AMCS ACTIVITIES NEWSLETTER No. 8

AMCS ACTIVITIES

NEWSLETTER

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AMCS
Box 7672 UT Station

The AMCS Activities Newsletter is published twice a year following the major expeditions, usually in May and November. Due to the highly variable nature of expedition caving and the writing proclivities of its participants the cost of the Newsletter will vary from issue to issue. Hence, no subscriptions. AMCS members will be mailed a circular as publications become available and advertisements will appear in the NSS NEWS and the Canadian Caver. Back issues of Newsletters 4,5,and 6 are available for one dollar each. Number seven is two dollars picked up in Austin, or $2.50 postpaid. Articles and trip reports are solicited from all who cave in Mexico

Front Cover: Into the vastness of Sotano de San Agustin's Sala Grande at -150 meters. Taken with a Nikonos III using Kodachrome 64. Photo by Bill Stone.

Back Cover: An ascent of La Grieta's "Refresher" during the December 1977 expedition. Taken with a Nikonos III; Kodachrome 64, by Bill Stone.

Inside Back Cover: Looking down the "Refresher" in La Grieta. Taken with a Nikonos III using Kodachrome 64 by Bill Stone.

ASSOCIATION FOR MEXICAN CAVE STUDIES

International News

TAG BRIEFS: Two new 120m plus deep systems have recently been found in the ever productive Jackson Co. of Alabama reports Jill Dorman. Vast Caverns, located in Allison Hollow has a 69m entrance drop of which 60m are free. A stream crawl leads off the bottom to an additional 30m drop. Still goes. A recent dig by Gerald Moni has resulted in an upper entrance to McBride's Cave. Gerald, Marion Smith and Buddy Lane explored down eight wet pitches before connecting with the old cave (120m lower) on the valley floor.

BRITS RETURN TO IRAN: During the summer of 1977 a large British team spent 2½ months scouring the karst in Iran. Correspondent Martyn Farr describes the expedition, "Our coach, with 18 people on board (some Hog! ed.) had frequent breakdowns enroute and finally the engine seized up whilst we were there. Despite chronic illnesses, to which everyone fell victim, we did cover Mount Shahu to a great extent. Found a hell of a lot of caves but only one to any depth, just under 300 meters. We had the manpower to go deep, but everything we found choked off. Although the area was incredibly shattered, the potential is fantastic. We found a superb area in the last two weeks but had to call off exploration prematurely. The deep one is there O.K., it's just that one hell of a lot of pits will have to be examined to find it."

THE LATEST ISSUE OF SPELUNCA, No. 4, 1977, contains a profile map and brief accompanying article of Austria's Hollecken Grosshole which was mentioned in the previous AMCS Newsletter. Although there has been some apparent contention to its stated depth (861m) one spectacular feature of this very deep cave is a shaft which accounts for almost half its depth. The "Sterwascher" descends 351 meters down a rift averaging 10 to 30 meters in diameter. This makes it the fifth deepest shaft in the world, behind El Sotano (410m), Proventina (392m), Golondrinas (376m), and the Sima Grande de Sarisarinami (363m?). European deep shafts usually tend to be wall drops and this one is no exception, requiring substantial ledge hopping and a pendulum across a partition halfway down the shaft. Additionally, exploration was compounded by the presence of a sizable waterfall of ice cold meltwater.

ALSO IN SPELUNCA, No. 4, are some rather enlightening updates of recent explorations and "re-explorations" in many European and Asian countries. In February 1977, a Saltzburg caving group pushed Austria's "Lamprechtsofen" to a depth of 810 meters. One month later, in March 1977 a Polish group reached the 860 meter level. These same two groups explored the "Wieserloch" to a depth of 600 meters during early 1977. A few other significant Austrian caves pushed in 1977 are the "Salzbuecerschact" (-591m), "Ahnenschacht" (-607m), and the "Platteneck Bergerhohlen System" (-895m).

IN SPAIN: The Sima G.E.S. Malaga has been resurveyed to -803 meters. The 1976 depth, originally claimed to be over 900 meters was actually found to be only -673m. Further exploration brought the tally to -803m. The cave still goes. Pozu de Cebolleda has been pushed to -580 meters.

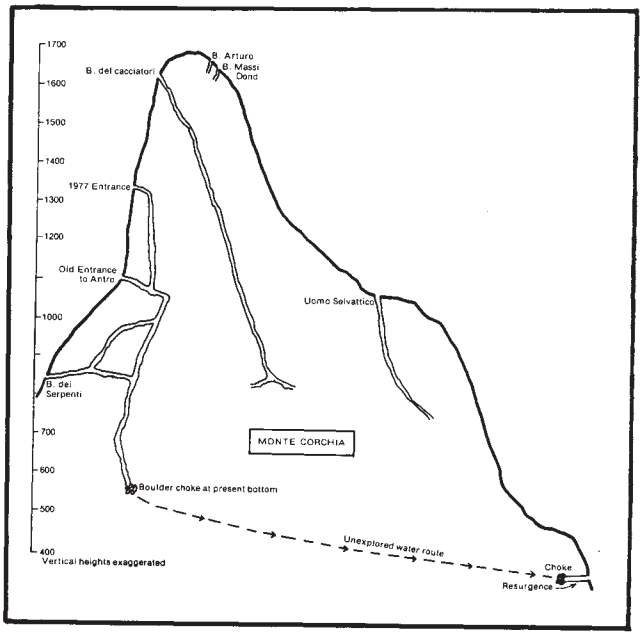
International News

SOVIET UNION: 1977 explorations were directed principally to resurveying the super deep Kievskaya. The original survey indicated a depth of 1080 meters - the only 1000m plus deep cave outside France. Unfortunately the resurvey showed a depth of "only" 964 meters to the terminal sump. Too bad, Ruskies. Surveying is continuing in Optimistitscheskaya. Present length is 119 km and it looks like the race is on for the Number 2 spot with Holloch.

MEXICAN CAVERS ON THE MOVE: A recent correspondence from Gerardo Fernandez, director of the Escuela Mexicana de Montanismo y Espeleologia, indicates that Mexican Mexico cavers are quickly picking up on advanced vertical techniques. Over the Christmas holidays a six man team sucessfully descended El Sotano without incident. Plans for upcoming excursions include Sotano del Arroyo, Hoya de las Guaguas and the Huautla area.

Some American cavers are unaware that there are two active caving groups in Mexico. Both of these are based in Mexico City. In addition to the Escuela cavers, who are mainly excursion oriented, is the Asociacion Mexicana de Espeleologia. This group headed by Jorge Ibarra and others, is interested more in the technical aspects of exploration and mapping. They have several ongoing mapping projects at the moment and have also been of considerable help to Peter Lord with his Chichicasapan-Atischalla project. We have a timely opportunity for cavers of both nations to establish an air of co-operation and friendship.

ITALIANS ONTO A DEEP ONE: The Italians have been continuing to piece together the caves of Monte Corchia, what could be a significantly deep cave in the Italian Appian Alps. The Buca del Cacciatore, now renamed the Abissa Fighiera, has been explored to a depth of over 800 meters where a goodly sized stream was encountered and a passage going towards the Antro del Corchia. Should it connect to Antro, the total depth would be over 1200 meters. Then there is another 100 meters vertically to a resurgence.



courtesy : DESCENT Dec. 1977

SWITZERLAND: The present length of Holloch is 135 kilometers.

International News

AS WE GO TO PRESS: On April 23rd Peter Sprouse, Terri Treacy, Sheila Balsdon, Charles Fromen, Mike Connally and Mark Shumate entered Infiernillo for a period of camping underground. The following day Fromen and Connally explored into new cave while the others surveyed and looked into side passages. Fromen and Connally discovered a new stream and entered a room measuring 600m X 100m X 50 m high. Returning to camp, these two got lost in the Confusion Tubes or a period of 17 hours. Two different groups went looking for them but they eventually found their own way back. Mark Shumate brought this report back with him. When he left Infiernillo the surveyed length was up to 5.4km with at least two more clicks having been seen. Sprouse, Treacy, and Balsdon were to exit the cave on May 1st.

DOO DAH (protection on a long fall?) A look at the map of La Grieta will show a dome that ended a passage; Doo Dah Dome. While camped underground in La Grieta this past holiday season the occupants were incessantly being sung to by Richard Schreiber. His song: Camptown Races. Well, we may now know why. A mid-April bit of national news related a story of a suicidal crazed man who evaded guards and jumped down a ventilation shaft in a San Francisco building. He fell 29 stories - 324 feet to a solid concrete floor. Result: two broken legs. While being hauled away the exultant man was heard singing Camptown Races! Was Schreiber prepared for a fall?

FLASH: A FIND ON THE XILITLA PLATEAU. We have word from John Fish that a major deep cave was discovered on the Xilitla Plateau during the Christmas season. The cave is called Sotano de Trinidad and is located near Ejido Trinidad, formerly known as Llano de Conejo. The group: John and Sandy Fish, Eoin Finn, Charles Young, Fred Bagnel, Susan Laidlaw and others, hiked up to the Llano from El Barrio along the same route taken by Stone, Stiles, Jameson and O'Loane to Hoya de la Luz in 1976. After digging fruitlessly in many clogged stream sinks they located the large (30 m high) entrance to Sotano de Trinidad, and pushed it down 22 pitches to a depth of -533 meters. A low stream crawl led on, but due to lack of time and tackle the group exitted. In late February, they returned and pushed the crawl to a large room. At the opposite end of the chamber two additional drops led to a sump at -559 meters. This makes it presently the fifth deepest cave in the Western Hemisphere. The longest uninterrupted pitch is 46 meters. There is also a 104 meter shaft, but this is broken in several places by ledges. The group also checked out the Llano de Garza lead reported by Stone (1976) two kilometers north of Trinidad. This was explored for 800 meters to a depth of 100 meters where an impassible fissure was encountered.

LAST WORD: Miles Drake of Maryland has sent notice that Simmons-Mingo and My Cave of West Virginia have been conconected resulting in it now being the third deepest cave east of the Mississippi River. Depth: 192 meters (630 ft.)

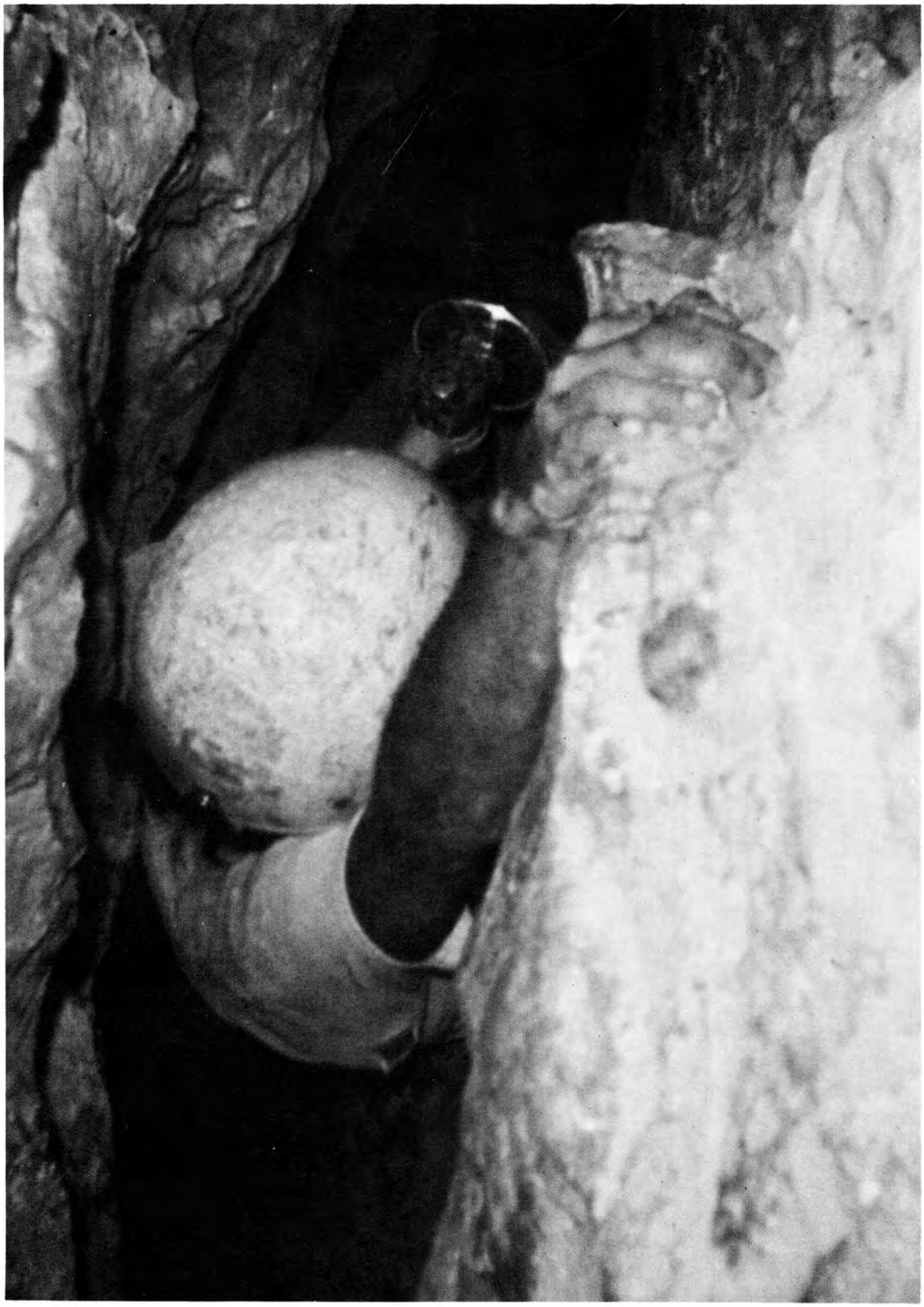
The Ten Longest Caves in Mexico

1. EL SISTEMA DE CHICHICASAPAN - ATISCHALLA, Puebla — 16000 meters (approx.)
   A complex stream cave, surveyed in 1977 and 1978 by British, Mexican and American cavers. A three month push in 1978 succeeded in connecting Chichicasapan with Atischalla boosting the length from 5235 meters to the present length. This is a field estimated length. Also Mexico's eighth deepest.
2. CUEVA DEL BRINCO, Tamaulipas — 9267 meters
   Dipping complex cave, elevation 1900 meters. Survey begun in 1973 by AMCS and is continuing. This is a field calculation length.
3. LA GRIETA, Oaxaca — 8895 meters
   Also Mexico's third deepest. AMCS cavers first began survey in December 1968 logging approximately 150 meters. In December 1976 a constriction was reached at 1100 meters. Further exploration and mapping in May, based out of a ten day camp at -300 meters, increased the length to 4200 meters. A large AMCS expedition in December camped at -520 meters (3200m horizontal) for 12 days and surveyed to the present length. Mapping is continuing.
4. 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.
5. CUEVA DE KAUA, Yucatan — 6706 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.
6. CUEVA DE INFIERNILLO, Tamaulipas — 6660 meters
   Elevation 1100m. Survey begun in 1976 by Greater Houston Grotto. Mapping continued by AMCS to present length, reached April 1978.
7. 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 1860m. 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.
8. 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.
9. 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.
10. GRUTAS DE JUXTLAHUACA, Guerrero — 5098 meters
    Sections of this cave are commercialized by the federal government. Surveyed by AMCS members in November 1971.

Note: Chronology for the three longest caves: in December 1977, La Grieta at 8895 meters surpassed Sotano del Arroyo (7200m), the six year title holder, to become the longest cave in Mexico. In early April, 1978 an intense mapping campaign in Cueva del Brinco topped La Grieta with 9203 meters. Finally, mid-April 1978 saw a winding down of a three month effort in the Chichicasapan system.

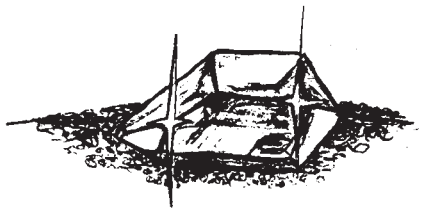
The Ten Deepest Caves in Mexico

1. SOTANO DE SAN AGUSTIN, Oaxaco — 859 meters
   Survey began in December 1966 by an AMCS team which carried the survey to -280m. In December 1968, a group of Canadians and Americans pushed the cave to a siphon at a depth of 612m. Eight years later AMCS cavers from Georgia pushed a side passage which was explored on to the -800m level. In March 1977, the current deepest point was reached when the explorers encountered a siphon in another passage at -859m.
2. SOTANO DE AGUA DE CARRIZO, Oaxaca — 778 meters
   Located in December, 1977 during the AMCS La Grieta Expedition. Subsequent exploration in January 1978 proceeded to -778 meters before being halted due to lack of rope. The cave has 31 pitches, including "Flip Pit", a 164 meter shaft.
3. LA GRIETA, Oaxaca — 760 meters
   AMCS cavers first began the survey of this cave in December 1968, reaching the 90m level. In December 1976, a larger team surveyed to a constriction at -401m. The survey was continued in May 1977 to a depth of 665m and a length of 4200m. In December, 1977 a 12 day camp at -520 meters allowed mapping and exploration to continue to -760 meters where an impassible breakdown maze was encountered.
4. CUEVA DE DIAMANTE, Tamaulipas — 621 meters
   AMCS surveying teams mapped this Sierra de El Abra cave to -120m in December, 1974. In March of the following year the depth was extended to -300m where an impassable fissure was encountered. December of 1976 saw a return trip to push a high level fissure, "The Canyonlands" with success (-466m). This group ran out of rope. In December 1977 the cave was bottomed at -621 meters. One higher level lead remains unchecked.
5. SOTANO DE TRINIDAD, S.L.P. — 559 meters
   Located near Ejido Trinidad (formerly Llano de Conejo) in December 1977 by a group of Canadian cavers. This group reached the -533m level before turning back. A return trip in February 1978 bottomed the cave two drops beyond the point of previous exploration. There are 22 drops and very little horizontal extent.
6. 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 142m. The cave ends in a mud choke.
7. SOTANO DE NOGAL, Queretaro — 529 meters
   Mapped by an AMCS team in May 1976. After 20 pitches the cave ended in a mud floor.
8. EL SISTEMA DE CHICHICASAPAN - ATISCHALLA, Puebla — 528 meters
   Surveyed by British, Mexican and American cavers during 1977 and 1978. There are only two pitches, the longest being 25 meters.
9. SOTANO DE LAS GOLONDRINAS, S.L.P. — 512 meters
   A large open air shaft, with a free drop of 333m from thelow side and 376m from the high side. AMCS members surveyed the pit in June 1967. In December 1968 a fissure was discovered in the floor by an Indiana caver which was explored and surveyed in 1969 to -512m.
10. 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 four meters but it continues down.



Changing levels in the Canyonlands (Marion Smith)

THE DIAMANTE STORY



Four years under the El Abra

by Mark Minton

The Christmas caving season of 1974 was a very special one for AMCS activities in the El Abra. An unprecedented stroke of luck befell us in the form of a road constructed from El Salvador on the Inter-American Highway directly across the range to Mina Otates on it's eastern crest, a distance of about 18kms. The placement of this road was auspicious indeed since it led into one of the most desirable yet inaccessible regions of the jungle. Not only are numerous pits and sinkholes visible from the air, but the range is also at its highest point above the coastal plain, thus providing the potential for very deep caves. The importance of the road is stressed here (there are not even any burro trails) because without it the equipment, especially rope and water, necessary for extended exploration of a major cave would be exceedingly difficult to carry in. The stage was therefore set for a new flurry of activity in this caving region.

La Cueva de Diamante was first located by William Russell at the bottom of a very large sink (later surveyed: ½km. by 1km. by 76m deep) on the northern edge of the road about ½km. from the crest. The cave was named for the numerous and often well-formed Herkimer diamonds (doubly terminated quartz crystals) found in the arroyos leading to the cave. There are two entrances: a low crawl taking the arroyo and an obscure karst window a few meters to the south. The initial reconnaissance party of William Russell and Andy Grubbs explored approximately 90m of steeply sloping flowstone filled phreatic tube to a depth of 40m where they were stopped by a short pit. Although the cave apparently takes large amounts of water during heavy rains (walls scoured clean and almost no mud present) and has reasonable air movement, it was not considered a high priority find. The passage is small, generally two meters high by one meter wide, and is often nearly plugged with flowstone. Other caves draining sinkholes in the El Abra have generally been short and unimportant (with the exception of Monos); so the lead was not immediately pursued by its discoverers.

A few days after the discovery of Diamante another group arrived in the area and took interest in the cave. To our group, with caving origins in the Midwest and much less experience in Mexico, the small, relatively unappealing cave was not at all intimidating. Armed with a single rope for the drop we had been told about, we set off with high hopes of a big scoop. We quickly reached a "pit" which we rigged and descended, only to find another drop which was obviously not climbable. Returning to the rope, we found the series of steep two to three meter high flowstone cascades to be free climbable. These were later named Frog Falls for the many green tree frogs clinging to the rock. We then moved the rope down to the next drop and rigged in. Ten meters down the pit is intersected by a ledge and is divided by a very thin bedrock partition. Follow-

ing what was apparently the main route to the left of the partition, we arrived at the bottom in another ten meters. There, a small passage leads back under the one above and quickly drops to another pit. Since we had no more rope, we were forced to retreat and check out the other side of the partition in the first pit. Both sides of the pit below the partition were found to be climbable; for ascending climbing is actually easier than using the rope.

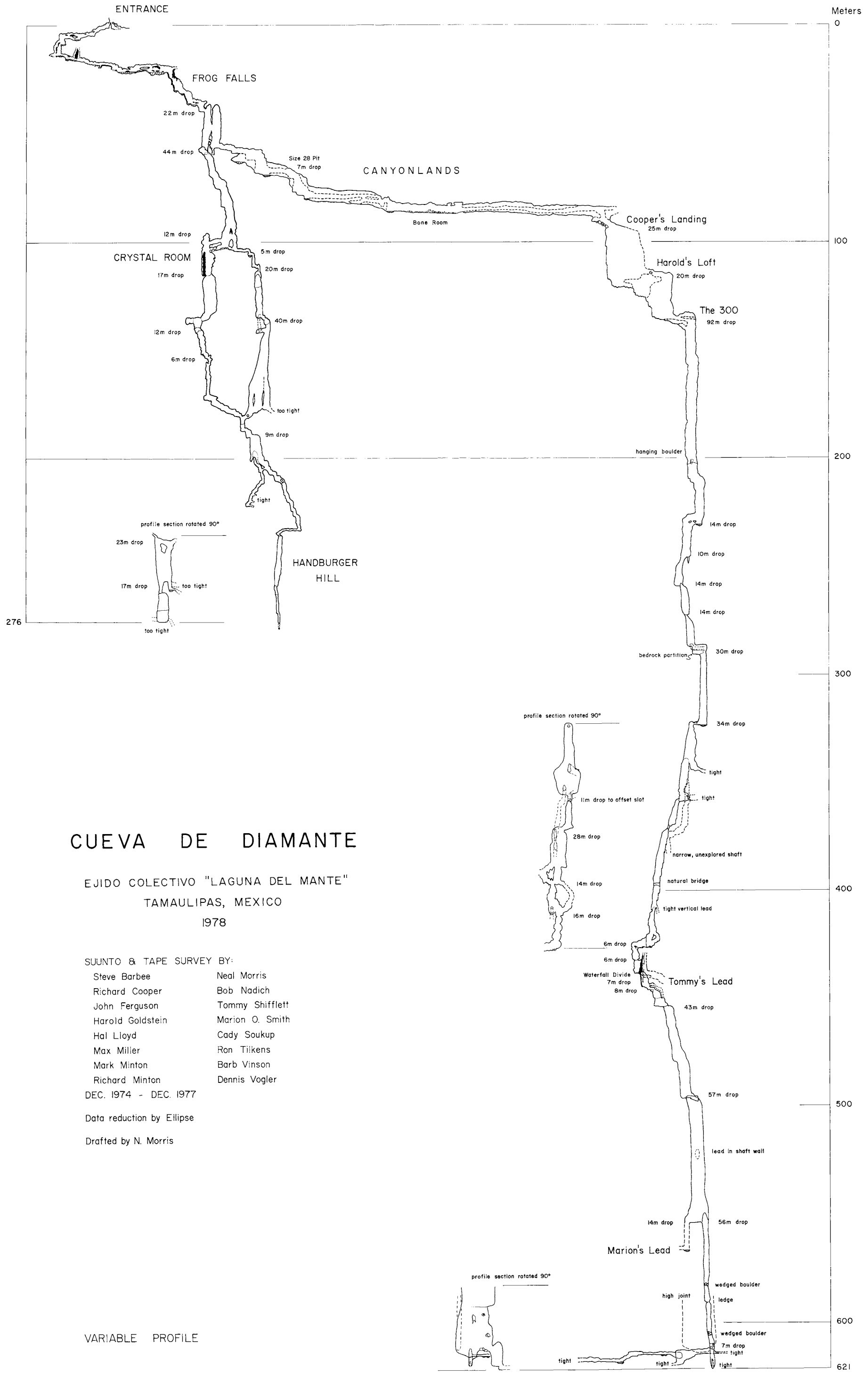
A narrow, jagged, highly sculpted canyon quite unlike any of the passage above led off from the other side of the pit. This torturous passage dropped steadily and finally led to an overhung seven meter pitch. Being without rope and faced with a choice of turning back or risking a climb, we naturally opted for the latter - after all, we could <u>see</u> bigger passage below! Richard Minton and Steve Barbee managed to squeeze through a vadose trench a meter back up the passage and emerged partway down the pit, from where they could easily climb to the bottom. The drop was thus named Size 28 Pit after the limiting waist size of the trench. I remained on top hammering at the hole with a mini-crowbar and finally enlarged the slot enough to fit through - if I took off my belt. The larger passage we had seen very quickly narrowed down and once again we were inching along in a miserably tight fissure changing levels frequently in order to squeeze through. This passage is so tight that it is not always possible to turn one's head or feet around, and there is frequently no floor - just a narrow crevice waiting to swallow up a carelessly droppped item of equipment or a misplaced foot or leg! The fissure ends abruptly and is intersected by a slightly larger canyon to the right.

Our hopes began to rise as we rounded a corner and came into wider passage which seemed to be getting bigger! It did so, but only for about ten meters before pinching back down as tight as ever. Many Herkimer diamonds were found in the stream gravel in this area. The fissure beyond snaked its way along and finally began getting exceedingly tight. As we contemplated leaving this nightmare I noticed an apparent widening in the lower part of the canyon, and chimneyed down for a closer look. Much to my surprise I was greeted by an echoing black chasm! Lack of rope forced an exited group to return to the surface and tell of our find.

Since our trip was near its end, we decided to map in to the first pit and then explore the next drop on the left side of the partition. This drop also led into a different sort of passage than we had seen before. All of the flowstone was highly crystalline and small alcoves in the pit walls were filled with six inch long crystals of dog tooth spar. A short passage at the bottom led two different directions, both ending in pits. The largest of these was also covered with dog tooth spar, and was later dubbed the Crystal Room. The main water course, however, seemed to be down the smaller shaft. Herkimer diamonds and inch long white isopods abounded.

We sadly had to leave for home after this brief but tantalizing look into Cueva de Diamante. Exploration had been stopped by pits at every turn, each one moving air. Little did we realize at that time that we had already seen virtually the entire <u>horizontal</u> extent of the cave!

The following Easter (1975) a group of Texans led by Andy Grubbs returned to Diamante to check the Crystal Room area. From the bottom of the room they found a semi-chimneyable slot leading down 15m to a handline drop. This led to



CUEVA DE DIAMANTE

EJIDO COLECTIVO "LAGUNA DEL MANTE"
TAMAULIPAS, MEXICO
1978

SUUNTO & TAPE SURVEY BY:

Steve Barbee	Neal Morris
Richard Cooper	Bob Nadich
John Ferguson	Tommy Shifflett
Harold Goldstein	Marion O. Smith
Hal Lloyd	Cady Soukup
Max Miller	Ron Tilkens
Mark Minton	Barb Vinson
Richard Minton	Dennis Vogler

DEC. 1974 - DEC. 1977

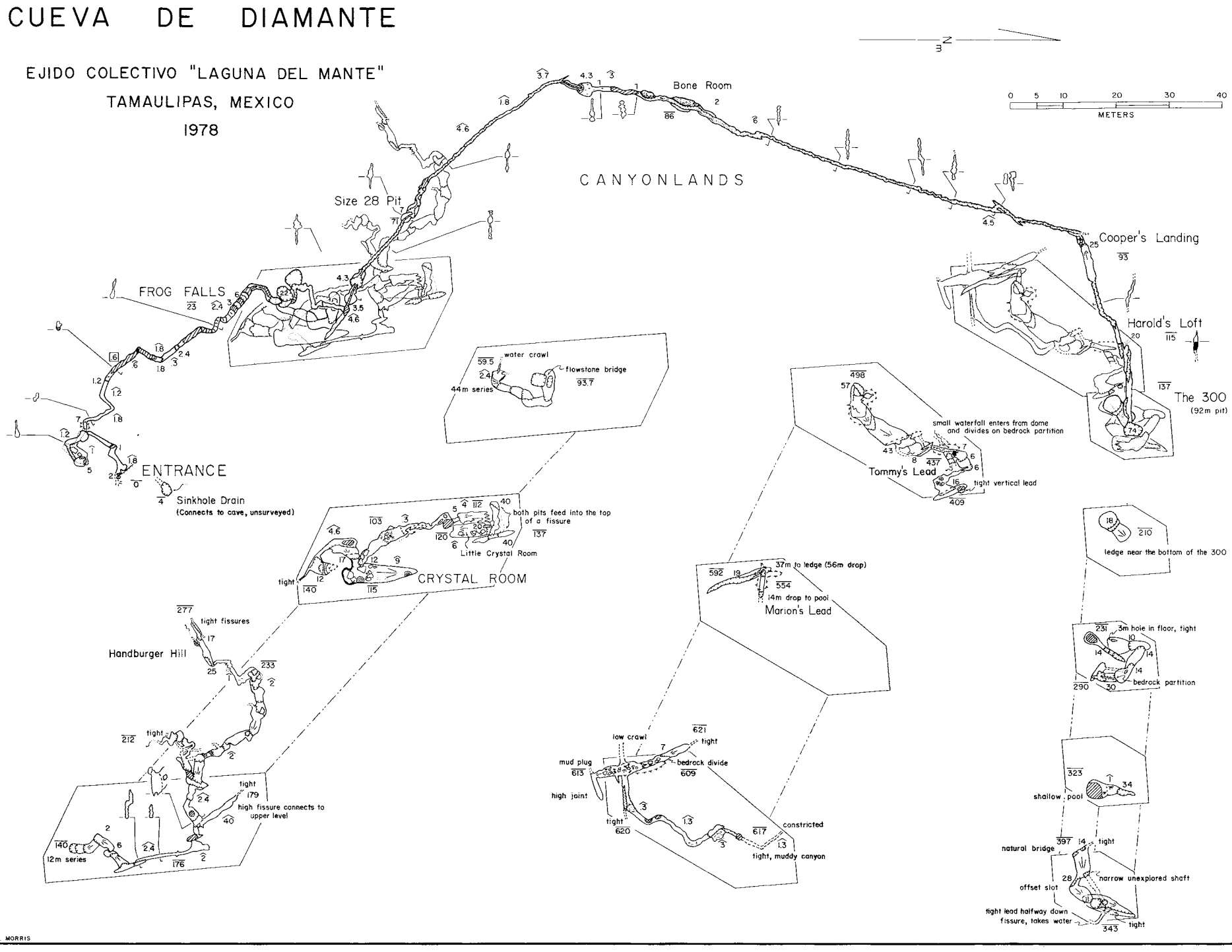
Data reduction by Ellipse

Drafted by N. Morris

VARIABLE PROFILE

CUEVA DE DIAMANTE

EJIDO COLECTIVO "LAGUNA DEL MANTE"
TAMAULIPAS, MEXICO
1978



N. MORRIS

another drop for which they had no rope, so they returned to the surface. Mike McKee fell 4½m on one of the climbs when a handhold broke, but wasn't hurt.

Armed with additional rope they returned the following day and rigged a few more short drops to a tight squeeze overlooking a deep fissure. This fissure, approximately 40m deep, was descended and partially explored but time prevented an accurate assessment of leads. The area was named Handburger Hill due to the sharp rocks encountered, and was estimated to be 300m below the surface.

Spurred on by the Texan's discoveries in March, a large group of cavers (John Ferguson, Harold Goldstein, Mark and Richard Minton, Neal Morris, Cady Soukup, Ron Tilkens, and Barb Vinson) headed back to Diamante for the Christmas '75 season. There was now a considerable amount of passage known but not mapped, and leads abounded. We decided to map the Crystal Room route first, since it was easily accessible and reportedly had a going lead at the bottom. Although several leads were checked, nothing was passable. Rocks could be rattled on down in narrow fissures, but it would take extensive blasting to open anything up. The other pit lead at the bottom of the second drop was explored while surveying and after two more extremely jagged-walled drops we found ourselves in familiar looking surroundings. Indeed, a little checking around produced a survey station - we had reconnected with the Crystal Room route about 80m down! What a bummer - two of our leads were now finished. The cave was 276m deep, not even the thousand feet we had been hoping for.

While part of the group de-rigged, Neal, Barb, and I set out on the grim task of mapping the 180m long canyon passage leading off the bottom of the other side of the first pit. Progress was quite slow since shots were of necessity rather short. We stopped for a rest at the enlargement in the passage noted previously, about halfway through the canyon. Barb reached over, picked up a funny looking rock, and handed it to Neal. "What's this?" Neal could hardly believe his eyes, it was a well preserved mastodon molar! A frenzy of digging in the mud bank and stream gravel produced several horse-like teeth and unidentifiable bone fragments. Samples were collected for further study, and were later found to date from the Pleistocene. Proceeding on from the Bone Room, we mapped the remainder of the fissure without incident and left a rope at the top of the drop which had halted exploration the previous year.

A return to the end of Canyonlands, as the torturous fissure is now called, was made a couple of days later. This time an extra rope was brought along in anticipation of what lay ahead. The drop at the end of the canyon turned out to be 25m down into a larger canyon. Unfortunately the larger passage quickly turned narrow and became totally impassable. Was this the end? In desperation we took to the walls of the canyon and began climbing to higher and higher levels looking for a way through, finally finding one about five meters up from the floor. A false floor was present for a while, but then gave away to a 20m drop. Since I was ahead of the others, who had the rope, I chimneyed across and down the far side of the pit. From the bottom a canyon passage led 15m to another pit which was obviously unclimbable. Chimneying back up turned out to be much harder than I had anticipated since all the ledges were sloping down and covered with greasy mud. But after considerable time and sweat, I returned to the others. We rigged our final rope, collected rocks, and headed for the new pit which had considerable air movement. An apparent floor 15m down turned out to be a ledge; rocks fell free for four and a half seconds! We could hardly be-

lieve our ears! But the lead would have to wait since this was our last trip of the year. The thought of dragging a 100m rope through Canyonlands was dismal indeed, but we were already making plans to return.

One of the problems with caving in Mexico when one lives far away is that trips only happen infrequently. It was an entire year before we once again collected a crew (John Ferguson, Harold Goldstein, Max Miller, Mark and Richard Minton, Neal Morris, Tommy Shifflett, Cady Soukup, Ron Tilkens, and Barb Vinson) and headed south. This was to be the final year at Diamante. We were all determined to see it through to the bitter end and had brought enough rope to rig the cave nearly 500 meters deep; surely enough for the El Abra. We also realized that the rather cavalier approach of past trips would no longer be possible. There were enough obstacles and pits that a more organized plan of action was needed.

With the above considerations in mind, a rigging team of five persons carried six ropes into the cave, including a 95 meter length for the big pit plus two extra ropes for whatever lay below. Progress was rapid and soon the big rope was lowered into the blackness. I rappelled in first, admiring the spaciousness of the drop - an uncommon luxury in Diamante! I was quickly snapped back to reality however when I backed over a ledge and saw the end of the rope swinging free! So already one of our extra ropes had to be brought into play. The pit ended up being 92 meters(300 ft.) deep and became known as "the 300". Three meters of canyon led to a 14 meter pitch which immediately opened into a nine meter drop with another hole visible in its floor; a scenario to be repeated many times in the days to come. The last rope put us down another 14m pitch and left us looking down a similar hole. This was amazing! In less than 12 hours we had pushed this side of the cave nearly as deep as the Crystal Room route. And it showed no signs of letting up! As we exited we were treated to Diamante's penchant for bad breakovers. They are among the worst anywhere. Nearly every drop requires some bizarre contortion to get over the lip.

Our next assault was divided between a push team of four, each carrying a rope, and a support crew which came in seven hours later. The purpose of the latter group was to rig handlines at some of the more dangerous climbs (Frog Falls, Size 28 Pit), place bolts to alleviate some of the worst breakovers, and bring in extra food, water, and carbide. After rigging a couple more short drops the lead team came to a 30m pitch - our first 1000 feet were now in hand! Unfortunately, Richard became ill at the bottom of this drop and decided to wait there. Four meters of stoopway led to another drop. Although the rope we used was too short, it was possible to free climb the last dozen meters. For the first time several small side leads were present, but we were anxious to push on. Our last rope, about 60m, was tied off and thrown into the narrow slot ahead. It was found piled on the floor only 12m down, but another slot beckoned so the rope went down it, too. Again, we ran out of rope; again, we climbed down. About eight meters below the end of the rope we had to stop, at the top of another drop! We had mapped in: only 17 stations but 180 vertical meters were netted!

The trip out was slow, being complicated by failing lights and bad breakovers, including the worst top-out I've ever done: a V-shaped slot completely undercut with the rope lying in the bottom. By the time we returned to Richard he had grown much worse. Before reaching the 300 he began to vomit. This

Topping out of the "Entrance Pit" (Hal Lloyd)

was a serious situation since there was no way we could pull him up that 92m drop; even if we could, getting him through Canyonlands would be impossible. Two of us decided to go up to where the support crew was waiting and send them down. After nine hours of waiting, they were happy to see us but saddened by the prospects of getting Richard out. After a lot of rest, Richard mustered his strength and clipped onto the rope. Three hours later, after falling asleep on a ledge only to awaken bobbing in mid-air, he made it over the lip. From then on it was smoother going, and the last person exited after a staggering 30 hours underground.

This cave was getting serious; nearly 400 meters deep and still going. It was now clear that trips would be very long. Oh, how we missed the comparatively easy Crystal Room route! Why didn't it go, instead of that horrible canyon? We also had a new factor to consider, what if we didn't reach bottom this trip? But we <u>had</u> to; it couldn't be much deeper. The estimated height of the range was less than 500 meters; the cave plus sinkhole already totalled over 470 meters. We were also running out of rope, a fate we certainly wouldn't have predicted. We decided on one final trip, taking all available rope, and agreed to de-rig even if we didn't reach bottom.

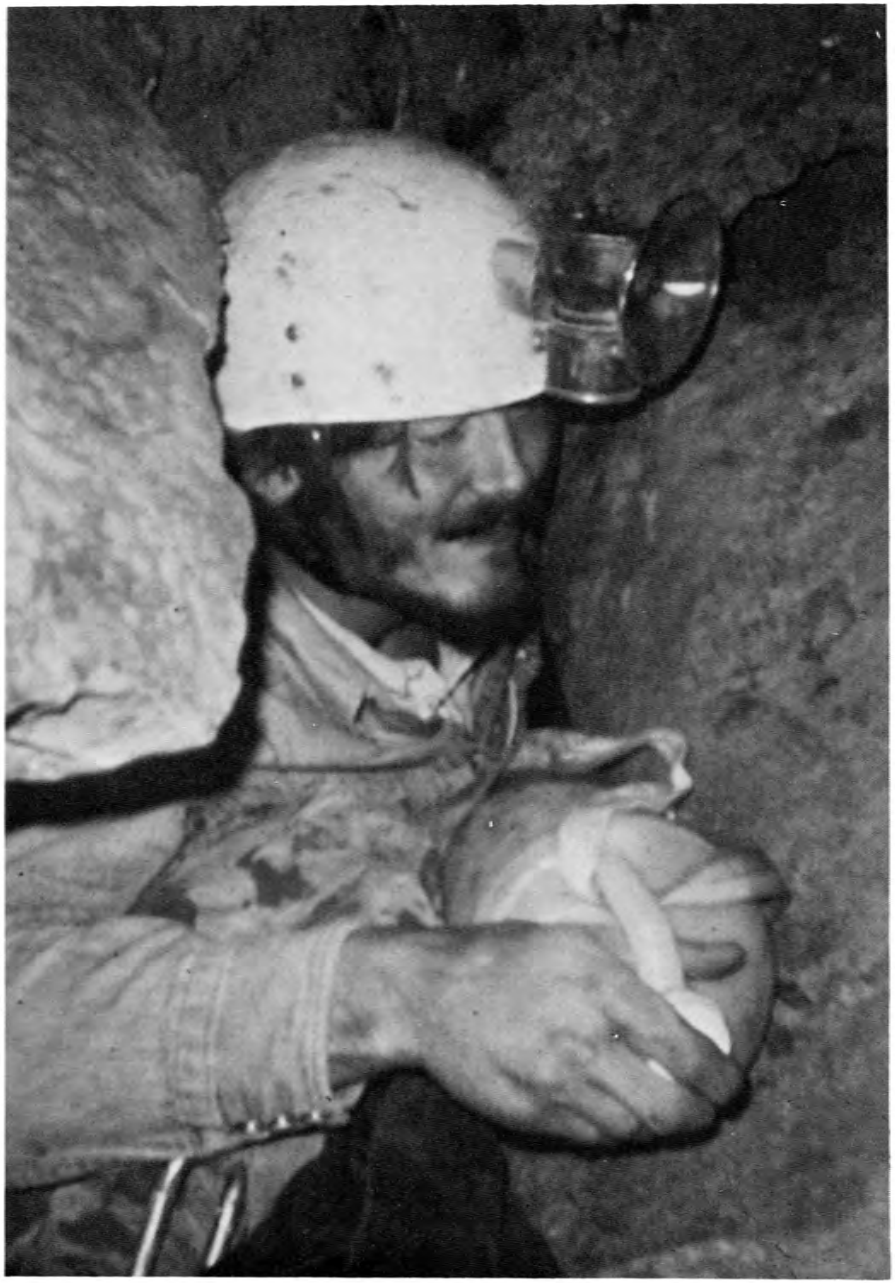
A five man team entered the cave and made good time to the 300m level where ropes were reshuffled to maximize use of the available lengths and to

allow the last two drops done previously to be re-rigged with ropes long enough to reach bottom. Climbing pits is dangerous anywhere; but at -320m on sharp rock prone to breaking off, it is especially bad. A few of the leads noted previously were checked, but just looped back in vertically. The main lead was finally rigged with one of the precious remaining ropes and was descended. Sitting in what appeared to be another tight canyon at the bottom (Oh no, not more canyon!), one could hear running water. Aha, I thought, perhaps a base level river passage lay ahead!

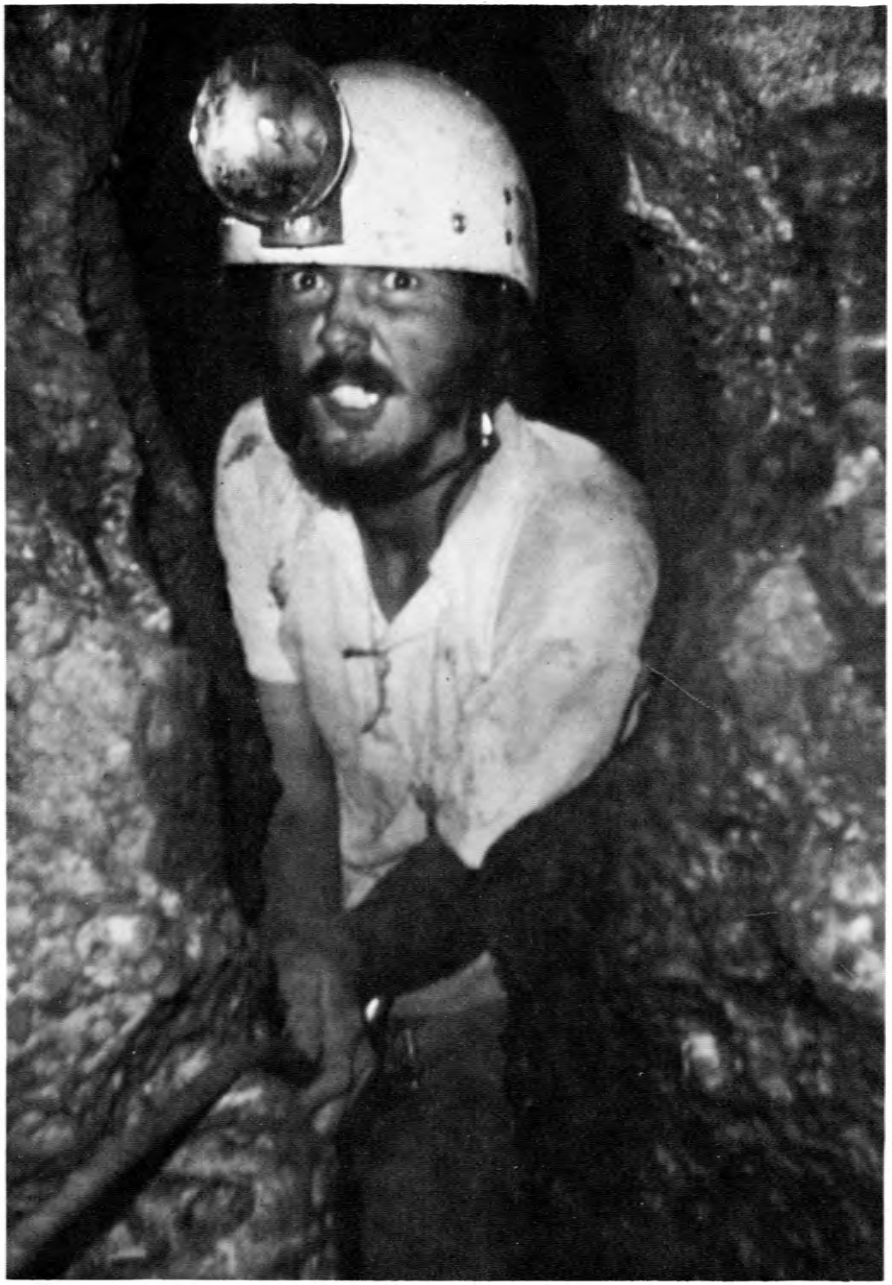
The canyon went only about five meters before the bottom dropped out and our last rope had to be deployed. Two short six meter pitches later the water appeared - a very small waterfall, really only a heavy drip. But it's source was significant: it came from a dome we hadn't come down. This was the first time we had seen evidence for input other than the way we had come. The water landed directly on a small partition and flowed equally in two directions. A brief reconnaissance showed that each led to a drop; we opted to continue basically "straight ahead". There was enough rope left to tie it off again and go down another 20m, which I did. Two short drops were followed by a larger one, and that's where the cave won! I threw the remaining rope in, knowing it would not reach bottom, and cautiously rappelled all the way off the end, stopping on a tiny ledge about 5m above an apparent floor. This one was unclimbable,but even had I been able to continue it would have been to no avail: I could see yet another black hole in the floor below! This shaft also went up into a dome different from the way we had entered and was larger in diameter than the last several.

We surveyed all we had seen and were preparing to check the other lead when I slipped topping out and cut my hand on the razor-like rock. It was a bad cut: 3 cm. long and ½ cm. deep on one end. Amazingly, it wasn't bleeding badly, but a quick exit (hah!) was imperative. Neal and I left while the others began the slow grind of de-rigging. Once on the surface I was bandaged by our resident nurse, Barb, and then she, Cady, and Max, an all female party, valiantly entered the cave to relieve the push crew. Over the next 24 hours two more groups of people wearily entered the cave, including Neal who had come out only hours earlier. In order to move so much rope through the canyon, where one usually needs both hands just for balance, it was decided to tie all the ropes end to end, station people along the way to help pull and prevent snags, and pull them through as one continuous snake. This unorthodox technique worked admirably for the monumental task at hand. Finally all the people, fourteen ropes, and one cable ladder were back in camp. The last push and all de-rigging saw people in the cave continuously for 52 hours; Neal was in for 42 of those!

We now had a cave over 450m deep with two leads both of which were taking water, blowing air, and going down. Obviously the range was higher than we had been led to believe! The cave was deeper than any of us had ever been before, which made it difficult to judge our abilities. With 26 to 30 hour trips now the norm, endurance was becoming a limiting factor. Would we be able to finish this cave? Camping underground was out of the question. It would be almost impossible to drag in the necessary gear. And, even if we could, there wasn't a suitable place to put up a camp. So, the prospects for future exploration were grim but exciting.



The spaciousness of Diamante (Marion Smith)



Neal Morris assaults the Double Slot Drop at -350 m. (Marion Smith)

In spite of attempts to give away the leads over the next year, there were no takers. By December of 1977 we found ourselves planning to do battle once again. The notoriety of Diamante had spread, bringing Hal Lloyd and Marion Smith into our ranks to replace John Ferguson and Ron Tilkens. A massive rigging trip was organized during which we planned to move all the necessary rope into the cave. In order to minimize wastage of rope, we brought along a 180m length of Goldline to cut for each new drop we encountered. (In spite of it's stretch, the abrasion resistance of Goldline makes it the preferred rope for Diamante with it's unusally sharp, jagged walls.) Using the snaking technique of the previous year we succeeded in reaching and rigging the 300 in a mere 16 hours (10 people).

On the next trip the remaining known drops were rigged, At one point we had trouble tossing the rope down a drop due to it's getting caught on projections. The rope eventually got so entangled that a second line had to be rigged so that someone could go down and straighten things out. We were finally at the lead thirteen hours later. The "floor" I thought I'd seen the previous year turned out to be only a wide ledge; the real bottom to the drop was over 30 meters below. At this point we had to deal with one of the less desirable properties of Goldline, it's tendency to form kinks and snarls. There was barely enough rope free from a large tangle to allow one to touch bottom. Getting the rack off rope with nearly full tension required a lot of gymnastics.

What came next was unbelievable: Hal yelled up that there was a five second pit ahead! This at 500m down! We were especially excited at this point since one of our secret desires was to beat Sotano de Nogal (-529m), the big find of the previous year. Marion won the dubious honor of going first (in a trickle waterfall). He stopped at a major ledge 55m down and explored a small side shaft. It went! Neal and I rappelled in, noting a large passage intersecting the pit 25m below the lip. The main shaft continued from the ledge, and sounded deep, but we were all feeling burned out. It looked as though more rope would be needed anyway, so we decided to leave it all for another day.

Gathering additional ropes, we headed back in two days later with visions of 2000 feet dancing in our heads. With all the drops rigged, we zoomed down to the leads in no time. We opted for the main shaft, again with Marion in the lead. A few minutes later the familar call for more rope rang out. Marion had stopped on a small ledge with a large boulder wedged into the elliptical shaft, unsure of whether the rope would reach "bottom". I descended with more rope, sending down a shower of broken projections which elicited a tirade of expletives from below. We tied off a new rope and Marion descended. Although the main line turned out to be long enough, I also had to go down the second line. One can't get off rope 100m down on Goldline and then get back on! The next person then removed the second line while still rigged into the main line.

After a minor clearing out of wedged boulders, some knobs provided convenient, if somewhat dubious, rig points for further progress. Finally, cautiously, Marion reported a solid looking floor. There were a scant six meters of rope to spare! The rest of the group descended and began poking into every hole we could find. Tommy found a muddy crawl and canyon, but it pinched out after about thirty meters. The relatively spacious bottom room was characterized by several enlarged intersecting joints and a conspicuous absence of water. (We had expected to hit base level.) It was hard to believe, but four years

after it's discovery we were finally at the bottom of Diamante.

A lack of time and energy prevented our checking any of the other leads, including the other major passage at the waterfall divide discovered the previous year, which may even be the "main" route down. The cave was de-rigged as far as the 300 on the bottoming trip. A subsequent 24 hour effort by nine people completed the de-rigging, again via the snake technique.

When the survey was tallied up we had minus 621 meters (2038 feet), the fourth deepest cave in the Western Hemisphere and the only 2000 foot deep cave outside of Huautla. A relatively small group of people has put in over 1500 manhours in their four year obsession with the cave, which really isn't finished yet. Although several leads remain, there are no plans to return soon. Allowing for the depth of the sinkhole, the bottom of the cave is nearly 700m below the surface. The triangulated height of the range is only 728m; thus potential for increased depth is rather limited, although a horizontal base level passage is still conceivable. (The presence of a small nacimiento, the Rio Tantoan, on the coastal plain just to the south lends credence to this possibility.) Diamante is clearly the most difficult cave in the El Abra and also the deepest by nearly twice the previous record of -318m for La Hoya de Zimapan. The promising Otates area thus lived up to and far surpassed all expectations.

SOLO SPIRIT

by Hal Lloyd III

Eternal night
Pale carbide light
The somber heartbeat of a caver alone
Pounding painfully into the night
As forbidden subterranean shores are calling
"Come to life, come to me"

A caver's hopes are crying
Shall I push the cave alone?
The distant sound of cascades are most inviting

He looks
He feels
The cool smooth stone
The soft white sand banks

He descends to the water's edge in wetsuit
The emerald green vanishes into inky depths
Open river trunk passage lures him into the dark

Smiling he wades into, then swims
Smiling he passes through low ceiling
Aware of an inner voice
"Come to life, come to me"
The cave is inviting

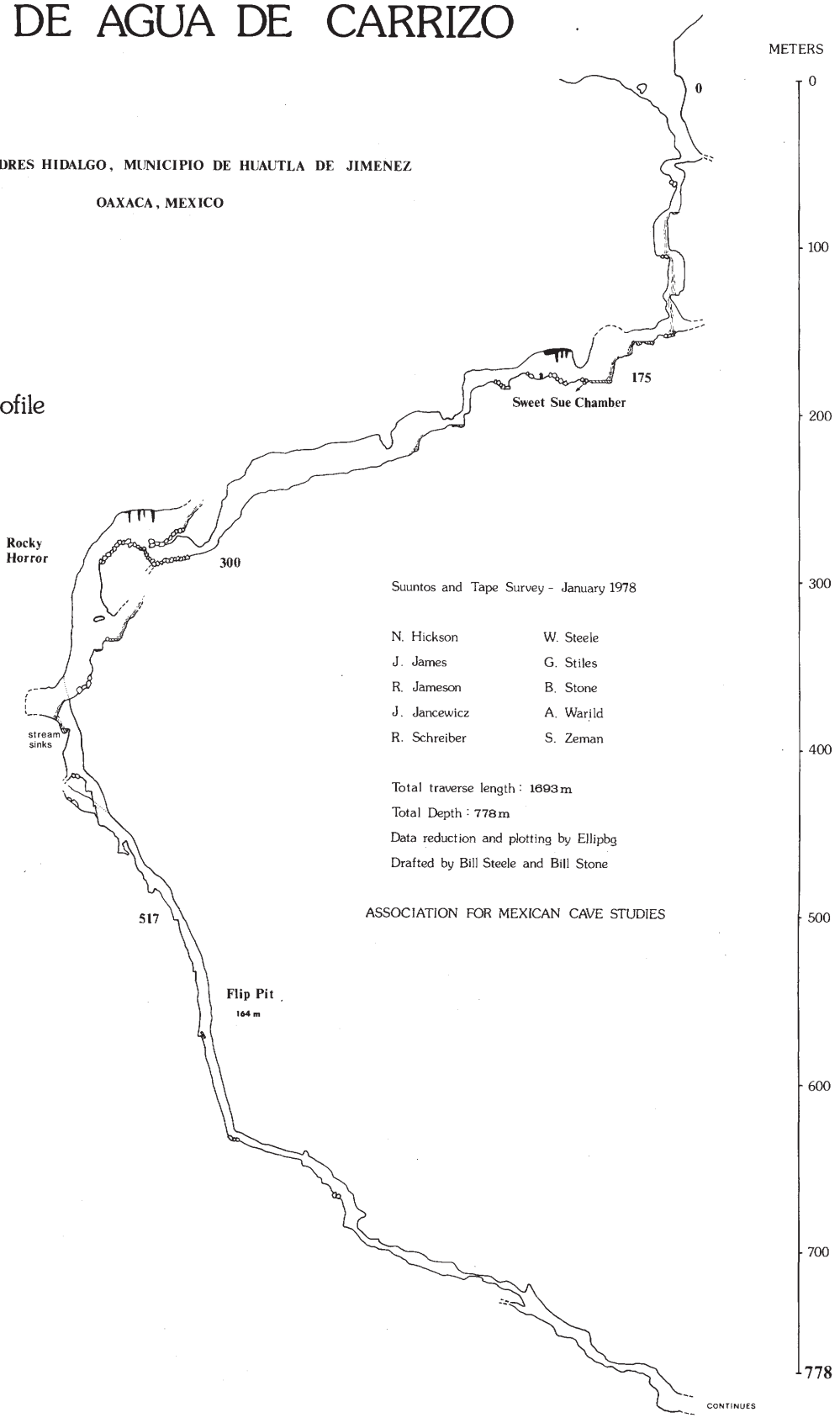
He stops, he listens
The water is rising
Precious inches of airspace
Rapidly declining
And still he smiles
For his spirit shall live forever
In the cave that is his shrine.....

SOTANO DE AGUA DE CARRIZO

SAN ANDRES HIDALGO, MUNICIPIO DE HUAUTLA DE JIMENEZ

OAXACA, MEXICO

Projected Profile



Suuntos and Tape Survey - January 1978

N. Hickson	W. Steele
J. James	G. Stiles
R. Jameson	B. Stone
J. Jancewicz	A. Warild
R. Schreiber	S. Zeman

Total traverse length: 1693 m

Total Depth: 778 m

Data reduction and plotting by Ellipbg

Drafted by Bill Steele and Bill Stone

ASSOCIATION FOR MEXICAN CAVE STUDIES

THE FIRST PUSH

Sotano de Agua de Carrizo

by Alan Warild

Secondary objectives can often ruin an expedition by creating a conflict of aims of members, and competition for the limited equipment resources available. Sometimes, however, things work out almost right. This is one such example.

With the effort in La Grieta fully underway and the underground residents all sorted out, there were a few people left over until the second shift. Namely Julia James, Neil Hickson and I. Three options were open to us:

a) Slothing and sunbaking on the surface.
b) Surveying side passages in La Grieta.
c) Checking out possible high entrances to La Grieta.

Considering the cost of getting to Huautla from Australia, we decided to go caving. Besides, it was raining, which made choice "c" the most attractive.

The Bills Stone and Steele mentioned several holes they had thrown rocks down a few days earlier. At any rate, there were quite a few holes to be seen from the track down towards La Grieta.

Holes one and two were poor; number three was worse; four and five both went somewhere but were tight..... eventually there were two holes in a pleasant grassy doline which for a change "looked good". We chose the one with an easy natural belay, then Neil and I went down with a couple of ropes each, while Julia kept guard. At the bottom, a stream, a howling breeze and (for a change) an easy going cave. That day we got down about 80 meters with another pitch of at least 40 meters dropping below. Cold and wet, we decided to return the next day, but our shift in La Grieta delayed us for nearly a week. There was nobody left on the surface who was interested so Carrizo stayed as it was.

To quote someone or the other, La Grieta "wimped out". The leaders of the party, having established Camp II, felt that it should be used fully and all possible side passages completly explored and surveyed. This effort was limited by us having only two sets of surveying gear and by the food and carbide supplies running out. The underground camp was intended for eight people for ten days and there were now nine of us for twelve days. With Carrizo still in our minds, we "Aussies" grabbed nine ropes, two diving bottles, a pile of garbage, our personal gear and left for the surface.

Except for the derigging trip, our committment to La Grieta was essentially over, so it was back to Carrizo. But this time Neil and I were ready for the water as well as carrying as much rope as we could. The ropes were gobbled up surprisingly fast; easy depth as one pitch followed another, these being interconnected by walk-through passages and the occasional desperate climb. These were later roped as both of us didn't want to climb them again. The inevitable happened; breakdown. Instant death to any cave but there was a

squeeze which led on to a waterfall. Unfortunately this constriction was designed to exclude all but the thinnest of people. Neil had found himself a way through too. By climbing up he met a huge chamber floored with loose blocks, sand and dirt. At the down end these dropped off into a huge shaft. By climbing down the scree as far as I dared we could get the maximum value from our thirty meters of rope left. We located a boulder which we couldn't push over the edge and tied off to it. I abseilled, gardening off some of the more vicious looking balanced rocks as I went down the remainder of this hanging scree slope. The freehanging pitch below was quite a relief, at least it didn't move when you kicked it. The rope was thirteen meters short of the stream below but we were well satisfied with having gotten down to 300 meters. Again we exited with a going hole, but by this time there were a few odds stacking up against us.

With only a week left, time was running out and so far only two of us had done any exploration in Carrizo. We certainly could not expect other people "to bust a gut" derigging a cave they otherwise had had nothing to do with. Many of the group were still finishing the La Grieta survey.

So exploration had to be thought of as a two man operation to the end. We allowed ourselves two days to de-rig Carrizo, and one more for La Grieta. In addition there were only two ropes left; one 200 meters and the other 500 meters. Julia was sure they were not to be chopped, and Richard confirmed this.

To finish our committment to La Grieta the three of us spent the next day derigging twelve ropes up through the grottiest parts of La Grieta, one of the most mundane and unrewarding parts of deep caving. The real reason was of course to get more rope to continue pushing Agua de Carrizo.

Despite the desire to keep pushing down a cave which keeps getting larger as you go, expedition policy was "survey as you explore", so Julia, Neil and I surveyed in as far as time and body heat lasted, i.e. through all the really wet pitches and into Sweet Sue Chamber at minus 150 meters. The traverse length was nearly 350 meters.

Another push trip, again two people, but this time Bob West and me. As much rope as you can carry doesn't seem to go far at times. It was gone after the desperate climbs had been rerigged and another 60 meters of cave had been descended. Still we had managed to negotiate the Rocky Horror without being squashed, and also hang the last rope down two small waterfalls from the shakiest pitons ever seen. This area is the landing zone for anything which falls off the Rocky Horror and so looks somewhat like a cross between a bomb blast area and a limestone crusher. Down a huge passage and some climbs which were later roped took us to a thirteen meter waterfall; certainly unclimbable. On the way back I looked at a very big chamber off to the left which was floored mainly with dry gravel and dirt. It had some big speleothems in it, one of which was a column about eight meters high.

Sotano de Agua de Carrizo was beginning to come of age; it had already cracked 300 meters, so people were showing more than just a verbal interest. This day we managed six people in the cave, but again pushing only went at half power because of the need to get the survey completed in the short available time. At least it was suggested that the cave could stay rigged if it was

The sixth pitch in Carrizo. (Bill Stone)

Zeman on the 17th drop. (Bill Stone)

still going at the end of the day - a major break-through in negotiations for those of us who were expecting two days of rope dragging. We split into two groups: Julia James, Jean Jancewicz and Roy Jameson to continue the survey from Sweet Sue Chamber to as far as they could get; probably Rocky Horror; and Neil Hickson, Richard Schreiber and me to continue down until the rope was gone - obviously the easiest task because this cave would surely eat the rope fast enough.

Two pitches and a handline beyond yesterday the passage lost it's water, but not the super airflow (the Carrizo wind). With plenty of rope left we headed down to a junction and took the lefthand (down) passage because it was easier than the difficult looking climb back up to the water; it also had part of the draught. With a minimum of rope but maximum of desperate climbing we got to a balcony overlooking a 50 meter pitch. The survey out connected easily with the J3 traverse at the top of Rocky Horror. For the fourth time we exited with the satisfaction that we had run out of rope and not cave; Carrizo computed out at minus 517 meters in depth. Enthusiasm magically increased for a push the next day with vast amounts of rope. It was abandoned because the day was running out by the time all the remains of cave tackle had been hauled out of La Grieta.

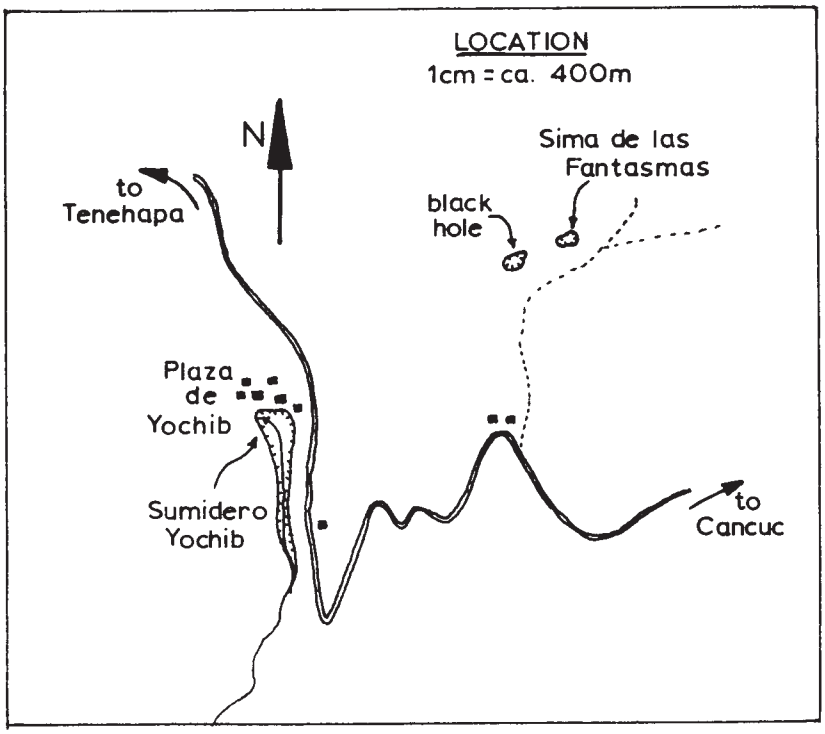
The last day for an all out push and a super late start was made by Bill Stone, Bill Steele, Steve Zeman, Gary Stiles, Neil Hickson, 200 meters of now chopable rope and me. What with more gardening, photo taking, and rigging ropes on things which didn't please some, it took quite a while to reach C1, our point of 48 hours before. Here, a minor altercation as to who should go where and when and why prompted the name Standoff Shaft, although this seems to have now softened to Flip Pit in honor of the Un Peso pieces which were instrumental in deciding who was to descend this 164 meter shaft in the first group.

Neil Hickson, Bill Steele and I pushed down with the remaining rope while Bill Stone, Gary Stiles, and Steve Zeman surveyed down from C1. As was becoming the habit, we ran out of rope and were left staring down an unclimbable drop with cave beyond. Unfortunately our cave had taken a turn for the worst. After it's long fall down the Flip Pit it became quite small, almost nasty. We still managed a few climbs which I'm sure will later be roped, but it does take a lot to stop three depth crazed cavers when they get going. With the completion of all surveys, we sprinted to the surface while Steve, Gary and Steele came behind coiling ropes which may be damaged by high water.

(Editor's note: Bill Mixon of Chicago has written informing us that Sotano de Agua de Carrizo, at -778 m, now stands as the deepest a cave has ever been explored on the first expedition to it. Ghar Parau, a 700 m deep cave in Iran explored by the British, had previously held this distinction.)

SIMA DE LAS FANTASMAS

a minor adventure



by Norm Pace

The Chiapas highlands of southern Mexico constitute one of the finest caving areas in the world. Yet, the area remains little-known, mostly because relatively few roads penetrate the mountains. This problem is compounded by the fact that U.S. cavers (and gringo tourists in general) have been loath to drive the 2000 or so miles required to reach the area from the U.S. border. However recent years have seen several Canadian expeditions to Chiapas, with fine results in the form of spectacular and challenging river systems. "Sporting cave," the Brits call it. One such river system is Sumidero Yochib, whose terminal sump was reached only this year. The apparent resurgence of the Yochib river, the Salida ("resurgence") Cruz Pilal, is located 1500 feet lower than the Sumidero ("swallet") and about 5 miles distant. However the terminal sump in Yochib is only about 750 feet lower than the entrance and, since the river slams down a corkscrew-like series of canyons, the sump lies almost directly below the entrance. During the exploration of Sumidero Yochib we had hoped to eventually hit a river gallery which would lead all the way to the sump blocking upstream progress in Cruz Pilal, but that daydream was dashed by the sump at -750 feet. So, a lot of fine cave presumably lies between the Yochib and Cruz Pilal sumps. But a new entrance is needed. Such a new entrance also could dramatically increase the length and depth of the system, since the entrance to Sumidero Yochib constitutes the foot of a river gorge some 2000 feet below the surrounding, karst-riddled ridges. Water collected in the dolines up there must ultimately dump into the river flowing through Yochib, and so open shafts are potential entrances to cave systems which could be very deep indeed.

With the thought in mind of looking for new entrances in the Yochib vicinity as well as peering at a few other areas of Chiapas where "black holes" had been reported by bush pilots, five members of the 1977 Yochib expedition bought, for about $100, 1 1/2 hours of air time from a pilot operating out of the small airfield at San Cristobal las Casas. To condense a long story, the views were magnificent. Pertinent to this account is that we spotted a very

good looking black hole no more than a mile from our camp at Yochib. Bill Steele had previously noted this possibility on an aerial photo, but on that it did not quite look worth the hassle of hunting for it. The view from the aircraft certainly crystallized the urge, however.

The next day Mike VanNote and I finally located a black hole candidate in the vicinity of that indicated by the aerial photo. It wasn't the sought-for hole, but rocks fell a goodly long way, maybe 200-250 feet we guessed, before thudding into what seemed to be the bottom. We couldn't get far enough down the steep sides of the sink to peer in. So, back to camp we trudged. Several long hours later we were back, along with Mike Boon, Maureen Cavanaugh, Kim Hastings (a Pa. caver who found out about us while passing through San Cristobal), and a gringo tourist who stumbled into Yochib by bus and foot for market day and got stranded. Blew him out to find a cluster of nylon mountain tents and 4x4 trucks! Enroute to the pseudo black hole we received directions from an Indian to the real black hole, which Mike VanNote and Maureen finally located. They reported the thing to be only about 100 feet deep. Although not descended, the pit almost certainly is blind.

The others of us focused on that afternoon's first find. Tying off on an eroded boulder, we first tossed a 300-foot line into the hole. I started in, down the steep, dirt and bush-covered slope, to a breakover onto the vertical wall of a cylinder some 15 feet in diameter and dropping away into blackness. Before going over I cleared all the loose stuff from the rope path. That act is a paranoia response, stemming from having gotten nailed in a muddy pit in Central Kentucky. This one was relatively clean, but I rather enjoyed kicking some rocks in. I wasn't too worried about the rope below, as things quickly got big down there and I already had begun to suspect that the end of the rope was nowhere near the bottom. Jamming the bars on the rack a bit more, I dropped down the shaft and through the ceiling of an immense room, eventually halting fifty feet above the end of the rope. The floor was only dimly visible in the evening reflections from the shaft, but it obviously was still a long way off. I stayed there for a few minutes, enjoying the precariousness of it all, then changed over to Jumars and ran up the rope.

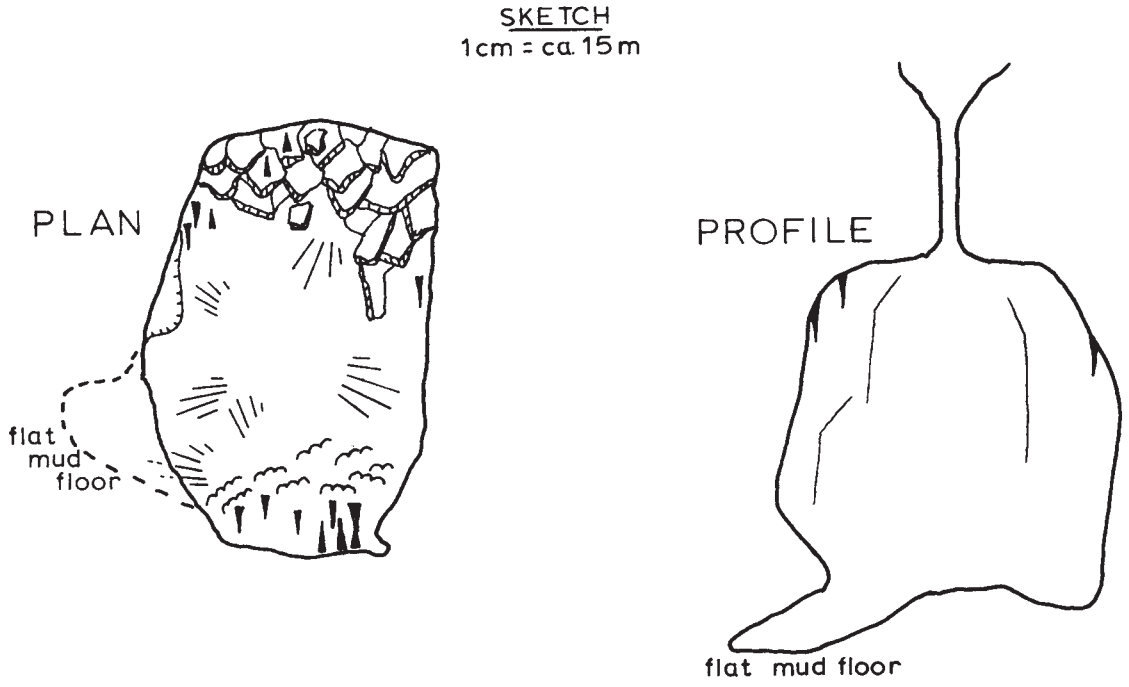
Back on top, I sat on the lip of the shaft as Boon and Kim untied the 300 and fed it in, now tied off on the 100. I regretted not bringing more line up, but climbed back into rappel; it was getting pretty dark.

Still some distance up, I could tell that the rope again was not on the floor. Rope ends on the bottom are stationary, but they whip about if free. However it seemed very near the floor, so I dropped on down to the foot loop tied off at the rope's end. This proved to be about 10 feet up, but I took a very close look before proceeding, as depths can be very misleading. Then, again changing over to Jumars, I pulled up the rope, untied the loop, and climbed down to the very end. Still several feet off the bottom, I clipped the long Jumar sling on the very end of the line and climbed down it, stepping down the last few feet. Fortunately the rope was Bluewater II; Goldline would have sprung twenty feet out of reach.

The room at the base of the shaft was huge, probably 300 feet long, 200 wide and 200 high. I had landed on a low mud hill covered with germinated, philodendron-like plants. Only a dim glow ever reached this depth, however, so

all were completely white and eerie. The overall depth of the drop, from the breakover in the doline, was somewhat over 300 feet. I spent perhaps an hour tracing the circumference of the room; clambering up a great breakdown slope on one side of the hall and up a slick, rotting, flowstone facade on the other end. A flat, thirty-foot high pocket led 100 feet to the deepest point, about 350 feet below the surface. Returning to the mud mound I now had to stretch to

SIMA DE LAS FANTASMAS
CHIS., MEXICO
Sketch by N. Pace
3-77



reach the rope. It had slowly continued to contract. Then a delightful climb back to the cool Chiapas night. Everything was working well.

Although this pit cave would be notable anywhere else, in Mexico it hardly merits mention. As a virgin pit, however, it was fine to experience. Two memories particularly stand out: a sight of the end of the rope whipping far above the floor on the first abortive descent; and the forest of albino plants at the base of the entrance shaft. We could not learn a local name, so in respect to the latter, I propose that we call the thing Sima de las Fantasmas - Shaft of the Ghosts.

EXPEDITION REPORT

Christmas 1977

HUAUTLA PROJECT

by Bill Steele

I imagine the vast majority of AMCS members receiving this newsletter have already read Bill Stone's detailed account of this expedition in the April NSS NEWS. In this summary of the same expedition, I am breaking the four weeks of caving down into information. The story, Stone wrote, and I encourage AMCS members to read it. The facts and figures presented here can also be of a big help, not only to persons following the exploration of what may be the world's deepest cave, but also, to document what we're doing and how.

Personnell List

1)	Tim Allen	5 out of 25 days spent in Huautla
2)	Mike Boon	3 out of 25 days
3)	Robert Hemperly	10 out of 25 days
4)	Neil Hickson	25 out of 25 days
5)	Roy Jameson	14 out of 25 days
6)	Jean Jancewicz	25 out of 25 days
7)	Julia James	24 out of 25 days
8)	Cindy Kopanko	7 out of 25 days
9)	Dino Lowery	25 out of 25 days
10)	Bill Mills	7 out of 25 days
11)	Patty Mothes	14 out of 25 days
12)	Cindy Perlman	2 out of 25 days
13)	Richard Schreiber	25 out of 25 days
14)	Jim Smith	10 out of 25 days
15)	Bill Steele	25 out of 25 days
16)	Gary Stiles	25 out of 25 days
17)	Bill Stone	25 out of 25 days
18)	Allan Turner	3 out of 25 days
19)	Al Warild	25 out of 25 days
20)	Bob West	25 out of 25 days
21)	Steve Zeman	25 out of 25 days

Opposite: Zeman at the Swallow Hole, -760 meters in La Grieta.

La Grieta Exploration Log

Date	Persons	Objectives	Results	Hours in motion	Meters surveyed
12-23	Steele,Stone,Smith, Warild,Schreiber	Rig down to -520m in La Grieta, locate a campsite, and check for sumping at the Pato Mojado. Exit.	rigged to -520 meters, camp was decided to be at Mazeteca Shores. Sump rigged with a line. Exited.	24	0
12-23	James,Hickson,West Hemperly	Survey lead in the entrance area of La Grieta.	Explored and surveyed to the end of the passage off the Hobbit Hole	6	100
12-23	Jancewicz,Zeman, Lowery,Stiles	Enter La Grieta with food and supplies for the camp.	Supplies taken to the Bottleneck at -400 meters.	23½	0
12-25	Hickson,James, Warild	Pick up food at the Bottleneck and take it on to Camp II. Learn the way.	Half of the food at the Bottle-neck taken to Camp II.	16½	0
12-25	Schreiber	Enter the cave with camp gear and go to camp.	One pack broke. Remainder of gear taken to Junction Room. Exited.	16½	0
12-25	Stone,Stiles,Zeman, Lowery,Jancewicz, Smith	Enter La Grieta with camp gear to camp for ten days.	Descended to Camp II at Mazeteca Shores, -520m, set up camp.	11	0
12-26	Schreiber,Steele, West,Hemperly	Enter to camp for Steele and Schreiber. West and Hemperly to pick up what food possible at Bottleneck, spend the night then exit.	Objectives met. One fourth of the camp food left at Bottleneck after this trip.	7	0
12-26	Steele,Stone,Smith Stiles	Trip to furthest point reached on last expedition. Explore and survey.	Stream lost in breakdown. No way to stay with it. Route found up into large borehole 20mX30m. Followed 300m to a drop. Surveyed lower streamway back to connect.	13½	175
12-27	Hemperly and West	Exit the cave.	Same	13	0

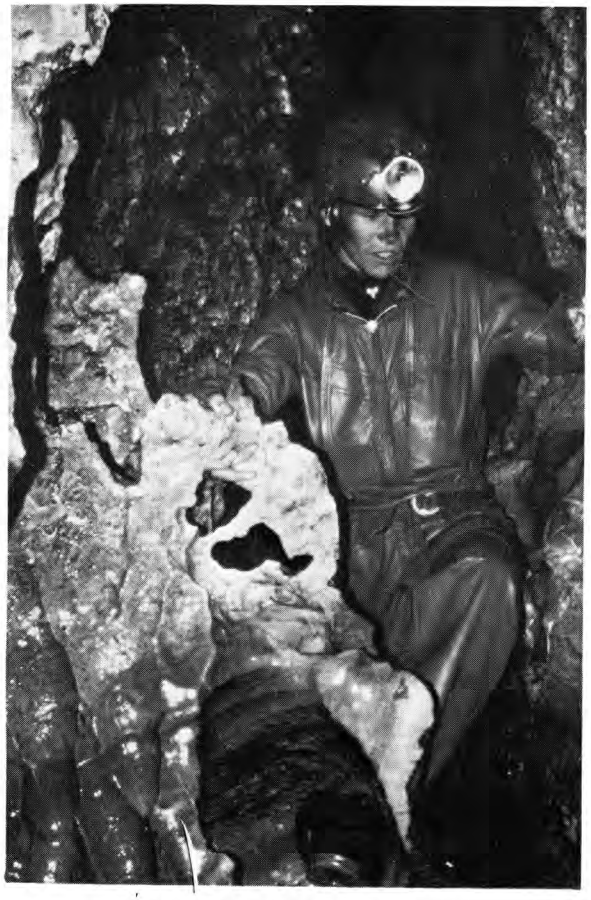
12-27	Schreiber,Zeman,Lowery,Jancewicz	Explore beyond the Black Slide in continuing borehole.	Trunk continuation found. Largest rooms yet. Found cairn of yesterday where team had come up into same passage. Surveyed one point beyond the cairn. Quick way to Black Slide.	15½	300
12-28	Stone,Steele,Smith Stiles	Survey up breakdown route to borehole, then on in it to pit drop seen before. Drop it.	Survey done. Pit dead ended! Checked breakdown in main passage looking for a way back down to the stream. Way found. Gorge found. Explored to breakdown. New way to Black Slide's bottom found on way out.	17	410
12-30	Smith and Lowery	Exit with camp gear	Same	13	0
12-30	Schreiber,Zeman, Jancewicz	Survey gorge and push breakdown.	Gorge surveyed. High leads seen before breakdown zone. No breakdown route found; pushed pretty well.	20	560
12-30	Stone and Steele	Take trip to Bottleneck for the rest of the food and photograph.	Same. 70 photos taken.	7	0
12-31	All in camp	OFF DAY Play around in camp. Sew and repair. Wait for the arrival of the Aussies.	Same. Played poker for M&M's. Aussies arrived at 6 PM. First news from the surface.	0	0
12-31	Hickson,James, Warild	Enter cave to camp bringing supplies requested when Smith and Lowery exited.	Same. This was New Year's Eve.	7	0
1-1	Schreiber,James, Hickson	Survey into high leads in the breakdown zone at the bottom	Same.	18	300
1-1	Warild,Steele, Jancewicz	Smallest folks to try and find a route through the breakdown.	Lose Jancewicz to next team.Steele and Warild push breakdown for six hours finding no way through.	17	0
1-1	Stone,Zeman,Stiles	Take photos in lower cave. Survey in Fracture of the Deep area.	Lost Stone to injury. He returned to Camp II. Gain Jancewicz. Survey. Took photos.	22	250

1-3	Stone,Schreiber, Steele	Explore and survey deep leads. Then de-rig to camp.	Explored and surveyed. Found Doo Dah Dome. De-rigged to Camp II. Most survey of any trip.	20	1250
1-3	James,Warild, Hickson	Explore and survey upstream tributary from Camp II at Mazeteca Shores.	Same. Still goes.	4	300
1-3	Stiles,Warild	Take photos beyond Pato and check a side lead.	Photos taken.	5	0
1-4	James,Warild, Hickson	Exit cave carrying all ropes in camp, and scuba tanks.	Same	12	0
1-4	West and Lowery	Take food and carbide to the site of Camp I,-300 meters.	Same	6	0
1-4	Zeman,Stiles, Jancewicz	Exit cave with camp packs. Explore and survey upstream from the Refresher.	Same. Surveyed what seen. Passage continued.	23	32
1-5	Steele,Schreiber, Stone	Clean up camp. Survey out from the L Room; already explored in May. Exit.	Same. De-rigged ropes to the Junction Room. Took camp packs to the base of entrance pit. This was the last group to exit the cave. Stone had been in for 12 days, Steele and Schreiber for 11 days.	24	300
1-7	James,Hickson, Warild	Enter La Grieta to -380m,and take a large pile of ropes from there to equipment pile in the entrance room.	Same.	6	0
1-8	Stone,Steele, Stiles	Survey original route from the Junction Room to the Refresher. Continue V survey upstream from the Refresher. De-rig as much as possible.	Surveyed loop - found upper level. Explored and surveyed this to it's end, way above the Refresher in the same room. Surveyed on in the V survey to where it was enlarging. De-rigged all ropes to the entrance.	27	550

1-8	Zeman,Jancewicz, Lowery	Survey down the "Tubes". Complete removal of personal camp gear.	Came to a 30m pitch in Tubes; no rope. Good lead. Took camp packs to the entrance chamber.	12	100
1-11	Everyone	Get everything up and out of La Grieta entrance shaft, then carry it all up to the truck.	Steele tied loads on the bottom of the 60m drop, with Zeman on the halfway ledge to assist, and all hands on the surface pulling.	4	0
					4805m

Notes on total hours The total manhours summed from the above list is 1315. These are manhours of hours in motion, not passed in an underground camp.

Notes on the survey The above total, when added to the previously published length of La Grieta, comes to 8.9 km. The previously published length was 4.1 km. This amount is not the total now said to be the length of the cave, 8.8 km. is. The 100 meters we are lacking is in the first one listed in the log. Julia took the notes to Australia, so they are as of yet not on the map. A length of 8.8 km. makes La Grieta the current third longest cave in Mexico. It should be noted that it was regarded as the longest until mid-April.



Warild in Skeleton Canyon, -550 meters in La Grieta. (Gary Stiles):

Carrizo Exploration Log

Date	Persons	Objectives	Results	Hours in motion	Mts.
12-30	Hickson and Warild	Check Carrizo out, taking three ropes in.	Ran out of rope after three drops. Got to the top of another. Aussies came into La Grieta to camp after this trip.	2	0
1-6	Hickson and Warild	Push on.	Pushed on. Ran out of rope at -250m. Explored to Rocky Horror.	4	0
1-8	James,Hickson, Warild	Survey from the entrance	Surveyed to Sweet Sue Chamber.	6	400
1-9	West and Warild	Explore on.	Got down Rocky Horror and a couple more pitches more before running out of rope.	11	0
1-10	Jancewicz,Jameson, James	Survey down.	Same. Met next group surveying out in the Rocky Horror.	13	373
1-10	Hickson,Schreiber, Warild	Push on, rigging, then survey out.	Ran out of rope at -517m, at the top of a 50m plus shaft. Surveyed up to the Rocky Horror.	13	391
1-12	Stone,Zeman,Stiles	Survey down.	Surveyed behind next team's rigging	22	320
1-12	Steele,Hickson, Warild	Beginning at -517m, rig in, survey out.	Beginning at -517m, rigged Flip Pit of 164m deep, then went on, running out of rope at the top of a 10m pitch at -778m. Surveyed back up, connecting with the others.	22 Steele 17 others	209

Alan Warild pops through La Grieta's second sump. (Gary Stiles)

EXPEDITION FINANCES

The books of the expedition were divided into three parts: 1) Transportation to Huautla. Two 3/4 ton 4WD trucks belonging to Robert Hemperly and Bill Stone were used. The amount of expense was divided among those getting to Huautla in these vehicles. 2) Resident expedition costs. This is a lump sum of everything aside from transportation to or from Huautla. This is all items consumed, including stateside expenses for food, carbide, supplies, and all community expenses while in Huautla including rent, perishables, rum, and gas for running around. 3) Transportation back to Austin .

Transportation from Austin to Huautla

Stone's truck:

$89.80	gasolene
44.90	half of gasolene amount - goes to owner of the vehicle for maintenance.
$134.70	

Hemperly's truck:

$84.55	gasolene
42.78	maintenance
$127.33	

$262.03 total cost to Huautla. This came to $22.81 a person for transportation from Austin, Texas to Huautla, Oaxaca, a distance of 1200 miles.

Resident Expedition Expenses

$ 62.72	insurance for Stone's truck; 30 days worth
100.00	insurance for Hemperly's truck; 30 days worth
100.00	extorted bribe to Mexico City cop
859.33	stateside money spent on food, white gas, etc.; this was fronted by expedition members at a rate of $60 a person before leaving.
$1122.05	total of money spent outside Huautla, levied to all persons who stayed at the San Agustin house.
$1122.05	total spent outside Huautla from above
197.42	money spent in Huautla. This includes all provisions purchased in the market, the rent of the house ($20 a week), all gasolene purchased for local transportation; everything.
$1319.47	total expenses for expedition, except transportation to and from Austin. This amount was divided amoung all persons (numbering 23) that spent days in the fieldhouse. The maximum amount was paid by persons who were there the entire time. This amount was $105.84, for 25 days.

Transportation from Huautla to Austin

Stone's truck:		Hemperly's truck:	
$83.62	gas to Austin	$73.22	gas to Austin
41.81	maintenance	36.61	maintenance
$125.43	total	$109.83	total

$235.26 total cost to Austin. This came to $25.50 a person for the return.

Totals

$262.03	transportation from Austin to Huautla
1319.47	all expenses other than transportation
235.26	transportation from Huautla to Austin
$1816.76	total expedition cost

Dividing the Cost

This amount was charged to the members of the expedition based on how many days they were a part. The maximum amount was paid by those who were along the entire time: riding in the trucks from Austin, being in Huautla for 25 days, and returning to Austin in the trucks. The amount the trip cost a person paying this amount was $155.15. Not bad for four weeks in a rented house in Mexico.

LA GRIETA

Plan Carlota, Oaxaca, México
Municipio de Huautla de Jimenez

SUUNTOS AND TAPE SURVEY

December 1976

F. Binney — R. Jameson
A. Cochrane — P. Mothes
J. Horowitz — B. Stone

May - June 1977

E. Garza — G. Stiles
J. Horowitz — B. Stone
T. Johnson — S. Zeman
W. Steele

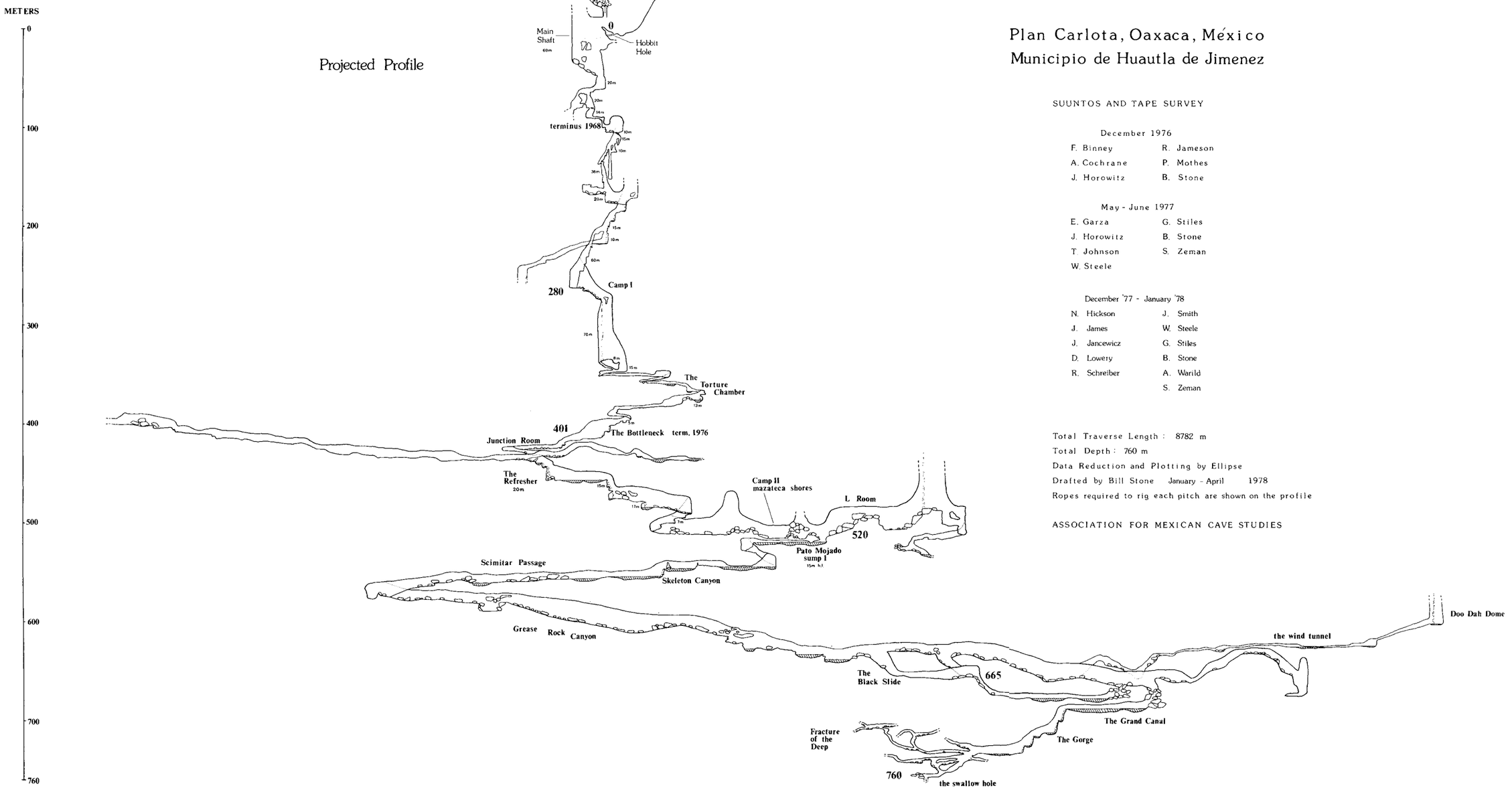
December '77 - January '78

N. Hickson — J. Smith
J. James — W. Steele
J. Jancewicz — G. Stiles
D. Lowery — B. Stone
R. Schreiber — A. Warild
S. Zeman

Total Traverse Length : 8782 m
Total Depth : 760 m
Data Reduction and Plotting by Ellipse
Drafted by Bill Stone January - April 1978
Ropes required to rig each pitch are shown on the profile

ASSOCIATION FOR MEXICAN CAVE STUDIES

Projected Profile



SÓTANO DE SAN AGUSTÍN

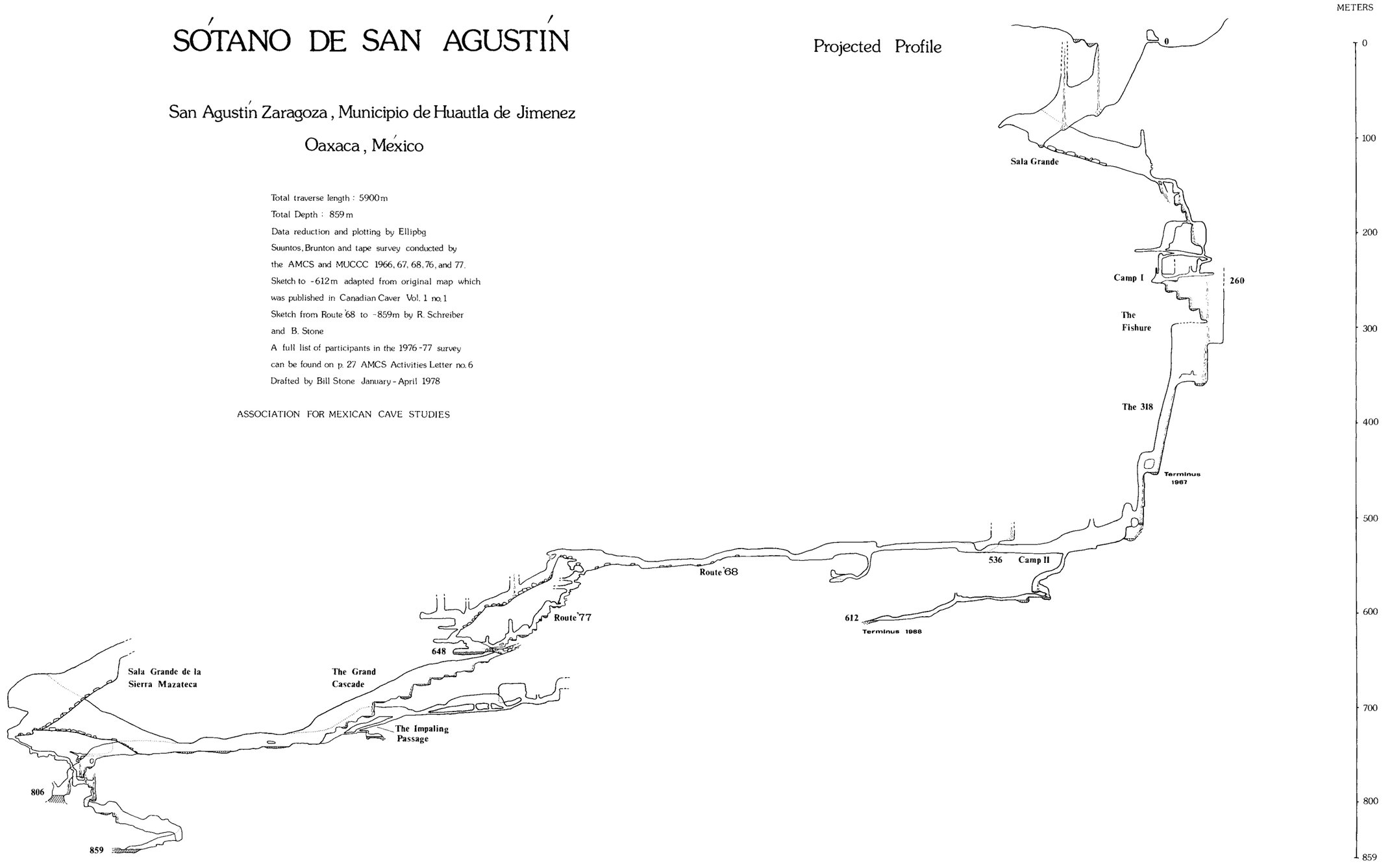
San Agustín Zaragoza, Municipio de Huautla de Jimenez

Oaxaca, México

Total traverse length : 5900 m
Total Depth : 859 m
Data reduction and plotting by Ellipbg
Suuntos, Brunton and tape survey conducted by
the AMCS and MUCCC 1966, 67, 68, 76, and 77.
Sketch to -612 m adapted from original map which
was published in Canadian Caver Vol. 1 no. 1
Sketch from Route '68 to -859 m by R. Schreiber
and B. Stone
A full list of participants in the 1976-77 survey
can be found on p. 27 AMCS Activities Letter no. 6
Drafted by Bill Stone January - April 1978

ASSOCIATION FOR MEXICAN CAVE STUDIES

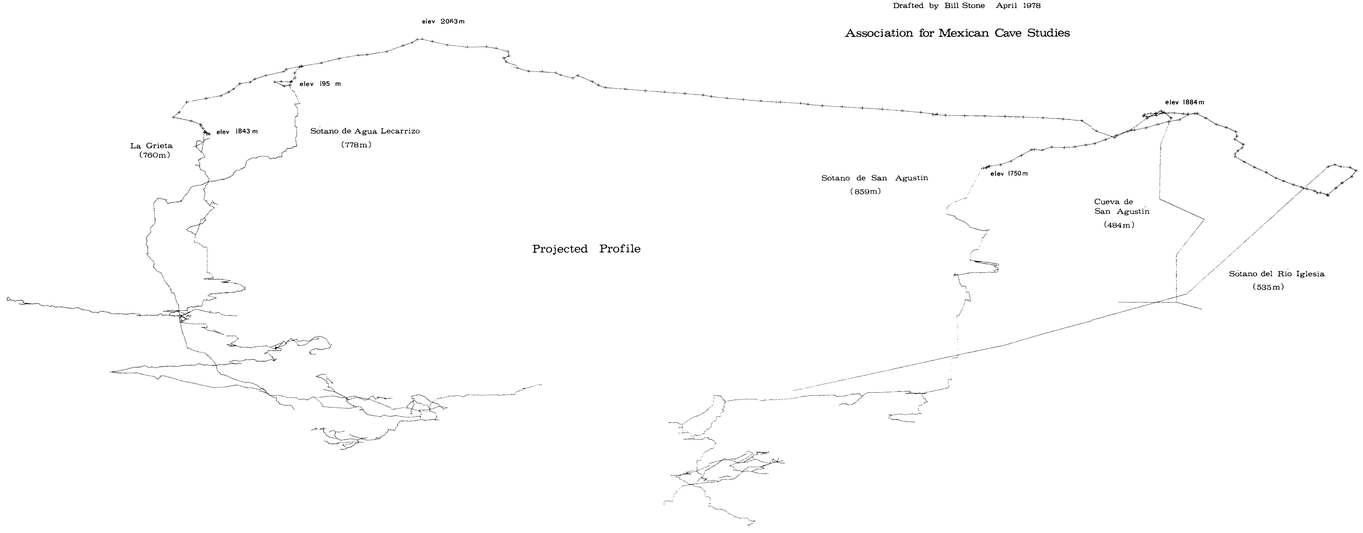
Projected Profile



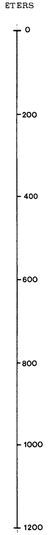
HUAUTLA AREA SURVEY

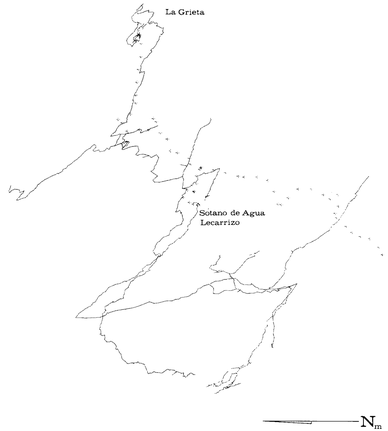
Data reduction and plotting by Ellipbg
Reference elevation for vertical scale 2063 m
Total depth of each cave listed below the name
Drafted by Bill Stone April 1978

Association for Mexican Cave Studies

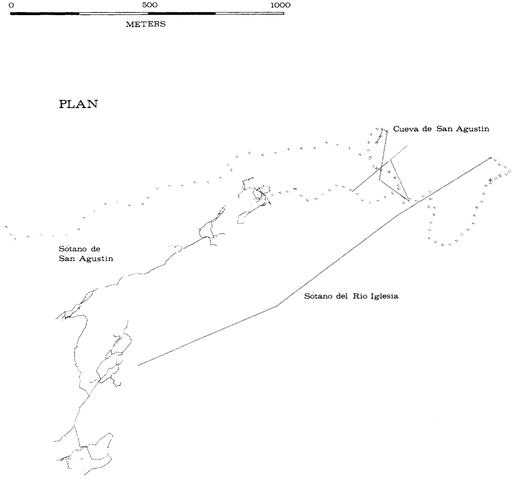


Projected Profile





PLAN



A tight spot in the Torture Chamber, La Grieta. (Bill Stone)

Some Random Observations

The cost of stateside purchases were inflated due to the great amount of underground camp food that was taken. It was all used, though. The caving was essentially all done by 14 persons. The others were all friends and contributed something. Tim Allen, for example, is a geologist and an archeologist. He visited Deer Cave and Cueva de San Agustin looking at archeological remains, as well as measuring geologic dip and strike of the strata in the area. Mike Boon came around for a visit. Bill Mills, a linguist, took a hike with Cindy Kopanko down the Tenango valley to the Presa Miguel Aleman, asking about caves, resurgences and insurgences. A pilot, Steve Fairchild from California, was due to fly to Huautla and take some of us up for a look see. There were cows on the rutted runway so he only flew over and left. He supposedly saw a 300m wide shaft on the Huautla Plateau to the east of the caves. Allan Turner was a newspaper reporter from the Austin American Statesman sent down to write a story.

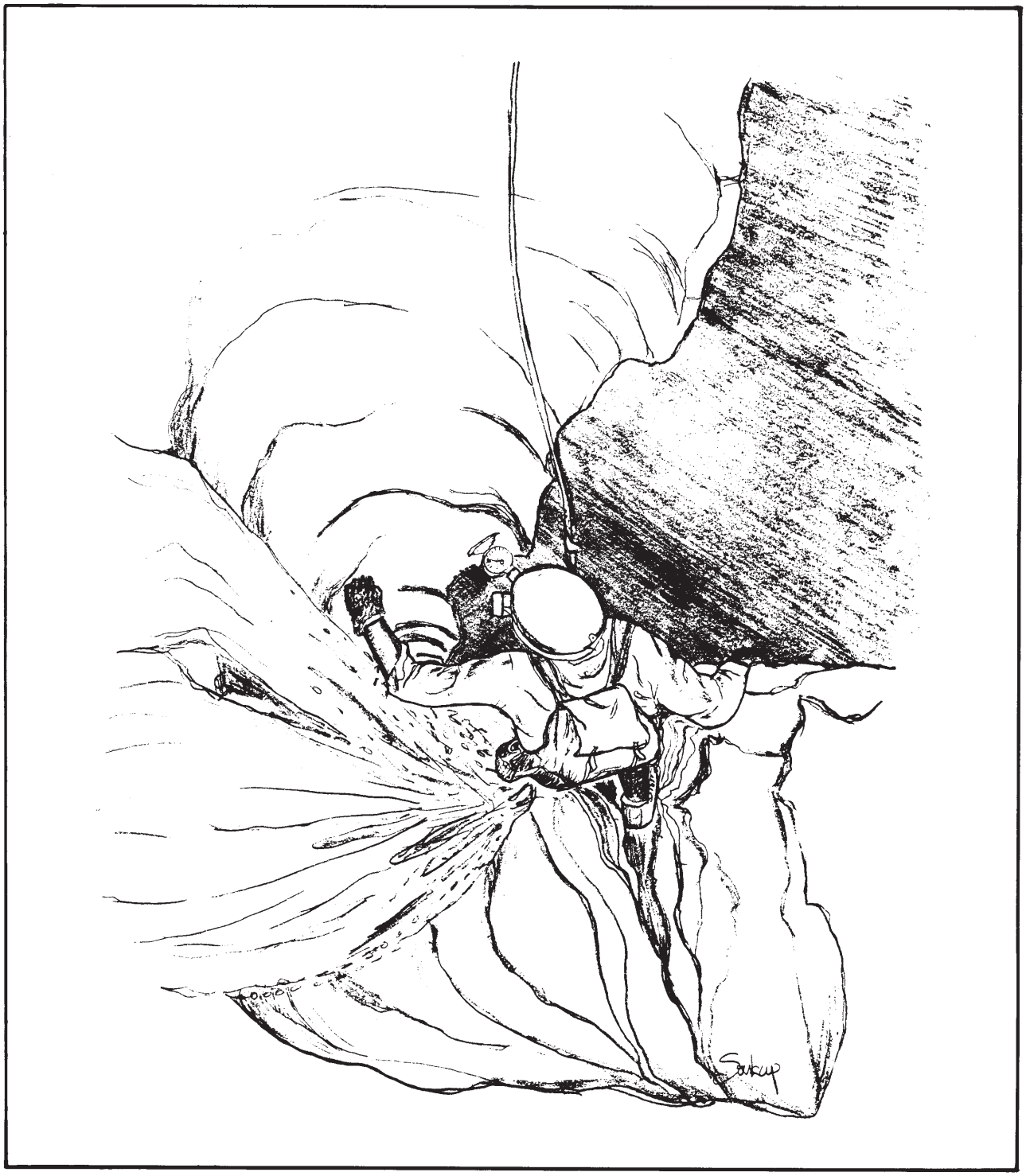
A look at the exploration log for La Grieta shows some interesting things. The log accounts for thirty trips this expedition. Of these thirty, only thirteen did any surveying. Given the large total survey that the expedition netted, enough to double La Grieta's length and make it the first cave in five

The Borehole beyond the Black Slide, La Grieta. (Gary Stiles)

years to surpass Arroyo in length, this seems a small percentage. The reason for so many trips is the great distances traversed in the cave. The camp at -520m required much logistical support to set up. Rigging, hauling in camp packs, de-rigging and photography, did not take as many manhours as exploring and surveying, but meant trips that ate up whole days. A good friend of mine and well established caver now living near Mammouth Cave told me he was hanging up his rack a few years ago, going horizontal. "Vertical caving is hauling", he pronounced. It involves logistic problems, hard work and danger. When we carried camp packs out in May of last year, we chided that it was a heart attack test; meaning that if you were going to have a heart attack, it would happen then. Climbing narrow rough fissure drops trailing a sixty pound duffle bag is tough. It's torture, a la Torture Chamber. But it is just for a fraction of the time spent underground.

An interesting anecdote alluding to how screwed up one's time can become occurred on January 9th, at the end of the logged 27 hour trip begun the previous day. When I got to the entrance room and looked up the 60m shaft there was only faint daylight. None of us had a watch. I dug into my camp pack duffle that was there to see if the alarm clock was still running. At my ear, it ticked. The time was 8:30. We figured then that it was AM and too early for a

restaurant meal in Huautla. When Stone, Stiles and I got to the trail outside, it was dark and cloudy. The stormyist we'd ever seen it look around there. By the time we reached the truck, it was quite dark. A helluva storm brewing, we said. But then it got darker. We had driven around the San Agustin doline, almost home, before we saw a Mexican with a watch. It was 7:30 PM de la tarde. We asked him to repeat it. 7:30 PM. The alarm clock hadn't been working. We'd had a 27 hour trip instead of an 18. It was hard to fathom.



Underground Camps for Deep Caves

by Bill Stone

I watched intently as the brightly colored figure dropped with ever increasing speed down the steep Nepalese glacier. Despite the parachute billowing out behind him, the man lost control and slid for 500 meters before coming to a stop on the brink of a 200 m cliff. We had just seen the climax to "The Man That Skied Down Everest." Besides the exciting last sequence it is a splendid color pictorial of what it is like to climb Everest as well. In order to ascend the final 2300 meters from the base of the Kimbu Ice Fall to within 600 meters of Everest's summit, five camps had to be installed by the climbers and Sherpas of the expedition.

We silently stood up, looking at each other with hidden smiles. "Camp V!" said two of us almost simultaneously. How deep could you go underground in five camps? How many people would be required? How much time?

Well, we haven't hit Camp V yet, but chances are good that Camp III will soon happen in Sotano de San Agustin when the -859m sump is dived. In the past year and a half a new phase of speleo-technology has been emerging for western cavers. In December, 1976, Camp II was established by four AMCS cavers in San Agustin (Jim Smith, Bill Stone, Frank Binney, Roy Jameson) at a depth of 536 meters for five days. This represented one of the deepest underground camps to be set in the world, outside of France. During the March San Agustin expedition the same camp was used for 12 consecutive days, allowing the push crews to comfortably explore to the -859 meter sump. In May, 1977 an 11 day camp was set in La Grieta at -300 meters, permitting exploration to continue to -665 meters before endurance levels were reached. The return expedition to La Grieta last December established Camp II at -520 meters and almost 3 km from the entrance. A new obstacle presented itself. Not only did one have to rappel and ascend a substantial number of deep pitches with camp gear as in the previous camps, but now it was necessary to backpack it 3 km horizontally as well. Eight cavers lived in this camp for 12 days, exploring La Grieta's furthest reaches. It took 13 people 4 weeks effort to make Camp II a reality.

Underground camping is not new to American caving. In fact, there is a fair bit of published literature concerning it.The two noteworthy deep underground camps done in the US were in Neff's Canyon, Utah, and in Ellison's Cave, Georgia. Both are dry caves, hence a lot of heavy water equipment was unnecessary. The Neff's Canyon camp was set at a depth of 200 meters for 36 hours in October of 1953. Participants included Dick Woodford, Marvin Melville, A.Y. Owen and Dr William Halliday. During the spring of 1969 Richard Schreiber and Della McGuffin camped at -250 meters for 6 days in the lower level of Ellison's Cave. Schreiber's camp was highly successful, using techniques he'd picked up from the December 1968 Canadian-American expedition to Sotano de San Agustin.

In Mexico, camping became "de-rigor" in many deep systems, particularly those of the Huautla Plateau. The earliest serious camping was done by Terry

Raines, Tom Phillips, Terry Plemons, and Bill Bell in Sotano de Huitzmolotitla, S.L.P. Their four day camp was set at approximately -183 meters, 800 meters from the entrance. In May of 1965, John Fish, David McKenzie, and Orion Knox set a four day camp in Joya de Salas at -140 meters and explored to the -260 meter sump. It was not until 1967, however, when the "Canadians" camped in Rio Iglesia at -407 meters, that Western deep caving technology was given a much needed input of new ideas. During the mid-sixties a large number of experienced British cavers (Boon, Thompson, Morris, Donovan, Drummond, et al.) moved to Canada and were inevitably drawn to Mexico by a Texan request to come and help explore some new caves found in a place called Huautla. These fellows were seasoned wetsuit cavers, used to lots of water and underground camping. For almost eight years following the deep caving scene was dominated by this group. Camps in Sotano del Rio Iglesia at -407 meters, San Agustin at -250 meters, Joya de Salas at -240 meters, Sumidero Yochib at -150 meters made feasible the exploration of these difficult, deep systems. Somehow, however, the knowledge gained on these trips was never passed on, so when it came for the serious planning of Camp II in San Agustin, little practical knowledge was available. The notable exception was that one member of the team, Jim Smith, had done some deep camping in the Gouffre Berger and PSM in France. Since that trip, our technique and philosophy of deep camping has been slowly refined. The tremendous upsurge in deep vertical caving in the past few years indicates that underground camps will become a primary tool in the exploration process. With this in mind, I would like to share some of the knowledge we have learned the hard way.

WHY CAMP: The limit to functionality of a caving team, no matter how good they are, begins to be approached after 24 continuous hours of physical activity. There have, of course, been exceptional cases, such as the March 1977 rescue in San Agustin, where trips have lasted up to 37 hours, but most participants were incapacitated for a week thereafter. In essence then, if the team plans to maximize their productivity underground, limiting trip times should be kept roughly around 24 hours. Typically, it is not an uncommon days work to survey for 8 to 10 hours. This leaves 14 hours of in-transit time under ideal conditions. If we assume that it takes twice as long to ascend as to descend (with full equipment) then between four to five hours are left for the party to enter to the point of interest. It is important to keep this hourly breakdown in mind. For every additional hour of descent, three or more hours are taken from the productive time period (exploring or surveying). Thus, beyond a seven hour trip in, there is effectively no time for additional work, other than exiting. At this point the endurance barrier is reached. Beyond this there is only one logical solution for continued exploration: underground camping.

The seven hour limit, along with the availability of a suitable campsite, determines where to put the camp. Even though Camp II in San Agustin is at a depth of 536 meters, Camp I at only -300 in La Grieta requires roughly the same amount of effort to enter and exit. Thus a 200 meter deep cave in Alabama could, if conditions were bad enough, demand some sort of camp. Clearly the methodology of getting you and your equipment to the camp, as well as the style of the intended camp will depend greatly upon the nature of the cave to be traversed. If one was camping only 100 meters inside the entrance everything including the kitchen sink could be lugged in. If the camp is to be a remote one not only will one want to forego some luxuries, but a suitable underground backpack will be required as well.

The actual choice of the campsite is influenced by several physical needs

The duffel pack with shoulder straps and hip belt. (Jerry Atkinson)

Proper carrying form for rope work. (Jerry Atkinson)

in addition to the seven hour trip time. Camps located further than seven hours from the entrance (or other camps) inhibit communication and supply unless "overnight" trips are planned. Basically there are four requirements for a functional campsite. There must be sufficient space to allow for sleeping quarters and a general eating area. The area should be reasonably dry if possible. A source of drinking water should be close at hand. Lastly, a suitable area must be provided for waste disposal (latrine), both for conservation reasons and for general morale!

THE PACK: Assuming that the campsite has been chosen, the main problem now facing the explorer is how to transport his equipment from the surface to the camp. If the cave consists only of large walking passage with little or no ropework, a standard rigid frame backpack (such as a Kelty) will be quite adequate. Camp I in Cueva de Infiernillo was set in this manner. The passage averages 15 by 15 meters on a gentle slope, and the camp was set 500 meters horizontally from the entrance. If much ropework and sinuous passage are encountered, even the best commercially available rigid frame pack will inevitably be torn to bits or broken due to its inflexible nature. Most deep systems fall into the latter catagory. The obvious solution is to switch to some sort of durable, frameless pack.

Consequences of incorrect form on a rope. (Jerry Atkinson)

Traversing a tight fissure. Pack is only 1/4 full. (Bill Stone)

The all-time classic in this catagory is a simple duffle bag. Until quite recently the usual technique was to rappel in with the duffle hung off the rack carabiner and then lug it by the strap or handle a short distance to the next pitch. This made going quite strenuous when longer distances were involved. In exiting the cave, the bags were almost invariably tied onto the rope at the bottom of a drop and hoisted up from above, many times with middle men spaced down the pitch to avoid foul-ups at ledges. The chief disadvantage here was that arms, instead of legs were used in the hoisting process. The recent trend to more remote camps has led to some modifications which make the duffle bag pack highly versatile and comfortable. For base materials, a surplus U.S. Army issue duffle bag with shoulder straps will suffice well. It costs roughly 8-10 dollars. Two modifications will now need to be made. In alpine back packing, most of the load is transferred to the hips via a padded waist belt. Since most deep camps require wetsuit caving the padding can be forgone and the waist belt made out of an old automobile seat belt. The seat belt has the advantage over a usual backpack belt in that it can be released quickly in the event of emergency, or where the pack must be taken on and off many times while traversing a difficult passage.

In dealing with ascents and descents of pits, the philosophy has again been taken from alpine techniques. That is to say each person carries his own gear

The Stiles break-apart camp pack in the disassembled state. (Gary Stiles)

The Stiles pack assembled for carrying. (Gary Stiles)

plus a share of community equipment. Although the ascent from say Camp II in San Agustin at -536 meters (15 pitches) with a 60-80 lb. duffle may sound like a fair bit of work, it is not as difficult in the long run as hoisting from above, particularly on awkward non-free drops.Although traversing a section of horizontal cave is most easily accomplished with the duffle on your back, this is definitely not the way to carry the pack while on rope. The weight and eccentricity of the pack about the pivot point (i.e. the rack or seat harness carabiner) provides a tendency for rotation of the system to a new equilibrium position.In caving terms this means that you will flop over backwards and come to rest upside down. The remedy to this problem is to suspend the pack off the pivot point by means of a short length of webbing (hauling tether). While rappelling, the tether attachment point on the duffle makes little difference. However, in ascending a pitch a duffle slung sideways off the handle will inevitably catch up on projections adding unnecessary work. The best solution is to sew the hauling tether to the top of the duffle so that it remains upright at all times. (Neil Montgomery, 1977) Additionally, it is advisable to adjust the length of the teather so that the bag hangs a few inches below your boots while ascending. Longer lengths allow the bag to catch on projections while too short a length interferes with climbing. The chief disadvantage of using a duffle bag pack is that many times it will not fit through a squeeze that you can. This means that

it usually must be unpacked to get it through. Based on this, Australian cavers have fashioned smaller diameter duffle packs so as to fit a body sized squeeze. (Julia James pers. comm.)

Another solution to the tight spot problem has been to construct the back pack using two smaller bags side by side which break apart when needed (Gary Stiles, pers. comm.). These bags are roughly half the size of a regular duffle and are also available in surplus stores for 6 to 8 dollars. A shoulder strap and half of the seat belt are sewn to each bag. These are then strapped together to form the completed unit. This pack has somewhat better balance and a lower profile than the large duffle.

Stepping up in price range, a wide variety of commercial frameless expedition packs are available. Of these, the Chouinard and Millet packs seem to be the most durable. A pack large enough to carry your camp gear will run between 60 to 80 dollars.

THE SLEEPING BAG: With the back pack chosen there are two camp essentials that will take up most of the available space; sleeping paraphenalia and food. In many cases for long duration camps it may take a special trip just to bring the food in, particularly for remote locations, as less can be carried per trip. In choosing a sleeping bag there are basically three desirable features: it should be a light, fairly compressible and it should keep you warm even if it gets wet.

All of these rule out Boy Scout type cotton sleeping bags as well as "paper" type bags. Down bags are notorious for losing their insulating qualities when wet. Even in a "dry" cave the humidity is apt to be running over 90%. A few days under such conditions will usually dampen a down bag to the point where sleeping is uncomfortable at best. The only commercially available bags which meet all three criterion are of the synthetic or "fiberfill" type. A light, three season fiberfill bag can be obtained for 30-80 dollars at most outdoor shops.

If the campsite can be located at a flat sandy or dirt floored area sleeping arrangements can be greatly simplified. Most alpine backpackers carry some type of foam pad for sleeping on. Underground, however, these pads are bulky and usually an unnecessary luxury. A suitable substitute is to lay out your wetsuit and cover it with a light piece of plastic.

As is many times the case, the camp must be located in a breakdown area where there are few flat spots. The usual solution is to sleep in a hammock, strung from bolts, pitons or projections on two opposite walls. The undisputed Cadillac in camp hammocks is the Merida or Yucatan hammock which is made in Mexico. It comes in several size varieties and two material types; nylon or cotton. Although the nylon is said to be more durable, the cotton hammocks are somewhat more comfortable and are the easiest to obtain. They weigh around 2-3 pounds and cost $10. If you can't get to Merida, two other hammocks are available in the states that will serve the purpose. For roughly $6, Sears offers a light, compact nylon two point hammock that fits in the palm of your hand. At first appearance, one would not think to rig these flimsy appearing things any further off the floor than would be healthy to fall. They are, however, durable enough to last through one expedition and are an answer to those purists who

Sear's hammock (foreground) and Yucatan hammock in Camp I, La Grieta. (Bill Stone)

Single point bivouck hammock. (Gary Stiles)

maintain that the Yucatan hammock is too bulky for underground camping.

Lastly, a rock-climbing single point bivouc hammock also works well, particularly for those who find a two point hammock uncomfortable due to the curvature. It is possible to lie fairly flat in a single point hammock. These are available in most rock-climbing shops for around 30 dollars. Additionally, rigging is simplified and one less bolt, pin or sling need be brought in. The most important axiom to remember in deep camping philosophy is that "it's not what you carry in that matters....it's what you have to take out!" Conservation practice means everthing you don't eat gets packed out. Clean caving. Heavy packs if you have a lot of unnecessary weight. Hence, the philosophy to bringing equipment into the camp is to develop the lightest, compact camp kit and vertical rig as possible since they have to go out at the end of the trip.

THE FOOD: In view of the high costs of freeze drying, the above axiom is of particular interest when purchasing your camp food. Since going in is down, gravity is on your side. On rope drops the load can be transferred to the rack and even the "horizontal" stetches are easier while descending. Not surprisingly, we have found the best expedition food supplier to be the neighborhood super-

market. The savings you make in not going to freeze dried food can be invested in higher quality real food. The benefit of high moral in a deep camp cannot be over-emphasized. So whether it's sardines or canned roast beef that turns you on, it pays to plan a menu that keeps people happy. Food planning for any large expedition is a difficult matter, particularly for the uninitiated. Rather than delving too much into personal taste, a typical puchase list might provide a better idea of what and how much is required to support an underground camp. This list was prepared by Dino Lowery for Camp II in La Grieta. Eight people

1 large bottle peanut butter
2 boxes cheesecake (Jello brand)
6 boxes rice, 14 oz. each
3 gallons instant mashed potatoes
3 packages egg noodles
4 cans mushroom soup
1 jar grape drink
2 jars Tang (1 lb. each)
1 bag (about pint sized) assorted tea
1 pint of coffee
1 pound sugar
30 soup mixes
5 pounds Grape Nuts
30 pounds granola
24 bars Tiger Milk bars
40 quarts powered milk (not enough)
4 packages cuttlefish
10 mixes Top Ramen and Chibans
4 pounds walnuts
3 pounds M&M's
4 pounds peanuts
2 pounds rasins
8 pounds cheese
4 mixes stroganoff sauce
4 mixes hollandiase sauce
4 mixes brown gravy
20 cans ham
24 cans boned chicken
24 cans boned turkey
12 cans roast beef
18 cans tuna
22 cans corned beef
2 cans pineapple
4 pounds dates
some salt
some pepper
some dried onions
some chili powder
4 quarts of Kool-aid
4 packages chocolate pudding
8 cans fruit pie filling
1 bottle vitamin C
1 small jar boullion cubes
2 cans bean salad
4 cans mushrooms
1 can cranberries
3 pounds prunes
6 pounds apricots
1 pound pineapple
1 pound peaches
3 pounds Nestle's Quick chocolate mix
1 pound dried cherries
4 cans Veg-all
1 can (8½oz.) apple sauce
1 quart Tiger Milk nutrition booster
enough toilet paper
a tea ball
1 gallon white gas
2 cartons margarine
8 packages spagetti mixes

ate well for twelve days, although some suffered from acute granolaitis. Group consensus was that ten to fifteen more pounds of bulk carbohydrates (rice, noodles, potatoes) should have been substituted for an equal amount of granola. Most exploratory trips from Camp I and II in La Grieta and Camp II in San Agustin were 20 plus hours in duration. A trip of this nature on a regular day on, day off basis demands a high energy input. One way to do this is to prepare a large batch of carbohydrate glop before each push, consisting of a potato or rice base and your favorite additions. For cooking equipment it is advisable to bring a minimum of two backpacking stoves, or you may have to endure through a week of cold meals (as Schreiber and McGuffin did in the Ellison's camp) when your only Svea blows up. Many people argue against gasolene stoves due to the high volatility of the fuel, particularly when carbide lights are used. Perhaps

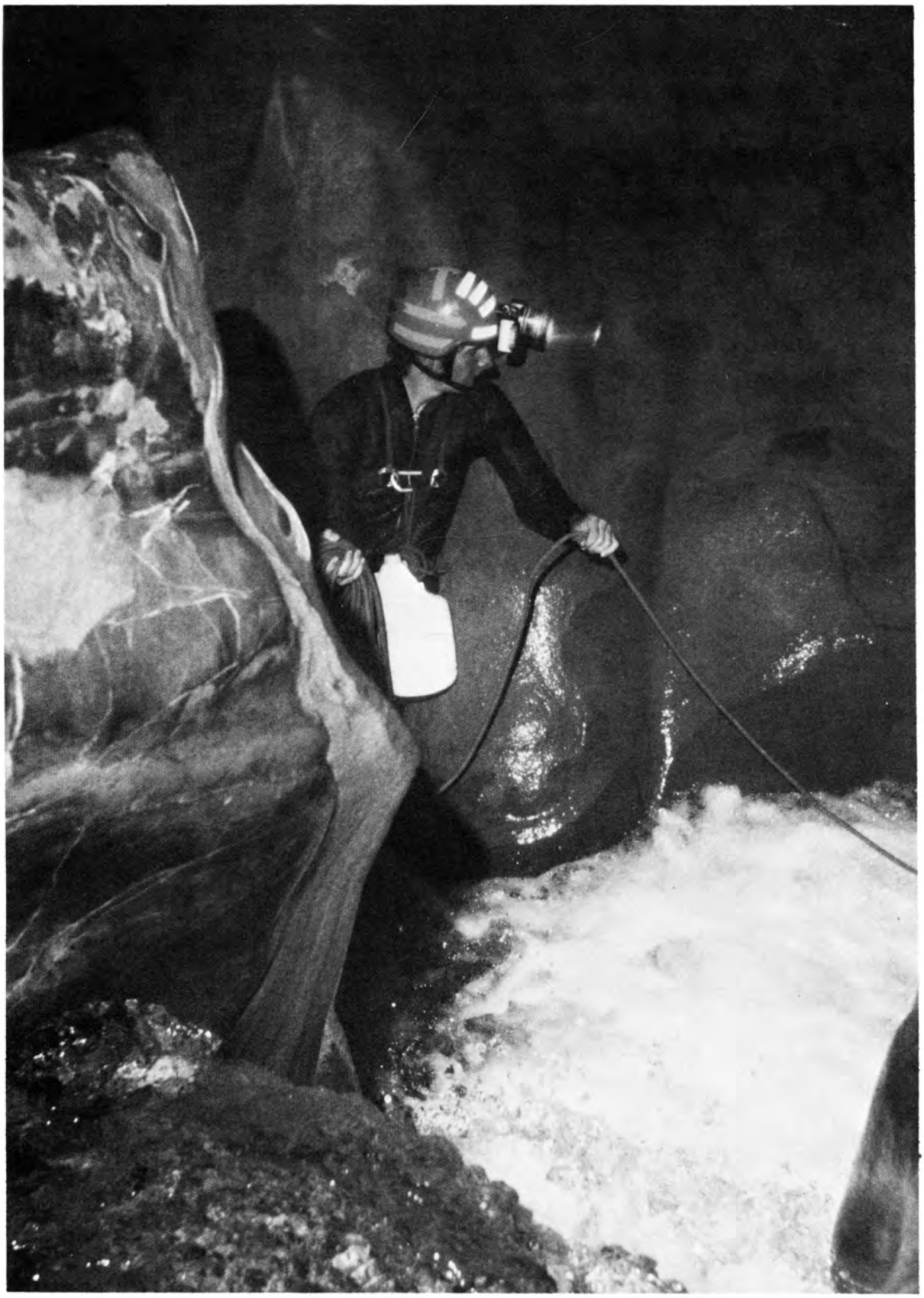
the most supportive evidence against high volatility type fuels was the destruction of the Canadian camp in Rio Iglesia in 1967. After a stove had been filled the fuel bottle was left uncapped just a few feet away. When the stove was lit the fumes carried the flame to the bottle. Despite these problems, gasolene stoves are still the easiest to operate and are generally the most readily available. Proper packing for transport and general caution in camp will usually avoid any problems. Alternatively, kerosene stoves and be used.

CAMP ATTIRE: What to wear at -500 meters? After a hard day in the wetsuit, getting dry and warm can be a real morale booster. For long duration camps it is well to have some sort of woolens along to change into once the wetsuits have been tossed on the clothesline. Most caves in Mexico average anywhere from 60^{o} to 70^{o} F. Hence, if one can stay dry in camp only minimal clothing need be brought in. The usual wardrobe consists of a pair of light wool pants, wool sweater, T-shirt and tossle cap. If the camp is to be an exremely remote bivoac of short time duation, almost all luxuries, including dry clothes, can be dumped. All that is really needed is a sleeping bag, a small stove and some canned food which can be heated directly on the stove. In transporting dry articles to a camp (clothes, sleeping bags, non-canned food) water tight packing is essential. Heavy duty plastic garbage bags usually work best. Double or triple bagging will be necessary to insure against leaks. This is of paramount importance. If your system leaks you may find the pack magically doubled in weight. Additionally, we have found that loading the backpack can be facilitated by compressing each bag and sucking out as much air as possible before tying it off. This air tight containerization of your equipment has an added advantage in that you can float your pack, barge like, through canals and lakes.

A surprising amount of active time will be spent in camp on a long duration project. After a 20 plus hour trip and 12-18 hours of sleep, it is easy to spend a 12 hour stint awake in camp while re-couping for the next push. Whether it be sewing up trashed equipment, cooking, playing cards or digging a deeper bog, light will be needed for everything you do. If everyone in camp has a lamp burning, the carbide supply will dwindle like the fuel gage on a Texas 4X4. For Camp II at La Grieta well over 40 pounds of carbide was used during the 12 day stint. The camp lighting situation can be augmented somewhat by using a few large candles in lieu of carbide.

ODDS AND ENDS: Just after breakfast you look across at the pained expression on your teammate's face as he prepares to take off this nice dry, warm camp clothes and step once again into that cold, slimy wetsuit. Sure, it heats up after a while, but its that first thirty seconds that will get you. The solution to the never enjoyed hassle (a la Mike Boon) is to prepare a steeping pot of hot water. Dump most of it into the wetsuit, the rest into your tea cup and suit up.

This article is not intended to be all inclusive of deep camp technology as it is today. Hopefully, though, it will provide enough insight to spare new underground campers a few of the stumbling blocks we have encountered. As a new form of wilderness backpacking comes of age it is well that we adopt the maxim of our alpine counterparts: PACK IT IN.....PACK IT OUT.



Henry Schneiker paying out a canal line. (Peter Strickland)

ZOQUITLAN

Return to the river caves

by Jerry Atkinson

A group consisting of Brian Clark, Preston Forsythe, Jocie Hooper, Shari Larason, Bill Mayne, Peter Strickland, Henry Schneiker, and I were heading to Zoquitlan, Puebla. This was a new area, having been discovered only the Christmas before. (AMCS Activities Newsletter no. 5) We were to meet Mike Boon, Freddy Poer, Loretta Poer, and Jim Rodemaker south of Mexico City.

Two days of driving found us in Coxtcatlan, Puebla where we caught up with Rodemaker's crew. On Dec. 22nd we drove up the west side of the mountains to the campsite outside of Zoquitlan. A few people went into town to arrange for burros and talk with the presidente. Although we were informed that everyone had sold their animals and bought camiones, we did manage to secure 2 burros.

The next day Henry, Peter, Bill, Jocie, Brian, and I hiked the nine kilometers with the burros to the river caves. The burro driver, thinking he knew exactly where we wanted to go, took an alternate trail and deposited our duffels at the entrance of the wrong cave. After an hours wait we finally located him and racked our brains as to what to do with eight 100 lb. duffel bags one valley short of our intended camp. Fortunately the local tienda owner agreed to haul the gear the next morning, so Brian was left to duffel-sit overnight. Camp was made at the southern river cave, Sotano de Coyomeapan.

Peter got the mules and our equipment into camp on the morning of the 24th. Jim, Mike, Loretta, Freddy, Preston, and Shari arrived late that afternoon with more gear-laden burros. Preston, Henry, and I rummaged through the jungle for about an hour trying to locate the best rigging point, all the while being directed by Peter who was perched on an opposite side of the pit.

The entrance of the cave is very impressive. An estimated 8-10 cusec. stream flows through a steep-walled gorge and empties into the 30x50 m. wide sotano by way of an 80 m. waterfall. The entrance pitch is rigged 1/4 of the way up the 60 m. headwall to stay out of the water. A constant mist prevails giving rise to lush vegetation reminiscent of a tropical paradise in the immediate area. Many types of ferns and orchids coexist with pine trees and cactus.

Christmas Day Henry and I started out in the morning and fed the 120 m. goldline into the entrance drop. I won the 'glory toss' and rappelled 40 m. to a ledge where I found the rope trailing off under the waterfall. I had the distinct feeling that I was part of an eternal swallowing process for insignificant debris. I rerigged the remaining rope down a meter wide hole in the ledge and whistled for Henry to come down. He descended and continued down the next 25 m. drop to a small alcove. A slot opposite the main entrance

pitch was blowing a gale wind into our faces. I couldn't believe our luck in finding a dry bypass past the pounding outside. The slot intersected a smooth-sided 40 m. pitch to a cobble and breakdown floor. A small duckunder led to a chamber where a window opened out to the bottom of the entrance waterfall and a main canal foaming off into the dark.

It was awesome with the wind, spray, and froth. The mean aspect of the canal led us to hope there was a dry bypass. Oztotl was with us! We discovered a 30 m. pitch opposite the window which intersected an immense room below. One side of this chamber contained a recess where the canal water thundered down in a 25 m. waterfall. A canal could be dimly seen leading off on the far side of the plunge pool. High above our dry perch the blue aura of the afternoon filtered in from a hidden skylight. We had no more rope to use as canal line across the turbulent water so we began the survey out. After a leisurely prussik we exited into the evening twilight.

Meanwhile, Jim, Preston, Brian, Bill, and Jocie hiked to the overflow cave about 1-1/2 hours hike from camp toward Zoquitlan. Five drops were rigged to a depth of 80 m.. Preston dropped a side pit at the base of the third drop where an incoming stream made descent prohibitive. Bill and Jocie went down the 4th and 5th pitches which were becoming increasingly wetter. A 70 m. rope was rigged on the 6th drop and Bill rappelled to a ledge. After determining that the rope did not reach the shaft's bottom, Bill returned and the group exited the cave.

The camp was awakened in the early morning of the 26th by a minor earthquake. It was later found to have been felt underground by the Huautla contingent. Most agreed that the sensation was akin to a gently undulating waterbed.

In the afternoon, Henry, Mike, and I proceeded to the last point of exploration in Coyomeapan. Mike was belayed to the otherside of the waterfall where he found the water roaring down a 1.5 m. wide rift. Henry and I followed after driving a bolt to rig a canal line. It didn't look good. The water was heading down a steeply dipping chute with shear walls. The depth and length of this little nasty couldn't be determined as the rift curved left and down. We began setting bolts for a traverse to a friendly looking ledge in the distance. After the placement of our 4th and last bolt, Henry rappelled down for a look. He went a little too far and began a somewhat epic struggle to free himself of the water. A half-hour later he was back with the news that the water disappeared into a 1 x 2 m. chasm with little or no air. The rift appeared to continue beyond however. The area was promptly named the Turbine and we exited into the night air.

The Overflow Cave was receiving its due attention. Jocie's journal reads:

"- Dec. 28; Peter, Preston, and I began the survey from the entrance of the cave. Jerry, Bill, and Henry were to be the push team. After a mishap which left Bill's electric light out of commission, and Henry's leg with a bit of a bruise, Bill left the cave. The survey team later found Jerry and Henry admiring the cavern's acoustics at the top of the 6th drop. With a full team once more, Henry bottomed the 6th pitch at a depth of 150 m. where he found a horizontal passage with several rimstone dams. We decided to leave the cave rather than push due to tiredness and cold."

SOTANO DE COYOMEAPAN

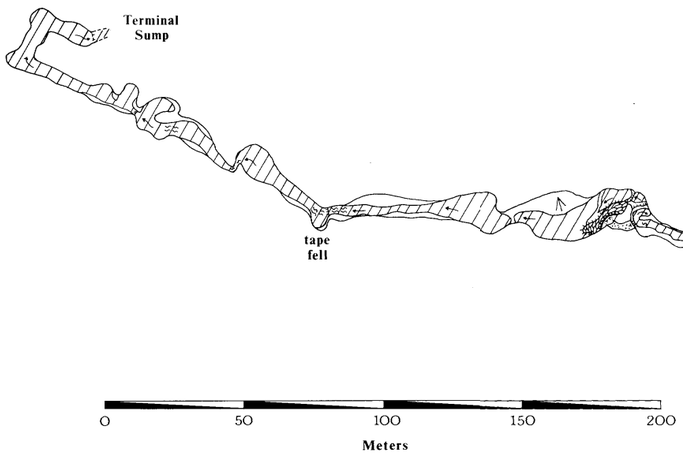
MUNICIPIO DE SAN PABLO ZOQUITLAN, PUEBLA, MEXICO

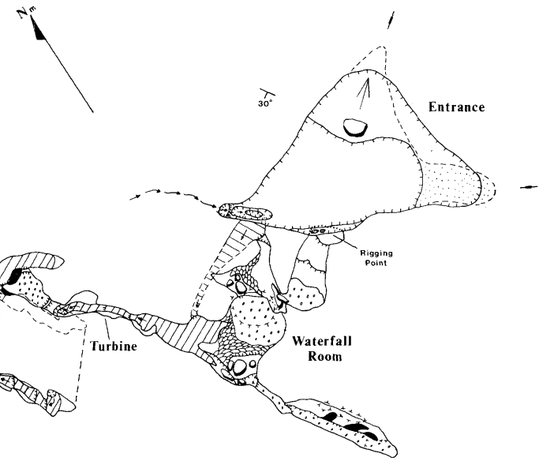
Suuntos and Tape Survey by

G. Atkinson
M. Boon
H. Schneiker

January 1978

Drafted by G. Atkinson April 1978





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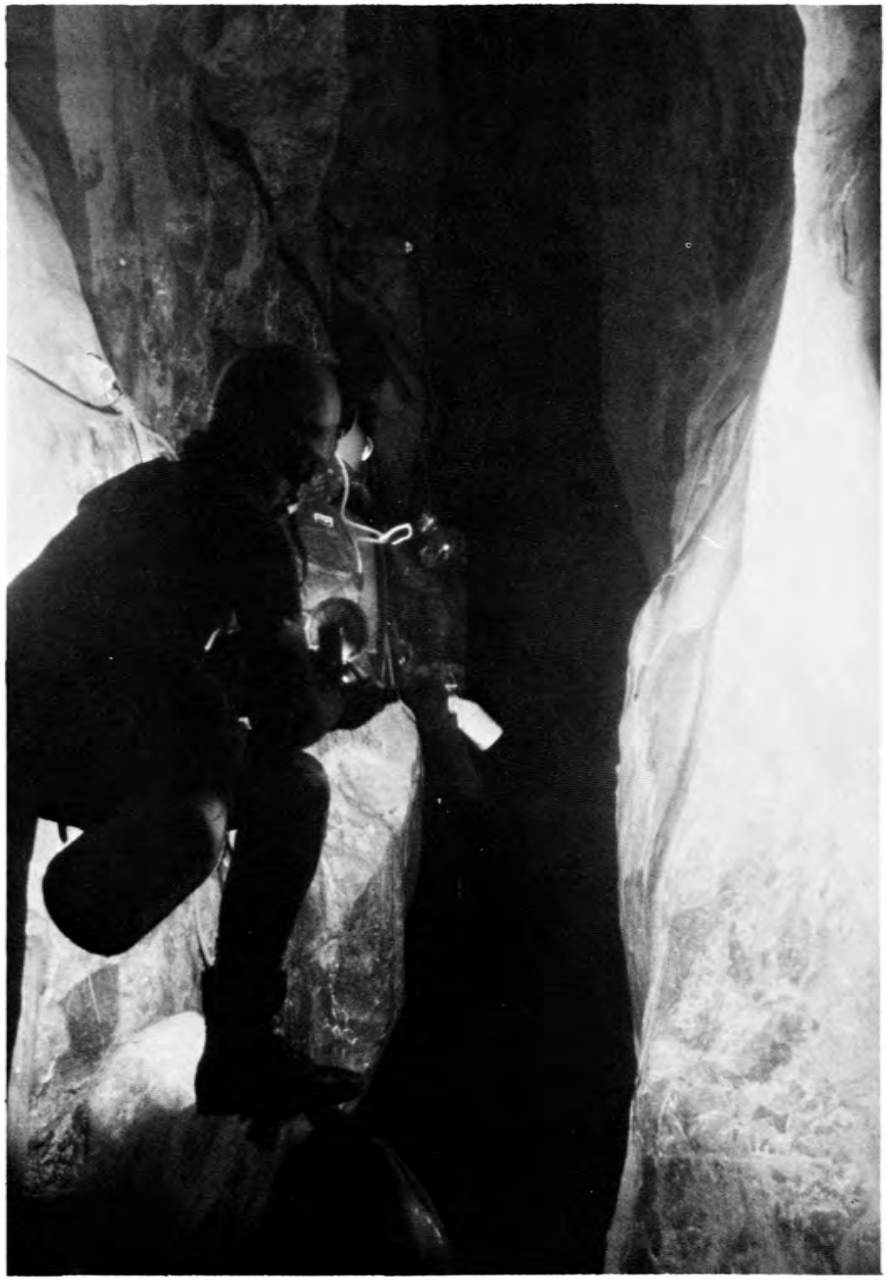
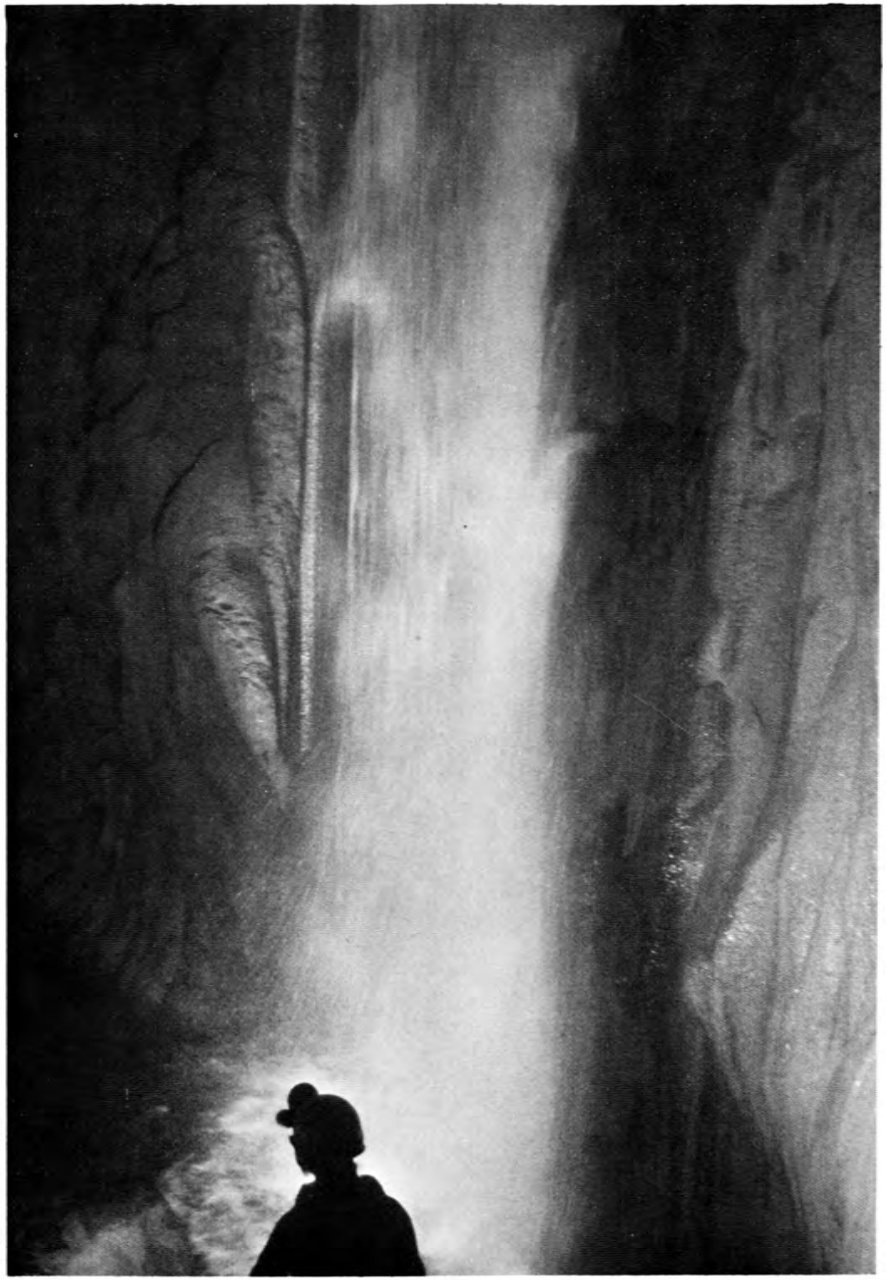


Mike Boon negotiating the Turbine traverse.
(Peter Strickland)



The 25m. waterfall in the Waterfall Room.
(Peter Strickland)

On December 30th, Henry, Peter, Jocie, and I returned to Coyomeapan to finish the bolt traverse. Two more bolts got us to a position where a solution doughnut could be lassoed. Henry made the rather exposed 6 m. tyrolean and secured the rigging. An additional two bolts gained us a rigpoint beyond the Turbine below. Peter rappelled 18 m. to a sandy-floored alcove that allowed a short rappel to a quiet water passage. Fifty meters of wading brought us to a deep 10 m. wide lake where the water from the Turbine rejoined us from a side passage. The stream could be seen continuing through a narrow cleft at the lake's far end. We had no more rope for belay and left the cave.

Having thoroughly recouped our energies, the afternoon of the 2nd found Mike, Peter, Jocie, Henry, and I at the terminus point in Coyomeapan. Mike was belayed through a narrow winding canyon to a wide high-ceilinged gallery. The stream was shallow, running over brown resolutioned flowstone studded with cemented black limestone boulders.

A series of short cascade climbdowns followed to where the stream again disappeared into the floor. A small, high level bypass was located which led to an 8 m. pitch. Here the stream was gushing out of the wall and collecting in a pool of putrid brown foam. Another deep lake was swum to the top of a climbable 3 m. waterfall. It was real trucking cave.

A canal line swim through a twisting canyon led to a 2 m. waterfall. We had now used up the last expedition rope. Mike went ahead and returned to report the cave terminally sumped in another 40 m. How timely! We surveyed and derigged to the top of the Waterfall Room drop where a duffel snagged. We aborted derigging and prusiked out.

The next 3 days were spent derigging both the Overflow Cave and Coyomeapan. Preparations were made to leave the area on January 6th. Little did we know that Paul Fambro and crew had suffered an accident at Coxtcatlan in transit to Zoquitlan. Two of their party hiked up to our camp with the local padre on the fifth. We reached the scene of the accident the next evening only to find no trace of Fambro except a message that they had been towed to Tehuacan "en transito". We failed to catch up with them, but later learned that they experienced an awful fate getting Fambro's truck repaired in Mexico City.

Jim, Preston, Loretta, and Shari left for Cuetzalan in Jim's truck. Mike was dropped off in Tehuacan to catch a bus for Huautla. The schoolbus returned uneventfully to Austin on the 8th.

Summary

Sotano de Coyomeapan was bottomed at -166 m. with a traverse length of 470 m. To date, the Overflow Cave is about 289 m. deep with a going stream lead at the terminus of exploration. Another major river in the vicinity sinks to the north with an estimated 10-12 cusec flow. It has been explored down three drops and appears to be going strong. Possible resurgences for the river caves are at least 500 m. lower and about 9 km. to the east. A very deep pit is rumored to exist approximately 8 km. to the north on a large plateau. The area's potential is very good to say the least. It would be premature at this point to predict whether this region will yield great length or depth, but with Huautla only 30 km. away .....

Down To The Sump In Peña

by Bill Stone

It was Monday night of Thanksgiving week. Though most everyone had left Austin for Brinco and other points south, four of us were gathered at Kirkwood Central talking of last minute preparations. Strangely enough, Tracy Johnson was there, even though he was not due to return from Cuetzalan for another two weeks. It seems the caves there were a bit too horizontal for his vertical caving blood. He had hardly been home a day, but seemed eager to join our small party heading for Reynosa the following evening. Along with Tracy, Bill Steele, Margaret Hart,Mark Minton and I made up the team. The trip to Valles was hardly what could be called routine. At Reynosa (4 AM EST) we were handed a traditional rendition of the almost forgotten long hair - beard hassle. After some considered conversation in Spanish, when we were informed caving was illegal in Mexico,we retreated to the U.S.A. and implemented Plan II: drive to Brownsville at 75 mph in the fog. This worked great until an unsuspecting motorist doing 20 mph pulled out directly in front of our 300 lb. international orange bumper. Stopping was out of the question. In true Mexican fashion we slipped into the left hand lane which, unfortunately, was already occupied. In a dazzling maneuver, befitting of Barney Oldfield and Terry Saythér, we narrowly avoided a close encounter and skidded to a halt on the left hand burm. About this time, those in the rear awoke, counselling prudence on driving through the fog. Oh well. Brownsville.

All went smoothly at the boarder, except for Steele who thought he could squeak out one more visa out of his expired passport. Carumba ! " No se puede pasar con eso. " A kilometer dash to the local Police Department for an affadavit settled that. Late Wednesday evening we set up camp just outside of Rancho La Presa.

The following morning we drove into Mirador and had a short conversation with the the commisario. Permission was granted to continue exploration, so we drove on to Rancho La Presa. Burro arrangements were made there and we were on the trail by 9 AM. ... five gringos,twenty Mexicans and one small burrito carrying 600 meters of rope. Inside, Pena was much as before; narrow canyons where rope after rope had to be passed along a five person chain and deposited in a great pile at the end for the next cycle to begin. Several drops were bolt rigged where difficulties had arisen in September. We soon arrived at the 71 meter pitch, terminus of previous exploration at -284 m. Steele descended first and I followed. About halfway down I noticed he was standing on a ledge at roughly the same elevation as I was hanging. His lamp dimly outlined a great passage receding onto the blackness behind him. This airy perch overlooking the shaft proved to be accessable via a somewhat exposed climb up the left wall from the touchdown point. I quickly joined him and we continued down the passage for 200 meters before coming to a 25 meter

drop. Margaret,Mark and Tracy soon arrived, impressed with the side passage and the shaft which continued on. Margaret, Mark and Bill decided to push and survey the side lead while Tracy and I rigged down the main shaft. A 30 meter goldline was rigged and Tracy descended. He came to the end of the rope, but not the shaft! Following a rash of echoing expletives, he tied on another 25m line and continued down an impressive chamber - 20 meters across. Since we still had plenty of rope, I rerigged the drop with a single 50 m line. A small door-like passage led off the low end of the room to a series of short climbdowns and finally a deep pitch. Good rigging points were sparse and most projections that looked suitable inevitably failed a pull test. Tracy found a loop passage which connected out over the top of the drop. By using the entire partition wall for an anchor we felt safe enough to descend. I went down first, roughly 40 meters, to a ridge of rock spanning across two more pits, one to either side of the touchdown point.

When Tracy arrived, he was almost out of breath, gasping. Strange, so was I, and all we had done was rappell down this shaft. Tracy's lamp waned with a hazy orange glow. Bad air? No sign of a sump or organic debris. We decided to go on and see what happened. Tracy continued rappelling down the left hand wall and into the smaller, but deeper of the two shafts. He called out that a passage continued off the bottom; several in fact. When I got off the rope below, I began to feel strange, disoriented. I clumsily walked down a small pile of breakdown to the larger of several passages leading off. This one had a slight trickle of a stream, but the air was very stagnant. Tracy soon returned. He had managed another 50 meters of passage before coming to a drop. By this time the two of us were breathing like we'd just run the mile with Jim Ryan. We both had headaches and decided to ascend to the large chamber below the 71 m drop for some fresh air. The air indeed got better as we ascended the 40 m drop. We slept for an hour before a crash of falling rocks signalled that the others were coming down.

With everyone present we began opening our canned Thanksgiving dinner. Everything was there - turkey, yams, cranberries and even pumpkin for dessert. Bill eagerly related their find as people fumbled with various methods of heating their canned turkey. Beyond the 20 m pitch he and I had stopped at, they had seen what surely was the largest passage in Pena: a long breakdown floored room up to 30 m wide in places sloping gently downward for 200 m to a circular shaped, high arched chamber some 40 m in diameter ... the Rotunda. There the passage stopped and they surveyed out. Tracy was still somewhat bummed about the bad air so after dinner he and Margaret headed out. Bill, Mark and I decided to survey down as far as was safe and see what the cave did beyond Tracy's drop. Knowing that there was bad air ahead made the transition a little easier than the first time. Not only was breathing difficult, but seeing proved to be a problem as well. Our lamps put out little more light than a brightly glowing ember in a fire. Any attempt to increase the light with a bigger flame only resulted in the lamp blowing out. There was just too little oxygen to burn it. Moving ahead was slow to be sure, almost comical at times. To see someone as atheletic as Steele gasping for air just making an entry in the survey book brought on a few smiles. We finally reached Tracy's pitch, a nasty looking fissure with an awkward tight slot at the breakover. I rigged up while Bill tied the rope off. The fissure dropped 25 m and was broken by two ledges. In the course of the descent a massive projecting ridge of loose rock came off the wall and fell to the floor with a grinding crash. My carbide was almost useless for reconnoitering so I switched

on my short circuiting electric. Its on-off nature was almost as annoying as that pitiful carbide flame. At least I could see, when it stayed on.

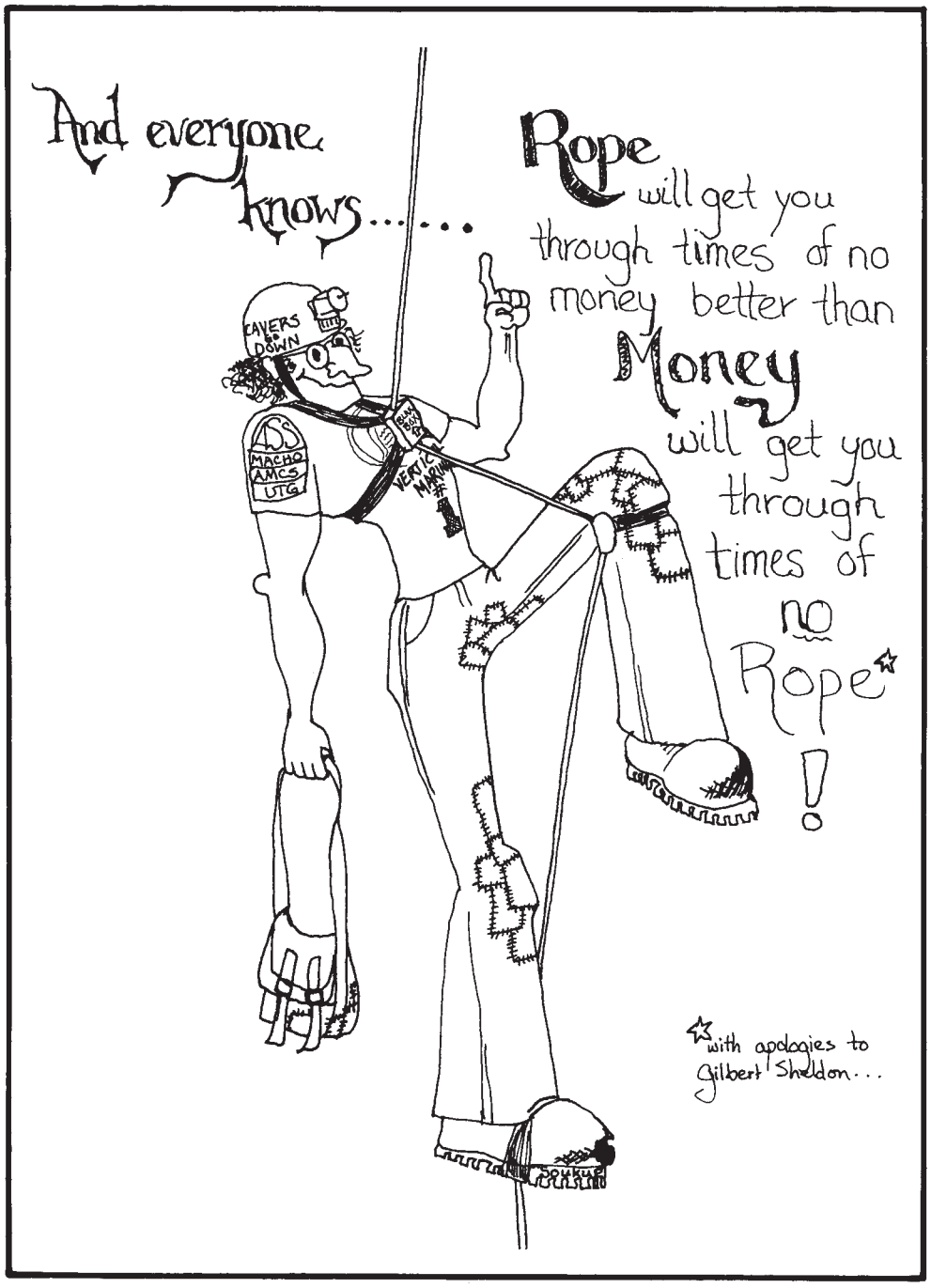
I was stopped only a short distance further on by an enticing 4 m drop. How much further was this rathole going to go! Upon returning to the rope, I ascended half the pitch before realizing that I had left my pack below. Rapture of the deep. I again ascended, this time to within 5 m of the top before a 50 lb. rock peeled off, landing squarely on my shin. Bill and Mark voted for ditching the survey and splitting. We did. The exit up was rapid, since we left all the rope in place intending on a mop up trip the next day. At the top of the 45 m pitch (-150 m) the ledge we had all been using to traverse out to the rope dropped out from under me as I was unclipping from the rope. A good 500 lbs. of rock fell into the pit. I had been the last to ascend. We climbed out to a nice sunny day at 8;00 AM Friday morning, concluding a 21 hour trip.

Clean up and relax was the order of the day. We then packed the truck up and commenced a 3 hour four wheel drive trip out to Arroyo Seco and finally the Rio Santa Maria at the Puente Conca. Most people were too tired to do more than take a quick bath in the river and crash in a hammock. Later that evening we drove back, camping just outside Mirador.

The following morning everyone was up early and we returned to Rancho La Presa. Tracy, Bill and I were going to be the deep crew and would attempt to survey for three hours beyond where we had stopped on the first trip before derigging. Margaret and Mark were to come in eight hours later and would wait at -150 m to help derig.

Only a few locals followed us up to the entrance this time. Many that did,came inside as far as the vampire guano crawl before deciding they'd had enough. From there on we tacked a swift pace. There is little more enjoyable to a vertical caver than the descent of a completely rigged cave. Compared with the more mundane phases of exploration, rigging and derigging, an unburdened trip is pure bliss. So it was that day. Typically all three of us were on consecutive ropes, never bunching up except at the 45 m pitch. There Bill and Tracy took the precaution of sending me down first to check for rope damage from the previous day's rock slide. Miraculously, nothing had been hit. From there on the racks never cooled. In the space of less than 1 1/2 hours we descended 18 pitches and picked up the survey where Mark, Bill and I had left off. We found the 4 m drop to indeed be climbable. The passage split at the bottom. One lead ascended up a steep polished flowstone embankment. Its apparent slickness was readily demonstrated when Tracy fell back to the mud floor with a dull thud. Three more determined tries got him up and off he went. Steele was changing carbide so I went into the low lead. Twenty meters of disgusting stream crawl with a flickering lamp led to a tight fissure: tight enough to make the exit more sporting than expected. A rat hole for sure. By this time, Bill had recarbided and Tracy returned from his one man penetration into the bad air. His passage had led to a lake, and through a 4" air space duck brought him to a rope drop. In short order we brought the survey through to the drop and set a 3/8 inch bolt. Again there were no good natural tie offs. Tracy racked in and dropped into the chamber below. " No go ", was the counter to the usual " off rope ". This was quickly retracted when Bill and I unclipped at the bottom. The floor of the room was little more than a great silt pile which sloped down to the apparent end of the cave. Closer inspection by Tracy revealed a horrendous looking crawl leading down into the mud. At first we decided to just survey to that point and call it the end. But by the time Tracy reached the crawl he was covered with mud anyway and pushed on through. Walking passage ! He followed this

a hundred meters to a canal before returning. All three of us then slopped through the crawl for a look see. Shortly beyond the canal we intersected another drop, twenty second in the system.The survey was then brought through and the drop rigged amid much huffing and puffing. The air was getting worse. The promising passage at the bottom of this 14 meter drop led only 40 meters to a foul looking sump. Tracy concluded that this was the end. Steele, wanting to be absolutely certain, persuaded me to jump into the neck deep pool and kick around for diving leads. Five minutes of soggy effort yielded nothing. Pena had sumped out at -448 meters.



CUEVA DE LA PEÑA

Rancho La Presa; San Luis Potosi; México

Suuntos and Tape Survey by

P. Forsythe — J. Horowitz
M. Hart — B. Stone

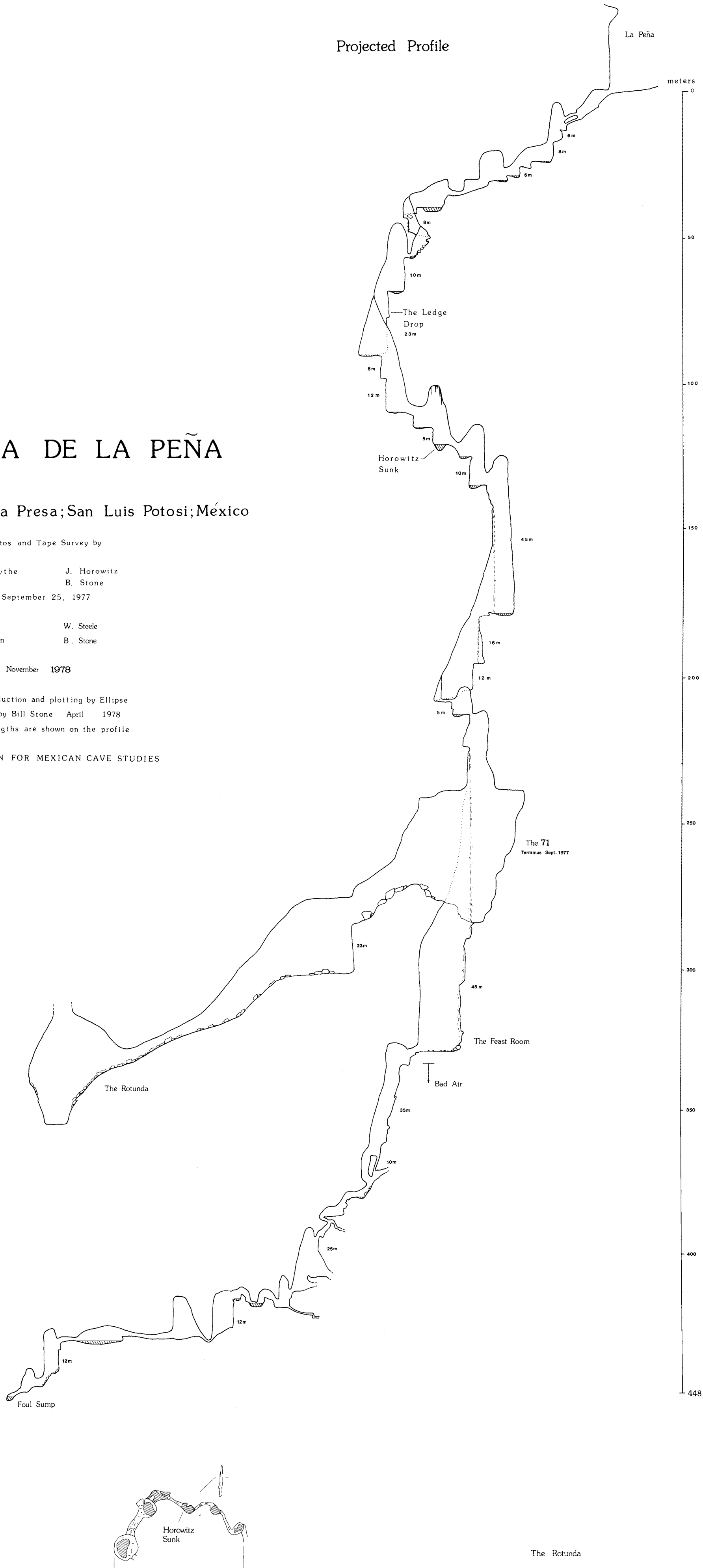
September 25, 1977

M. Hart — W. Steele
T. Johnson — B. Stone
M. Minton

November 1978

Data reduction and plotting by Ellipse
Drafted by Bill Stone April 1978
Drop lengths are shown on the profile

ASSOCIATION FOR MEXICAN CAVE STUDIES



BRINCO UPDATE

By Gill Ediger

Members of the Proyecto Espeleologico Purificacion, under the direction of Peter Sprouse have been busy this spring in Cueva del Brinco in southwestern Tamaulipas. The first crew of the year consisted of Hal Lloyd (TX), Peter Sprouse (TX), Terri Treacy (TX), Chris Albers (CO/WY), Warren Anderson (CO/WY). They arrived in Conrado Castillo on the 7th of March in an overloaded Power Wagon, belonging to Chris, fitted with Hal's camper. They set up housekeeping in the newly acquired fieldhouse, rented by several members of the project. Work done during the first phase consisted of a trip to The World Beyond, a 3 km long borehole 10m wide and often as high. Occasionally larger rooms are encountered and several long, deep lakes of 16°C or so water make full wetsuits a must.

Under Hal's direction, lead checking continued on the surface and in known small caves near Cueva Palo Caido, a cave with two 30m rope drops which was discovered during a trip this past January. A connection of two of these smaller caves reduced our ever growing cave file by one.

The second phase began when Albers, Anderson, and Lloyd departed on Friday 17 March to join an Easter break push on Joya de Salas, leaving Peter and Terri to clean up old leads near and below the entrance area of Brinco.

The third phase of Brinco got underway with the arrival of two truckloads of cavers loaded into the 4WDs of Peter Strickland and Robert Hemperly on the 18th. Those ten cavers, in addition to the drivers, were Texans Jocie Hooper, Andy Grubbs, Jerry Atkinson, Cecilia Green, Marcia Cossey, Dale Pate, Kurt Schultz, and Henry Schweiker (AZ). They camped at the traditional campground near the Brinco entrance. Mapping, exploration, and collecting in Sotano de Oyamel resulted in, among other things, passage depth well below the level of The World Beyond in Brinco, ending hopes that a connection could be made between the two. The highlight of their stay was undoubtedly the trip on Wednesday the 22nd, which saw 12 wetsuited cavers visit the magnificant Throne of Oztotl in The World Beyond, some 200m below the entrance. With UTG president Josie Hooper and a number of the grotto officers present, a special meeting was called to order and, there being no business to conduct, nearly as rapidly adjourned, followed by the traditional 'After Party Boogie' featuring an impromptu rendition of the "Time Warp" in wetsuits. This was one of the largest gatherings to date of wetsuit cavers in one spot in Mexico, and similar scenes are taking place in Oaxaca and elsewhere. The thought that the age of wetsuit caving is upon us was felt by many, a happening which I deem worthy of note. Nine members of that trip made a photo/tourist visit to lower portions of TWB while the remaining three returned upstream to continue a survey begun by Balsdon, Ediger and Hart last spring. They mapped some 350m upstream, quitting in going,

blowing passage. In Brinco, the wind is our copilot! The tourist trip exited the cave after 14 hours, while the survey team lasted 19.

The end of phase 3 and beginning of phase 4 were rather sloppy and ill defined but consisted of the arrival (phase 4) by lumber truck of Shelia Balsdon, Gill Ediger, and Paula Good, and the subsequent departure (phase 3) of most of the members of the two 4WDs. During that time some significant progress took place. Peter and Jerry connected Oyamel with the Worm Tubes, and a team pushed the upper end of Tin Can Alley (highest part of Brinco) into the disjointed Valhalla Section. By pushing a very tight, short crawl they emerged in large, roomy maze section complicated by big breakdown, muddy chalkification and silt deposits, and some treacherously crumbly holds. Our 'map as you go' policy netted 221m.

With phase 4 officially underway, four of the five remaining cavers made an Easter Sunday trip to clean up and survey more entrance area leads. Balsdon, Sprouse, and Treacy surveyed, while Grubbs made biological collections. One of the problems with Brinco is that few leads are ever ended. Instead, one poor lead often turns into several good ones. Three cavers returned with tales of virgin cave, moldy crawlways, and green pine needles, but no second entrance.

A trip to Cueva X resulted in the completion of surveying there. Also, of note was the discovery of a new blind scorpion in this cave.

On April Fool's Day a five member assault was made downstream from The World Beyond, of Beyond The World Beyond. Sheila, Peter, and Terri mapped while Ediger and Grubbs checked leads. Surveying began at a point where the south trending World Beyond reversed direction nearly 180^{o} and started dropping rapidly. A series of broad, deep dry flowstone falls were encountered which in 100m of horizontal extent dropped in vertical element nearly as far. This otherwise beautiful section required us to rig our first vertical equipment in the entire cave, a short handline. (Later discussion of employing permanent climbing aids at that point, and a few other difficult spots, heard no dissenters). Several side leads were examined - some ended, some didn't. Beyond the falls the passage dropped less abruptly and was pleasant walking in 8 X 10m trunk, with the floor varying from broad, low travertine dams, to sand and gravel bars, to large muddy stream cobbles. Mapping ended at another deep 20m flowstone fall into a <u>big</u> room. Peter downclimbed and explored 150m further before the five cavers wrapped up their work and exited the cave. Short naps were taken by several members on several occasions during the night-long trip and at first glance seemed to aid tremendously in overcoming fatigue. Exposure seemed to be no problem for naps of 30 minutes or less in the damp wetsuits. Nineteen hours was the maximum length on that trip.

One foggy afternoon was spent on the surface looking for entrances on the mountainside to the south. Little of interest was found.

Another trip to the entrance area by Peter and Shelia resulted in a closed loop in virgin passage.

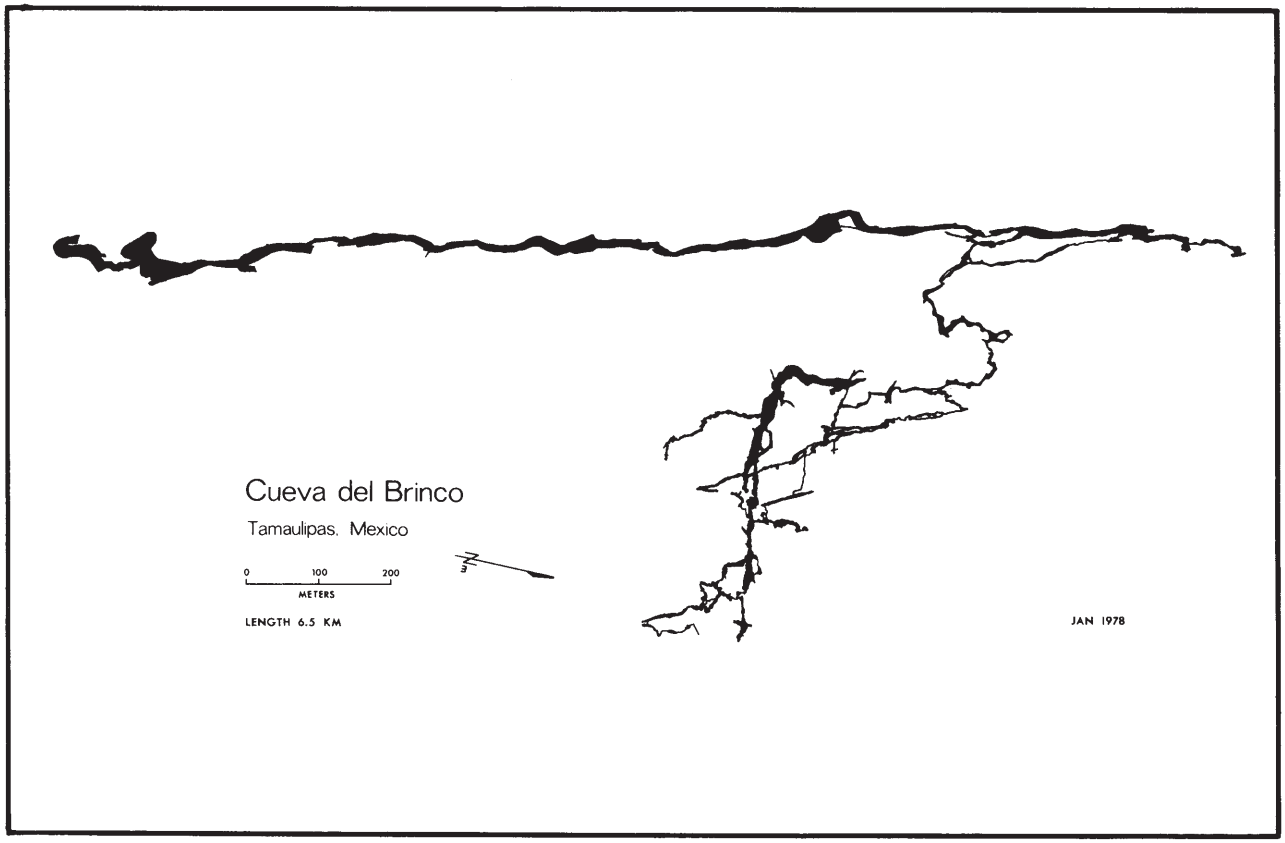
On 7 April a push trip to Valhalla led to some fine caving. Peter, Terri, and Shelia surveyed while Ediger checked leads. Flakey holds and crumbly breccia in 8 to 10 meter pits kept us cautious but led to a stream passage heading steadily downward. A tall fissure along an obvious fault could be seen con-

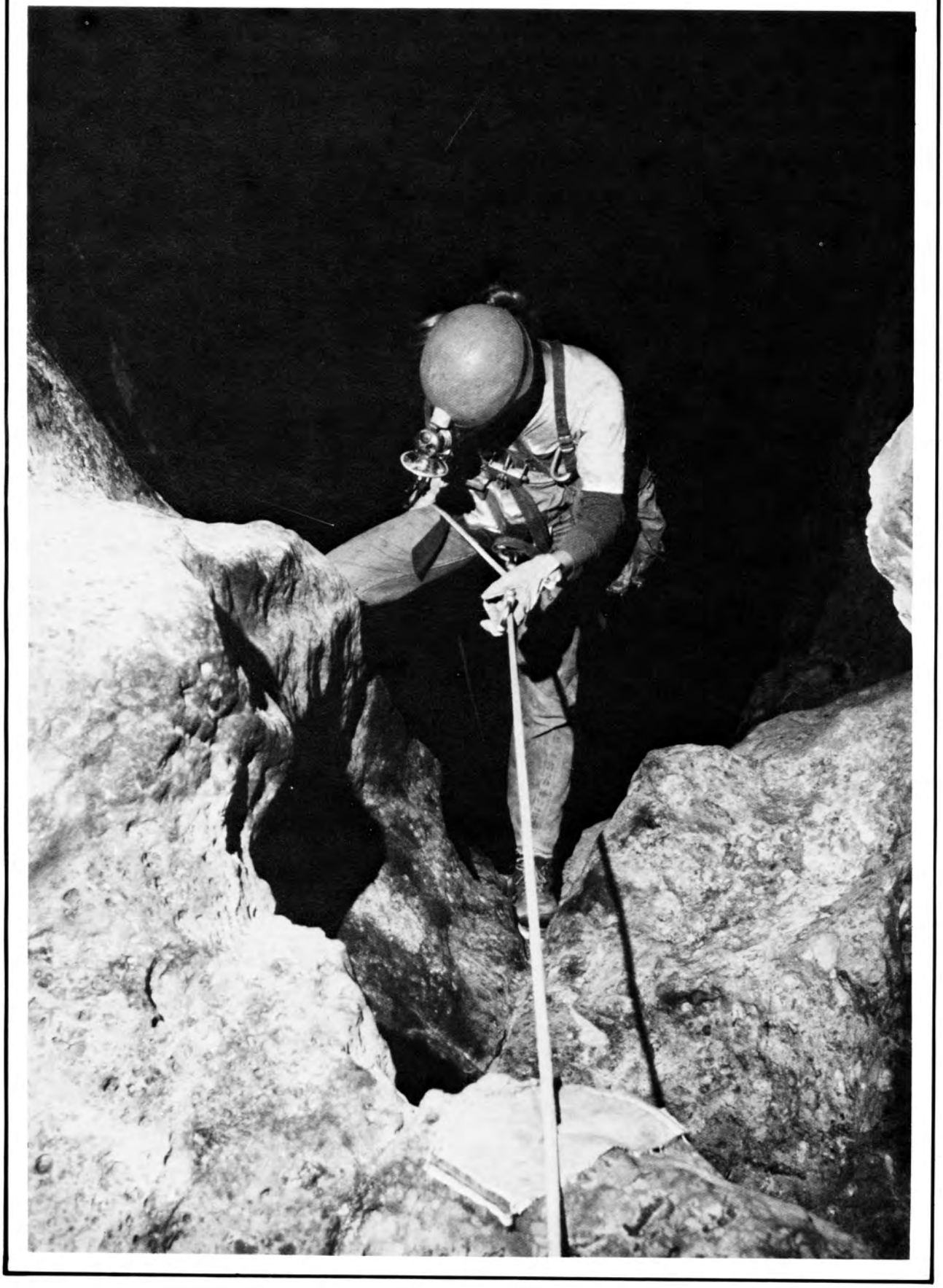
trolling this section. Below it, the stream petered out into floor cracks in a swiss cheesey area of solution pockets and gour pools named Pool Hollow. Exploration stopped there at a down shoot to stream passage. The survey team retreated to tie in some loops in the passage above.

A couple of days later Peter, Terri and Shelia did a surface survey to connect the datum point near lower camp with a new one near the house, Cueva X, Allarines Spring, and Oyamel.

As phase 4 was rapidly drawing to a close due to the impending departure of Ediger and Grubbs, Peter added up the numbers. As of Monday 10 April 1978, Cueva de Brinco had 9.203 km of mapped passage with large going leads in several directions, all with air. Depth was 382 m and going down. Phase 5 began with a trip by the remaining three to Beyond The World Beyond - the results of which are unknown.

Speculation ran high that we had the longest cave in Mexico, but alas, Peter Lord and his Chichicasapan crew have scooped us.....for a while! In the intervening weeks many things could have happened. It's probably best if we don't speculate. The plans, however, were to continue the rotation system of mapping each of the three lead areas in turn, showing favortism only in trip duration. A week long trip inside Cueva de Infiernillo was planned for late April. It's length is 5.1 km and heading up toward the descending Beyond The World Beyond some 2.5 km away. There are 98 known leads in Infiernillo - all going in different directions.





RETURN TO SALAS

by Cady Soukup

After nearly a week of minor parties and major changes of plans, Margaret Hart, Mark Minton, Norm Pace, Cady Soukup and Bill Stone left Austin, Friday night, March 17, to pick up Jean Jancewicz on our way to the border. A slick and easy border crossing and no stops for anything but gas and a meal (no water, bakery goodies, fresh fruits or vegetables) allowed us to meet Chris Albers, Warren Anderson (the Teton Trogs) and Hal Lloyd (the Borracho) at the Rio Sabinas by early Saturday afternoon. Without further ado we wound our way up the road to Joya de Salas with frequent stops for admiring the scenery, maneuvering around lumber trucks loaded with locals, or asking directions. Three hours, 29 km, and a recently improved road brought us to the small town of Joya de Salas with no difficulties.

The town is located in a large, flat-floored, closed valley at an elevation of about 1500 meters in the Sierra de Guatamala. Much of the drainage water is trapped in a lake reported to have been made by blocking the entrance of a cave. The occasional overflow from this lake enters the Sotano de la Joya de Salas. Since the only likely resurgence for the water entering the cave, Nacimiento del Rio Sabinas, is 1400 meters below the entrance, there is outstanding potential for a deep cave.

The first exploration trip was in 1965 by an AMCS crew that had hiked in. In 1973 a group of six Canadian, English, and Texan cavers found what were reported to be at least two good leads beyond the sump at -280 meters. Our job, should we decide to accept it, was to push those leads into whatever cave we could find (before self-destructing).

Our first glimpse of the sotano revealed a message painted on a large rock, later our rigging point, forbidding entry or exploration of the cave without permission. Bill obtained permission without difficulty, so we settled in next to the cave.

When we awoke Sunday morning, we slowly began to organize ropes, discuss plans and trips, and repair equipment. The first objective was to rig the cave and check out the leads beyond the sump. Leads before the sump were also to be investigatied thoroughly to see if a way to bypass the sump was possible. Mark, Warren, and I started in to rig. We were ready first and had decided to poke around in leads before the sump. The entrance is a 74 meter drop against the fairly smooth wall of an 8 by 30 meter symmetrical slit. Near the bottom, the walls become increasingly fluted. The bottom is intersected by several passages. One was found to go about 10 meters to a blind 20 meter pit. Another connects back to the main passage, which is a large, irregular, water-scoured tube (3

Opposite: Jancewicz rappels the Sima Grande, Joya de Salas.(Bill Stone)

meters diameter) that goes 30 meters to where it intersects a magnificent dome-pit, the Sima Grande. Mark noted a lead to the right of the breakover to be checked out later. Another obvious passage to the left of the breakover is repoted to lead back to the surface.

The Sima Grande is decorated with old, reddish flowstone which is now being eroded. The pit is a 50 meter drop offset by a large ledge about 15 meters from the floor: a handy place for recarbiding. Adding to the beauty of the Sima Grande are its fine acoustical properties. For a pit-whistler, it was wonderous!

By late in the afternoon we arrived at the 1973 campsite at -260 meters and located the sump. Bill Stone relates,"Standing in the waist deep pool we could see that the 5 m wide passage continued a considerable distance with an airspace before diving would be necessary. With Norm belaying I dove through with the tanks. Visability was limited to about 1/2 meter. Shortly, I could make out the reflection of an airspace and headed up. The dive was quite short, eight meters or so. After a return trip for the equipment, a narrow squeeze, and a fairly deep shaft, we reached Peter Lord's hot lead (maybe a hot lead in Britain, but certainly not in Mexico!): a low wet crack averaging less than .6 meter high and two meters wide, with solution flutes leaving a span of .2 to .3 meters to work with. Norm and I managed to move only 100 meters before coming to an impass for me. Here, an 18 centimeter squeeze will strain out all but the thinnest of cavers. The passage beyond continues the downward trend, no doubt to the 20 meter pitch described by Lord. So the lead still continues on for future thin explorers

Returning the next day and pushing again through the siphon, we approached the Passaje Superior, which surprisingly involves no climbing at all. The Passaje Superior is one of the high points of Joya de Salas. For a good 800 meters this amply sized stream canyon meanders along. We soon arrived at our destination. The walking passage closed down to a broad crawlway in knee-deep water. After 60 meters things got sporting. The ceiling arched down to within 5 centimeters of the water. We tried this passage and managed about 30 meters through methane filled mud with one eye out of the water, and nose to the ceiling. Had we brought a tank, things would be somewhat different, but for that day it was the end of Salas."

Friday was our last day at Joya. Many leads were checked but Bill and Mark's climb/lead at the Sima Grande was the find of the day. They broke into a complex series of multi-level fissures, pits, and decorated passage. Some of the passages they claim come back into the main route; others go off in what seems to be a new direction. They were forced to come out before they had finished checking everything; we were due to leave. We packed up hurriedly, gave away our plastic milk jugs, and camped that night at the Rio Sabinas.

DIVING THE NACIMIENTO

Del Río Sabinas

by Bill Stone

Following a week of enjoyable but fruitless exploration endeavor at Joya de Salas, we decided to access the Sierra de Guatemala master system from one of its "lower" entrances. Along the eastern face of the range are three major resurgences which apparently account for the majority of the subsurface drainage from the high elevation karst. The new Cetenal topographic maps indicated that there were no sizable springs to the west of Joya de Salas. Additionally, local stories contended that logs from the sawmill at Joya de Salas which were swept into the whirlpool at the entrance during hurricane season were seen again in the Rio Sabinas, 1300 meters lower. Of the three springs, the Nacimientos del Rio Sabinas, Frio and Mante, the Rio Sabinas was surely the most awesome: a great blue hole in the verdant tropical forest.

Following an early morning breakfast in El Encino,our two truck caravan of Chris Alber's Dodge and my Ford arrived at the head of the dry arroyo which leads 400 meters to the spring. In planning for the dive, Norm Pace and I had secured four 72 cu.ft. tanks, 300 meters of dive line and a large assortment of other paraphernalia which we were sure would get us back into airspace on the other side of this "super sump". However when we arrived at the entrance our hope for success was somewhat shaken as we got our first look. Beneath the surface of the pool loomed the inky blackness of a massive cave entrance 25 meters wide and 11 meters high. Initial reconnasiance with our first set

of 72's located a good tie off for the diving line at a depth of 12 meters, just inside the twilight zone. After a few further adjustments with weights and buoyancy compensators, we felt ready for the push. Chris helped us don a fresh set of 72's at the edge of the spring. I carried a backup 15 strapped beside the 72 in case of an emergency. Although the water was warm near the surface, it quickly cooled to cave temperature(59F degrees) at only a few meters depth, hence we each wore full wetsuits. For light, Norm carried two compact Teckna-lites and I a large Ikelite underwater flood light. Chris and Cady Soukup picked up the remaining half used 72's and followed us to the tie off log. With Norm in the lead with the spool of line, we coasted into the blackness below. Cady and Chris faded into a blue mist, outlined by the immense black arch of the entrance. While there had been some problem with stirring up silt near the entrance, the further we went the cleaner the floor became. We were descending a crystal clear, cobble-floored passage on a steep 30 degree slope. Both excited and nervous, we continually checked our pressure and depth gauges. The ceiling gradually lowered to about 5 meters in height but the walls remained undiscernable beyond the reaches of our lights. Except for the tinny, crisp sound of escaping air bubbles, we proceeded in silence,deeper into the void ahead. My ill fitting cave wetsuit compressed to a snug fit attesting to the increase in pressure. At a depth of -30 meters we had used up 1/3 of our air supply, so we reluctantly retreated, leaving the scoop for another day. Norm tied off the spool for later measurement and we slowly made our way back.

At the tie off log we pulled in all the line and headed for the surface. Thus ended our brief foray into the Rio Sabinas. The trip had lasted barely 20 minutes and we had seen only 50 meters of cave beyond the tie off. Larger, multiple tanks would have given us an edge, but depth may soon become the limiting factor in the exploration of this spectacular cave.

SAN JOAQUIN:

A CUMULATIVE REPORT

by Patty Mothes

Thanksgiving 1977

Roy Jameson and I first went to the El Doctor Plateau and San Joaquin area, located in northeast Queretaro, in mid-November 1977. Although there are good roads up and on top of the 10,000 foot plateau, we had to backpack part of the way up a road because our old car was too weak to manage even the first steep grade. Three and half hours of easy hiking brought us to the crest of the escarpment. We quietly set up our tent so as not to disturb the local dogs, and went to sleep with a pack of coyotes yapping.

In the morning we took a trail through big karst outcrops to a nearby cluster of houses called Lagunita. Two people in the only store informed us that there were caves on nearby ridges but not in the valley. Undaunted, we walked on a small road that took us past sloping karst fields and into a pine forest and finally to a view of the next valley. Here we saw evidence of internal drainage and headed for a small arroyo which terminated at a clump of trees. It contained a 14 meter pit, Sotano de Rincon. Roy and I entered the cave, taking an extra two ropes with us. After the initial drop there is a rocky crawl and a handline drop. Another tight squeeze brought us to a narrow pit. The longest rope was tied off and Roy rappelled down the pit which proved to be deeper than we'd calculated. Since the rope didn't reach we exited the cave. Before dusk we were guided to two other pits. We dropped into one of these only to discover that it was plugged at -25 meters. The lowest portion of the cave is in marble.

The next day in the village of Chavarria, we were told by an old man about some Aztec ruins and a cave, both located on the next ridge. Then we had the luck of being taken to four caves by a local boy. He first brought us up through an arroyo to a cave that had been used as a mine. Roy dropped down the short entrance slot and found that in one direction the passage ended in water, and in breakdown the other way.

Our guide finally obliged us by taking us across the shallow valley to three more pits. Since dusk had fallen and our rope lengths were too short we thanked him for his generosity and hurried down the steep trail to Chavarria, where we bought our usual sodas and bread, quietly conversing with a group of locals.

The next day started with a very pretty morning. We bottomed a pit near our camp at -17 meters. Then we hiked the steep trail to the top of the ridge over-looking Chavarria, and continued on to the two pits we'd been shown the previous evening. I first checked the 17 meter flowstone wall pit. The bottom was entirely plugged with boulders. Roy descended the other pit directly across

from the mine, and likewise, it was plugged at -40 meters. Realizing we had but two remaining days we decided to hike down to the car and get enough rope to go deeper in Rincon. By midnight we'd returned to camp with 700 feet of rope.

We had a late start on Thanksgiving day. The small entrance drops of Rincon were rigged with the 380 foot Bluewater. Thus, only one rope was needed to get us down to the cave's mudplug at 110 meters. The most impressive of the cave's features was the 55 meter pitch a short way from the entrance.

We said goodbye and hiked down the now familiar trail to the car. Dusk was falling as we drove on the wide gravelled road to San Joaquin. Three quarters of a mile outside of the town we saw a closed valley and a cave by the roadside, now known locally as Grutas de San Joaquin. The cave is entered by following a boulder cluttered arroyo down to the horizontal entrance. A 5 meter wide by 6 meter high passage leads into a large room with many formations in its upper portion. There are water marks up to 2 meters high on the walls and plenty of dried debris to attest to the wet season flooding. Further down the road and nearer to town we sighted another depressed area. Before we'd even seen the cave the odor emanating from it verified that some of the San Joaquin's sewage is drained into this bare-walled pit.

San Joaquin is a town of 1800 people. It was probably built as a consequence of the many mercury and phosphate mines in the vicinity. Of all the mines in the area we've been told that only two were operating. The streets of San Joaquin are cobblestoned, and some are lined with flower and fruit trees. One section of the town which I call San Joaquin Heights surprises me with its very modern houses; some houses having two car garages and picture windows. Although it is twenty-six miles from Vizarron, the next largest town, it seems to have reliable bus service.

The next morning, our last day in Mexico, we took several ropes and survey gear into Grutas de San Joaquin. We mapped for four hours, and then descended a three drop series. Here we stopped at a big pool of water and photographed out. Finally, at 10 PM, we left for home.

Christmas 1977

We left Austin on December 17th, taking until noon on Sunday the 19th to arrive in San Joaquin. We had a pleasant talk with the Presidente of the municipality. He was greatly interested in our activities and assured us of permission to explore caves anywhere in the area.

By mid-afternoon we'd begun mapping from the top of the three drop series in Grutas de San Joaquin. The large pool of water had slightly receded and we continued down the large 12 meter high and 5 meter wide passage to a gravel plug. This was easily dug open and we belly crawled for many meters until we came to a big chamber with lots of holes in the ceiling. Soon we encountered a 15 meter drop, but having left ropes at the beginning of the crawl, we contented ourselves with mapping the crawl and exiting.

Lacking a level place to camp close to the car, we smoothed off a gravel bar at the mouth of the cave and slept there protected from the cold winds. Then, the next morning, mapping began at the end of the belly crawl and proceeded down the 15 meter drop. There we immediately had to crawl in water again. Finally, this plugged and we laborously mapped back to the drop. When we came to the base

of the three drop series on the way out we heard voices above. This made us quite frightened because if they cut the rope no telling how we'd get out. Roy quickly raced up the ropes, demanding that they not throw rocks or touch the ropes. When he reached the top they explained that they'd come in to rescue us. They also explained that the farmer living near the cave had become concerned when he didn't see us for a day; so he called up a rescue team of seven men, some from as far away as forty miles. These men had to do some searching to find their way to where we were. We assured them that we were fine, and although we appreciated their concern, it had not been necessary. As a consequence of this rescue attempt and the Presidente's interest in our explorations, an article about our discovery and exploration of Grutas de San Joaquin appeared on the front page of the state's largest newspaper. As a result, the cave has become something of a local attraction. We think that the cave could possibly continue into an upper level that may be reached by a high climb below the three drop series.

One afternoon we drove to the Los Pozos area to check out the internal drainage indicated on the topo map. Three caves and two other plugged holes that take water were located. Because of the fog rolling in and the rising winds, we left the countryside to eat dinner in town and join in with the townspeople in celebrating the coming of Christmas.

That evening in the square several ladies were selling a Christmas punch of brandy and heated guava juice. This sweet concoction was highly recommended to us by the Presidente. We would have barely finished one cup when he'd order us another. He and the other adults gathered around us learned a little about cave exploration through the course of numerous drinks.

The next morning we no longer felt so warm when we got up. A dense fog had rolled in and everything outside was coated with ice. With difficulty in the fog we finally found the obscure road that led close to the Los Pozos caves. We drove the road to its end, on a hillside overlooking the Pozos area. This has been our favored campsite; it is the source of a large portion of the area's potable water. We camped here three days and went caving in Cueva del Salto for three days.

The four side valleys that drain into Salto are terraced like a giant's stairway. Salto and several other caves have four meter high stonewalls at their entrances, built to retard soil runoff into the caves. We were quick to find out about the 90 meter (mostly free) drop only 75 meters inside Salto's entrance. This was a surprise! There also was a skylight 18 meters above the floor. On each trip down the big bell-shaped pit we were aware of a strong draft of air. A passage takes off and appears to end in a mudplug. The cave, however, continues up a difficult climb. We explored, mapped, and photographed through a large, beautifully decorated room and continued down a wide and high-ceilinged stream bed until we were in deep pools of water. We decided to pull out the ropes on the third day after mapping a total of 720 meters horizontally and 143 meters vertically. The cave trends to the northwest and is definitely going.

On Christmas Eve we located two more caves, Cueva de la Sebastiana and Sotano de Los Hernandez. We also happened by chance to come upon the old Aztec ruins (Las Ranas) just out of town to the north. Before we left, I dropped a 30 meter pit at Campo Allegre - San Joaquin's picnic grounds. We also start-

ed the mapping of Cueva de La Sebastiana. In the evening we left quiet San Joaquin for Mexico City for a few days holiday, and then onwards to Huautla for two more weeks of caving.

March 1978

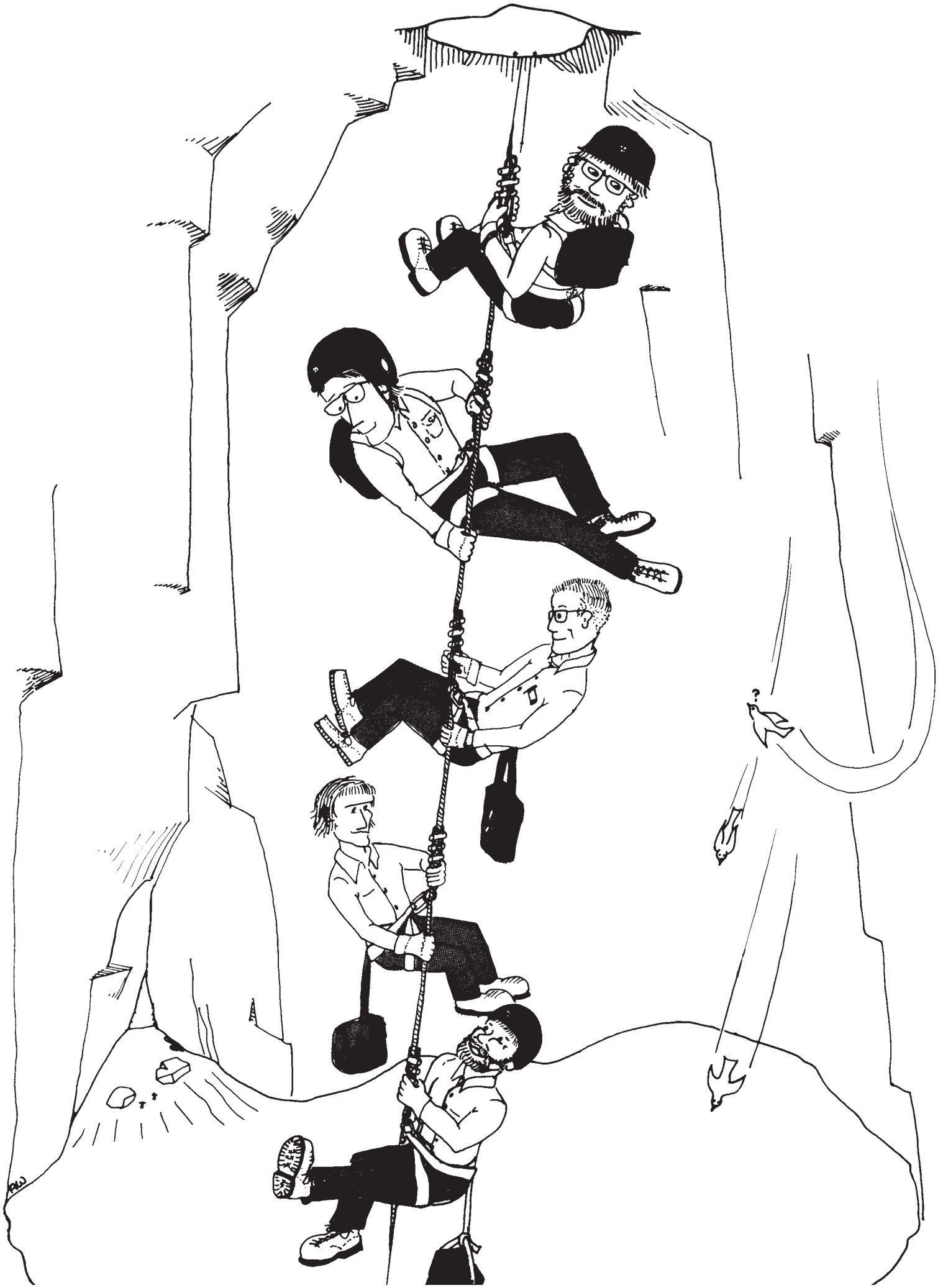
Each time I have slept at Charco Frio (four miles south of Vizarron) the weather has been cold. This last time was no exception. Chris Arts, on his first trip to the interior of Mexico and his second caving trip, Roy and I camped there on March 17th. During the winter-like night, I remember waking up several times and commenting to myself, "What's wrong with this sleeping bag? Why am I so cold?" In the morning the tent was sagging and my sleeping bag was wet due to the three inches of wet snow on the flimsy nylon. I had a hard time accepting the discomforts of this wet stuff, considering that we were 900 miles south of Austin. Two elderly ladies came from behind the walled enclosures of their homes, and approached with broad smiles and exclamations that the snow was so pretty. They seemed oblivious to the icewater penetrating their worn huaraches. After buying gas in Vizarron, we proceeded on up the 32 km road to San Joaquin. As we gained elevation the road was covered with snow and a slight layer of ice. The bottom of the steep ravine on our left was usually no less than 200 meters down. I imagined that our car would have no problems getting depth fast if the circumstances were right.

We arrived in San Joaquin at 10 AM. It was a Saturday, usually a market day, but almost all the shops were closed and the locals were frolicking in the snow. Eventually, the largest of the tiendas opened its brightly painted green doors and we were able to make our usual purchase of carbide and cookies. Having acquired four pounds of quality carbide, we drove three miles out of town to Cueva de La Sebastiana. Roy and I had only mapped 100 meters during our last visit to it. We didn't get very far (-70 meters) before a sequence of 5 meter climbdown and 30 meter drops were in front of us. We stopped there because we first wanted to give Chris some vertical practice on the cliffs outside. After a walk down into a fog-obscured valley to check out some mines, we made camp in the comforts of an abandoned pigpen. On Sunday we had an easy mapping trip to the second drop in La Sebastiana. Chris had some problems using Jumars so it was decided to let him try out a ropewalker system.

A cave with an 18 meter entrance drop near Los Pozos was started and completed. Unfortunately it is mudplugged shortly into the twilight zone. An overland survey tying in all three caves of the Los Pozos area was also completed.

Two mapping and photo trips were taken into Squirrel Cave (so named because of the creatures in the entrance) which is also in the Pozo area. We're down to the sixth drop and about -100 meters. It is a very beautiful cave and has good airflow. The highlight caving trip for Roy and me was to Sotano de Los Hernandez. Our calculation of the entrance drop being nearly 100 meters proved correct. Three or four ledges are on the walls of this big fissure-like pit and make convenient tie-offs. A 60 meter drop, broken up by ledges with deep pools, follows the entrance series. Except for these intermittent ledges the cave is essentially vertical. Walls are scoured clean and little debris was seen. The constant, chilling wind is quite evident moving down the shaft. We stopped at -150 meters because we were running out of rope and were not wearing wetsuits.

We again celebrated with the locals on Good Friday night. One of their customs is for boys to dress up in costumes and strange masks and run around amusing the townspeople. We told several people that we were planning to photograph in Grutas de San Joaquin the next day. That night and Saturday morning there must have been a hotline around town telling where we would be later in the day. That afternoon we'd been in the cave for only a short time when a group of townspeople showed up. Eventually there must have been over eighty people (women, girls, babies, and men) in the cave. Well-equipped by candles or carbide lights, few hesitated to clamber down wood ladders and come as far as the top of the three drop series. Naturally we took many photos, some of which we will show to them when we return in May. We exited the cave in the afternoon, astonished by the number and variety of people we had just been caving with. We then went home to Texas. Roy and I will be returning to the San Joaquin area in mid-May.



A Grand Tour of Mexican Pits

by Alan Williams

Mexico is caver's heaven. For the past ten to fifteen years the underground wonders of Mexico have been revealed to the world. Monstrous pits and deep, deep cave systems penetrate this land of limestone 2000 meters thick. A steadily increasing number of cavers have fallen under the spell of Mexican caving.

So it was that a band of cavers under the spell gathered at the Kirkwood house in Austin one bright December day. We were nine pilgrims on our way to Mecca: anxious to finally experience the reality of the caves we had heard talk of for ten years and more. Our guides for the adventure were Bill Steele and Blake Harrison - both cavers of sterling repute and vast experience in Mexico. They were going to lead us on a two week grand tour of classic Mexican caves, concentrating on the big pits in the Sierra Madre Oriental. It was to be, unabashedly, a tourist trip; but a tourist trip of the first order, indeed.

The party was composed of experienced cavers. Al Grimm and Tom Bain, from New Jersey and Maryland, are two insatiable connoisseurs of verticality. They, along with Toni Williams from Pennsylvania, made up the Eastern group. Jeff Horowitz, a recent convert to that divinely obsessed band of Austin cavers, was a last minute addition to the crew. A contingent of five from the Colorado Grotto completed the manifest: Jerry Hassemer, Tom Taylor, Jim Pisarowicz, Al Collier and Alan Williams. All but Horowitz, Grimm and Taylor were virgins to Mexican caving.

Spirits were high as we loaded Blake's Chancho de Acero (Hog of Steel) with a formidable mountain of food, water, rope and other gear. The double-cabbed Power Wagon with "speleo-vista-cruiser" camper proved equal, though just barely, to the tonnage we loaded into her. Our spirits became more subdued as eleven of us packed our bodies into the limited space remaining. Traveling eleven in the Hog was to be the most trying part of the trip. Nevertheless, as we pulled out of Austin creaking and groaning, frame-on-axle, the promise of Mexico was about to become a reality none of us will ever forget.

For the next two weeks our days were filled with the sights, sounds and smells of Mexico: her cities and villages; the lush jungles and winter-cool deserts; but most of all, the incredible pits and caves. They taught us the true meaning of the words "magnificent" and "awesome". The inner pride and satisfaction gained by successfully negotiating their depths was a revelation - a natural high. The fact that others have done these caves before did not detract from the experience in the slightest. Rather, it made us feel initiated into the brotherhood of Mexican caving, and whetted our appetites for future trips

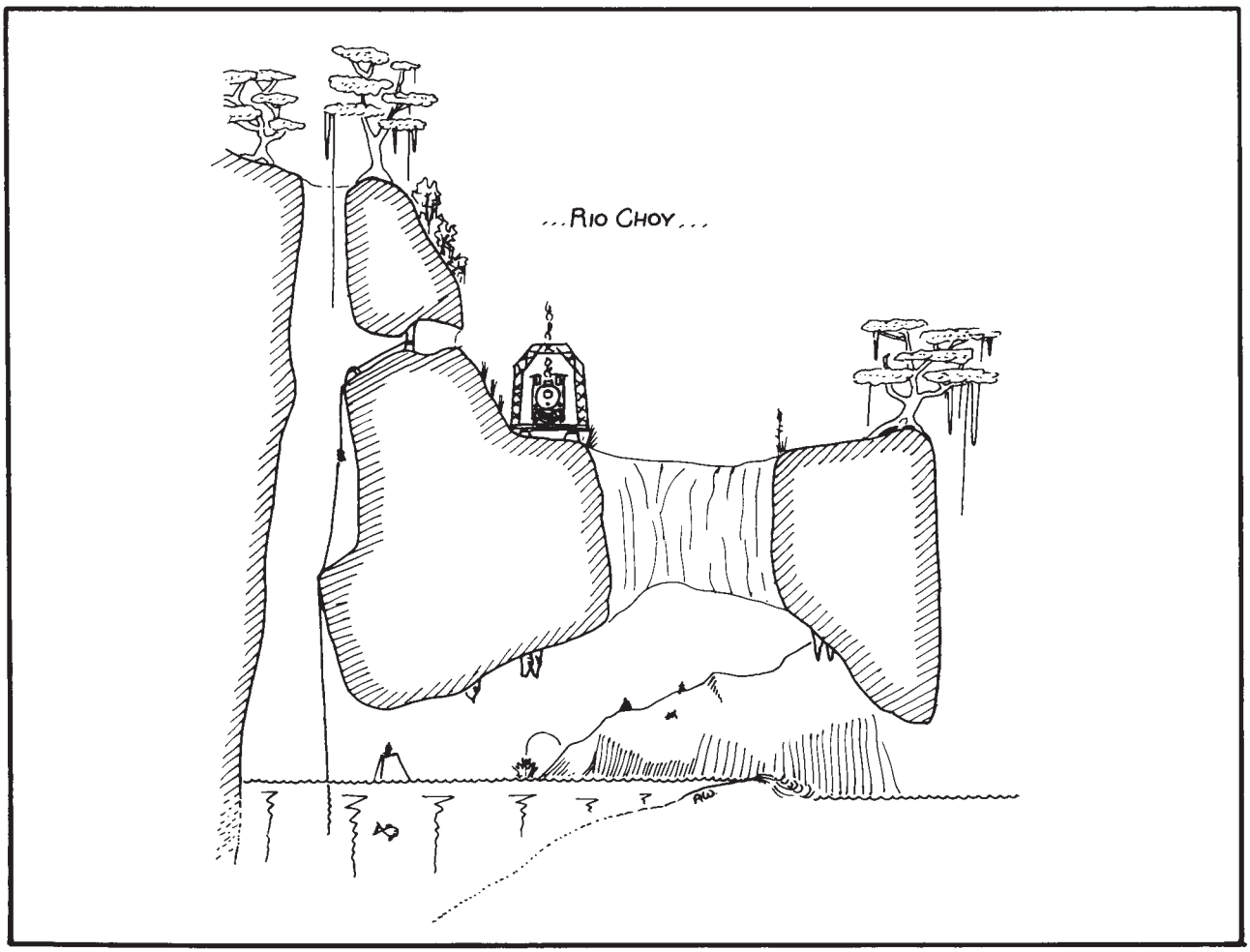
into that region south of the Tropic of Cancer.

The seven caves we visited are described below:

Gruta del Palmito Also called Bustamante after the nearest town, this well visited formation cave in northern Mexico reaches a depth of over 200 meters, with never a roped drop. We whiled away six hours taking dozens of photographs and searching unsuccessfully for the elusive Birthday Passage. The fifty-three switchbacks on the trail to the cave are also a memorable part of a Palmito visit.

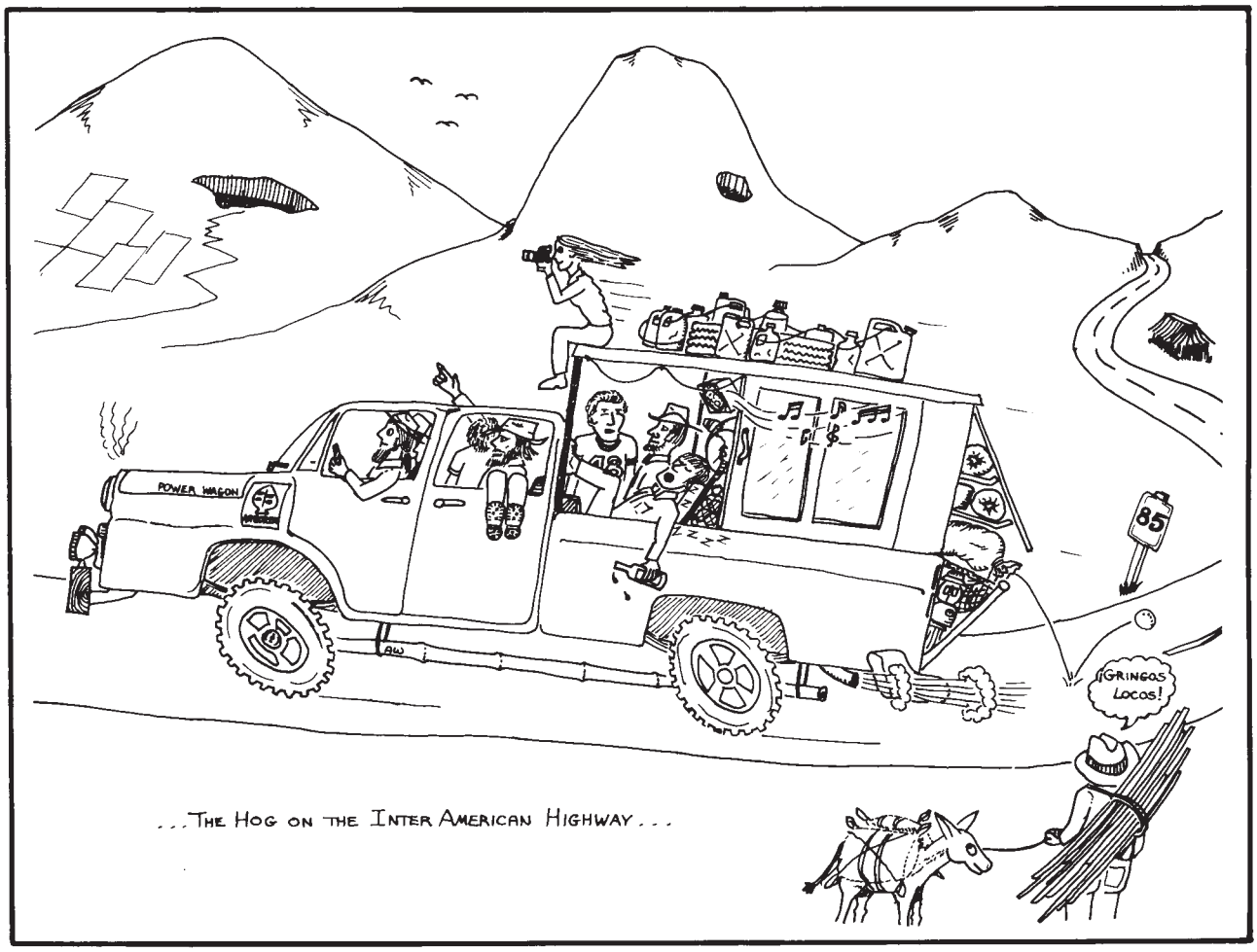
Nacimiento del Rio Choy It must qualify as one of THE "Swimming Holes of the Western World". This massive spring, welling out of the base of the El Abra escarpment east of Ciudad Valles in the state of San Luis Potosi represents the confluence of hundreds of subterranean trickles and rivulets flowing through countless kilometers of undiscovered (or undiscoverable) caves. The water is twenty-one meters deep and six meters wide where it resurges.

We entered Choy through one of it's several upper entrances. It was a unique experience rappelling fifty-two meters down a dark shaft with no lights, wearing only swimsuits and rappel gear. The blue-green glow of the water far below, illuminated by another large skylight, beckoned each rappeller in turn to let it fly for the last ten or twenty meters, landing in the cool cave lake with a mighty splash.



Hoya de las Guaguas The access to this beautiful bird pit, the tenth deepest cave in the Western Hemisphere, has been made much easier by a new road carved four kilometers up the hill from El Limoncito. An hour of hiking on rain soaked trails and through coffee plantations put us at the edge of Guaguas. We rigged the 202 meter high side twice, using our new 1500 foot length of PMI rope. The low side, a -147 meter drop, was also rigged, so that the pit was continually filled with cavers on their way up or down. Steele, Hassemer, Collier, T. Williams, and A. Williams continued on to the bottom of the second drop to sign the register at -430 meters. We marveled at the 200 meter high room we were in, the surface light barely filtering down from a quarter of a mile above. Guaguas was the deepest pit any of had done up to that time, but bigger things were to come.

Sotano de las Golondrinas It had been raining for two days as we rumbled into Aquismon (it was the "dry" season) to begin the twelve kilometer hike to the Mecca of Meccas: Golondrinas. The Precolumbian limestone path twists it's way up over ridges and down into valleys through a fairy tale jungle of vine-hung trees and mysterious undergrowth. Huastecan Indians call the area home and they were busily engaged in carrying heavy sacks of coffee beans down to market. An occasional refresca stand in the "wilderness" supplied us with 12¢ sodas on our way.



What can be said about Golondrinas? It is simply one of the most sublime of the Earth's natural wonders. To be suspended halfway down this 376 meter shaft - a tiny mote hanging on a silver thread, lost in the immense twilight void of green and brown, the chattering of swifts and parrots echoing from the walls, tens of meters distant on any side, is an experience which cannot be fully appreciated without actually being there. To reach the bottom is a ten to twenty minute vertical journey of total concentration. To exit is a thirty to sixty minute contest with gravity, resulting in an exultant rebirth into the world outside. Steele's greeting as we emerged sweat-soaked and gasping at the lip will not be soon forgotten: "Congratulations, you have now done the Big G".

Several unique aspects of our mass assault on Golandrinas were: Tom Bain did the drop three times in 24 hours and Al Grimm twice. On his second ascent, Bain climbed out in only 25 min. and 15 sec. to set a new Golandrinas ascent record. In order to allow more than two people at a time to ascend, a 600 ft rope was rigged next to the 1500 footer. As people tandemed up from the bottom, they would switch over to the short rope upon reaching it, thus allowing four people to be ascending at a time. The switch-over, 200 m off the floor, was an exhilerating maneuver, to say the least.

Grimm, Harrison, Collier, and Horowitz bottomed La Ventura--the 200 m crack continuing down from the pit floor. Finally, not enough has been said about the spectacular flights of swifts and parrots which darken the sky as they swoop to and from their nesting places in the great pit. The incredible sight and sound of the thousands of plummeting birds lasts for an hour each morning and evening, putting the Carlsbad bat flights to shame.

Sotano de Huitzmolotitla. This handsome jungle-rimmed pit lies in the Tlamaya valley near Xilitla. One of the earliest Mexican caving areas to open up, the valley also contains Sotano de Tlamaya, a classic cave. Huitzmolotitla begins with a 110 m drop into mossy green twilight. A small stream winds along the pit floor, leading into a passage which quickly drops away into a 48 m waterfall pit. From the bottom of this pit a horizontal stream channel winds its way 3000 m or so to its terminus. Our group ventured a kilometer down the channel, seeing as much as we could in the limited time available.

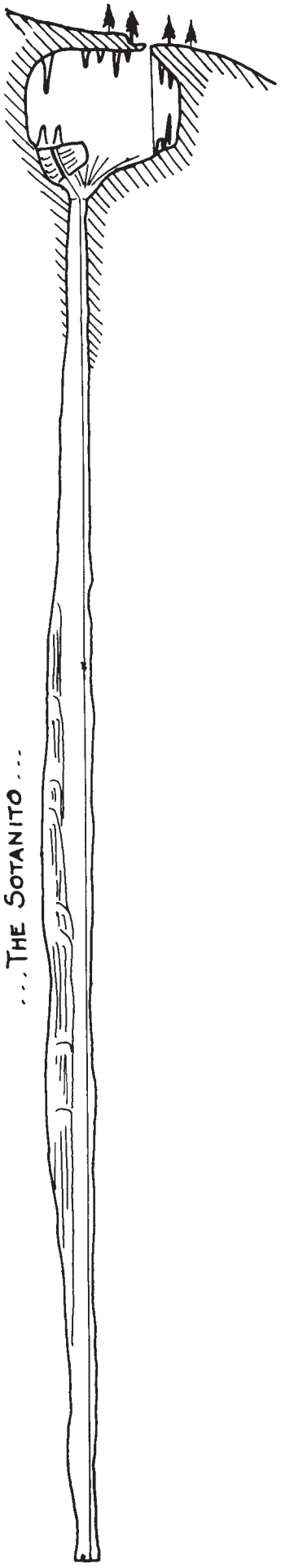
Sotanito de Ahuacatlan. Traveling west from Xilitla, we left the coastal jungle upon reaching the crest of the Sierra. A high desert environment predominates in the interior of San Luis Potosi, a land in the very heart of the Sierra Madre. It was above the little town of Ahuacatlan, several kilometers up another newly built road that we visited our last two caves of the trip. The Sotanito de Ahuacatlan contains the third deepest interior pit in the world.

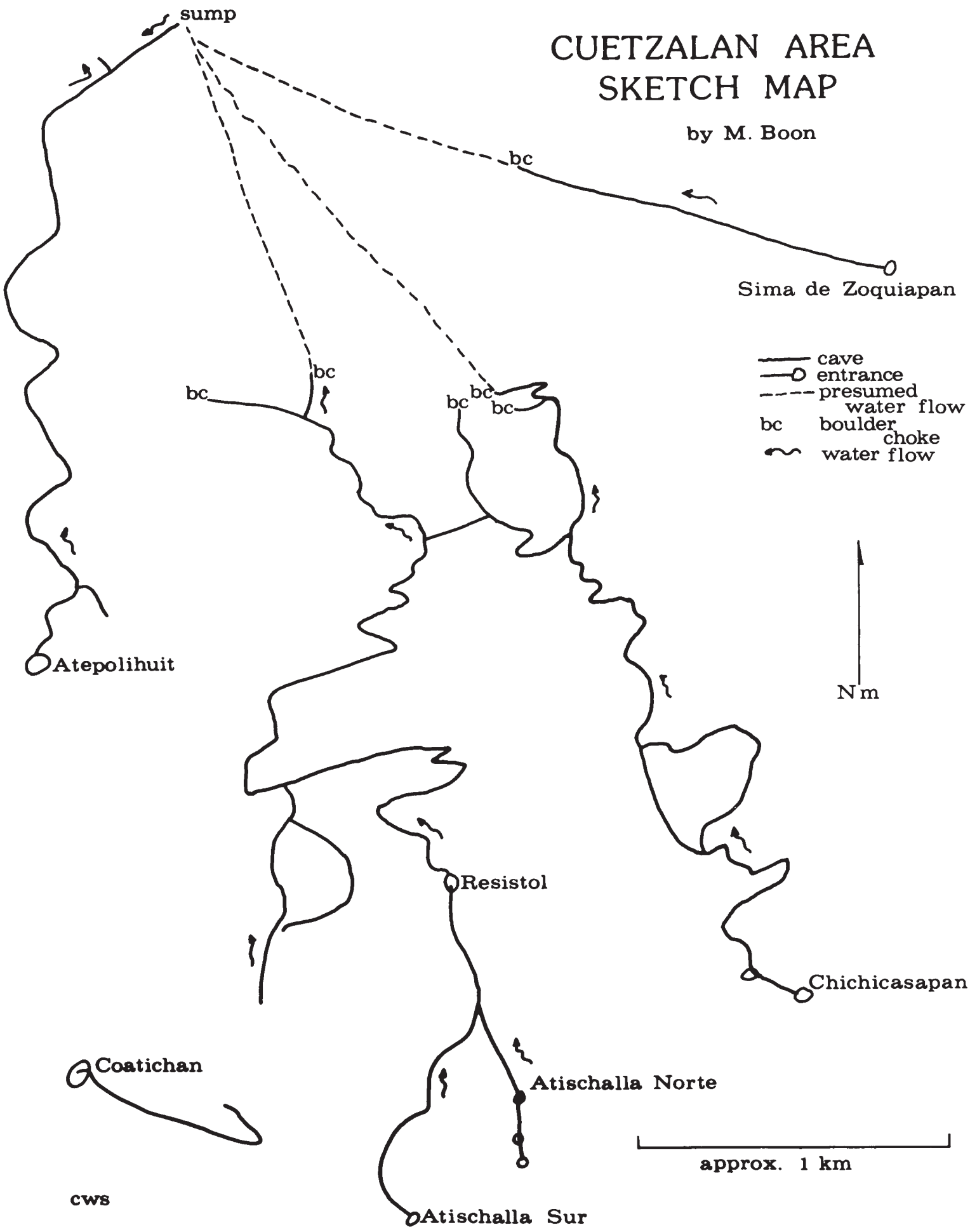
Harrison led us up the narrow mountain path to an obscure pit entrance, a meter on a side. The pit drops 22 m into a room. In the corner of this room is a 2 m diameter hole. You lower 300 m of rope into it. Eight of us did the cave in shifts of two, to minimize the very real danger of the lower man being trashed by falling rocks. If Golondrinas is the most inspiring pit on earth, Ahuacatlan is probably one of the spookiest: rappelling forever (20 min) in the isolated glow of your headlamp, the rope disappearing above and below in utter darkness. You are rappelling the elevator shaft of the Empire State Building, never more than a meter from the wall, yet almost always hanging free, until finally you reach the 5 m in diameter floor. Once down, cowering under some scant cover,

you wait for your partner to join you, with tiny pebble-missiles occasionally whizzing past your ear. Then the ascent: 288 m with no reference points to indicate how far along you are. The climb is an exercise in patience and anticipation.

Sotano del Macho Rey. A mile or so from the Sotanito lying at the bottom of a kilometer-wide doline, is Macho Rey. This cave had only been visited by three or four parties prior to ours. It was to be our last cave, an attractive combination of two offset drops dumping into a large chamber. In a passage off the lower room is a pristine sparkling flowstone mound called the Macho Rey. It is one of the prettiest examples of crystalline flowstone any of us had ever seen. The two drops: 85 m and 104 m respectively, seemed like child's play after two weeks of living on ropes. Nine of us toured the cave in five hours.

It had been a great vacation: exotic lands and incomparable caving. Bain and Grimm had far exceeded their goal of a vertical mile each. The rest of us had seetled for 3000 to 5000 feet. The drive home was the typical endless journey, e.g. 48 hours straight for the Colorado crew. Bill and Blake had brought the whole thing off in fine style; and all of us, I'm sure, look forward to the day we can return.




CUETZALAN AREA
SKETCH MAP
by M. Boon
sump
bc
Sima de Zoquiapan
cave
entrance
presumed water flow
bc boulder choke
water flow
bc
bc
bc
bc
bc
Atepolihuit
Nm
Resistol
Chichicasapan
Coatichan
Atischalla Norte
approx. 1 km
Atischalla Sur
cws

THE LONGEST AND GOING

Cuetzalan in 74 by Charles Plantz

From December 27, 1974 to January 4, 1975 I visited the Cuetzalan Cave area described by Nevin Davis in the AMCS Newsletter, visiting three known and six new caves. I entered the previously described lower entrance to Cueva de Guayateno and soon came to the end of the 1974 map. Following the stream out of the last room on the map I traversed above deep water for a few feet to more walking passage. This passage continued hundreds of feet, increasing in size, to several more skylights and two easily climbable pit entrances.

For two days I mapped the passage between the second and third entrances but eventually became discouraged by the great amount of scuttling back and forth from station to station involved in solo Brunton and tape surveying. So I went exploring in the main part of the cave, where the stream enters as a falls on the map. By wading and climbing to a ledge at the side of the falls toward the third entrance it is possible to traverse into the stream passage above the falls. The main stream comes out of a very low passage about 2000 feet in. At this point it appeared to me that the volume of the stream was much less than in the Sima Esteban stream. In all, about 2600 feet of passage was seen above the falls, mostly large walking passage.

At the end of the 1974 description of Cueva de Guayateno a cave is mentioned in a prominent cliff in a shallow dolina uphill from Guayateno. This is Cueva de Tecaltltan. Climbing down into the lowest entrance over breakdown for about 50 feet brings one into a 25 by 50 foot room with a skylight and a stream. The stream passage, about 20 feet wide by 10 feet high, leads west for about 500 feet to a falls of 20 feet into a room 60 feet in diameter by 30 feet high. Large passage could be seen leaving this room.

I then attempted to drive the road from Nauzontla to Tepanyehual but gave up because of the roughness of the road and camped alongside it. Later that night I was arrested and brought back to Nauzontla where I was kept for about a day to check my papers. Moral: The presidente wants to know who is on his turf. I spent the next day repairing damage to my vehicle, which happened during the arrest.

Next morning I followed the cobblestone trail north out of Nauzontla. After a little more than a mile a large stream flows northward into the 20 by 20 foot entrance of Cueva de Atepolihuit. After about 80 feet the passage turns left and continues west for about 600 feet averaging 10 feet wide and 20 feet high, and passing through a room with a skylight. Where I turned back the stream had ponded and filled the passage. The passage continued straight on beyond lamp range, and was 40 feet high by 10 feet wide, but only wide enough for a narrow boat at water level.

On my last day in the area I visited Cueva Esochita which is east of the road from Nauzontla to Tepayehual. The cave is a stream passage which zigzags in a generally southernly direction. It is mostly of walking passage with occasional stooping and crawling. The stream is generally in a slot in the floor but after about 600 feet a three foot deep pool blocked the passage. Ahead I could hear the roar of a waterfall. As I was attempting to climb above the water I fell about three feet into the pool, dislocating my left shoulder. I had very little trouble getting out, but then my troubles began. Local first aid probably did me more harm than good. Eventually I got someone to drive me to Mexico City.

Cuetzalan in 77 by Maureen Cavanaugh

Tracy Johnson (Tx), Mike Shulte (Va), Peter Lord (Britain), and Maureen Cavanaugh (Tx) arrived in Cuetzalan, Puebla on November 13, 1977. That afternoon we briefly visited Atischalla and mapped 140m of the upstream section and exited the cave through a downstream sinkhole overlooking the head of the valley that culminates in the Chichicasapan suckhole. On November 15 we returned to this entrance and set off into the downstream passage. An interesting aspect of this passage is that it is developed along the contact between limestone and a type of conglomerate that polishes glossy smooth. About 250m in and several climbdowns later we reached a 6m pitch that had to be rigged with a cable ladder. After another 100m of spacious high ceilinged stream passage we reached a massive breakdown choke and began applying what Peter termed "British Technique". After worming through an inobvious route (which had taken Peter two hours on an earlier trip) we found ourselves back in a stream passage now in the form of a crawlway. A few meters further a sloping crawlway came in from the left and connected to another cramped stream passage. This side passage, in addition to being developed along a limestone-conglomerate contact, showed clear evidence of being controlled by a fault where displacement in one place was measured at 60cm. We surveyed up this passage about 250m; it still continued, then returned to push the main passage. On a subsequent trip Peter, Mike, and Alejandro Villa Gomez (AME) connected the side stream passage with what had been until then called the "uppermost Atischalla entrance".

Returning to the original stream passage the cave continued as a crawlway through a tight fissure about 50 cm wide. About 60m further the fissure split. The left hand lead went about 13m to a slackwater sump (diving looked poor). The right hand lead continued 20m to another breakdown choke which was negotiated by utilizing a maze-like route through muddy, slippery breakdown. At the top of this pile there was an open breakdown passage that continued another 70m to a place where we sensed another entrance closeby due to the smell of fresh air and the presence of large fern stalks. Apparently water entering here (possibly at the base of the sinkhole) flows further into the cave, but because it was extremely tight, we opted to end exploration and began to survey out of the cave. The trip was 17 hours long, adding 1.5km to the survey in 128 stations.

The next day (Nov. 17) Peter, Tracy, and Mike undertook a six kilometer overland survey. In 367 stations they tied together three entrances in the Atischalla system and two entrances in the Chichicasapan system along with identifiable landmarks on the aerial photographs.

Cuetzalan in 78 by Mike Boon

At the start of this winter's caving, Pete Lord with the help of his wife Sue and various odds and sods, nad explored two major caves in Cuetzalan: Chichicasapan and Atischalla. Chichi consists of a major streamway about 4kms. long running northwest, Atischalla is a much smaller streamway running in roughly the same direction. Atischalla in addition has a long tributary passage. Lord assumed that Atischalla would flow into Chichi. At Christmas a party consisting of Bill Bockstiegel, Bill Liebman, Ernie Garza and others went to look at formations in a high level passage in Chichi to the west of the streamway. They got lost and found a passage leading to a pitch into a big chamber with the sound of a stream. As it was their last day they did not go down this pitch.

In January Preston Forsyth, Jim Rodemaker, Sheri Larason, Loretta Poer and I spent a couple of weeks in the area. We looked at a few shakeholes around the Coatichan sink before exploring the Sumidero de Atepolihuit with Pete Lord. Nevin Davis and Judy Davis had explored this big river cave for about 1.3kms; we explored another 3 kms. to the point where the river flowed into a nick point, or new passage capturing the flow of the old cave. Just above this point was a large inlet, giving a combined flow of about 10 cusecs.

On their very first day in the area Pete and Sue Lord had been shown a pothole about 25 meters deep. This was very near the end of Atischalla at that time. It's current name is Resistol. Pete and I went down the pot and found a good passage leading northwest, towards Chichi. In addition it had water entering from the roof and a tributary passage . A recce trip and a survey trip followed. From these it was pretty clear that Atischalla was not far off. Ben Dobbin and I returned to a point in boulders that Lord had reached and pushed further until we entered a passage with boot marks - part of Resistol. Ben, Pete, Joe Lieberz later explored Resistol further downstream to a point about 4 kms. Enroute we picked up an inlet which we assumed to be Coatichan.

Our furthest point was close to the Bockstiegel passage in Chichi. We did the drop at the end of this passage into the big chamber and were soon at the last survey station of the Resistol survey. Downstream was more river passage to a boulder choke which we did not get through. A high level passage also leads to a choke. One should add that there are four more chokes in Chichi.

Late March saw the arrival of the Chris Albers, Warren Anderson, Hal Lloyd, Norm Pace, Pete Thompson and Irv Graham. A big 60m pothole below town was descended to two kilometers of stream passage heavily polluted with sewage and festooned with shredded plastic. This pot is known as the Sima Zoquiapan. Some good pushing in the final boulder choke failed to get through. More was done in the Coatichan inlet and in the first part of Chichicasapan.

Beyond the mainstream in Resistol is much more cave which will very likely pick up water from Chichi and Zoquiapan before entering boulders or a sump to the presumed resurgence into Atepolihuit. What the chances of getting into it are is hard to say. The boulder chokes look difficult. There are also three passages entering Atepolihuit which are heading for the Resistol stream. The length of the Atischalla/Resistol/Chichicasapan system is 16 kms., the depth is 528m. Lord has promised a preliminary report for the June 1978 Canadian Caver.

AMCS Publications List

compiled by W. Russell

Information on the availability and prices of the AMCS Newsletter, Cave Report Series and Bulletins 1-6 can be obtained from the AMCS c/o Terry Raines, Box 7037, UT Station, Austin, Texas 78712.

AMCS NEWSLETTER Volume 1 January - December 1965
1 - Jan 65: History of AMCS, El Abra, Ocampo, Biology, S. de Tlamaya
2 - Feb 65: S. de Tlamaya, El Abra Caves pt. 1, Biology of Northern El Abra
3 - Mar 65: S. de Venadito, Joya de Salas, El Abra Caves pt. 2
4 - Apr 65: El Abra Caves pt. 3, Membership list
5 - May 65: Bustamante pits, S. de Tinaja, Xoxafi, Cd. del Maiz, N. de Rio Frio
6 - Jun 65: Chamal & Xilitla, Joya de Salas, Membership additions
7 - Jul 65: Huautla Area, Tlamaya, C. de San Vicente, C. del Diablo
8 - Aug 65: Xilitla Area, Huitzmolotitla, G. de Atoyac, Permission to cave
9 - Sep 65: Pena Nevada, Tlamaya, N. del Rio Frio, Map symbols
10 - Oct 65: Caving glossery, Vertical techniques
11 - Nov 65: Musquiz, Aramberri, Zaragoza, S. de Tinaja, S. del Arroyo
12 - Dec 65: Serranias del Burro, Rancho del Cielo, Xilitla, Bec Cave

AMCS Newsletter Volume 2 January - December 1966
1 - Jan/Feb 66: Tlamaya, Rancho del Cielo, Biology, Deep Caves List
2 - Mar/Apr 66: G. de Garcia, Montecillos, S. de Tinaja, Cd. Valles
3 - May/Jun 66: Galeana, Pozo de Gavilan, Pablillo, Huautla
4 - Jul/Aug 66: Tlamaya, Xilitla, C. del Diablo, Riscos, Palmito development
5 - Sep/Oct 66: Caves of Guerrero & Morelos, Biology - Millipedes
6 - Nov/Dec (Pub. Mar 68): Joya de Salas, S. de San Francisco, Huasteca Canyon, S. de Tlamaya, Xilitla, S. de la Silleta, Membership List, Cave distribution

AMCS NEWSLETTER Volume 3 January 1967 - August 1972
1 - Jan/Feb 67 (Pub Sep 68): S. de San Agustin, Mexican Maps, Biology
2 - Dec 69: Golondrinas, Guaguas, S. de San Agustin, Sierra de Guatemala, El Abra, Phsiographic Divisions
3 - May 71: Montecillos, Pichijumo, Joya de Salas, Sotanito de Ahuacatlan
4 - Feb 72: Constantin, Puente de Dios (Jalpan), Monos, G. de San Sebastian, Carrizal accident
5 - Jul 72: El Sotano, tres Manontiales, La Cienega
6 - Aug 72: Micos, El Abra Map, El Abra Cave List, La Cienega

AMCS NEWSLETTER Volume 4 February 1973 - April 1974
1 - Feb 73 (10th Anniversary Issue): Historical Accounts of Huitzmolititla, Palmito, S. de Arroyo, Tequila, Exploration, Biology
2 - Dec 73: Aquismon, La Florida, El Sotano, C. de la Puente
3 - Dec 73: El Abra, Sierra de Guatemala,
4 - Apr 74: Sierra Partida, El Abra, El Abra Archeology, Biological Cave Hazards, Illusive Pit
5&6 - Apr 74: Zacapoaxtla-Cuetzalan Area - The Cuetzalan Area Report

AMCS NEWSLETTER Volume 5 September 1974 - Current
1 - Sep 74: Volcancillo, El Abra, El Pujal, Monos Petroglyphs, Biology
2&3 - Jun 77: C. del Alamo, Aquismon, Ejido Purificacion, El Abra Archeology, Sierra del Burro, S. de Sauz, Caves of Chihuahua & Durango

AMCS BULLETINS
No. 1 - Jul 67: Caves of the Inter-American Highway
No. 2 - Sotano de las Golondrinas - text, map and photos
No. 3 - A Preliminary Bibliography of Mexican Cave Biology with a checklist of published records (Biology)
No. 4 - Studies on the Cavernicole Fauna of Mexico (Biology)
No. 5 - Studies on the Cavernicole Fauna of Mexico and Adjacent Regions (Biology)
No. 6 - Studies on the Caves and Cave Fauna of the Yucatan Peninsula
No. 7 - Caves of the San Juan Plateau (published by the Membership Committee)

CAVE REPORT SERIES
Sotanito de Ahuacatlan

AMCS ACTIVITIES NEWSLETTER January 1965 - November 1977
1 - Jan 75: S. de Otates, El Socavon, Los Sabinos, Chiapas, S. de Sendero Yucatan
2 - May 75: El Socavon, C. de Diamante, San Cristobal, Yochib, Map symbols
3 - Oct 75: Yucatan, Casi Mil, El Abra, San Juan, C. de Porvenir, Map symbols
4 - May 76: Chiapas, S. de Conchas, S. de Nogal, Quintero, Acahuizotla, Otates Mine, Acatlan
5 - Jan 77: Xilitla Plateau, San Juan, Diamante, Huautla, Zoquitlan, Brinco
6 - May 77: Golondrinas, Brinco, La Grieta, Yochib, San Agustin, Huautla
7 - Nov 77: San Agustin, Infiernillo, Brinco, Guaguas, Pena

Vertical Extent

an AMCS editorial

There of course needs to be a set of criterion established so that one deep cave can be compared to another. I've spoken to non-cavers about deep caves and invariably am asked,"Is this figure below sea level?", " Is this below the entrance?", " Is this the amount of rock above the passages?" The depth of a cave has evolved to be the vertical extent: the surveyed vertical distance from the highest point reached in the cave to the lowest. This should be reasonably applied.

Ellison's Cave, Georgia has a recorded depth or vertical extent greater than the highest entrance to the lowest point in the cave. This was achieved by surveying up in a passage going above the entrance. It's legal; everything added together; the total human traversed vertical extent regardless of where the entrance or entrances lie.

Holloch in Switzerland is another case in point. The cave is over 800 meters deep, with all the vertical extent being reached from the lowest point, the only entrance.

There are a couple of sticky issues. One is where to locate the base datum for the survey of a deep cave when beginning at the entrance. Customarily this has been that the highest point of the entrance can be the beginning point. The total depth of Golondrinas begins at the highest point of the entrance shaft, not where the ropes are usually rigged. The second sticky issue, and one argued a great deal, is how to consider sumps when they are the lowest point reached. The accepted AMCS procedure has been to take the survey to the surface of the water at a sump, unless someone takes the end of the survey tape underwater for some additional distance. Plumbing doesn't count, it must be a survey point reached by someone. Conchas was done this way. Mark Stock held his breath and dove three meters into the sump taking along the survey tape. The cave is that deep - just conditions provided higher water.

But what about when using tanks? Well, tanks are just another item of gear. I'm not equipped to see in the dark. I'm not provided with vibram soles on my feet. Caving is an equipped endeavor. Where a person gets to should be added to the vertical extent, be it underwater or not.

In Huautla we're hoping for a world depth record. It's probably going to be a cave system if it comes to be, with more than one entrance; pieced together. There will be higher entrances and sumps to be dived. But all the vertical extent adds together - that's what the figures represent.