficulty of exploration it was left for the following year, hence the name Cop-Out Cave.

# *The Ten Longest Caves in Mexico*

by Peter Sprouse

1. SOTANO DEL ARROYO, S.L.P. 7200 meters  
First reported by F. Bonet. The survey was begun in 1971 by AMCS members, and the present length was reached in 1972.
2. CUEVA DE KAUA, Yucatan 6707 meters  
A large maze cave, the extent of which is not known. Survey begun by the AMCS in 1973 and reached its present length in 1975.
3. SOTANO DE SAN AGUSTIN, Oaxaca 5900 meters  
Also Mexico's deepest cave. Survey initiated by AMCS cavers in 1966. In 1968 a group of largely Canadian cavers (MUCCC) pushed the cave to an apparent end at 1860 meters. However, in 1976 AMCS cavers from Georgia opened up a new passage and subsequent mapping by the AMCS has brought the cave up to its present length.
4. GRUTA DEL RIO CHONTALCOATLAN, Guerrero 5600 meters  
A large river cave parallel to Gruta del Rio San Jeronimo and below Gruta Cacahuamilpa. Surveyed by an AMCS team in March and April of 1974.
5. GRUTA DEL RIO SAN JERONIMO, Guerrero 5600 meters  
Large river cave, slightly less in length than nearby Gruta del Rio Chontalcoatlan. Surveyed by the AMCS in April of 1973.
6. CUEVA DE CHICHICASAPAN, Puebla 5235 meters  
A complex stream cave, surveyed in 1977 by Mexican, British and American cavers. Additional passage has been explored but not surveyed.
7. CUEVA DEL BRINCO, Tamaulipas 5200 meters  
Dipping complex cave, elevation 1900 m. Survey begun in 1973 by AMCS and is continuing.
8. GRUTAS DE JUXTLAHUACA, Guerrero 5098 meters  
Sections of this cave are commercialized by the federal government. Survey by AMCS members in November 1971.
9. CUEVA DEL NACIMIENTO DE SAN ANTONIO, Oaxaca 4570 meters  
This large resurgence cave was mapped 1973-1975 by the AMCS. It is notable for its spectacular cave biology.
10. CUEVA DE LA TINAJA, S.L.P. 4502 meters  
Closely related to Sotano del Arroyo. Partially mapped in 1947 by zoologists from the American Museum of Natural History, the AMCS surveyed the cave in the mid-1960's.

# *The Ten Deepest Caves in Mexico*

by Bill Stone and Peter Sprouse

1. SOTANO DE SAN AGUSTIN, Oaxaca 859 meters  
Survey began in December 1966 by an AMCS team which carried the survey to -280 m. In December 1968, a group of Canadians and Americans pushed the cave to a siphon at a depth of 612 m. Eight years later AMCS cavers from Georgia pushed a side passage which was explored to -648 m. Another AMCS team surveyed this passage to -760 m while exploring on to the -800 m level. In March, the current deepest point was reached when the explorers encountered a siphon in another passage at -859 m.
2. LA GRIETA, Oaxaca 665 meters  
AMCS cavers first began the survey of this cave in December 1968, reaching the 90 m level. In December 1976, a larger team surveyed to a constriction at -401 m. The survey was continued in May 1977 to a depth of 665 m and a length of 4200 m.
3. SOTANO DEL RIO IGLESIA, Oaxaca 535 meters  
Surveyed in December 1967 by Canadian cavers (MUCCC). The largest of all the pitches in the cave, the Christmas Shaft, is 142 m. The cave ends in a mud choke.
4. SOTANO DE NOGAL, Queretaro 529 meters  
Mapped by an AMCS team in May 1976. After 20 pitches the cave ended in a mud floor.
5. SOTANO DE LAS GOLONDRINAS, S.L.P. 512 meters  
A large open air shaft, with a free drop of 333 m from the low side and 376 m from the high side. AMCS members surveyed the pit in June 1967. In December 1969 a fissure was discovered in the floor by Indiana cavers which was then surveyed to -512 m.
6. HOYA DE LAS CONCHAS, Queretaro 508 meters  
Mapped in March 1976 by a large AMCS expedition. Bottomed at a siphon which was dived to a depth of 4 m but it continues down.
7. SOTANO DE BUQUE, Queretaro 502 meters  
Surveyed by an AMCS team during the summer of 1972. Exploration was stopped at a sump which has not been dived; the map of this cave has not been published.
8. CUEVA DE DIAMANTE, Tamaulipas 466 meters  
AMCS surveying teams mapped this Sierra de El Abra cave to -120 m in December, 1974. In March of the following year the depth was extended to 300 m, then in 1976 to -466 m. Exploration in this cave is difficult due to very tight canyons.
9. HOYA DE LAS GUAGUAS, S.L.P. 464 meters  
Another large pit similar to nearby Sotano de las Golondrinas. In June 1968 AMCS cavers surveyed it to a depth of 422 m. Additional mapping in July 1977 through a lower breakdown section to a siphon showed it to be 464 m deep.
10. CUEVA DE SAN AGUSTIN, Oaxaca 458 meters  
Surveyed by AMCS cavers in December 1969 to the bottom at -484 m, but this map was never published. In December 1970 MUCCC cavers resurveyed the cave, obtaining a depth of 458 m. An overland survey in 1977 to a higher entrance may add 20 m of depth.







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# Ten Days in La Grieta

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## *AMCS Huautla Expedition, May 1977*

by Bill Stone

During the past year the Western Hemisphere depth record has been broken no less than three times during three separate major expeditions to the same cave: Sotano de San Agustín. The terminal sump at -859 m, reached by the March expedition marked an end to exploration in the lower system short of using diving equipment. The quest for the first 1000 m deep cave outside Eur-Asia could now only be realized by a connection with a higher entrance.

During the January and March expeditions we connected all the area caves via an overland survey. From the computer plot of this data La Grieta stood 93 m above Sotano de San Agustín. However, the big revelation was the surprising density of caves around the village of San Agustín. Cueva San Agustín (-484 m) was 134 m above Sotano de San Agustín and appeared to be a sure connection to nearby Sotano del Río Iglesia (-535 m). Río Iglesia on the other hand, came very close to the upstream trunk in Sotano de San Agustín. A double connection would yield a system 992 m deep. Hence the plan was formed. The team would "warm up" checking the Cueva. If no connection was made we would move into Camp I at -300 m in La Grieta.

THE WARM UP: We arrived in San Agustín on May 17 and set up operations in the two story fieldstone house used by the three previous groups. Cavers on the expedition were Gary Stiles (AZ), Tracy Johnson (AZ), Ernie Garza (CA), Steve Zeman (TX), Jeff Horowitz (TX), Bill Steele (TX), Cathy Rountree (IN) and myself.

After sorting ropes and equipment for the 19 known drops in Cueva San Agustín we split into two groups. The rigging and scouting team consisted of Zeman, Horowitz, and myself. We were given a 6 hour lead to rig to the bottom (-484 m) and would be followed by Steele, Garza, Johnson and Stiles who comprised the push/de-rig team. Unlike most of the area's deep systems which lie at the bottom of immense dolines and take active surface drainage, Cueva San Agustín sits high and dry on top of a rounded hill. From an exploration viewpoint this allowed for a rapid trip as bulky wetsuits and heavy-water gear could be left behind. While rigging we found it advantageous to sling each persons' ropes with a long tether rather than attempt to carry eight coils over our shoulders. Each rope was labelled for the drop it was to rig in the known parts of the cave. Four other ropes were designated "push" ropes and could be cut to length for new drops should the cave go. At about -300 m we noticed a high lead, 10 m off the floor at the top of an overhanging flowstone wall. With some difficulty I managed to freeclimb it, and followed the passage 150 m or so

to a drop. I returned and dropped a line to Zeman and Horowitz. In short order we bottomed the 20 m pit--no go. We did, however, discover several clusters of 20 cm selenite needles on the sandy floor. About this time the push crew arrived. While they surveyed the new passage we continued rigging and lead checking. The final (19th) drop in the Cueva is a spectacular 110 m, mostly free drop into an immense room 200 m long and 50 m wide. We circumnavigated the room with both teams checking every conceivable hole. No leads were found so we began derigging. At first, each person could carry a coil or two up the rope with him. More tackle amassed at each drop and we were forced to hoist equipment out the final 4 pitches. Each major drop would find someone sleeping while waiting for others to finish climbing. We exited the cave with all equipment 24 hours after entering. No connection had been made.

After a day's rest we commenced operations at La Grieta. Formal permission was obtained at Plan Carlota precluding further political problems. This however, did nothing to assure that the rope would not be cut and stolen by some needy Indian. We proceeded to develop two escape routes. In December voice communication had been made between a small crawlway, some 15 m from the usual rig (chop) point, and the main 60 m entrance shaft. After some poking around Horowitz and Johnson managed to freeclimb to the bottom. This new entrance, dubbed the Hobbit Hole, was our main insurance. To be doubly safe I pendulumed



The La Grieta camping crew with full camp and cave gear. (Jeff Horowitz)



The rigging team of Stone, Horowitz and Zeman with the ropes for Cueva de San Agustin. (Gary Stiles)

some 5 m under the entrance lip and bolt rigged the first drop. This being done, we untied the rope from the boulder above leaving an "invisible" rope. In an emergency, the most agile lead climber could then freeclimb out from the bolt. While all this was being done the rest rigged down 11 drops and 4 tyroleans to Camp I. The tyroleans were added as a safety precaution for hauling heavy loads on otherwise simple traverses.

INTO CAMP I: The next two days were occupied preparing packs, sorting food and resting. Menus were planned to sustain six cavers in Camp I for seven days. All the food was laid out and split up, leaving each of us to decide upon the best way to carry the burden. More equipment: full wetsuits, double Ni-cad electric packs, and dozens of cool-lites for the heavy-water we were expecting. A massive bolt kit, first aid kit, close to 30 pounds of carbide, fiber-fill sleeping bags, large Yucatan hammocks and wool campclothes--all were methodically stuffed into ever expanding duffel bags. This was topped off by the standard array of vertical gear, plus extra ascenders, carabiners, carbide lamps and webbing. All this added up to packs weighing between 50-70 pounds.

By morning, May 23, all was ready. All equipment was shifted from the house to the truck for the ride to San Andres on the western edge of the San Agustin Dolina. Camp bags were lashed to pack frames for ease of transport

to the entrance. From San Andres we slowly descended the winding trail to the base of the La Grieta doline, 300 m below. Then, like a precession of ants, we rappelled in. When the last man was down, Horowitz pulled the entrance rope out and hiked back to San Agustin. This surely must have amazed the small crowd of locals there!

Following experience learned during the two previous camping expeditions, each caver was self contained for 7 days underground: i.e. food and equipment were divided so that if someone could not get to Camp (as happened due to the accident on the March expedition) the others were not left without some essential item. To aide in transporting the heavy packs we attached a 2 m webbing tether and suspended it off the rappel rack carabiner. This way one could rappel down awkward pitches with minimal difficulty. Other times the tether aided in dragging the pack through a tight crawl or lowering it down short climbs.

Within four hours we arrived at Camp I. It was 5:30 p.m., and the general consensus was to establish camp, eat dinner, and begin the push next day. Camp I was situated at the bottom of a 55 m drop, approximately 300 m below the entrance. The dry fissure passage averaged 4-5 m in width and was broken into three 10 m long tiers by 5 m climbdowns. Beyond the last tier the passage plummeted into a 60 m shaft. The hammocks had proven a wise decision as there were few flat spots for sleeping. Once everyone had set bolts for their hammocks we surveyed the area. Certain essentials had to be taken care of if camp was to be functional. A kitchen area was designated, then food was inspected for damage and stored in a nearby alcove. Water was obtained from a flowstone drip some 30 m down the passage from the kitchen. The BOG (outhouse) was dug in a small sand-filled chamber 15 m from the water supply. This done, two of us rigged the 60 m drop while others cooked dinner.

The following morning we split into two teams and left camp after a hearty meal of granola, dried fruit, milk and tea. Steele, Zeman and I formed the rigging and exploring team, while Johnson, Garza and Stiles brought the survey along behind. We quickly negotiated the 1/2 km of known passage below the 60 m pitch. Virgin cave lay beyond. Our six man team, a tight procession until then, broke into the designated groups. The cave continued as a narrow vadose passage with sharp solution carved blades projecting from the walls and floor. During the future trips this passage became known affectionately as the "Torture Chamber." Five hundred meters further on, the ceiling lowered to a pool with 25 cm airspace and finally a 20 cm crack. Zeman and I hammered on the crack for over an hour before Steele managed to squeak through. All this work was to no avail as 60 m further on he got to a 12 cm crack. Somewhat reluctantly we headed back to deliver the bad news to the survey team. At one room along the way I stopped to check a small fissure leading downward. This quickly led to an active stream dropping down a new series of cascades. After assuring myself it continued I returned to find the survey party had shown up. A brief conference ensued. They elected to continue surveying to the pinch while we pushed the new lead. With Zeman at the point we traversed an amazing series of canal swims and exposed climbdowns through cascades. For the next 2/3 km the passage alternated between large steeply sloping breakdown floored rooms, sometimes reaching dimensions of 30 m wide and 15 m high, and long stretches of narrower canals and cascades. Usually each large chamber would be preceded by a termination of the water passage and a 10 to 15 m climb through breakdown. Throughout this entire



stretch only four pitches were rigged, none of which were greater than 15 m. We soon arrived at a complex breakdown blockage where two major cave streams disappeared. An additional 3 cusec (ft<sup>3</sup>/sec) stream had entered via a narrow fissure shortly before the blockage. Steele managed to find a route through the maze which led to an L-shaped breakdown room. He located a stream which sumped after a short distance. With no obvious leads we returned to meet the others. At the Junction Room we found Garza patiently waiting. Johnson and Stiles had a hot lead and were off pursuing it. They soon returned jubilant over a new going passage which had led to a 15 meter pit with a large amount of water dumping in. Matching descriptions led to the conclusion that their waterfall drop intersected our route just before the first big room. We dropped all extra push tackle at the Junction Room and began a retreat through the Torture Chamber. When the last man prusiked the 60 m pitch it ended a 15-1/2 hour trip.

We awoke at 4 p.m. on May 25th. Our time schedules were already starting to shift. At breakfast everyone chowed down to the usual granola and fruit plus an extra quart or so of mashed potatoes to boost carbohydrate levels. Each of us methodically re-loaded carbide bottles, checked electric lights, picked up new cool-lites and survey gear. Groans could be heard from the lower tier as Johnson, Steele, and Garza crawled into their cold, slimy wetsuits. One by one we racked in and began our daily commute to work. We rhythmically strided through the Torture Chamber, each move and key hold being memorized for the long trip out. At the Junction Room we again split into two 3-man units. Steele, Johnson and I were surveying from there through the Stile-Johnson route to the lower cave. The other three were to rig ahead through the large cascade and photograph down to Mazateca Shores, the sand-banked room just before the breakdown maze which had stopped us on the first trip. We arrived at the 15 m cascade drop expecting to see an elaborate bolt rig for a free dry rappel. Instead we found the rope leading directly down the 4 cu-sec chute. This proved sporting enough to be of interest and a pleasant cooler to our over-heated wetsuits. We christened it The Refresher. After eight hours of surveying we caught up with the photo crew at Mazateca Shores. They decided to return to camp after lunch, leaving us to ponder the breakdown. We were all beginning to feel the effects of back-to-back endurance trips. Steele and I were soon sleeping beneath a space blanket he had thoughtfully brought along. Johnson was still fired up and plunged on through to have a look at the L-shaped room. It must have been close to an hour later when he returned saying that he had been to the sump and thought there might be airspace beyond. It required a commitment though, a full dive. This didn't seem too promising so we returned to the breakdown maze looking for a by-pass. An hour's work netted a connection back into the upstream passage above Mazateca Shores where Steele was sacked out in the space blanket. In our state of semi-sleep we debated for almost a half hour, unable to decide if the breakdown and the L-shaped room sump were worth another 20 hour trip. We slowly retreated, leaving 3 ropes and a bolt kit for the next push assuming at least 3 people would be willing to return. At the Junction Room we found 3 wetsuit tops. A vote of confidence! We all smiled, this crew had it together. Two hours later we could smell dinner at the base of the 60 meter drop and sprinted into camp. We had been caving for 19 hours and it was 1 p.m. on the 26th. Speculation was raised as to whether Horowitz would wait until the 27th for Steele and Garza to exit or come in solo to check up on us. The question answered itself just two hours later. An echoing yell came down the 55 m pitch above camp and everyone reached for their hardhats. Grinning and ready for action, Horowitz arrived only to find everyone sitting around the



stove in a semi-catatonic state. He reported having had an interesting trip in. Since he had solod, no one was at the entrance to pull the rope out for him, so he used the Hobbit Hole. As 15 disbelieving Mazatecs watched, he tossed his cave pack down the small crawl, entered feet first, then dragged his duffel bag of camp gear in behind him! Steele and Garza then left camp for San Agustin. Steele was to return after a day on the surface and Garza would remain with Rountree as topside crew. The rest of us headed for the hammocks at 6 p.m. We awoke at 12 o'clock, refreshed - funny, only 6 hours sleep after being so tired. Horowitz said he was ready for action, so we sent him on an important mission-- was it 12 noon or 12 midnight?! He had left his duffel near the entrance and had to ascend anyway. When he returned we discovered we had slept not 6, but 18 hours and it was Friday the 27th.

This was a "rest day" for Camp I. Two rough trips had taken their toll on both our bodies and equipment. Those who didn't wear gloves spent several hours repairing their lacerated hands, vowing not to make that mistake again. Most of the day was spent playing cards (Poker for M&M's) and eating. We racked out around midnight assuming Steele would wake us on Saturday morning.

BREAKTHROUGH: Steele arrived on time bringing a few extra luxuries: breads, batteries, gloves, merthiolate, and a spare wetsuit top. Rountree and Garza had hiked over to the entrance with him to guard the rope while he rapelled. We packed up for a long push trip as this might be the last chance we had at going deep. At Mazateca Shores we discussed the approach to be taken. All equipment was dropped except for standard cave packs. Following 30 m of breakdown crawl we arrived at the L-shaped room. A high lead was visible as a looming blackness some 20 m above us. Zeman and Horowitz headed for the sump and I started free-climbing the house-sized boulders. At the top, two fissure passages led off. I chimneyed down one to a 20 m drop. A waterfall was audible in the distance. When Steele arrived he somehow managed to find a bypass downclimb and got to the bottom. Johnson also found a lower route through the breakdown, joined Steele, and continued on. Stiles and I could find neither route and returned to Mazateca Shores with Horowitz to bring the survey through the breakdown, assuming the others would return soon with a going lead. By the time we reached Zeman, who was sleeping in the L-shaped room, we could hear hoots from the other two heading out. No go. The lead petered out a few hundred meters further on and the waterfall was found to be just a trickle in a side dome. One-by-one we downclimbed the breakdown toward the sump. Steele felt sure all the cave streams were entering this sump. Time for some commitments. Steele and I swam to where the ceiling hit the water and looked around with an underwater flashlight. In crystal blue water we could see a passage, perhaps 1 m wide and 2 m deep, continuing under the ledge. A belay line was payed out which I tied around my wrist with a slip knot. I took a deep breath and swam 2 m or so before heading up. Airspace! I yelled back hoping someone would hear me. They did, so I continued on to check the lead. I swam close to 60 m of deep canal passage before coming to a deafening waterfall. We were back in the cascades! When I returned to the sump I found Steele coming through. He had found a 7 cm x 4 cm airspace along the ceiling where a carbide lamp could just be passed through. Both of us swam back for a conference. The canals were very cold in our tattered wetsuits. The plan was for Stiles, Johnson and I to survey through the sump to the cascade at which point we would explore for 2 hours then begin survey back. This way the second survey team of Steele, Zeman and Horowitz could traverse the canals swiftly and begin at the cascade without getting overly cold. Past the canals we traversed the sinuous canyon passage on a series of solution pendants 10 m



Water purification consisted of six drops of Clorox per gallon in La Grieta. (Bill Stone)



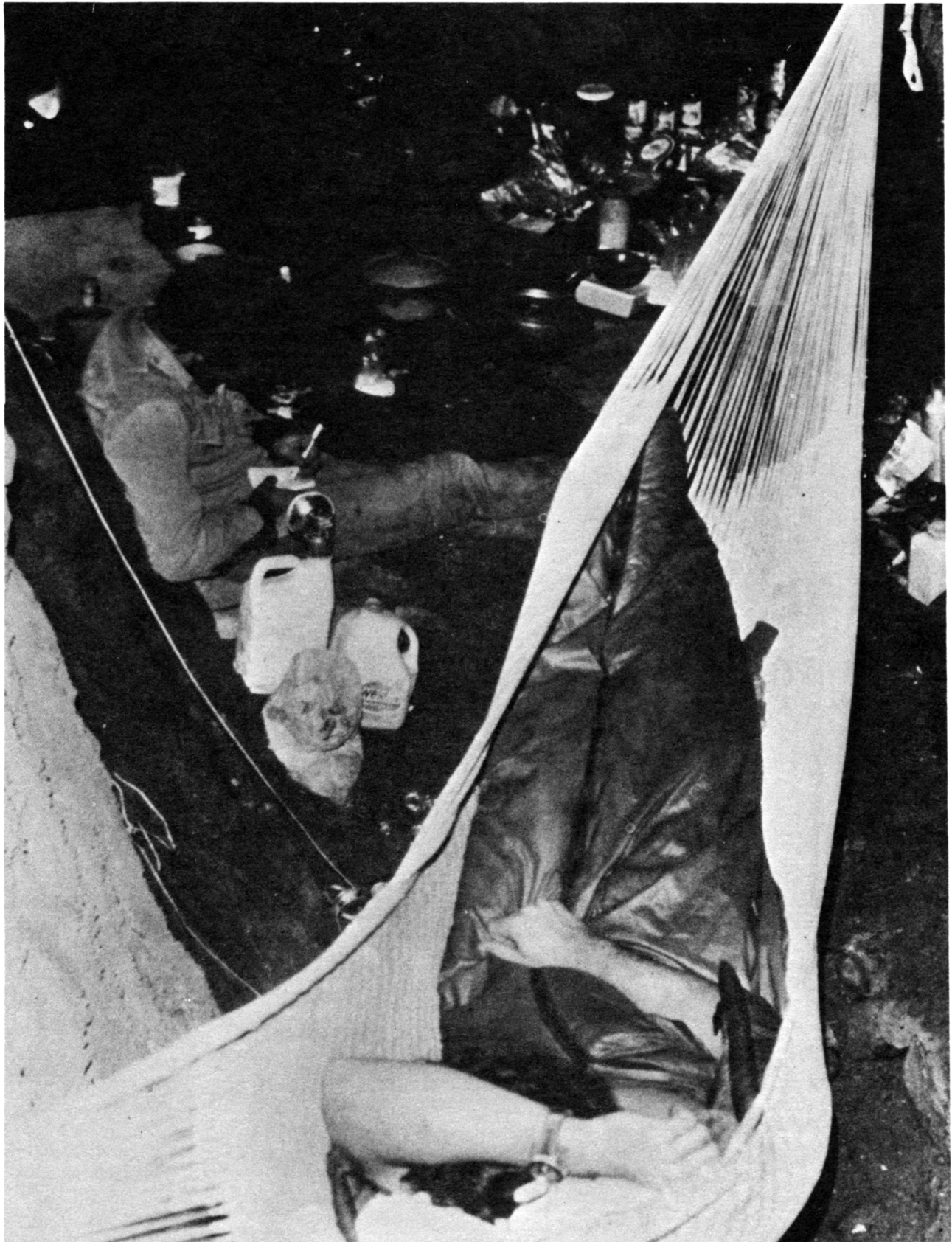
A typical Huautla underground camp pack. (Gary Stiles)

above the roaring cascades. At times the upper route would give out and we would be back in the canals swimming for 50 m or so at a time. Sections of this passage had the most remarkable solution flutting any of us had ever seen. Half meter wide blades would project from passage walls and extend vertically for 10 m or so. In other places the rock was dissolved so it formed only a skeleton of what used to be the stream floor. The thinner projections of rock in these areas sometimes were less than 5 cm in diameter, yet 1 m long! This made going extremely difficult as it was impossible to tell when a foothold was going to break off. We soon reached our two hour limit and commenced the survey. Some four hours later we connected with the other team and headed out. It was 6:45 a.m., Sunday. At 9 a.m. we reached the Junction Room. Wetsuit tops were again dropped here for the final push. Everyone was back at Camp I by noon concluding a 21 hour trip. Realizing that we could be underground as much as three more days Johnson headed for San Agustin to inform the surface crew. We were originally due to leave the cave the following morning. The camp crew then hit the hammocks for another 18 hour sleeping blitz.

Our eighth day underground was spent in camp repairing equipment. Several of us had bought new Viet Nam boots (Korean made) for the expedition and were astounded at their state of disrepair after only two weeks of caving. Three or four hours work with a sewing awl usually returned them to a functional state. Wetsuits, unfortunately, could not be repaired since they never dried out enough for the glue to hold.

BOREHOLE: Johnson arrived at 11:30 a.m. on Tuesday with news that it had been raining hard. The rainy season was due soon. Carbide and food were also getting low. This would be the last trip of the season. Along with some extra provisions he had brought in a hand calculator. A half hour's work showed the furthest survey station to be 542 m (1778 feet) below the entrance. La Grieta was now the 2nd deepest cave in the hemisphere. We suited-up for the last time and smoothly negotiated the now familiar passage. Within four hours we reached the limit of exploration. The stream canyon led on just as before: canals and cascades. This time it was Steele, Zeman and Horowitz in the lead planning a minimum four hour exploration blitz before surveying back. One rule we had been enforcing this trip (as always) was that all explored passage be surveyed. Johnson, Stiles and I began surveying in. We soon came to an apparent sump. Johnson went freeclimbing high up the wall and I went low, not sure of where the others had gone. The passage continued beneath the ledge with a 5 cm airspace. We dove this one too, arriving at the top of another 10 m cascade. For the next 1/2 km we surveyed through more canals and cascades. Gradually we left the water and began traversing large breakdown. With each survey shot the passage opened up until all we could see was a great blackness ahead beneath the 15 m high arched roof. For close to six hours we had nothing but 30 m survey shots. The roar of the river could always be heard below the breakdown. Speculation ran rampant. Was this part of some old super system? Whatever it was, it was bigger and longer than any known passage on the plateau and heading down on a steep 15° dip. San Agustin was not far away, but if we continued on this dip there was a possibility of going underneath. Our speculation was never answered for we soon heard the push team. They were just as dazed as us. Beyond the trunk passage continued even more cave of similar dimensions (20 m x 15 m), but they hadn't followed it. Several hundred meters further they had descended a rift leading into a steeply dropping chamber over 60 m wide. At the bottom they encountered another cascade and canal passage. From there they surveyed out.





Home at -300 meters in La Grieta. (Bill Stone)

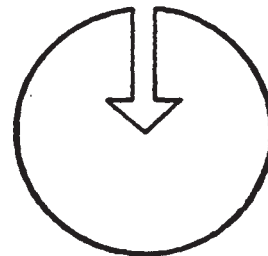
With two leads beckoning we began the retreat. The strain of a long trip began to show. Every time our procession stopped people dozed off. Only when we reached the L-room sump did we really wake up. All tackle (600 m of rope, pads, and bolt kits) was derigged back to Camp I, the last person arriving at 6 p.m. Wednesday night after a 26 hour trip.

During dinner we worked through the numbers. Total depth, verified later in Austin, was 665 m (2181 feet). Length was over 4 km. The general plan was to pack camp and derig the entire cave on Thursday.

DERIGGING: Following a brief 12 hours in the hammocks we slowly roused ourselves to the task at hand. Personal gear was packed first. Wetsuits were not needed above Camp I so those were also packed. All cans were crushed and placed in a community garbage pile; everyone carried a share of this out. What remained of the camp food was finished off in a final gluttonous breakfast. We then scoured the campsite for trash. Not so much as a gum wrapper remained. By noon Thursday everyone had their camp packs ready for the ascent. Horowitz ascended first with just his camp pack, intending to make a second trip for rope. The rest of us machos in camp decided we could each carry a fifth of the immense pile of tackle up to the entrance in one shot. This amounted to roughly 120 m of wet, muddy rope per person in addition to a 60 pound camp pack! It all sounded so easy the night before. Johnson got 10 m into the 55 m pitch above camp before deciding that something had to be rearranged. Things were a bit unbalanced with a 100 pound cave pack! Everyone later agreed that it had been one of the most difficult ascents of their careers. Once up this pitch we shuffled half the load at a time up successive pitches and climbs. At about -150 m I met Garza on the way in from the surface to help derig. Things went smoothly from there on. Steele and I reached the bottom of the 60 m entrance shaft by dusk with six duffels of equipment. Horowitz and Johnson had gone back down to finish derigging. After freeclimbing the entrance at the top of our emergency rope we bolt rigged a pulley with a Jumar safety and began hauling equipment bags up the entrance pitch. We had been underground for 10 days and 10 hours.

EPILOG: A computer generated map of the area showed that we had stopped only 3/4 kilometer short of a major upstream lead in San Agustin. If a connection can be made between the two caves the resulting system will be 952 m deep (3121 feet) and over 13 km long. Limits of endurance, however, will necessitate a second camp at -500 m for the return expedition.

THINK DEEP



[see loose map of La Grieta]



## Purificacion Area

### Summary of Exploration

by Peter Sprouse

Two large cave systems in this mountainous region west of Cd. Victoria, Tamaulipas have been the focus of an ongoing AMCS project. The survey of Cueva del Brinco, elevation 1900 m, was initiated in August 1973 and under the direction of David McKenzie and Peter Sprouse has achieved a length of 5.2 km and a depth of 197 m. Cueva de Infiernillo, at 1100 m elevation, was discovered in April 1976, and a survey co-ordinated by Charles Fromen and Peter Sprouse has reached a length of 4.1 km and a depth of 216 m. It now appears likely that the two caves may connect; this is supported by the fact that a considerable amount of air flow enters Brinco while a large flow also exits the entrance of Infiernillo.

Following are three reports of recent survey trips. These represent all of the work to date done in Cueva de Infiernillo, while accounts of all previous work in Cueva del Brinco may be found by referring to the following publications: AMCS Activities Newsletter, nos. 5 & 6; AMCS Newsletter, vol. V, nos. 2 & 3; NSS NEWS, vol. 31, no. 11.

### Discovery of Cueva de Infiernillo

by Jean Ubico

Date: April 9-18, 1976

Persons: Cathy Barnes, Mark Conover, Charles Fromen, Erin O'Hare, Jean Ubico, Harry Walker, Dorothy Walker, and Bruce Wilbur.

Under the guidance of Senor Antonio Grimaldo, a 78 year old, local sawmill official, our group located and explored several guano caves in Esperanza Canyon before heading up to Senor Grimaldo's house in the mountains. Several years ago Grimaldo and nine other men built a narrow mountain road on which to transport lumber, which we headed down in the morning to reach the embarkation point for an exploratory hike. The inexhaustible 78 year old Senor macheted down vines and limbs to clear the semblance of a trail for us through the thick jungle vegetation. Huge boulders blanketed with slippery moss form an obstacle course along the river bed that winds through the canyon. And then we came upon it: an enormous, black cave mouth some 35 meters straight up the face of the cliff. During the rainy season a giant waterfall cascades out of the entrance down to the river below. The Senor had once shown the cave site to some American tourists who merely took pictures; our crew began immediate plans for entry.

The next day the most experienced caver-mountaineers of the group, Charles



Chaining a passage in Cueva de Infiernillo. (Tom Byrd)

and Harry, were elected to scale the steep cliff face. The rest of us manned strategic points on the boulders to photograph the ascent into the cave mouth. The climbers tied a rope around a tree adjacent to the top of the cave and rappelled down at an angle to the entrance. A second climb was necessary to free the entangled rope from the trees. A line was then dropped from the mouth to the cavers at the base of the cliff, and thus began the seven hour ascent of the novices supervised by Mark. A dense, tropical rain further slowed the upward trip. The main entrance of the cave measures 20 m in width with a ceiling of 25 m. Piles of boulders intersect smooth sand banks along the gradual descent of the central passage. Clear puddles of water in which tiny pieces of wood have been deposited dot the sandy areas. The wood indicates the possible existence of an upper cave entrance from which debris would be carried by the water through 1000 m or more of rock. Our exploration of the main passage was halted initially by a 6 m deep lake with a siphon and then by a 23 m shaft with water in it. The side passages, however, proved to be rambling and of varied feature. One in the vicinity opens into a compact room filled with thick, pudding like mud.

Dinner that evening consisted mainly of breakfast bars, as our rations at that point were rather limited. With a great amount of rustling, we huddled together for siesta under the crinkly, fluorescent space blankets. Unfortunately our body heat was absorbed in a short time by the cold sand banks. At about 4 AM the cave exploration resumed. A pit in the rear of a dome shaped room with five entrances descends some 12 m and then opens

into another major passage. The pit was not entered due to lack of proper equipment; we did, however, investigate the path out of each of the five entrances. A strong wind blows down these passages, a further indication of a possible upper cave entrance. A series of fifteen foot travertine dams line one lengthy passage; 60 cm stalagmites in the shape of bushes cover the floor of another.

In the morning four cavers rappelled down the cliff, while Cathy, Charles and Mark completed the partial mapping of the side passages. A total of 1158 m of cave was mapped in 50 different stations. The extent of the area that remains to be explored may be virtually infinite. The backpacks weighed heavily on the two hour return through the jungle to the van. A symbolic walking stick and rock etched with Grimaldo's initials awaited us on the windshield of the blazer. Concerned about our welfare, the old man was on his way down to the cave.

After stopping in the mercado in Cd. Victoria, we returned to Texas via Reynosa.

## Cueva de Infiernillo and Cueva del Brinco

by Peter Sprouse

Phase I: May 6-13, 1977

Persons: Ralph Batsche, Mike Connolly, Charles Fromen, Carmina Fromen, Peter Sprouse, Terri Treacy, and Harry Walker.

Terri Treacy and I spent two weeks caving in the Cueva del Brinco vicinity with two groups of cavers. On Friday, May 6, we left Austin for Houston where we joined with Greater Houston Grotto cavers, Ralph Batsche, Mike Connolly, Charles Fromen, Carmina Fromen and Harry Walker and headed south to the land of caves. We crossed through Reynosa the next day and on to Cd. Victoria, Tamaulipas. Driving part way up the mountain we camped near Paso de la Muerte that night.

The following morning, May 8, we drove on to Sr. Grimaldo's house at La Curva. Here we packed for the hike down to the large cave being explored by the Houston cavers, which Grimaldo informed us is called Cueva de Infiernillo. We planned to stay in two days, all setting off with heavy packs except for Carmina, who stayed at Sr. Grimaldo's house. We were able to drive within a kilometer via a new logging road yet the rough hike still took 1-1/2 hours. After dropping down into the canyon we found ourselves following up a 15 meter wide arroyo with truck sized smooth boulders. Soon this arroyo ended abruptly in a sheer cliff face 40 m up in which was the huge entrance to Cueva de Infiernillo (the Cave of Hell). During times of flood, a powerful waterfall must fall from the entrance, evidenced by the usually dry 3 m deep plunge pool and ensuing arroyo. The only access to the entrance is by an interesting climbing maneuver; Harry and I did a steep bushwhack up the left side of the arroyo until we met the sheer cliff face. Here we were 25 m above the lip of the entrance and could rappel down to a ledge leading into

the cave. We pulled our rope down behind us and rigged it down the 40 m drop to the arroyo for the others to ascend. My first impression of the cave was of the strong wind blowing out of the entrance. I had never seen anything like it in my life. The entrance measures 20 m X 25 m, yet still a piece of flagging tape, .5 meters long, would flutter 70 degrees off of horizontal! Hmm! Promising cave.

Once we were all in we hiked on down the trunk passage towards our campsite. We were to camp down the right hand passage about 300 m in past where the main passage forked. Halfway there we noted a right hand side passage not shown on the survey. Terri and I explored down this major inlet for about 150 m (50 m vertically) to a large, deep sump. It appeared to flood upwards to contribute to the entrance flow. Continuing on down the main passage we came to the fork - or so we thought. A steeply climbing passage took off to the left blowing air. But just a little further on was the major fork in the passage, so we went on down to camp. After setting up camp we all went down to the end of the right hand passage where Terri and I suited up to investigate a large lake. This is a definite sump with a dipping ceiling and about 7 m deep. This sump also apparently floods upwards. We collected some rare Asellid isopods here. Afterwards Terri and I returned to the main passage to investigate the left hand lead which the other had also missed in their previous survey. We explored quite a ways with air blowing in our face, climbing up a continual 30° dip. We ran back down to camp for the night.

The next day the others decided to push our ascending passage of the night before. Terri and I elected to pursue the main passage to see what it did. We explored several new side passages of fair promise before reaching the end of their survey. The passage was climbing steeply up to that point, over ancient rimstone and deep dry plunge pools. Obviously the river that once flowed here now travelled a deeper, unknown route, with only a strong wind beckoning us on. We reached a seemingly unclimbable flowstone falls just as the voices of the others floated to us from above. Their passage had reconnected into our 400 m linear distance from where it had taken off! Up on a high balcony opposite the flowstone they had connected in after partially exploring a series of high ascending tubes that appeared to be the source of most of the air in our passage as well as theirs. They began to survey back to the main passage. With a boost from Terri I managed to find a route up the climb and explored on ahead. The passage split into at least six ways - I explored a while before giving up. Returning to where Terri was we explored into a lead there which split into three passages which also continue. We then went back to camp for the night.

We packed up the next day (May 10) and exited the cave. The others' survey had brought the length of Infiernillo up to 1.8 km; the depth must be somewhere around 130 m so far. Altogether a most promising cave surely to be one of Mexico's longest and perhaps deepest - determined exploration should bring rich discoveries. It is on the same fracture zone and some 4 km away and 800 m lower than Cueva del Brinco - so it may connect, though this would require a serious effort. It appears to be primarily a fossil resurgence however, so the main Brinco drainage may still go on down to the Zona de Manatiales 600 m lower than Infiernillo.

We continued on up the mountain for further caving, returning to the Brinco



area on the 12th. The Houston cavers departed for Texas leaving Terri and me at the Brinco camp to wait for Ediger's crew to arrive for the Brinco push. (See AMCS Activities Letters #4 & 5 for previous exploration accounts.)

Phase II: May 13-22, 1977

Persons: Sheila Balsdon, Gill Ediger, Preston Forsythe, Margaret Hart, Shari Larason, Thomas Moore, Diane Perwien, Peter Sprouse, and Terri Treacy.

While waiting for the rest of our crew, Terri and I occupied ourselves with unfinished leads in Brinco in the area of the cave near the entrance. The first day, Friday the 13th, we entered the second left hand passage and mapped into the downstream lead to where a second stream passage came in. We surveyed up the incoming stream to a low stream bellycrawl. We netted 183 m of survey in a 6 hour trip. The next day we were preparing to enter the cave to continue the survey when we heard the unmistakable sound of Ediger's truck grinding up the mountain. Soon it arrived carrying Sheila Balsdon, Gill Ediger, Preston Forsythe, Margaret Hart, Shari Larason, Thomas Moore, and Diane Perwien. After much hoo-haaing Terri and I continued on into the cave and surveyed downstream from the previous night's stream junction. Our surveying tied in to the bottom of familiar Traverse Pit, creating a link long missing, as well as part of another link to the first stream. Another 6 hour trip with 171 m mapped.

On May 15 the others were rested from their journey and ready to cave. Ediger led Margaret (her first Mexican cave) and Diane (her first cave anywhere!) to the Loser's Paradise area and did some lead checking. Terri, Thomas, Sheila, and I returned to the Canal, the caves deepest point at -180 m, and brought the survey up to the limit of exploration of the previous trip. From there the trunk of the World Beyond led on into the unknown. We netted 532 m in a 17 hour trip.

The 16th of May was an R&R day. On the 17th Ediger, Margaret and I walked up to look at an interesting entrance above town that Ediger had been shown by a local. It takes some air. Quite close by we found a slightly higher entrance that blew air and a stream could be heard inside. In the afternoon two teams returned to the World Beyond while Diane and Shari dug in a lead near the entrance. On the trip into the cave Ediger made a physical connection upstream from Laguna Verde to the limit of exploration below Katy Falls. In the World Beyond Ediger, Margaret and Sheila surveyed upstream for 200 m before the cold lakes convinced them to quit. The passage continues upstream with air movement going downstream. Preston, Terri and I charged into the downstream "River Beyond" with nearly continuous 30 m shots. After about 250 m of wide stream trunk the passage enlarged into a huge room 30 m X 50 m X 20 m containing an immense flowstone mountain - dubbed the "Throne of Oztotl." Beyond the stream continued as ever, through long deep lakes and under breakdown collapses. With the setting of our last station we had mapped 937 m that day and



increased the cave's depth to -197 m. I explored on ahead another 100 m and saw no end in sight - indeed, the water flow seemed to be increased and the passage ahead took quite a bit of air. We exited after 17 hours.

The 18th we rested, and on the 19th Thomas, Sheila, and Margaret went into Brinco to Laguna Verde where they attempted to survey the connection Ediger had made. They mapped partway up to the end of the other survey. Ediger, Diane and I did a surface survey from Brinco through town up to the two new high cave entrances. We mapped 60 m upstream into Entrada del Viento Alta to the bottom of a 10 m dome. Here a fault was visible, the chert beds having about 10 cm displacement. The dome is climbable, but requires a belay. Into Entrada del Viento Baja we surveyed 40 m to a pinch. I squeezed on through and explored another 60 m downstream in tight passage. It will probably connect into the Brinco system but will require a lot of work - a connection would add considerable depth.

By a long shot this was the most successful trip into Brinco to date. The cave's length was increased from 3.2 km to 5.2 km in the cave's largest and longest passage. The configuration of the cave was totally changed and a definite trend established. The cave has been extended 1 km to the south, away from the assumed resurgence to the north. It seems to be trapped in a minor syncline that has captured stream flow along its axis. At some point (which could be a long way off!) it may break through this, dropping down and doubling back. Such an occurrence would also break the recent horizontal trend and again result in increasing depth. The cave thus far has dropped 197 m of a projected 1400 m potential. The new discovery is so vastly different it almost doesn't seem like the same cave. The well integrated dipping stream maze has intersected a large horizontal stream trunk 1.5 km long (so far). By all indications this passage will continue a long way in both directions.

## Further Exploration in Cueva de Infiernillo

by Maureen Cavanaugh

Date: July 29-August 6, 1977

Persons: Terry Sayther, Tom Byrd, Sheila Balsdon, Maureen Cavanaugh, Jeff Horowitz, and Peter Sprouse

July 29: After much soul searching about "Mexico or Convention" our crew headed resolutely south. The 2 a.m. border crossing at Matamoros presented no problems and we arrived in the Victoria square in time for sunrise and breakfast. After an assault on the mercado it was time for a swim and watermelon gobble in the El Carmen canal. A ruthless bout of seed spitting ensued, but the mountains beckoned to us . . . A wet and muddy road was anticipated due to the rainy season but it was very dry. That evening we camped at the Paso de la Muerte campground and watched the rising of a brilliant full moon flooding the valley below with an eerie silvery light. The weather was warm but pleasant and we all felt exhilarated to be out of the sultry lowlands and into the dry mountain air.

July 30: The next morning we paused for a few minutes about a kilometer from Purificacion for a first glimpse of our quest, the Cueva de Infiernillo entrance which is situated in a cliff face 35 m above the head of the Canon de Infiernillo. Looking west across the valley from this point (towards Sotano de los Novios), Terry spotted a road that comes down from Dulces Nombres to a settlement called La Joya and a mine. Possible cave entrances were noted on that side of the valley. Next we stopped in the far end of the village of Ejido Purificacion (La Curva) for a few minutes to chat with that very fine old gentleman, Senor Antonio Grimaldo and to inspect the (now) famous airplane door pigpen. Senor Grimaldo remarked that it hadn't rained in about three weeks; mentioning that a waterfall comes out of the entrance of Infiernillo during times of heavy rain. After a few refrescos we drove down to the end of the logging road and began our 2-1/2 hour descent into the arroyo with 20-30 kilo backpacks. There is no trail and the hillside consists of loose karst blocks covered with dead oak leaves. Fiendish thorny vines caught on clothes and backpacks and caused occasional cases of tanglefoot. Returnees beware: THAT SILENT MENACE, POISON IVY, IS EVERYWHERE! General consensus was that a priority on the next trip would be to establish and mark a good route down the hillside. The arroyo was a welcome change and we were surprised by a small cold spring gurgling out of some talus which provided enough water to sit down in. The entrance was close by and in another 15 minutes we were at the bottom of the cliff admiring the 20 X 25 m entrance 35 m up and contemplating the cold 2 m deep spring fed plunge pool at its base.

Jeff, Peter and I did the climb to above the entrance and Peter rigged his 45 m Goldline which barely reached a ledge by the entrance. The view was fantastic and cool brisk breeze blew out the entrance. After packs were hauled up Terry, Sheila and Tom prusiked up and we backpacked through impressively large trunk passage (over slippery breakdown) to our predetermined basecamp 500 m inside the cave. This was the beginning of five days underground.

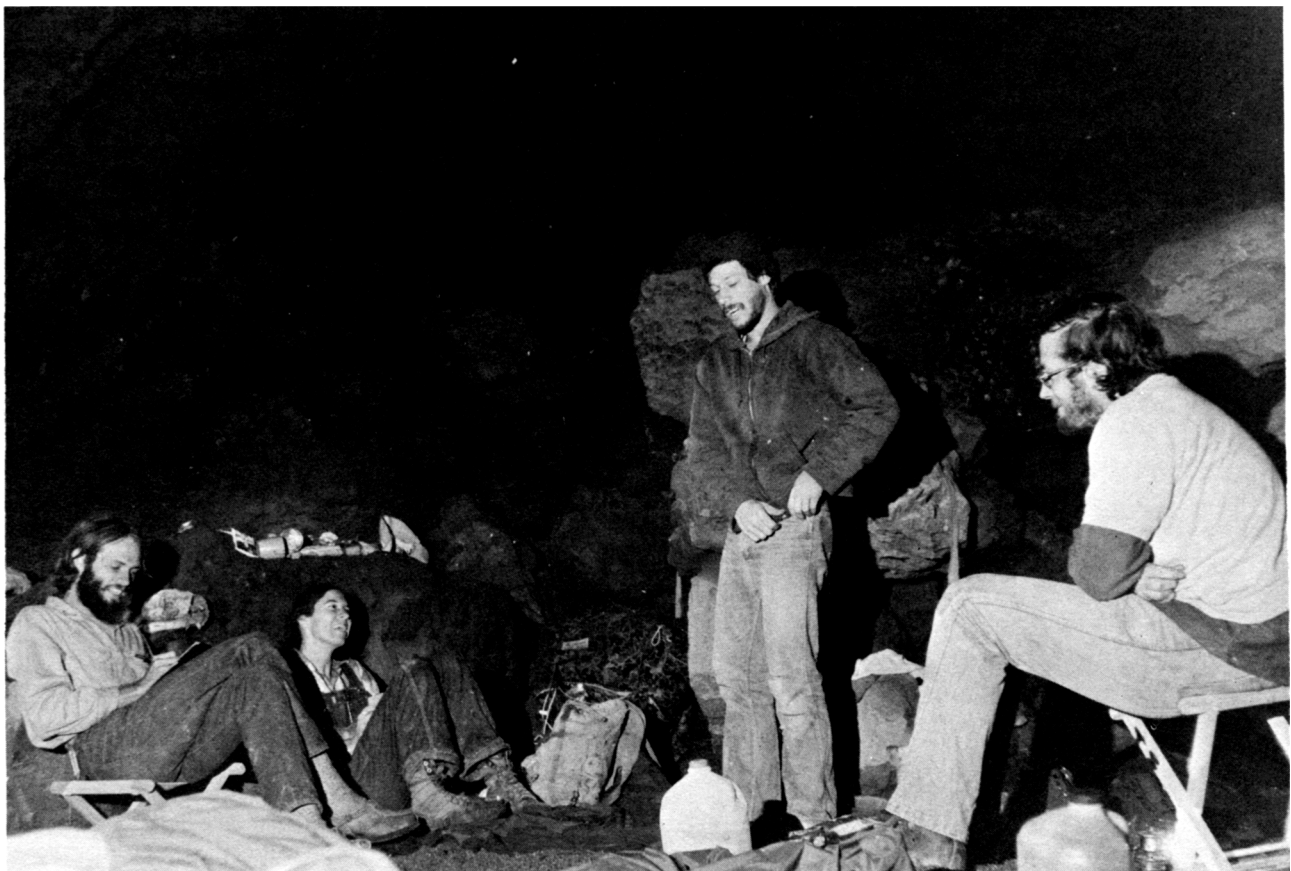
August 1: Two survey teams were formed to start on the day's work. Peter, Jeff and Sheila began to survey up the left fork of the main passage while the other team of Tom, Terry and myself mapped up the middle fork. The middle fork was your basic booming trunk passage with passage width up to 20 m and ceiling heights ranging up to 25 or 30 m in some places, and abounding with promising side leads. The middle fork initially trended downwards to the level of the entrance and then gradually up for the remainder of the survey. The last 150 m we surveyed up tiers and cascades of dry flowstone and rimstone dams that contrasted nicely with the dark grey scoured walls. A brisk breeze was blowing towards the entrance and was especially strong in one place where the ceiling height dipped to 3 m. The terminus of our 8 hour, 666 m survey brought us into voice contact with the other crew and Terry climbed up another flowstone slope to establish visual contact. They shot down 35 m from a balcony to a station Terry established. They had mapped 714 m in their survey, which was a rehash of a Greater Houston Grotto survey, necessary to get a running vertical profile and add passage details to pinpoint locations of numerous side leads. Total surveyed length in the cave was 1988 m.

August 2: Day 2 underground again saw two teams in action. Tom and I returned to the middle fork to photograph and to complete the final 146 m of the main passage loop left from the previous day's survey. Sheila, Jeff and Peter mapped in the Confusion Tubes, which proved to be fairly complex. The Tubes are a

series of parallel ascending (+30°) vadose tubes 1-2 m in diameter with pits leading off at an angle of -70°. Past the Tubes was a T-junction. Following the air led them to another large junction room with three passages leading off from a lake (Lakeland). One lead took air and headed back. The other blew air but led to untraversable Frustration Lake and the third led to another lake with a good wind that could be traversed on one side. It led into a large breakdown trunk, past the Bucket ( a retable done by holding onto the edge of a rimstone dam) and under some natural bridges or "Puentes de Oztotl." The survey was terminated and Jeff explored on to a large room with a climbdown. Then they retreated back to the Confusion Tubes and tied up another loop. They had mapped 636 m in their 11 hour trip. The cave now had 2780 m of mapped passage.

August 3: Sheila, Peter and I mapped north off the other large junction room that was before the Tubes, while Terry photographed the surveyors in action and checked leads. Tom and Jeff returned to the Tubes for a photographic trip and joined us later on. We mapped past GHG stations and started into virgin passage. Average passage size was about 3 X 2 m. The survey was stopped by an unclimbable 8 m pit taking air. Three hundred and fifteen meters were surveyed on this trip, bring the cave length up to 3095 m.

After returning to camp Peter and Sheila decided to take a look at the Sand



Campsite activity in Cueva de Infiernillo. (Tom Byrd)



Room which was down passage from basecamp. It had flooded since the previous trip 11 weeks before and the entrance to it sumped. They looked at the left hand sump and decided that it was up 6-7 m. On the way back to camp Peter noticed that the air flow was going up and was surprised to notice a large dome in the ceiling. Two passages appeared to be going off of it about 25 m up. It is unclimbable but perhaps someday the top will be found. When he returned to camp Peter measured the cave temperature of 59°F.

August 4: Jeff, Peter and I went back to the end of the furthest survey while Tom, Sheila and Terry mapped to the right at the T-junction and into the Tubes. Peter, Jeff and I mapped through big trunk passage trending 160° with a good wind coming out of it. Eventually the passage lowered to a crawl but by following the air through a breakdown maze Peter found a parallel trunk passage that continued. Our survey stopped at the end of the crawl and on the way back to camp we tied up another loop in the Tubes. Meanwhile Tom, Terry and Sheila gave up in disgust at a pit after mapping 50 m in 30 stations in the Tubes and returned back to camp. This combined with the 864 m of our survey brought the cave length to 4 km.

August 5: Jeff was developing a bad case of poison ivy and mildew was beginning to set in. It was time to think about heading out after five days underground. Grimy cavers' hearts were gladdened by the thought that soon they would be out romping in the sunshine, washing off the sweat and mold of five days in the sparkling cold waters just beneath the entrance. Yahoo! Tom and I returned to the middle fork for some last minute photographs and to finish details on the vertical profile. When we returned to camp everyone else was gone and after a quick pickup we headed for the exit. After days of semi-darkness the first sight of brilliant blue sky and green trees seemed an incredibly lush and welcome sight. I yearned for the rejuvenating catalyst of sunshine and water, nature's best alchemy. As I reached the entrance I was surprised to find the others standing and sitting listlessly about. Why weren't they already frolicking in the water below? I set my pack down and walked to the edge and looked down, and looked . . . and looked again. NO WATER, not one drop. I realized immediately that it must be a result of God's perverted sense of humor; Oztotl would never play such a mean joke.

Peter rappelled down first with his backpack on. The first part of the descent, against a wall, went smoothly but when he reached the free part of the drop his backpack pulled him over backwards and in extricating himself he scraped his arm badly. The rest of us suspended our packs from our racks with a carabiner and a short length of rope and rappelled down to the ledge with no problems. Jeff and I came down last and lowered packs to the base of the cliff. Peter decided to leave his rope rigged permanently to avoid having to repeat the entrance climb on return trips.

The hike up the mountain took an hour and a half and soon we were back at La Curva eating delicious goat's milk cheese and tortillas courtesy of Senor y Senora Grimaldo. That night we camped at the Paso de la Muerte campground and drove down the next day (August 6) for another swim in the El Carmen canal. After comida at the Restaurante San Carlos we cruised north at top speed. The Customs official at the new bridge took one look into the truck and shuddered in disgust, and soon we were back in Austin with good stories to tell, having proved that you can go caving in Mexico in the summer time.

Credits: Many thanks to Peter Sprouse for the use of survey and trip notes.



## *La Sistema Purificación: a theory and a goal*

by Peter Sprouse

As these trip reports and accompanying line plots imply, the cave potential is immense. At this point, if Brinco and Infiernillo were connected the combined system would be around 800 meters deep. The passage length required for a connection between the two, now 5.2 km and 4.1 km respectively, could be anywhere from two kilometers to ten. The downstream and downwind passage in Brinco is currently heading nearly due south and doesn't appear to be likely to change trend any time soon. Geomorphic evidence suggests it could maintain this trend for up to 15 km to the south. Additionally, the major likely resurgences located 10 and 20 km to the north of Infiernillo amount to a potential linear extent of 20 - 40 km. In comparison, the current linear extent of the world's longest cave, The Flint Mammoth Cave System of Kentucky (length 297 km) is around 10 km. The potential for density of passage development in the Purificación system is probably similar to Flint Mammoth. Yet the potential for vertical development is some 20 times greater. From the springs of the Rio Purificación to the high karst of Rancho Nuevo is a vertical gain of over 2000 meters. It is interesting to note that thus far there has been no vertical work involved, with the notable exception of the ropework required to get up into the cliffside entrance to Infiernillo.

So we are indeed embarking on a project of immense potential that could produce the world's deepest and longest cave, although its realization admittedly may take many decades. All survey data is now computerized and stored on permanent file at the University of Texas and line plots similar to the ones used here will be used to show the continuing development of the system. Meanwhile a serious program of study and survey will continue in the field the likes of which has not been seen in Mexican speleology.

# *Between the Cold and the Glory*

by Terry Sayther

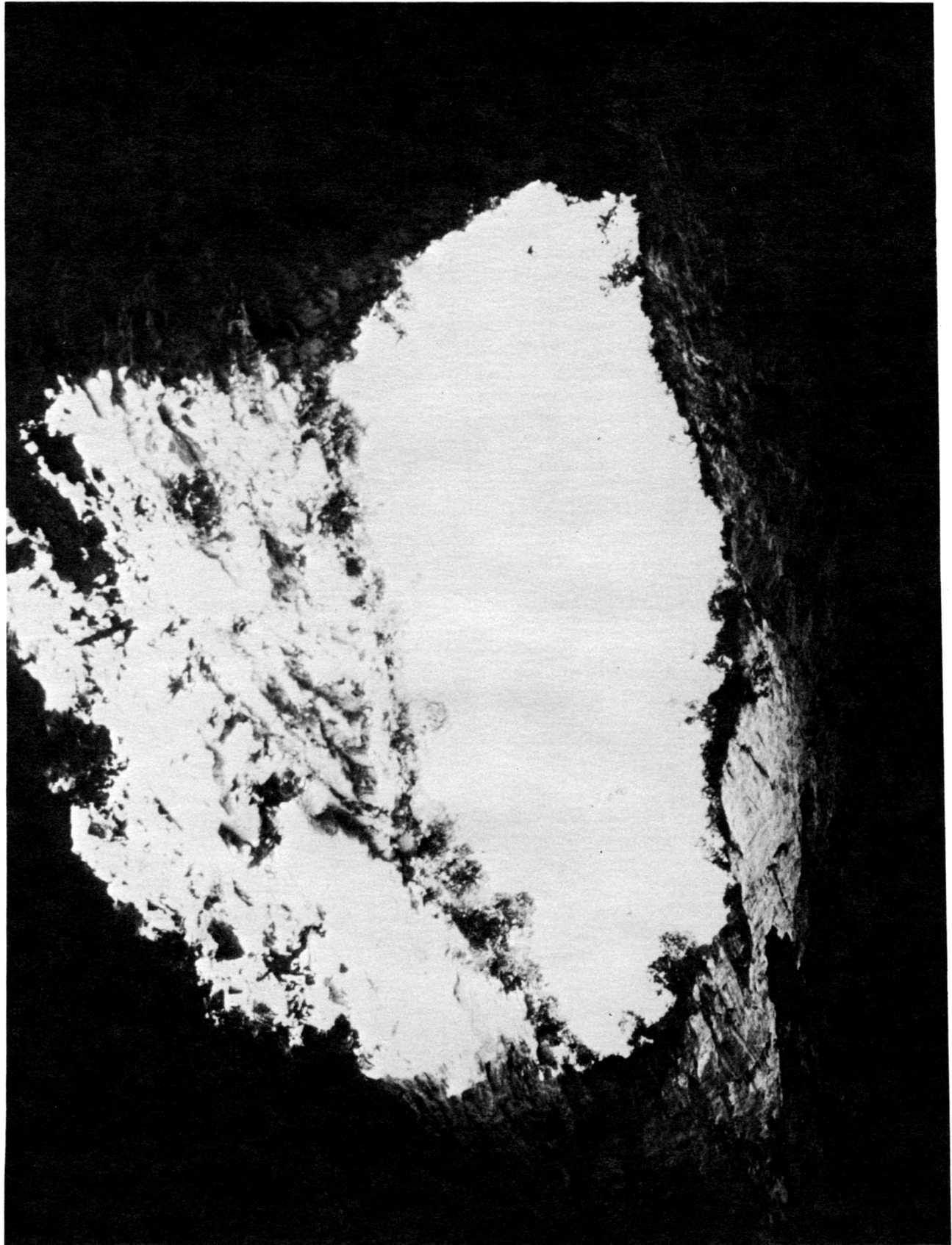
Probably a high percentage of you out there consider Northern Mexico a region of desolation and boredom which is crossed on the way south to the GOOD STUFF. Another high percentage of the Activities Newsletter readership has probably never considered it at all, having travelled through it at night or while asleep. The caves of Northern Mexico have traditionally been used for recreational week-end caving. Mostly these trips revisit a small number of well-known caves including Gruta del Palmito near Bustamante, N.L., famous for its spectacularly big rooms and well decorated walls; Gruta de Carrizal near Candela, N.L., smaller but also highly attractive (especially for those tending toward webbed toes); and Gruta del Precipicio. Although visitation has not become frequent yet, Elusive Pit should probably be added to this list since its entrance drop (about 140 m) is a strong attractant to many. Visitation of these caves is a custom handed down from one caving generation to the next, and as such is not news. Once activities of this sort are weeded out, it becomes easy to report on those remaining. Because only a few people do exploration in Northern Mexico, there is little left to report.

Probably the most interesting of recent events is the visitation of a vertical cave near Candela by South Texas cavers including Craig Bittinger, Paul Duncan, Fred Paschal and others. As yet unnamed and unmapped (at last word), preliminary measurements indicate a depth of over 120 m. Another vertical cave, Cueva del Milagro, south of Monclova, Coah., was investigated by Austin cavers, Preston Forsythe, Shari Larason, Thomas Moore, Bill Morrow, Ron Ralph and Terry Sayther. It was explored briefly down to a depth of about 35 m where two drops of 30+ m were encountered.

Additionally, several medium sized caves in the Sierra la Ventana ridge extending to both the north and south from Elusive pit have been visited and mapped (Blake Harrison, Ernst Kastning, Bill Morrow, Al Ogden, Sandy Flint Ogden, Ron Ralph, Terry Sayther, and many others). A number of these caves are associated with archeological material such as pictographs on nearby shelter walls. Many of these same cavers have become involved with documentation of these and other pictograph and petroglyph sites in the area.

In spite of the proximity of Nueva Leon and Coahuila caving areas, little else has been done recently, and much of the area remains virtually untouched. In all directions from the Monterrey-Bustamante center, and especially to the south and west, there is tremendous potential for AMCS-type speleological imperialism.

If you have been involved with, or are aware of other work (or workers) in any part of Northern Mexico, please notify either me or the editors of this Newsletter so that such material can be included in future issues. Additionally, information on Indian Rock Art sites throughout central and northern Mexico would be appreciated.



Rappelling the high side drop of Hoya de las Guaguas. (Bill Stone)

# *Back to the Bird Pits*

by Bill Stone

Summertime in Austin is frustrating. To a caver that is. Montana is nice, but far away. So is Huautla, but the rains have come. With only a three day weekend to spare neither of these seemed feasible. Frank Binney once told me of a two day trip to Sotano de Soyate, but it took four days to recover. With plans for the upcoming Xilitla Bulletin in the works Hoya de las Guaguas seemed the logical target for a weekend endeavor, as this was the only remaining major cave in the area lacking a map. Caver opinion was clearly divided to the moment of departure from Kirkwood Central on Friday, July 1. The rational point of view (it's at least 16 hours driving to Valles plus a 3 hour backpack) gradually lost out to the fanatical faction (we can map the whole cave, dive the sump and still have time to hit the Rio Huichihuayon!)

Guaguas is a spectacular hole. The few who have been there rate it second only to Golondrinas. The cave consists basically of two immense interconnected domepits, each over 200 m high and 200 m in diameter. The shortest way in is a 147 m drop from the low side of the pit, and the controversial high side drop was reputedly -229 m. In order to accurately plumb both drops a 410 m spool of thin gauge wire was procured. Following the usual last minute personnel shuffling Peter Sprouse, Gill Ediger, Bill Steele, Andy Grubbs, Katy Knighton, Audry Larken and I piled into my truck and were off to Guaguas.

Despite the shortness of time we stopped at Aquismon long enough to greet Sr. Ramirez, the new presidente, and obtain a letter of permission. Much to our delight we were informed that the road to Tampaxal was finally being built. From El Limon the road traversed the valley and climbed almost to the western crest before becoming impassable. Even so it cut well over 2 hours off the hiking time from La Pimienta.

A forty minute hike Sunday morning brought us to the gaping precipice. We rigged on the high side with a 430 m line (overkill?).

Steele, Grubbs, Ediger and I formed the two bottom survey teams and rappelled in. Sprouse, Knighton and Larken began the surface survey by unreeling the wire spool at the high side datum. Once measured they began the long process of rolling it back up onto a stick. Meanwhile, the bottom teams surveyed two loops around the entrance chamber closing on the touch down point. The low side drop was also wired despite a heavy downpour topside. Following lunch we surveyed down the long chute to the lower chamber. Ediger and I then took



the right wall while Steele and Grubbs went left. The immensity of this chamber is rivaled by few caves. The high vaulted ceiling looms 200 m overhead. Light from the entrance is still visible as deep as -430 m! Steele and Grubbs shrunk to specks as they traversed the far wall 200 m away. Thirty meter survey shots hardly made perceptible progress. Ediger and I surveyed for three hours in an apparent straight line. Once the loops were tied, Ediger sketched in the detail for the "hole" of our doughnut survey and headed out. The rest of us surveyed through a near guano sump and down the phreatic tube Steve Zeman and I had found several years before. The passage was somewhat drier and the sump at the end had receded close to 10 m vertically. With the survey complete Steele and I dug out our diving masks while Grubbs fished for an evasive, blind crayfish. No one had any luck. Grubbs missed the critter, but was highly successful in murking up the sump. Steele kicked around, deciding not to free dive. Following some indecision I cracked a lightstick, turned on my nicad and dove it for 6 m or so with Steele belaying. The ceiling continued down on the same dip with no signs of a change so I turned around and gave a yank on the belay line. Steele then pulled me to the surface. Surveyed depth to that point was 465+ m (1540 feet). Only a dry season push with diving tanks will tell if Guaguas is really finished. We returned to the entrance chamber well after dark and began the long prusik. Sprouse and Ediger provided some diversion with a spectacular 200 m glowing cyalume "waterfall." In return Steele ignited several strips of magnesium. We drove home the following morning after a dip in the Rio Pimienta. The high side drop was later measured in Austin at 202 m with the low side 147 m.

#### POEM IN HONOR OF RETURNING HEROS

Down through the cornfields  
On precarious slopes  
Heads filled with vapors  
Hoping high hopes,  
Past cana crazed Mazatecs  
Thirsty for ropes,  
March the disciples of Oztotl.

Bent with the weight  
Of overstuffed packs  
Buried in Bluewater  
Rattling their racks;  
One more grain of granola  
Would have broken some backs  
Of these brawny children of Oztotl.

Bent on descent  
Of impenetrable gloom  
Forsaking bright hillside  
For dank dripping room,  
Living for days  
Without use of a broom -  
Brave brethren of Oztotl.

For over a week  
To chimney and crawl,  
Gliding down drop  
Clawing up wall  
Plunging the sump  
They follow the call  
Of the Great God Oztotl.

Now battered and bruised  
They ascend from the depths  
Their dope stash is empty  
Their muscles crave rest,  
But Salvation is certain  
For they answered the test  
Of Omnipresent Omniscient  
Omnipotent Omniverous  
Oztotl.

Cathy Rountree

# Getting Down in Peña

by Bill Stone

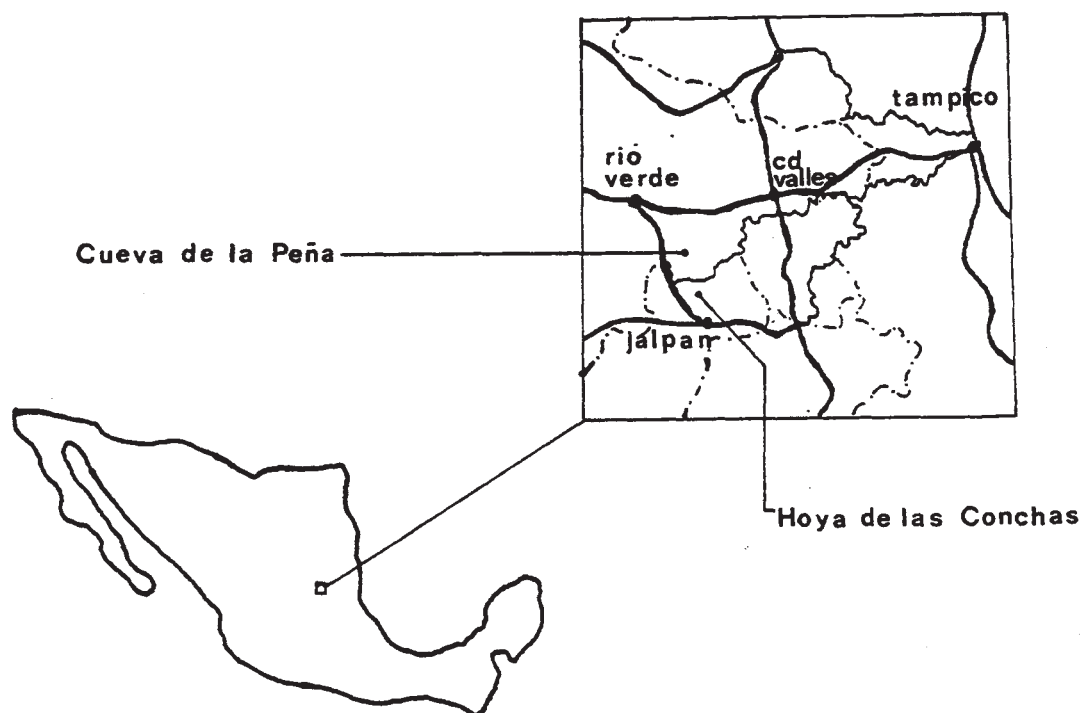
It had almost been a year since the discovery of Cueva de la Pena when our group arrived at Rancho la Presa, S.L.P. Preston Forsythe and I had located the entrance on a long hike from Tierras Prietas during November of 1976 and had unsuccessfully been trying to return since then. This time the trip came off, even though we could only afford a four day blitz from Austin. Along with Preston and I were Shari Larason, Margaret Hart and Jeff Horowitz.

At Rancho la Presa we were greeted with enthusiasm as close to 30 townspeople followed us up the mountain. The hike to the entrance was short but strenuous in the hot September sun. Ripe Guayabas along the trail proved to be palatable thirst quenchers.

We soon crested the doline edge. Cueva de la Pena lay beneath a striking 30 m high headwall of limestone 1/2 km away. A 6 m wide arroyo wound sinuously across the fields of Heloti before abruptly diving into the wide gash which forms the entrance. Here we unloaded our backpacks and sorted equipment. In addition to standard equipment we had brought close to 400 m of rope in high anticipation of a deep system. Shari, having forgotten her helmet remained topside, leaving the rest of us to the task at hand. The entrance series was composed of several 6-8 m handline pitches followed by a stream passage. Strewn about this area were disgusting piles of vampire guano. Following a 6 m pitch we arrived at the limit of exploration; a 13 m drop. From this point on we could easily have been in any of the San Juan Plateau caves. The generously sized passage continued only a few meters past the 13 m drop before intersecting with an even deeper shaft, 25 m. The rock throughout this portion of the cave was extremely fractured and natural tieoffs proved scarce. Sometimes this necessitated wasting up to 15 m of rope just to achieve a safe rig. We greatly regretted having left the bolt kit in the truck. Beyond the 25 m pitch (which had a knot halfway down) came four more "nuisance" drops; 8 m, 12 m, 5 m, and 11 m. At this point things started looking up. Preston, who had descended the 11 m shaft first, greeted me with a smile as I undid my rack; "Looks like we have a deep one." And a deep one it was - 45 m down the wall of a fine 10 m diameter cylindrical well. Almost expectedly, another drop loomed just a few paces from the touchdown point. It was as if the entire cave were but one single shaft with a few ledges stuck in for entertainment. Three more pitches of 16, 12 and 6 meters and we were left with but one snarled chunk of goldline, and of course another shaft! We dropped rocks and estimated it at 15 m or so. After tying off to the rope used on the last 6 m pitch I rappelled in. The

rope never touched the small ledge where all our rocks had somehow landed. Instead it led downward into an ever expanding blackness that defied illumination from my waning carbide lamp. About 30 m into the drop I looked up to find the rope snagged on a projection some 10 m above. No amount of maneuvering would free it and I was forced to ascend. Once freed, the end drifted into the shaft with a swishing sound all too indicative of a rope too short for a successful descent. I continued climbing and swung to the 15 m ledge, whereupon Jeff rerigged the drop utilizing 20 m of excess rope from the 6 m pitch. After passing the knot I continued down into the void. At its largest dimension the shaft was close to 35 m in diameter with a light waterfall following the rope. I finally reached a 3 m wide ledge with but 10 m of rope left. Beyond, the drop continued. Rocks bounced for 5-6 seconds before drifting out of hearing range. There was little else to do but re-carbide and ascend. We had reached our limit for the day.

The final pitch was taped at 71 m freefall, and we began the long process of surveying out and derigging. Save Horowitz' spectacular sump diving exercise to retrieve a rope out of the deepest lake in the whole cave, the remainder of the trip was routinely arduous. After 17 hours, 15 pitches and 284 m of vertical work we exited into the moonlit doline just before sunrise.



[see loose map of Cueva de la Peña]

