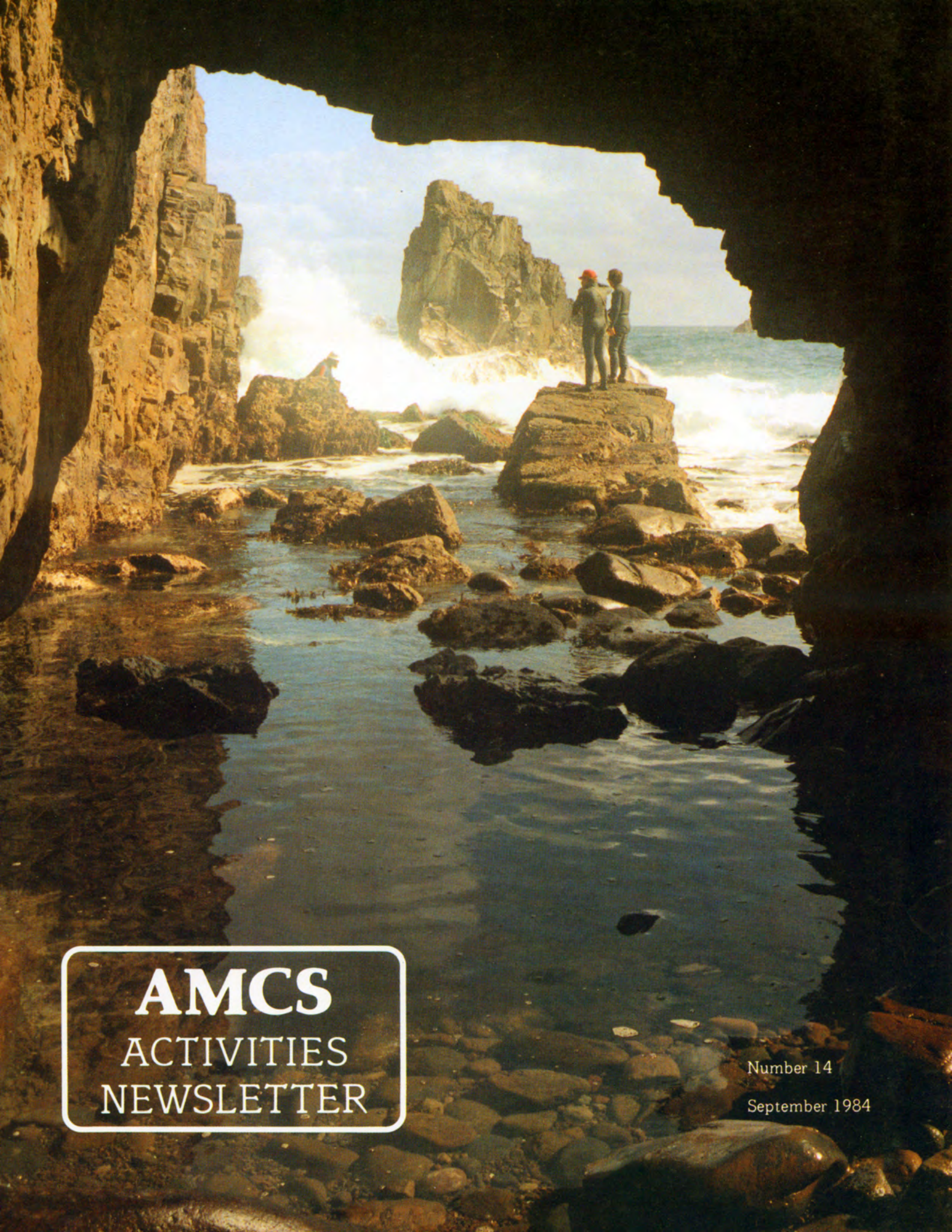

AMCS
ACTIVITIES NEWSLETTER

Number 14

September 1984


MÉXICO
PLACES IN THIS ISSUE
PUNTA BANDA
PRECIPICIO
POTRERO REDONDO
VASQUEZ
SAN BERNARDO
ZOQUITLAN
DOS AGUAS
PLAZA DE GALLOS
HUAUTLA

AMCS ACTIVITIES NEWSLETTER

Number 14 September 1984

Publisher
Association for Mexican Cave Studies
with assistance from
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Paul Fambro, Jim Feely, Mark Minton,
Bill Mixon, Duwain Whitis
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Katy Arens, Peter Sprouse, Alejandro Villagómez

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COMMENTARY

The AMCS Activities Newsletter has finally entered the computer age. This is the first issue that has been done using word processing, and even some of the artwork is computer generated. But even though computing makes preparing publications much easier, it doesn't necessarily make it all that much faster. Many thanks to all the contributors who submitted articles months ago and have been waiting patiently for the results.

In this issue you will read about caving in several familiar areas. Bill Stone has written an excellent account of exploration in the water-filled caverns below the Huautla Plateau, while Mark Minton brings things up to date on the continued penetration of the high caves of Huautla. Along with accounts of established caving projects, several articles focus on some exciting new areas. Dave Bunnell and Carol Vesely have been leading trips to Baja California to document the sea caves of Punta Banda. This new type of Mexican caving often requires a great deal of effort fighting the surf just to enter the caves, but once inside you may find seals lounging about on the rocks. Mike Fischesser's article on Dos Aguas, Michoacán, introduces another new limestone karst area. These new projects demonstrate once again that there is still great potential for cave discoveries in México.

In addition to the many feature articles in this issue, other caving events in México are covered with an expanded México News section – nineteen pages worth! Thus it is apparent that there is a lot of caving going on in México, in fact far more than you see presented here. Everyone caving in México is encouraged to contribute articles, maps, photographs, and illustrations for publication in future issues.

the Editors

The AMCS Activities Newsletter is published by the Association for Mexican Cave Studies, a non-profit group dedicated to the conservation and study of the caves of México. Articles, maps, and photographs on caving and speleology in México are solicited. A list of publications and prices is available on request.

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Cover Photo: Looking out the entrance to Cueva de Rayo del Sol para el Mar. (Dave Bunnell)

Frontispiece: The Gorge in Nita Nanta during high water. (Jim Smith)

Backispiece: Top - looking out main entrance of Resaca Violento. (Dave Bunnell)
Bottom - Sump I in Peña Colorada. (John Zumrick)

Back Cover: Upper level passage in Gruta del Precipicio. (Keith Heuss)

México News

CHIAPAS

In April 1984, Norma Edith Hatch and Doyle Mosier visited an apparently unexplored cave south of La Trinitaria in southern Chiapas near Ejido Plan de Ayala (15°56'45"N 92°04'12"W). Their primary purpose on the trip was to collect cave-dwelling catfish of the genus Rhamdia for Doyle's research at the University of Texas. Cueva de Plan de Ayala is a moderately large cave with few formations. The first 100 meters of the cave are dry walking passage, which slopes gradually to a pool 1 meter deep and 4 meters wide. A large population of blind, depigmented Rhamdia was found in the pool. The cave was explored for a distance of about 1 kilometer through water passage containing a few small cascades. They stopped where the water became too deep to wade and airspace decreased to about 30 centimeters. There was good airflow at that point.

Two pits approximately 25 meters deep were also located, but they did not have time to explore them. Both are said to contain catfish. Other caves are reported in the area, and a return trip is planned for 1985.

Source: Doyle Mosier

Italian cavers from the Circulo Espeleológico Romano recently concluded a month long expedition in the area around Presa del Malpaso. They had very good results, including the exploration of Sumidero del Pecho Blanco, estimated to be 450 meters deep. It contains a number of drops, the longest being a 120-meter cascade. A large pit in the area, Cueva de la Lucha, was not explored due to its difficult access.

Source: Carlos Lazcano

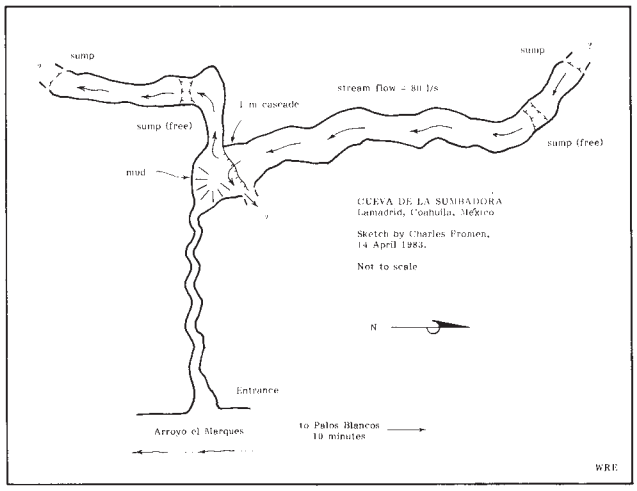
In March 1983, Canadians Mike Boon and Randy Spahl investigated a section of the Río Xumulá near Agua Azul that was shown on an old topographic map as having a Puente de Tierra. A new Pemex road runs about 10 kilometers west from near Agua Azul to Venustiano Carranza and La Cueva. This road crosses the Río Xumulá, and upstream, to the south, the river runs underground for approximately 2 kilometers. Only the downstream (resurgence) entrance was visited. It is a high, triangular entrance set in a 100-meter-tall headwall. The exiting river fills the cave, leaving no place to get out of the water. At a point about 80 meters in, there is an inlet on the right side. An estimated 4 cubic meters per second of water flows around a boulder, and the passage could be seen to continue. Exploring farther on in the main passage, they reached two exposed rocks 120 meters from the entrance. Looking ahead, the passage could be seen curving to the right, and falling water could be heard.

Although the upstream entrance was not visited, locals described it as being 5 meters wide, 3 meters high, and with a lot of water flowing in. There are also reported to be many pits and caves around the village of La Cueva.

Source: Randy Spahl, Canadian Caver 15:2

COAHUILA

In the first part of 1983, Dick Cruse, Charles Fromén, and other cavers from Houston, Texas located and explored various caves in the area around Cuatrociénegas in western Coahuila. In the Arroyo el Marqués north of Lamadrid, they were shown the Cueva de la Sumbadora, a short cave containing a large river. The entrance passage is an overflow route that intersects the active river. In both the upstream and downstream directions the



river sumps. Both of these sumps were free-dived by Fromén, and were pushed to more sumps. Southwest of Cuatrociénegas, near Tanque Nuevo, the Houston cavers located Gruta de Tanque Nuevo, a dry phreatic room. This was mapped by Austin cavers Jim Feely, Peter Sprouse, and Mike Warton on 3 March 1984. The Austin group also investigated a caveless breccia pseudokarst north of Socorro, 35 kilometers west of Cuatrociénegas.

Source: Peter Sprouse

COLIMA

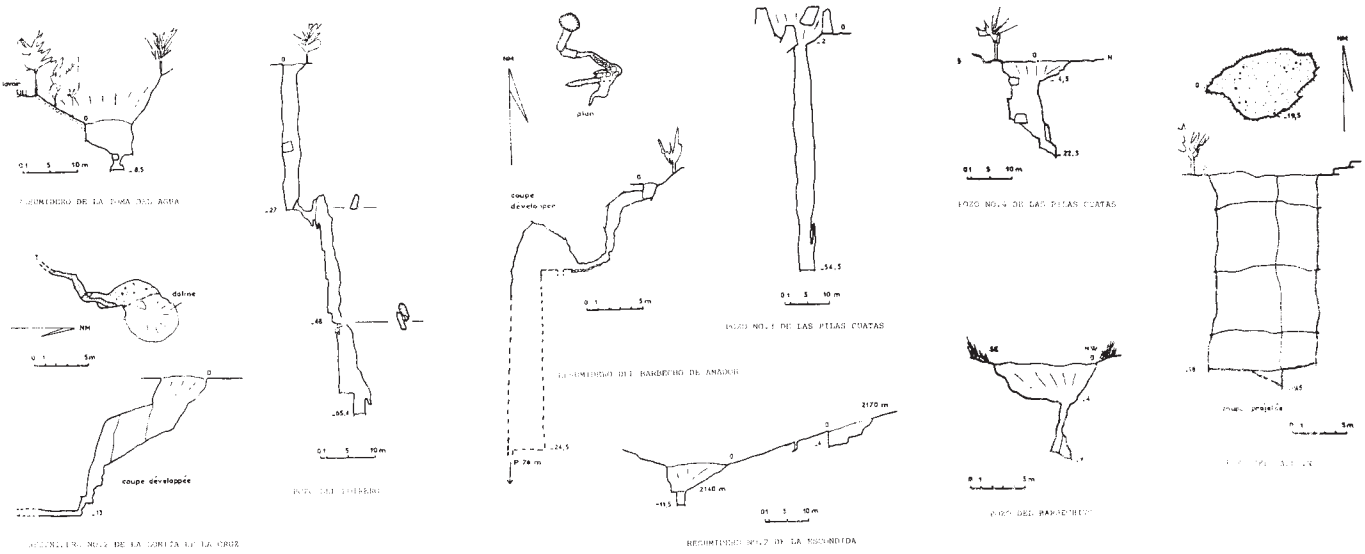
During the March 1983 SMES expedition to the Cerro Grande area (see AMCS Activities Newsletter No.13), French cavers Claude Chabert and Nicole Boullier aided the Mexican cavers in the exploration of various pits and sinks near El Terrero and La Escondida, close to the Jalisco state line. Perhaps the most significant of these is Resumidero del Barbecho de Amador. This cave was explored by Chabert, Victor Granados, and Carlos Lazcano down drops of 17 and 76 meters to an obstructed drop at -105 meters. Pozo del Potrero was explored by Chabert and Granados down four drops to a termination at -65 meters. In all, the French participated in the exploration of twenty-four pits and sinks.

Source: Claude Chabert, Grottes et Gouffres No. 89

GUERRERO

During a trip in the spring of 1984, Linda Elliott and David McKenzie investigated caves at Aclala, west of the city of Iguala, and about 6 kilometers west of the river cave Boca del Río Apetlanca. The Gruta de Aclala is well known locally. It has several entrances and is located above a major sumidero cave. A pit in the back of the gruta may connect to the sumidero. The Sumidero de Aclala drains about 40 square kilometers of a volcanic valley. Several arroyos meet and empty into the normally dry 20-meter-high and 10-meter-wide entrance. The cavers were able to explore about 100 meters of passage. They descended a climb

CAVES NEAR EL TERRERO, COLIMA



down polished boulders to a pool, then stopped at a second drop, which would require rope. This also ended up in a pool, and they could see a passage 20 meters high and 5 meters wide continuing over to a far shore of boulders. Noticeable airflow blew out of the cave.

Source: David McKenzie

Entrance to Sumidero de Aclala. (David McKenzie)

In October 1980 and January 1981, French cavers Phillipe Ackermann, Antoine Rouillon, and Genevieve Rouillon investigated caves near the town of Pantitlán. A river cave called Sumidero de Atliliakan to a sump at -230 meters. From the entrance they followed 500 meters of passage to a large room. This was followed by a polluted lake, after which was a maze section. Then the cave descended two wet pitches of 15 meters. Another drop in the full force of the water presented some difficulties due to floodwaters coming in from the surface. Bolting out away from the cascade was necessary. A considerable amount of passage below this drop was traversed to the final sump. After exiting the sumidero on one trip, they were accused by the locals of disturbing vampire bats in the cave, causing them to swarm out and attack livestock.

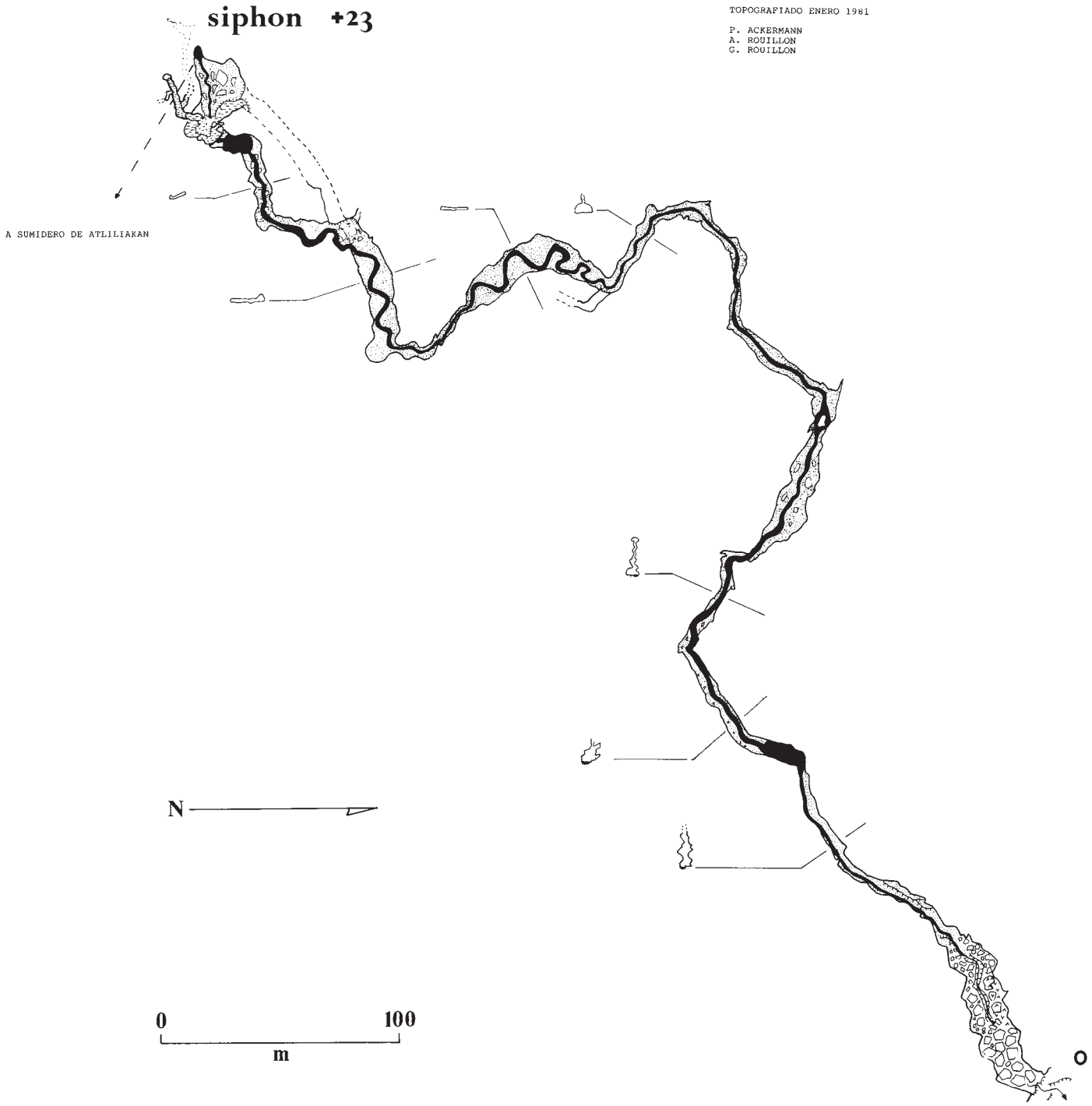
In January 1981 a resurgence cave called Gruta de Tecuanapa was explored on the other side of a ridge. This cave apparently has water flowing from the entrance year round. It is about 900 meters long, and ends in a sump only a few hundred meters from Sumidero de Atliliakan.

Source: Genevieve Rouillon


SUMIDERO DE ATLILIAKAN
PANTITLAN, GRO.
0
-35
-120
-147
-160
-179
siphon
-230
0
meters
100
N

GRUTA DE TECUANAPA

PANTITLAN, GRO.



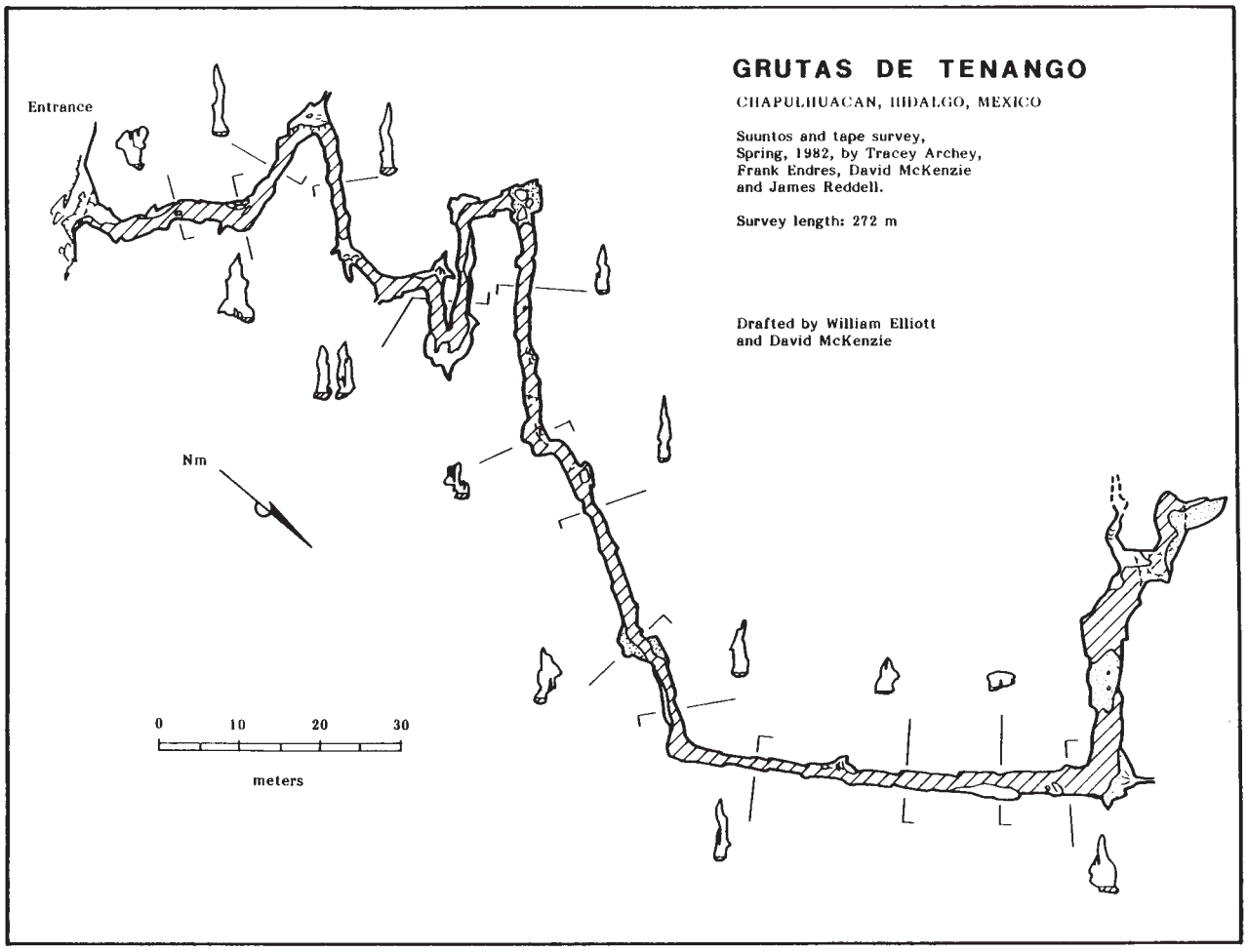
HIDALGO

Two interesting caves were visited near Chapulhuacan in the spring of 1982 by Tracey Archey, Frank Endres, David McKenzie, and James Reddell. At the edge of the Rancho el Tenango, Cueva del Arbol Grande was explored for about 100 meters to a depth of 25 meters. The passage was 3 meters wide and 1 to 3 meters high, and had good airflow. Exploration stopped at a 5 meter drop that would require rigging. Down in a canyon 1 kilometer from the rancho, the spring-cave Grutas de Tenango was explored and surveyed. It is mostly water passage, averaging 1 meter deep. Several deep pits in the dolinas around Chapulhuacan that were seen in the 1960's by James Reddell and John Fish remain unexplored.

Source: James Reddell

JALISCO

Members of the Sociedad Mexicana de Exploraciones Subterráneas continued work in the Cerro Grande area in April 1984. Resumidero (Gruta) de Toxin was explored for 3 kilometers to a sump. Bad air in the lower section may inhibit pushing the sump. The cave is very beautiful, and the passages are often 30 meters wide and 40 meters high. The cave is largely horizontal, with only one 10-meter drop. The possible resurgence for the cave, La Taza, was dived by Carlos Lazcano. He was able to push it for 40 meters,



Surveying in Resumidero de Toxin. (Carlos Lazcano)

where he encountered a constriction at 12 meters depth. Two paleo-resurgences remain to be explored in the La Taza area. Fifteen small caves and pits were explored on Cerro de Enmedio, north of Toxin.

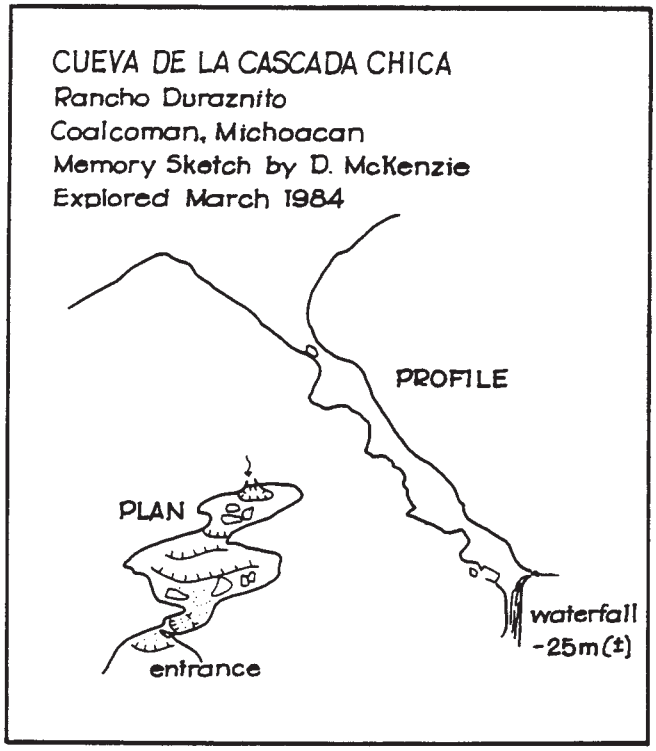
Source: Carlos Lazcano

MICHOACAN

David McKenzie and Linda Elliott made biological collections in caves around Dos Aguas, Michoacán, in March 1984 (see article on this area by Mike Fischesser). Accessing the area from Coalcoman on the west side, they investigated an apparently unexplored cave along the side of a 500-meter-wide dolina at the edge of the plateau, on the south side of the road. A sloping passage descended to a depth of about 25 meters, where an incoming stream poured down a shaft, suggesting wetsuits would be needed for a push. A new genus of cricket was discovered in the cave. On the road going north from Torrecillas, they explored a number of sinks near La Alberquita, one of which, Cueva de La Alberquita, contained a water-crawl that was not pushed.

Southeast of Dos Aguas, near Puerto Hondo, two sinking arroyos were followed. The first contained a flowing stream that sank into gravel and, farther on, came to a headwall. Here they found a fissure drop that appeared to be about 5 meters deep, with no detectable airflow. The other arroyo led to a small entrance containing washed boulders and a pit estimated to be 15 meters deep. Airflow could be felt, and it seemed to reverse every three minutes or so.

Source: David McKenzie



NUEVO LEON

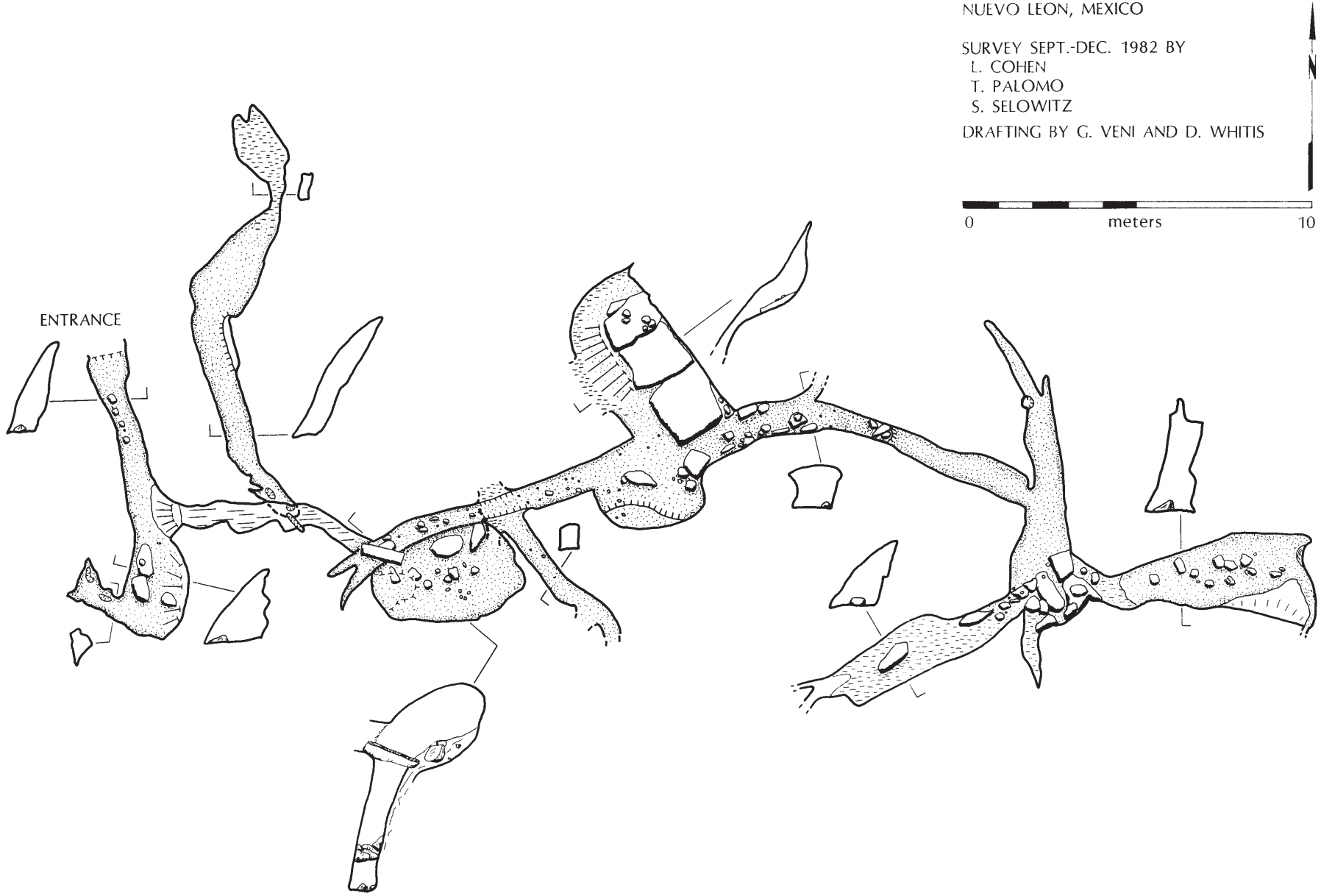
Larry Cohen, T. Palomo, and S. Selowitz surveyed a cave south of Monterrey during the latter part of 1982. Cueva de la Sierra Madre is located on a hill on the north side of Cerro Chipinque. Apparently the cave has not been frequently visited. Some of the crawlways had not been traveled, nor was there much vandalism or graffiti. The cave does not contain

CUEVA DE LA SIERRA MADRE

NUEVO LEON, MEXICO

SURVEY SEPT.-DEC. 1982 BY
L. COHEN
T. PALOMO
S. SELOWITZ

DRAFTING BY G. VENI AND D. WHITIS



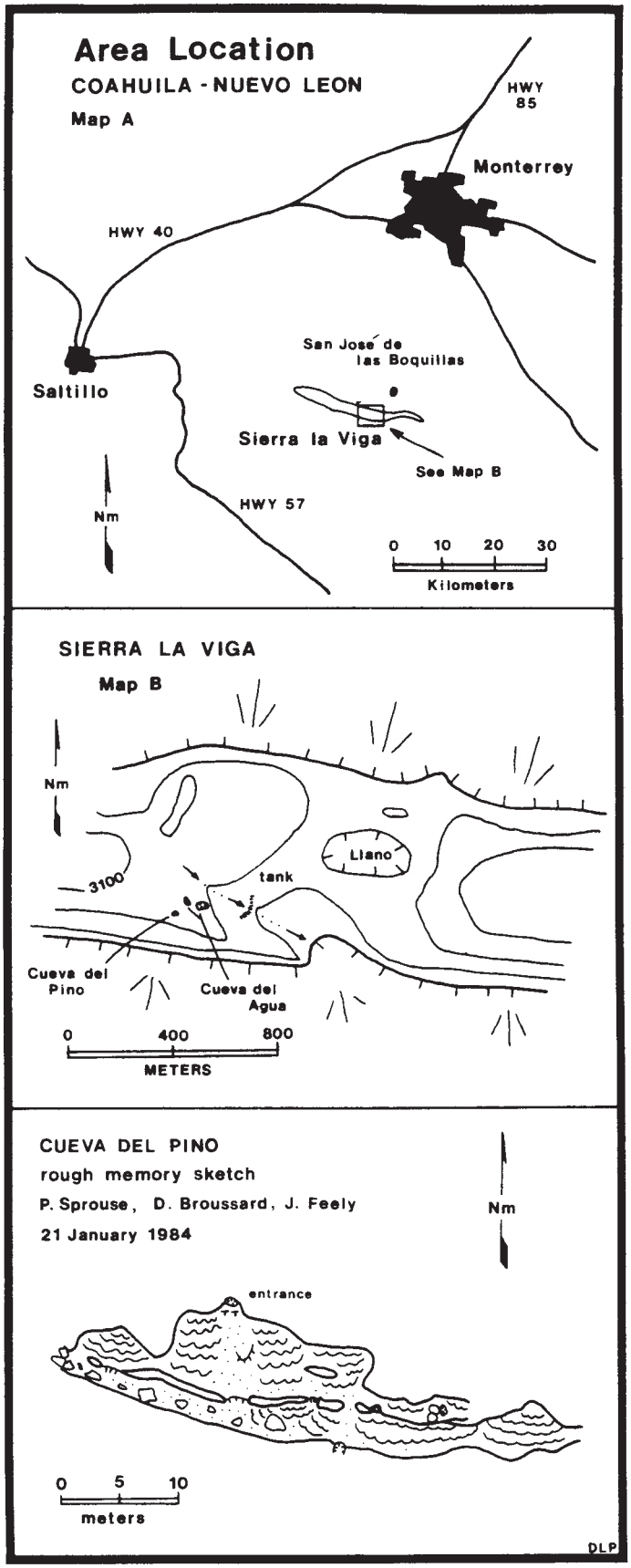
many speleothems. It is an easy, Sunday-type cave.

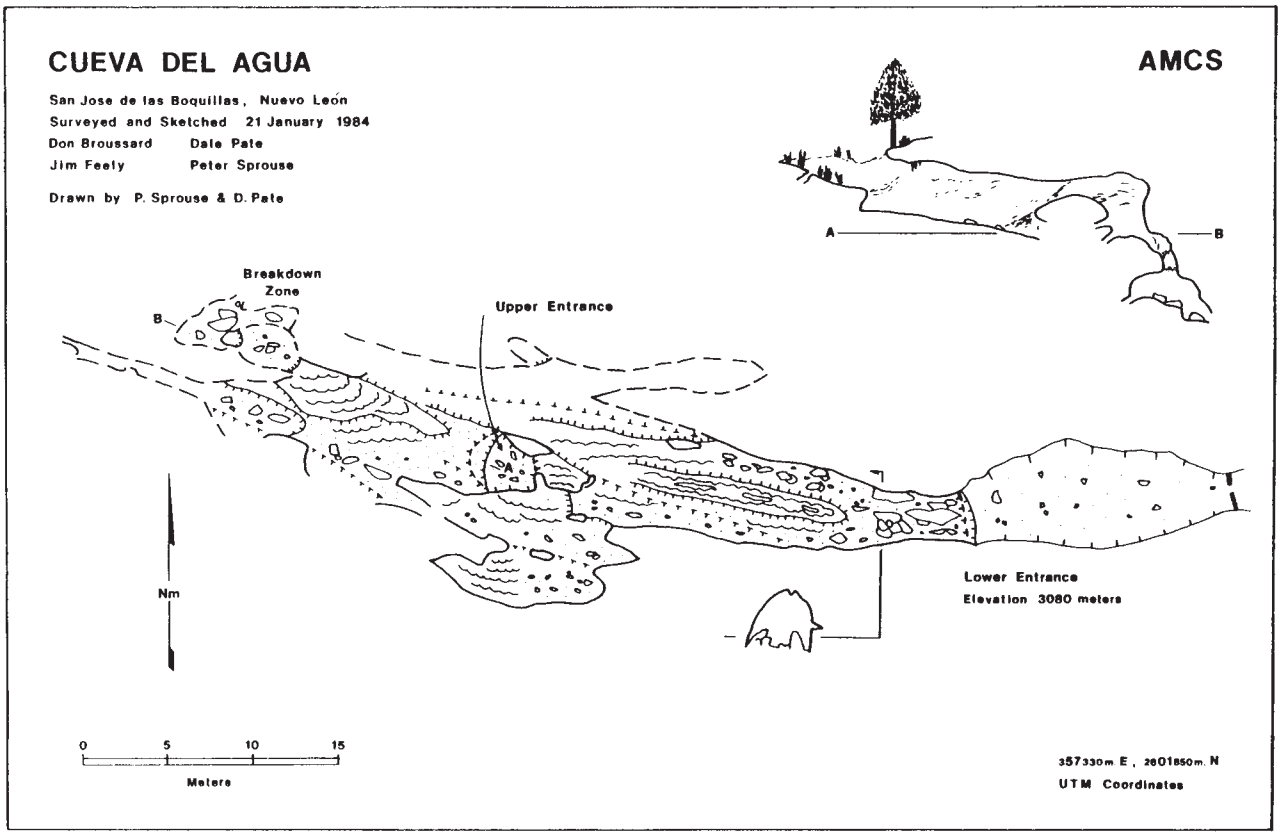
Cueva de la Sierra Madre is located about one hour's walk south of the cemetery in the village of San Pedro, in the Garza Garcia district. From the cemetery at Puebla and Jiménez streets, a dirt road leads past the pantheon along an arroyo on the left. A trail then leads south toward a hill with a rock outcrop on top. The meandering trail skirts the right side of the hill, then bears left to the cave entrance at the rock outcrop.

The cave is a series of interconnecting rooms on two levels. Lower level crawls actually constitute a third level. From the entrance room heading south, a passage on the left leads to the main portions of the cave. A slot in the floor of this passage leads to a lower section 20 meters long with no visible outlet The main passage narrows and reaches a rock bridge, giving access to a balcony. This can be freeclimbed, or descended with a handline to reach the lower level. From this point the cave continues east with numerous side leads, generally heading down. At the rear of the cave is an old flowstone canopy, the easternmost point in Cueva de la Sierra Madre.

Source: Larry Cohen

Situated on a high ridge of the Sierra la Viga south of Monterrey are two caves that have been visited by numerous groups of Texas cavers over the years, but never adequately documented. In January 1984, a group of Austin cavers mapped and sketched these caves. A 900-meter ascent up the ridge south of San José de las Boquillas is required to reach the cave area. Cueva del Agua is a complex breakdown cave several hundred meters long. The cave has three entrances and is widely known in the area, and it is reputed to be very extensive. The cave yielded various invertebrates, includ-



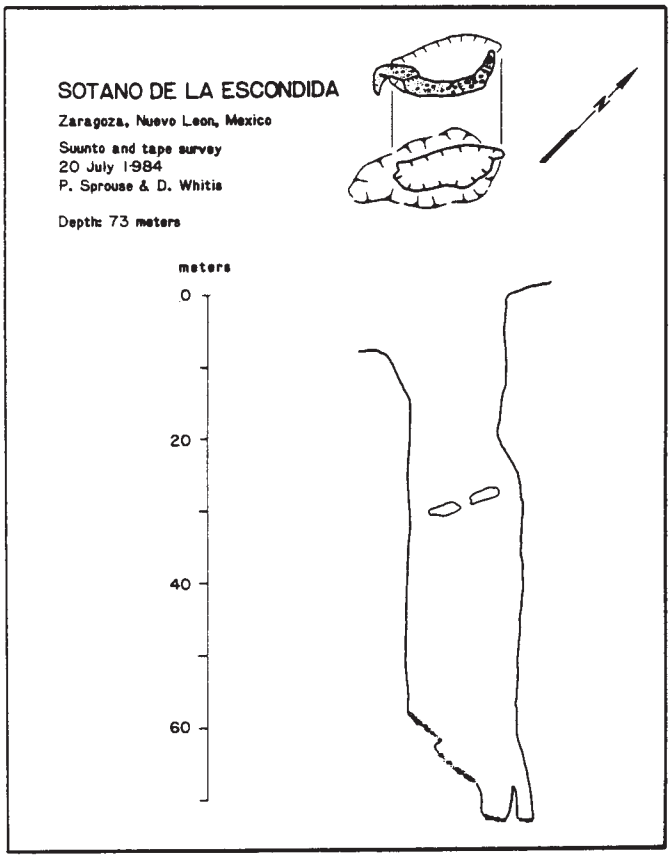


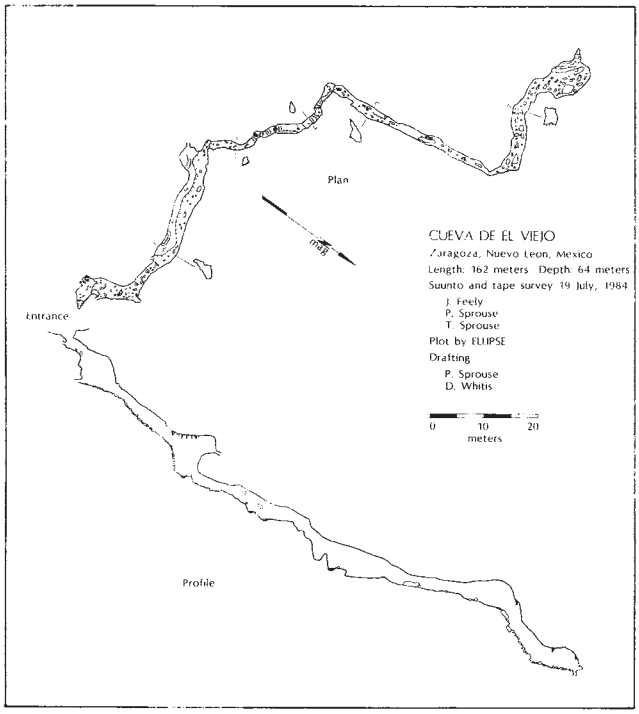
ing a probably new pseudoscorpion.

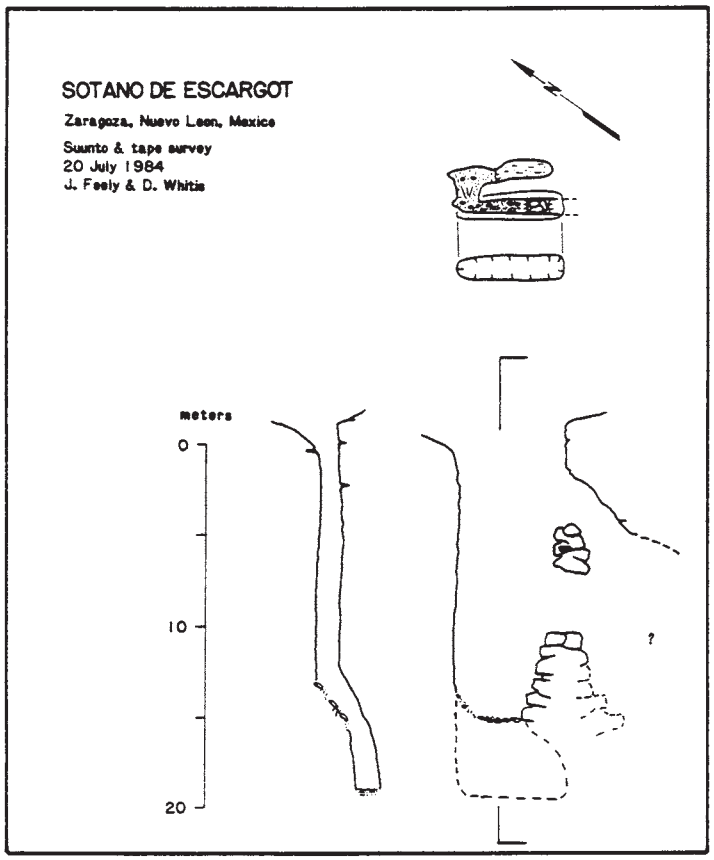
A few dozen meters to the south is Cueva del Pino, a formation cave that dips steeply to the south. Although only about 150 meters of passage were seen, there is a strong warm breeze that blows out the entrance, suggesting that there may be a hidden way on.

Source: Peter Sprouse

A cluster of new caves and pits have been discovered on the southeast side of Cerro el Viejo, 7 kilometers east of the town of Zaragoza. A group of Texas cavers consisting of Audrey Cole, Jim Feely, Peter Sprouse, Terri Sprouse, Barbra Vinson, Duwain Whitis, and Sara Whitis checked the area around the village of La Escondida in mid-July 1984. One kilometer southwest of the village, just after the road from Zaragoza crests the ridge, a line of sinks is encountered. A sink 100 meters south of the road contains the small entrance to Cueva de El Viejo, a 162-meter-long cave that descends





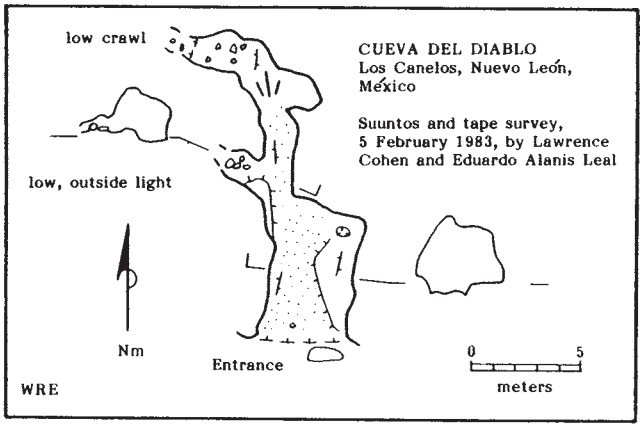


along bedding. Two sinks to the south is a small pit, Sótano de Escargot.

On the side of a hill on the southeast side of La Escondida, local boys showed the cavers three pits. One of these, Sótano de La Escondida, was explored to a total depth of 73 meters. It has a fluted entrance shaft of 50 meters, followed by a steep rubble slope to a terminal room and parallel dome. The second pit on the hillside was very wide, and maybe 30 meters deep. The third was narrower, and seemed much deeper.

Source: Peter Sprouse

Eduardo Alanis Leal and Larry Cohen have explored two caves at Los Canelos, where the Río San Juan leaves the Cañon La Boca, east of Cueva de La Boca. Cueva del Diablo, a small cave about 200 meters southeast of the village, was mapped in February 1983. It is not far from a warm spring used by the locals for bathing. Also visited was Cueva de Macedonia, north of the village.



Eduardo knew of a pit high on the ridge south of Los Canelos, so in October of the same year a group consisting of Jim Feely, Ernie Garza, Jim Pisarowicz, Peter Sprouse, Terri Sprouse, and Mary Standifer went down from Austin to locate it. Eduardo hadn't seen the pit since he was a boy, so he enlisted his brother and a

friend to help find it. After making the 700-meter climb up the ridge, they were unable to locate it, saying the entrance was very small and could be hidden by leaves.

Source: Peter Sprouse

Austin cavers Craig Bittinger, Ron Gernsbacher, and Arnulfo Gómez were visiting Gruta de Carrizal in late July 1984 when an unfortunate accident occured. Craig and Ron were in the first warm lake 50 meters inside the cave, and Arnulfo decided to take a photograph. He set up his camera on automatic and began running down the slope to get in the picture. Just then the others 'mooned' him, and he slipped and fell. He thought he had a sprained ankle, but upon examination back in Austin it was determined that the long, thin leg bone was broken just above the ankle.

The main road into Carrizal now has a permanently locked gate on it, but it is said that by continuing on the road to Candela to a chapel, one can find a road with an unlocked iron gate that provides access to the cave.

Source: Craig Bittinger

A return trip to the Río Potosí canyon northwest of Hualahuises was made by Austin cavers in August 1983. The large entrance seen the previous January turned out to be blind, only 8 meters in extent. Not far upstream, a resurgence was found on the south side of the canyon. The water came out of a collapse, but a nearby entrance led into a boulder choke that blew air. Farther into the canyon, another spring was seen on the north side, but it had no cave openings.

Sources: Paul Fambro, Mark Minton

PUEBLA

A group of cavers from México, D.F. investigated a new area along the Veracruz state line in late February 1984. The Canoajoapan area has a depth potential of 1100 meters, and numerous entrances were located during the initial reconnaissance.

Source: Carlos Lazcano

In March 1984 Steve Knutson, Jim Pisarowicz, and Mary Standifer visited the area north of Zoquitlán (see article in this issue, and México News, AMCS Activities Newsletter No.13). They went to El Sumidero (or Atlcomunik), but failed to find a way through the large logjam. Exploring towards Eloxochitlán, they passed through a fossil karst valley containing many pits. A promising sumidero found at El Mirador has an entrance pit 3 to 4 seconds deep and takes a small stream. John DeBeer, Scott Linn, and Steve Knutson had flown over the promising Cerro Tzinzintepec, but an attempt to hike in to it was thwarted by fog. The group plans to return to this area in 1985.

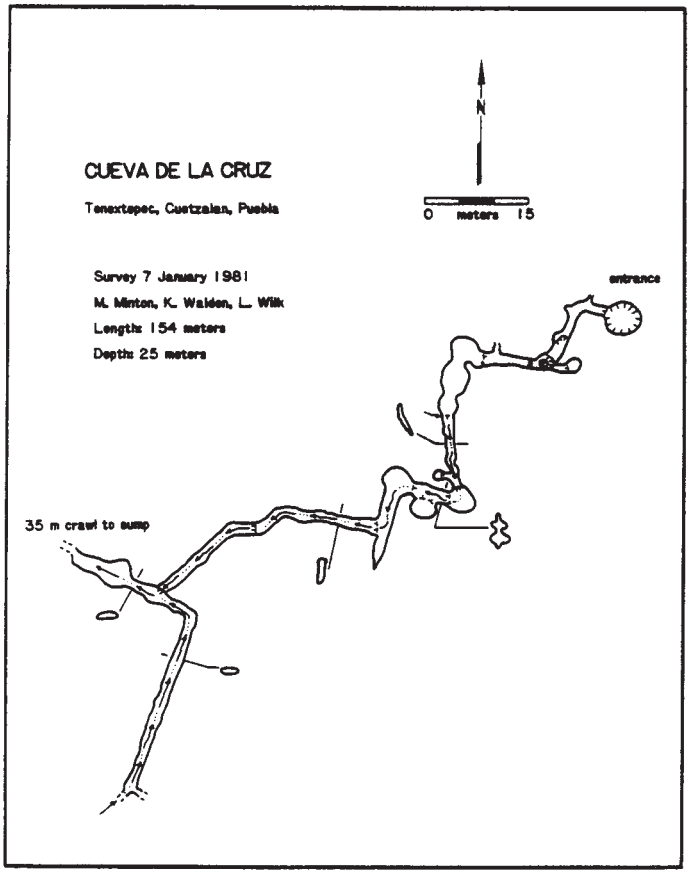
Source: Jim Pisarowicz

Cavers from Canada and Florida explored various caves in the Jonotla area near Cuetzalan in February 1983. Along the road a few kilometers from Jonotla, a small cave in a sinkhole was explored. Upstream led through alternating wet crawls and walking-size passage to another entrance in a small headwall on the north side of a sink. The downstream direction in the cave proved to be small and tight.

On the opposite side of the Jonotla road, the cavers surveyed Sumidero de Agueyaco, originally explored by Mike Boon and others in 1981. It is a 410-meter-long stream cave with entrances at both ends (see map in Canadian Caver 15:2).

Source: Randy Spahl, Canadian Caver 15:2

On the trip to the Jonotla area in January 1981, when Sumidero de Agueyaco was explored, Mark Minton, Kyle Walden, and Lisa Wilk also explored a small cave called Cueva de la



Cruz. They named it for a memorial cross along the road between Agueyaco and Tenextepec. The entrance was dug open, revealing a small passage that dropped quickly through a cherty upper layer of limestone into a more homogeneous layer containing ceiling domes. The cave picked up a small stream, and soon the floor began to show signs of the conglomerate layer that usually indicates good development in the Cuetzalan area. But after a short drop into another small stream passage, the cave ended: upstream pinched, and downstream sumped. Due to the unstable nature of the entrance sink, it is questionable whether this cave is still open.

Source: Mark Minton

SAN LUIS POTOSI

A group of California cavers checked a number of caves near Rascón, west of Ciudad Valles, in January 1984. Several small caves were found 2 kilometers northeast of Rascón, along the railroad tracks near Casa Blanca. One of these went down to a depth of 30 meters but then choked off. The weather was very cold, and they spotted a steam plume on a hill 3 kilometers southeast of Rascón. They chopped their way up to an entrance leading into a room 20 meters by 30 meters. The cave continued as a series of rooms connected by flowstone-covered fissures. It went down to a depth of about 70 meters before flowstone choked it off. The cave has at least 200 meters of passage, but they did not have time to survey it.

Another steam plume was seen a few hundred meters away, so this group plans to return to the area to do more caving.

Source: Dave Bunnell

In November 1983 a large group of cavers from Austin and San Marcos, Texas assembled to resurvey Sótano de Tlamaya, in the Xilitla area. The original survey from the mid 1960's had never been fully compiled and was in disarray. On this trip most of the cave was mapped, with the exception of the very lowest portion past the drop below the Pinnacle Drop and the upstream feeder into the Big Room. Anyone visiting the cave could do a service by finishing these portions. A 30-meter-long cave near La Rosal was surveyed, and it is apparently one explored by Bill Mixon many years earlier. Called Cueva de La Rosal, it consists of a few small rooms. Significant invertebrate collections, including a new dipluran, were made in it. Also surveyed was 22-meter-deep Sótano de El Rincón. This pit is on the left side of the road past the school in a banana grove, and has been referred to in the past as Sótano de los Plátanos.

Source: Peter Sprouse

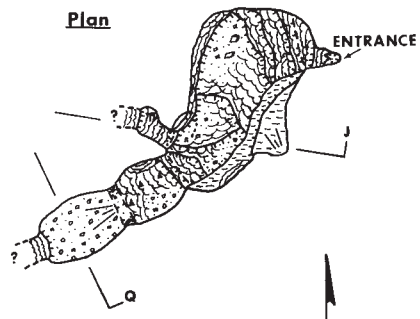
SOTANO de TRUENO

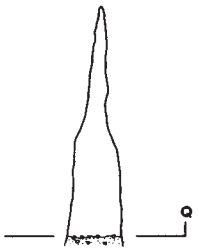
MUNICIPIO de ZARAGOZA
SAN LUIS POTOSI, MEXICO

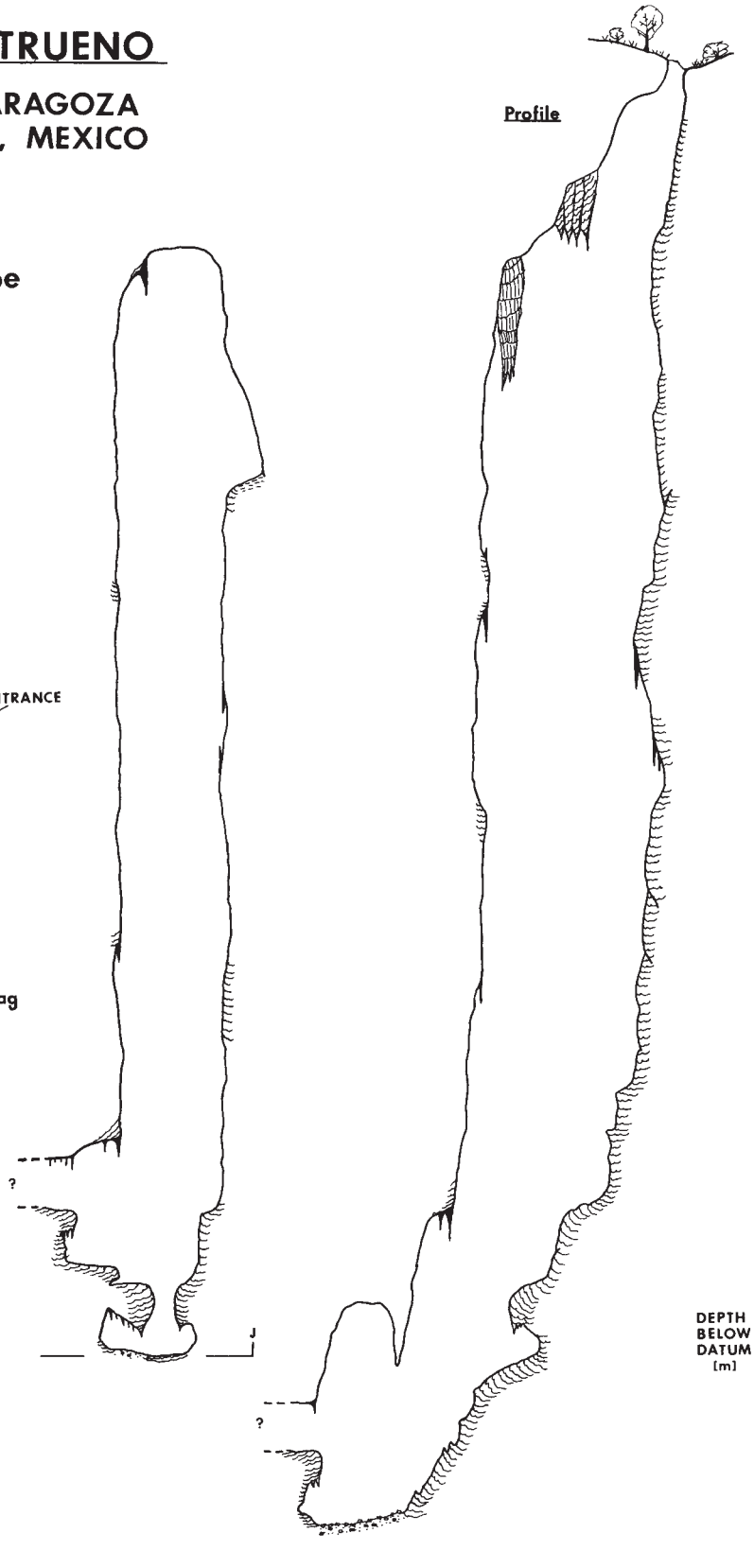
Survey: 30 Dec. '81
G. Veni
suuntos/tape

length: 42m
depth: 146 m

NOTE: Sections are at true elevations.

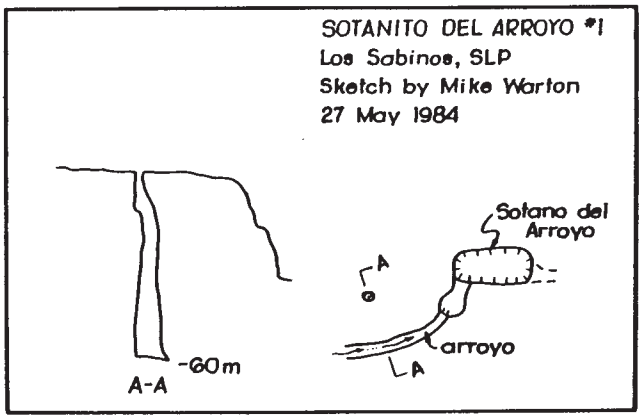






In late May 1984, Mike Warton and Frank Maloney happened upon a new pit while climbing to a good vantage point from which to photograph Sótano del Arroyo. The pit is off to the left as one approaches the entrance in the arroyo. They named it Sotanito del Arroyo No.1. The drop is 60 meters down light-tan flowstone walls to a dirt floor.

Source: Mike Warton



In the Valle de los Fantasmos area near San Francisco, a group of cavers from San Antonio and Houston, Texas, discovered a new deep pit on 30 December 1981. Lisa Passmore found the entrance to Sótano de Trueno while seeking the privacy of a clump of bushes near the road to La Puente. The next day illness struck the group, so only George Veni made the descent. The drop was 101 meters deep, followed by a steep slope to -146 meters. Apparently, the locals had been unaware of its existence.

Source: George Veni

SONORA

Marion Smith has discovered an interesting item printed in the July 1, 1864 edition of the Louisville Journal:

> John Wilson, who has arrived in San Francisco from Sonora, Mexico has with him a few curious relics, which deserve the attention of archaeologists. They consist of a human foot, with pieces of the wrapping which encloses a large number of mummies found in a cave near Chiricahin, near the line of Sonora and Chihuahua. The cave is a large one, which the mummies appear to fill to a depth of forty feet; and, though in the neighborhood among the Indians are traditions extending back some 500 years, there is nothing which can explain the filling of the cave with these bodies, which appear to have been preserved by the presence of large amounts of salt petre.

Marion would be interested to hear from anyone who has a chance to follow up on this lead.

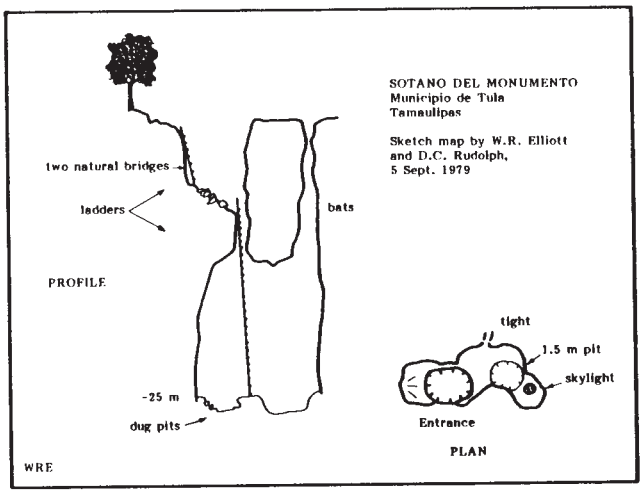
Source: Marion O. Smith

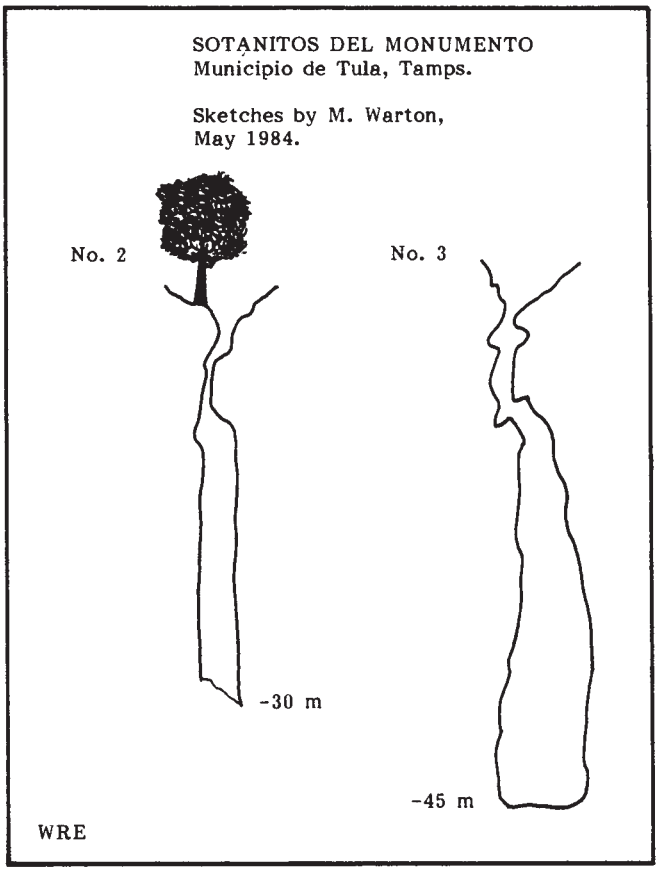
TAMAULIPAS

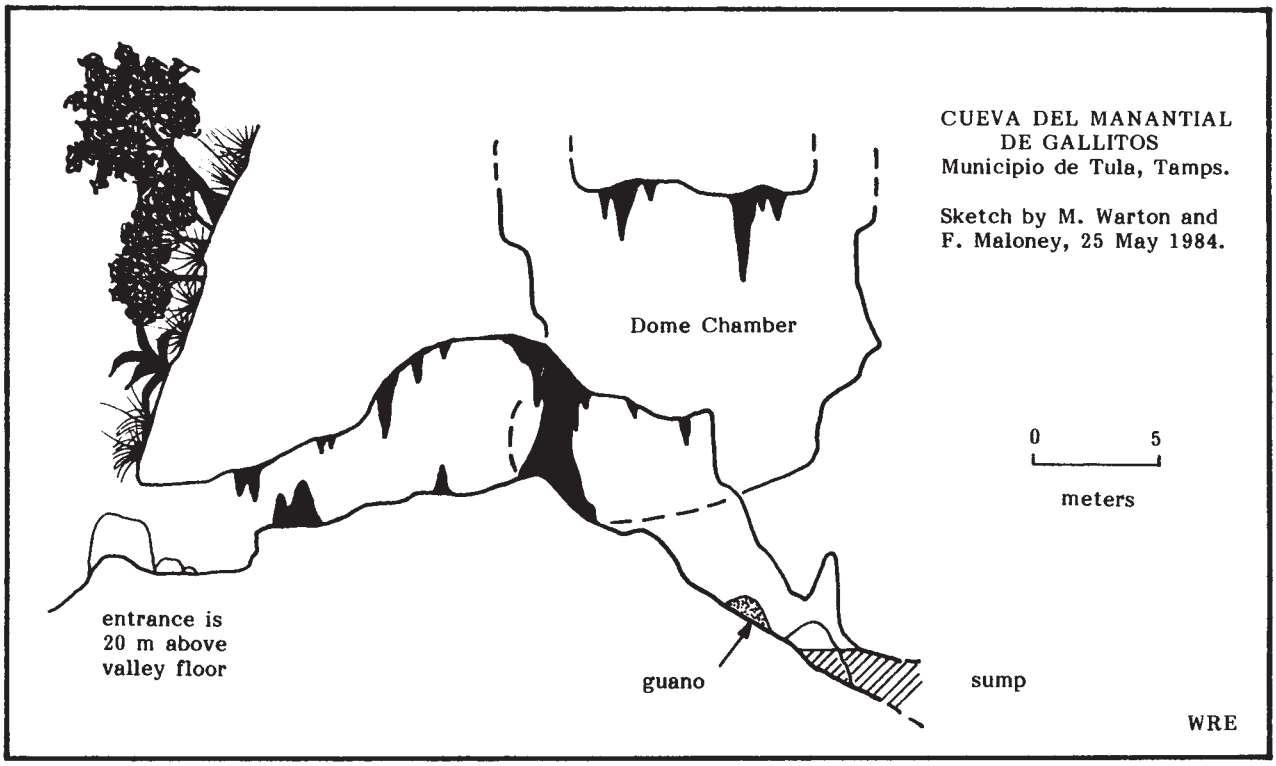
Mike Warton and Frank Maloney investigated the area around Gallitos, west of Ocampo in the municipio of Tula, during a trip in late May 1984. They found three pits off the road on top of the range 2.5 kilometers north of Gallitos. Most of these were plugged by clay. The deepest reached 45 meters. One of the pits turned out to be Sótano del Monumento, explored by Bill Elliott and Craig Rudolph in 1979. Guides from Gallitos showed them two caves near town. The first, Cueva de Gallitos, was a small formation cave 1 kilometer up the mountain on the south side of town. The second cave, Cueva del Manantial de Gallitos, is 1 kilometer west of town on a streamside trail. It is a resurgence cave 20 meters above the valley floor. Cascades can be followed up to the 6-meter-wide and 8-meter-high horizontal entrance. A well-decorated passage leads 20 meters to where a 30-meter-high decorated dome extends off to the right. The main passage descends for

15 meters to a clear deep sump that would be a good diving prospect. A colony of vampire bats lives in the rear section.

source: Mike Warton







In mid-March 1984, a group of eleven cavers from Texas and Colorado continued work in two major caves in the Purificación area, northwest of Ciudad Victoria. Most of their time was spent unsuccessfully pursuing leads in Sótano de Las Calenturas, searching for a route around the main upstream sump, beyond which substantial cave should exist. Surveying continued in the Hong Kong Tubes in the upper portion of the cave, resulting in the discovery of a small stream passage. Unfortunately, this could only be followed for a short distance in either direction before pinching off. In the main part of the cave, it was discovered that the huge Captain's Log had been washed from its lofty perch and broken in two. New surveying brought the length of the cave up to 6032 meters.

The last portion of the expedition was spent at Cueva del Tecolote, 7 kilometers to the southeast. The cave was unusually clean, in contrast to the polluted conditions found on previous trips. Exploration was continued in the main passage, down a 20-meter unexplored drop amongst massive formations. This dropped into trunk passage, the Ides March, that headed to the south. This passage is dry and one of the largest in the cave. Numerous side leads take off in this area. After netting 360 meters for the day, the survey left off at another drop overlooking a large room. A return trip is planned in the near future to continue pushing the cave.

Elsewhere in the cave, a climb atop the Waterfall Drop at the end of the Inverted Highway yielded a short section of nice fossil passage. This led to a surprisingly large room containing bats and an interesting ceiling lead, perhaps where the bats come from. Tecolote is now 1977 meters long and 175 meters deep. Extensive surface reconnaissance in the vicinities of both caves failed to turn up any worthwhile new leads.

Source: Mark Minton

Twelve kilometers to the south-southeast of Cueva del Tecolote lies a sink area that was investigated by Peter Sprouse and Terri Sprouse in late May 1984. Around the village of La Asunción is a well-developed karst area where a 25-meter pit and a steeply dipping cave, Cueva de La Asunción, were encountered. Two kilometers to the south, a valley named Las Hoyas was also examined for caves. Two caves and two pits were found, the most promising of them being Cueva de Las Hoyas. It was only explored a short ways to a tight 3-meter drop, but good airflow was detected. One pit entrance discovered was 5 meters by 10 meters across and about 30 meters deep.

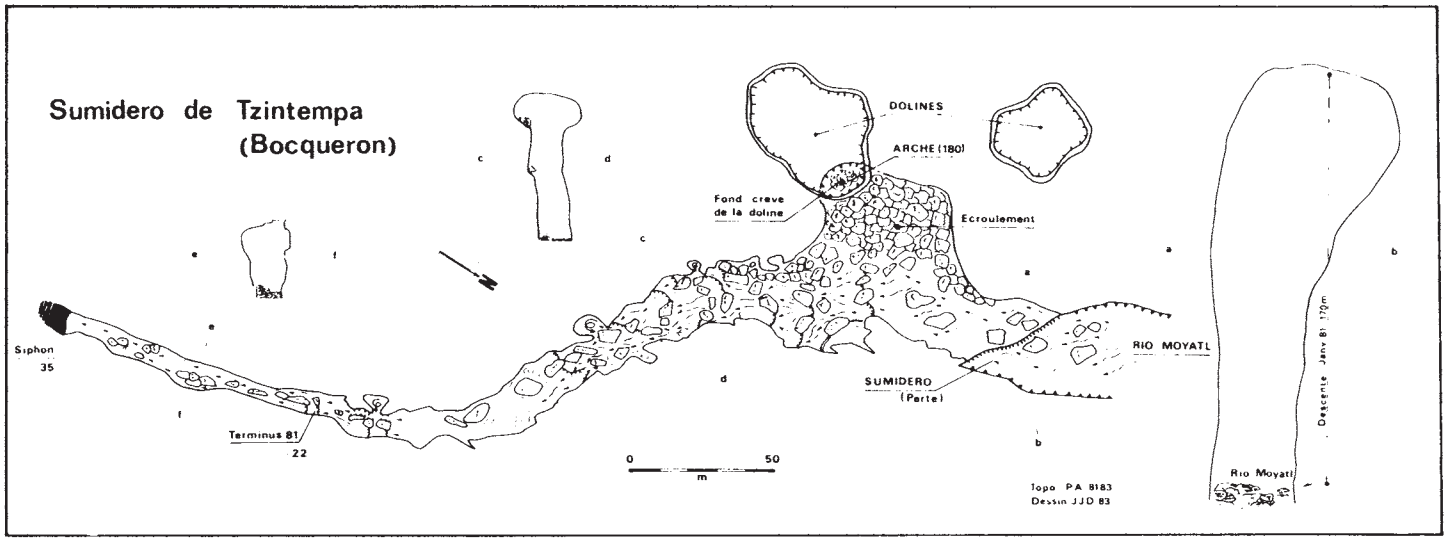
Source: Peter Sprouse

VERACRUZ

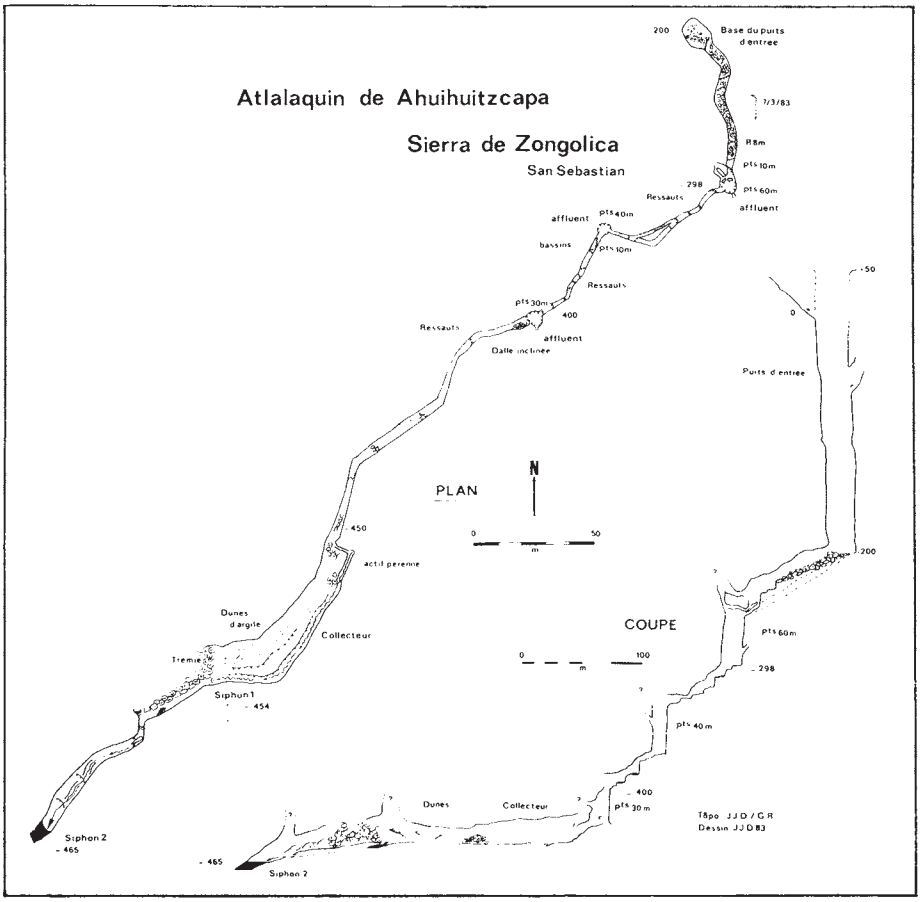
Mexican cavers working in the area around San Sebastián in the Zongolica area have documented a number of pits. In April 1981, Steve Robertson and Gerardo Fernández were guided to these pits by resident Mario García. One of these was the deep Sótano de Alpupuluca. It was explored by the Mexican cavers in December 1982 and February 1983. The Nahuatl name means "agua que sale y luego se esconde".

Also explored was the 200-meter entrance drop to Sótano de Ahuihuitzcapa. The cave was later pushed to a sump at -515 meters by French cavers (see article by Phillipe Ackermann on Ahuihuitzcapa and El Boquerón in AMCS Activities Newsletter No. 13). The name is Nahuatl for "donde se esconden las golondrinas". Sótano Mario García 1 turned out to be a 30-meter-deep blind pit. Sótano de Mario García 2 has been explored down an 85-meter shaft, and it continues. Sótano de Mario García 3 is a blind 35 meter-deep pit.

Source: Gerardo Fernández Ruiz



Spelunca Jan. 1984



Spelunca Jan. 1984

SOTANO DE ALPUPULUCA

San Sebastian, Veracruz

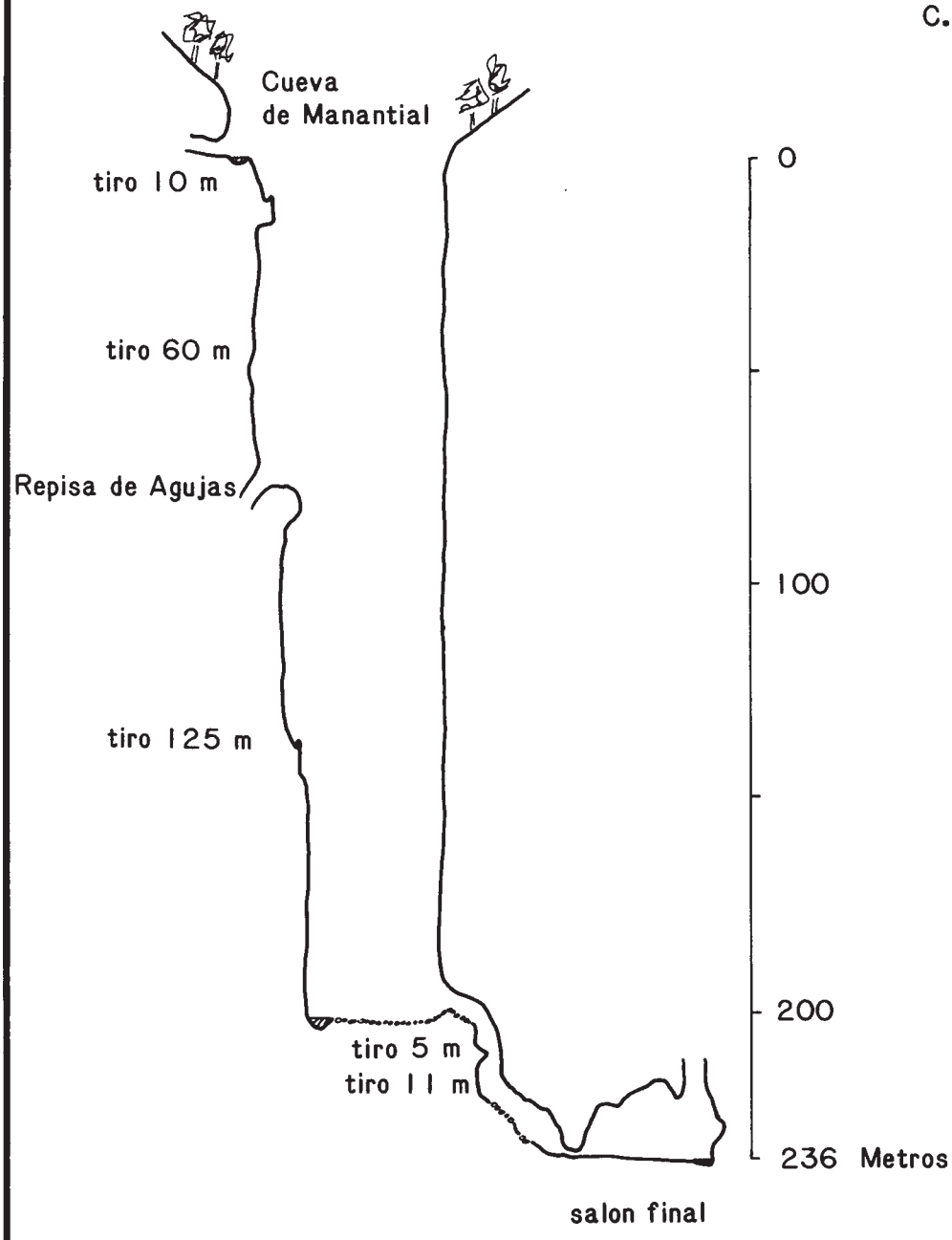
Croquis elaborado por

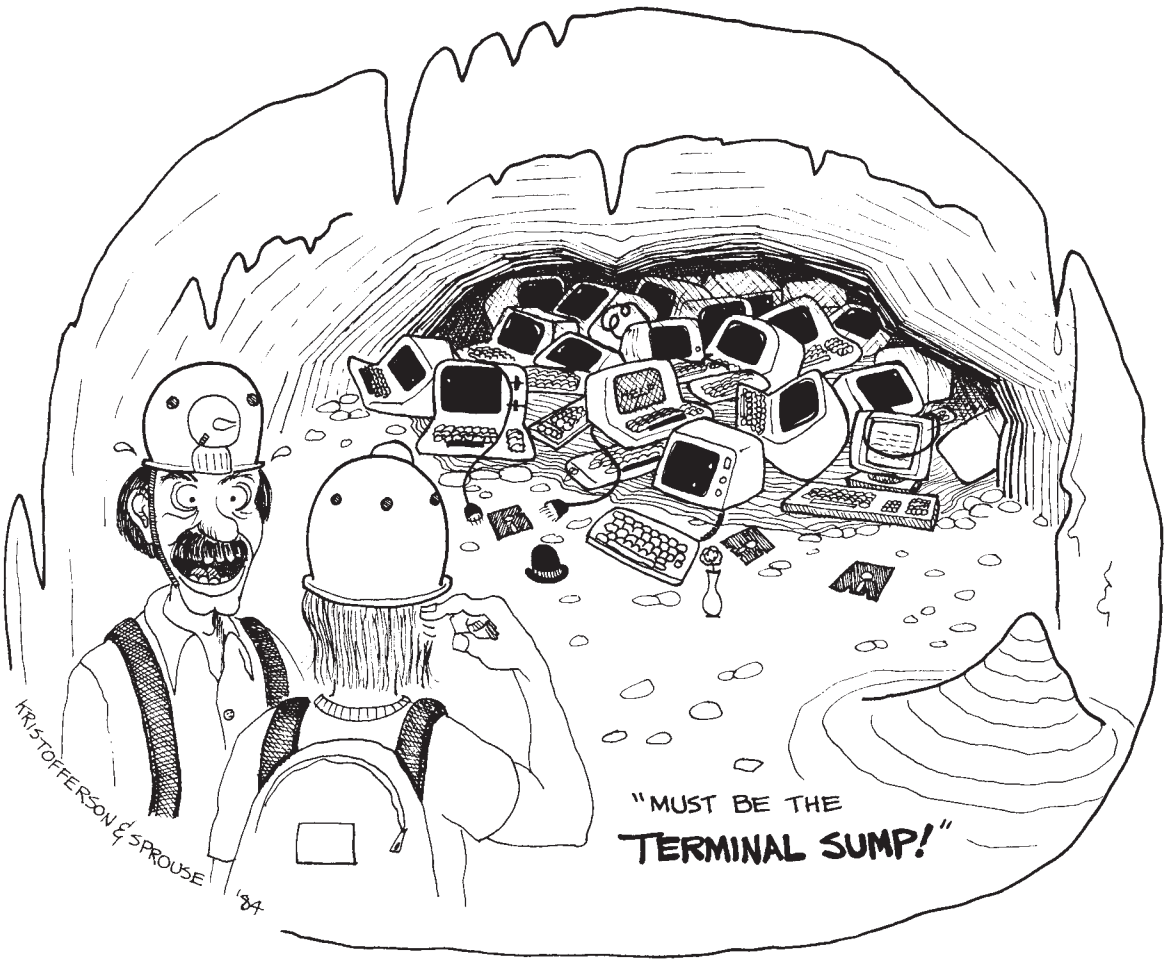
C. Lazcano, J. Prieto,

V. Granados

Febrero de 1983

SMES




"MUST BE THE
TERMINAL SUMP!"
KRISTOFFERSON & SPROUSE '84

Long Caves of México

compiled by Peter S. Sprouse

1.	Sistema Purificación	Tamaulipas	51,170
2.	Sistema Huautla	Oaxaca	24,392
3.	Sistema Cuetzalan	Puebla	22,432
4.	Nita Nanta	Oaxaca	10,769
5.	La Grieta	Oaxaca	8782
6.	Sumidero Santa Elena	Puebla	7884
7.	Cueva de la Peña Colorada	Oaxaca	7764
8.	Atepolihuit de San Miguel	Puebla	7700
9.	Sótano del Arroyo	San Luis Potosí	7200
10.	Actún de Kaua	Yucatán	6700
11.	Sumidero de Jonotla	Puebla	6381
12.	Sótano de Las Calenturas	Tamaulipas	6032
13.	Gruta del Río Chontalcoatlán	Guerrero	5827
14.	Gruta del Río San Jerónimo	Guerrero	5600
15.	Grutas de Juxtlahuaca	Guerrero	5098
16.	Cueva del Nacimiento del Río San Antonio	Oaxaca	4570
17.	Sótano de la Tinaja	San Luis Potosí	4502
18.	Sótano de Japonés	San Luis Potosí	4500
19.	Sistema San Andres	Puebla	4471
20.	Sótano del Río Iglesia	Oaxaca	4206
21.	Sistema Zoquiapan	Puebla	4107
22.	Sima del Borrego	Guerrero	4087
23.	Sumidero San Bernardo	Puebla	3931
24.	Sótano de Agua de Carrizo	Oaxaca	3748
25.	Nita Nashi	Oaxaca	3524
26.	Veshtucoc	Chiapas	3500
27.	Cueva del Río Jalpan	Querétaro	3440
28.	Actún Xpukil	Yucatán	3353
29.	Cueva de la Laguna Verde	Oaxaca	3350
30.	Sumidero Yochib	Chiapas	3316
31.	Cueva de El Chorreadero	Chiapas	3280
32.	Sumidero La Joya	Guerrero	3100
33.	Atepolihuit de Nauzontla	Puebla	3066
34.	Sistema de Montecillos	San Luis Potosí	3022
35.	Sótano de Huitzmolotitla	San Luis Potosí	3002
36.	Sumidero de Atliliakan	Guerrero	3000
37.	Sótano del Río Coyomeapan	Puebla	3000
38.	Sótano del Tigre	San Luis Potosí	3000
39.	Resumidero de Toxin	Jalisco	2887
40.	Boca del Río Apetlanca	Guerrero	2750
41.	Cueva Ayockal	Puebla	2702
42.	Actún Loltun	Yucatán	2682
43.	Sistema Santa Lucia	Puebla	2500
44.	Cueva de Juan Sanchez	Oaxaca-Veracruz	2493
45.	Sima de la Cruz Verde	Puebla	2301
46.	Grutas de San Cristobal	Chiapas	2250
47.	Xocomanetlán	Guerrero	2223
48.	Grutas de Estrella	Guerrero	2100
49.	Sumidero de Cuetzaloztotl	Veracruz	2100
50.	Sumidero de Atecarla	Puebla	2005

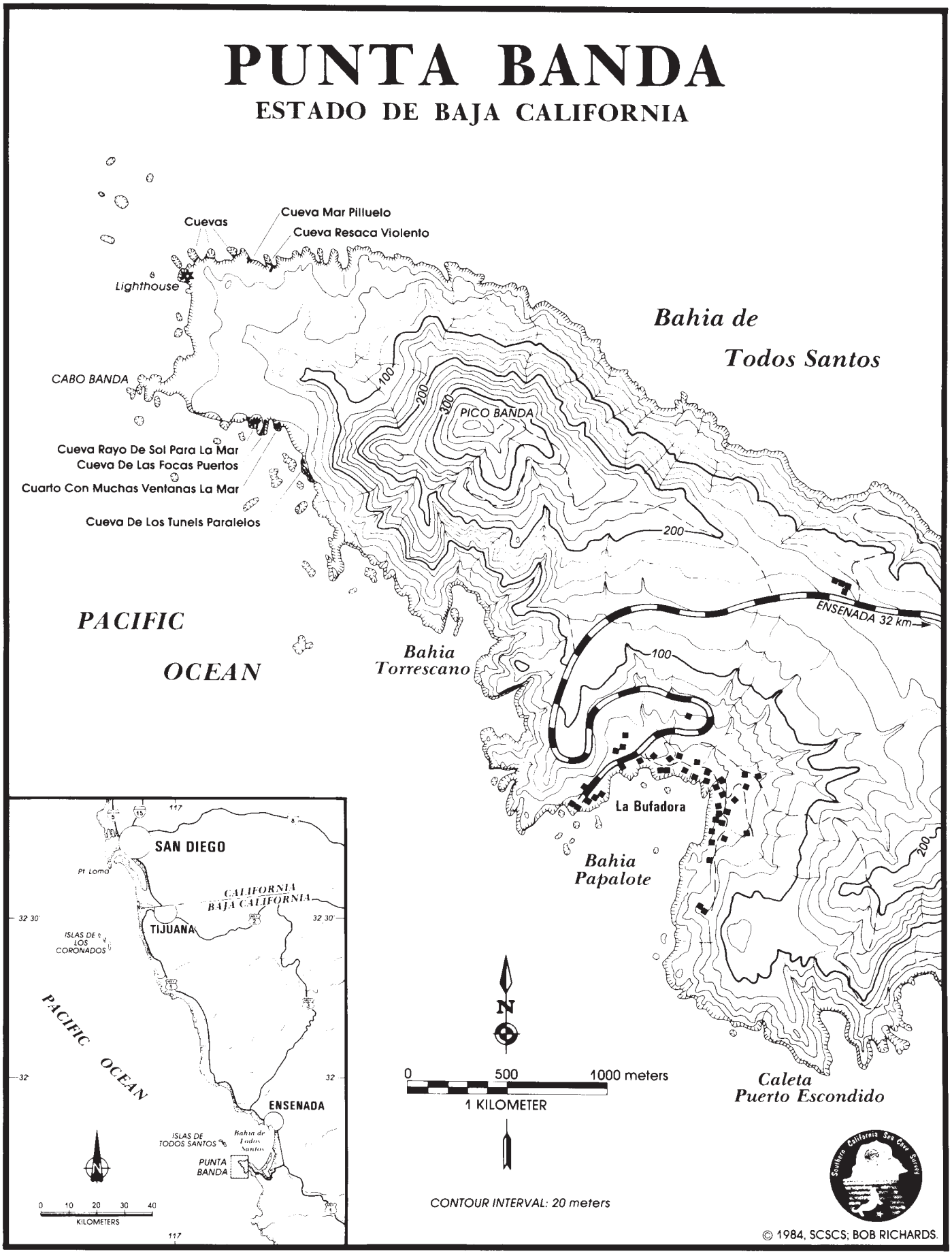
Deep Caves of México

compiled by Peter S. Sprouse

1.	Sistema Huautla	Oaxaca	1245
2.	Nita Nanta	Oaxaca	1031
3.	Sistema Purificación	Tamaulipas	895
4.	Sótano de Agua de Carrizo	Oaxaca	836
5.	Sótano de Trinidad	San Luis Potosí	834
6.	La Grieta	Oaxaca	733
7.	Sótano de Tilaco	Querétaro	649
8.	Nita Nashi	Oaxaca	641
9.	Cueva de Diamante	Tamaulipas	621
10.	Nita He	Oaxaca	594
11.	Sistema Cuetzalan	Puebla	587
12.	Sótano de las Coyotas	Guanajuato	581
13.	Sótano del Río Iglesia	Oaxaca	531
14.	Sótano de Ahuihuitzcapa	Veracruz	515
15.	Sótano de Nogal	Querétaro	529
16.	Sótano de las Golondrinas	San Luis Potosí	512
17.	Hoya de las Conchas	Querétaro	508
18.	Sótano del Buque	Querétaro	506
19.	Hoya de las Guaguas	San Luis Potosí	478
20.	Cueva de San Agustín	Oaxaca	461
21.	Sótano del Barro	Querétaro	455
22.	Hoyo de San Miguel	Guerrero	455
23.	Sótano Itamo	Veracruz	454
24.	Sótano de Tlamaya	San Luis Potosí	454
25.	Cueva de La Peña	San Luis Potosí	448
26.	Sumidero Santa Elena	Puebla	400
27.	Atepolihuit de San Miguel	Puebla	399
28.	Sótano de la Joya de Salas	Tamaulipas	376
29.	Sótano Tomasa Kiahua	Veracruz	374
30.	Sótano de la Virgen	Querétaro	352
31.	Cueva de El Chorreadero	Chiapas	345
32.	Cueva de Xocotlat	Puebla	339
33.	Sótano del Río Coyomeapan	Puebla	337
34.	Grutas de San Cristobal	Chiapas	330
35.	Sótano de Los Hernandez	Querétaro	330
36.	Cueva de Santa Cruz	Oaxaca	327
37.	Sumidero del Río Xocotlat	Puebla	323
38.	Sótano de Seis Segundos	Oaxaca	323
39.	Sotanito de Ahuacatlán	Querétaro	320
40.	Hoya de Zimapan	San Luis Potosí	320
41.	Sumidero de Atikpak	Veracruz	319
42.	Sótano de Jabalí	Querétaro	308
43.	Sistema Zoquiapan	Puebla	297
44.	Sótano del Burro	Querétaro	292
45.	Sótano de los Monos	San Luis Potosí	291
46.	Sótano Hondo	Querétaro	290
47.	Sótano de Soyate	San Luis Potosí	287
48.	Cueva del Rancho de Agua Amarga	San Luis Potosí	283
49.	Sótano de las Hoyas	Guanajuato	282
50.	Veshtucoc	Chiapas	280

PUNTA BANDA

ESTADO DE BAJA CALIFORNIA



THE SEA CAVES OF

PUNTA BANDA

Dave Bunnell and Carol Vesely

In contrast to mainland México, there is little limestone and few known caves on the 1200-kilometer long Baja peninsula. The longest known limestone cave, Cueva de Agua Caliente is 143 meters in length. With some 2500-plus kilometers of coastline, Baja seemed like good hunting grounds for a generally neglected type of cave: littoral, or sea caves. We'd already mapped a number of sea caves longer than 143 meters in California and figured that México, being what it is, ought to have some even bigger ones. Our interest in the Punta Banda area was spurred by reports, from diving friends and yachting guides, of large caves near the tip. Punta Banda is a 12-kilometer long promontory that forms the southwest side of the Bahia de Todas Santos, with Ensenada forming the north side of the bay. A prominent peak rises 388 meters above the sea. Much of the rock near the tip is of volcanic origin. Some eight kilometers from the tip are the rugged volcanic Islas de Todos Santos, also rumored to have

large sea caves. Also, Punta Banda is home of La Bufadora, the famous blowhole. Even on a calm day, the ocean shoots 20 to 30 meters into the air from this small cave. Things really got started though, when Ernie Garza took his Folboat down to paddle along the rugged coast of Punta Banda. Landing on one of the few beaches, he discovered a series of caves that we later named "Sistema Punta Banda." Lacking a flashlight, he couldn't appreciate their full extent, but he returned with glowing reports of large chambers filled with barking sea lions...

Don and Lisa de Lucia and Ernie Garza in Ernie's Folboat. (Dave Bunnell)

TRIP ONE

Bad storms caused by El Niño forced us to cancel several scheduled sea-cave trips, but finally in April 1983 good weather and low negative tides coincided, and we along with Ernie Garza, Bob Richards, Don DeLucia and Lisa DeLucia eventually made it to beautiful Baja. The rugged terrain around Punta Banda was covered with chapparal and cactus, all in full bloom from the heavy winter storms. Due to the steepness of the cliffs, we were not sure how easy it would be to get to any sea caves by hiking overland. Since Ernie had originally visited the caves by boat, we decided to use our two inflatable rafts.

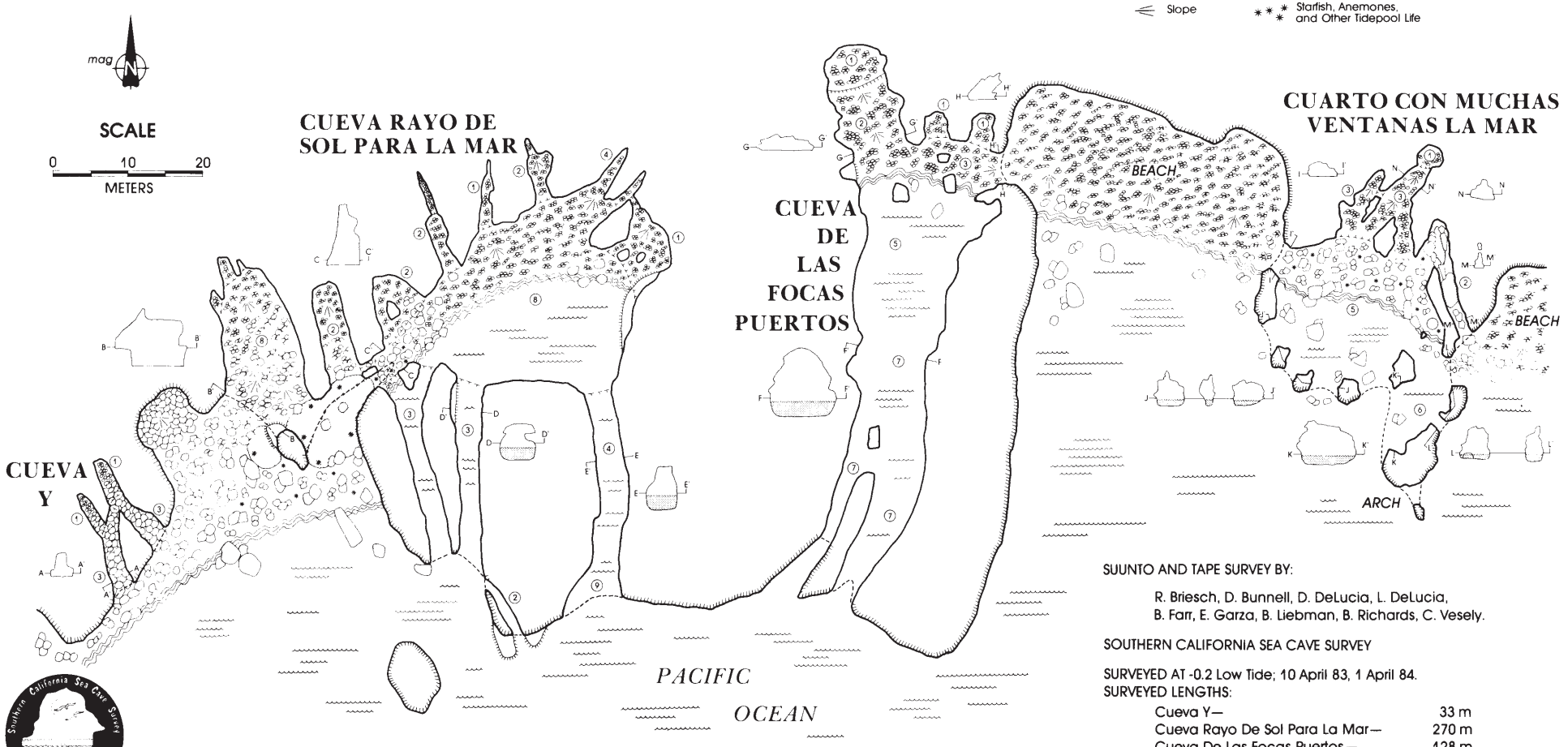
With Don and Lisa in one raft and Dave and Carol in the other, we attempted to paddle from the most easily accessible beach towards the caves that Ernie had told us about. The current was very strong once we had left the relative protection of the cove from which we launched. Jagged cliffs, 15 to 20 meters high, plunged directly into the sea for as far as we could see, with no sea caves or beaches in sight. Don and Lisa turned around, but Dave and Carol paddled on until they finally reached a beach where they could land and rest their arms. Near the beach were some sea-stacks containing some small sea caves and tunnels, but nothing of significance. We judged that we were still a long paddle from Ernie's caves, and since Carol was feeling a touch of seasickness, we decided to head back. To our pleasant surprise we found that we could climb up the cliffs from the beach and that there was even a trail heading both back the way we had come and also out towards the point. We hiked back to find that the others had not been any more successful than we.

The next day we decided to try a new plan of attack, since the rafts had proved too slow and awkward for travelling such long distances. We assembled Ernie's Folboat, and Ernie and Dave paddled out towards the caves, while the rest took the trail. The Folboat proved to be a quicker but somewhat riskier means of transportation. A huge gray whale surfaced five meters from the boat as Ernie and Dave were passing La Bufadora! Nevertheless we all managed to arrive safely at our destination. Meanwhile Don found a way down to the ocean from the top of the cliffs and immediately discovered an inconspicuous walking-height fissure. Entering this cave, he was surprised to find that the passage continued in darkness for a

Looking towards the points containing the Sistema Punta Banda. Islos Todos Santos in background. (Dave Bunnell)

SISTEMA PUNTA BANDA

ESTADO DE BAJA CALIFORNIA, MEXICO



SUUNTO AND TAPE SURVEY BY:

R. Briesch, D. Bunnell, D. DeLucia, L. DeLucia, B. Farr, E. Garza, B. Liebman, B. Richards, C. Vesely.

SOUTHERN CALIFORNIA SEA CAVE SURVEY

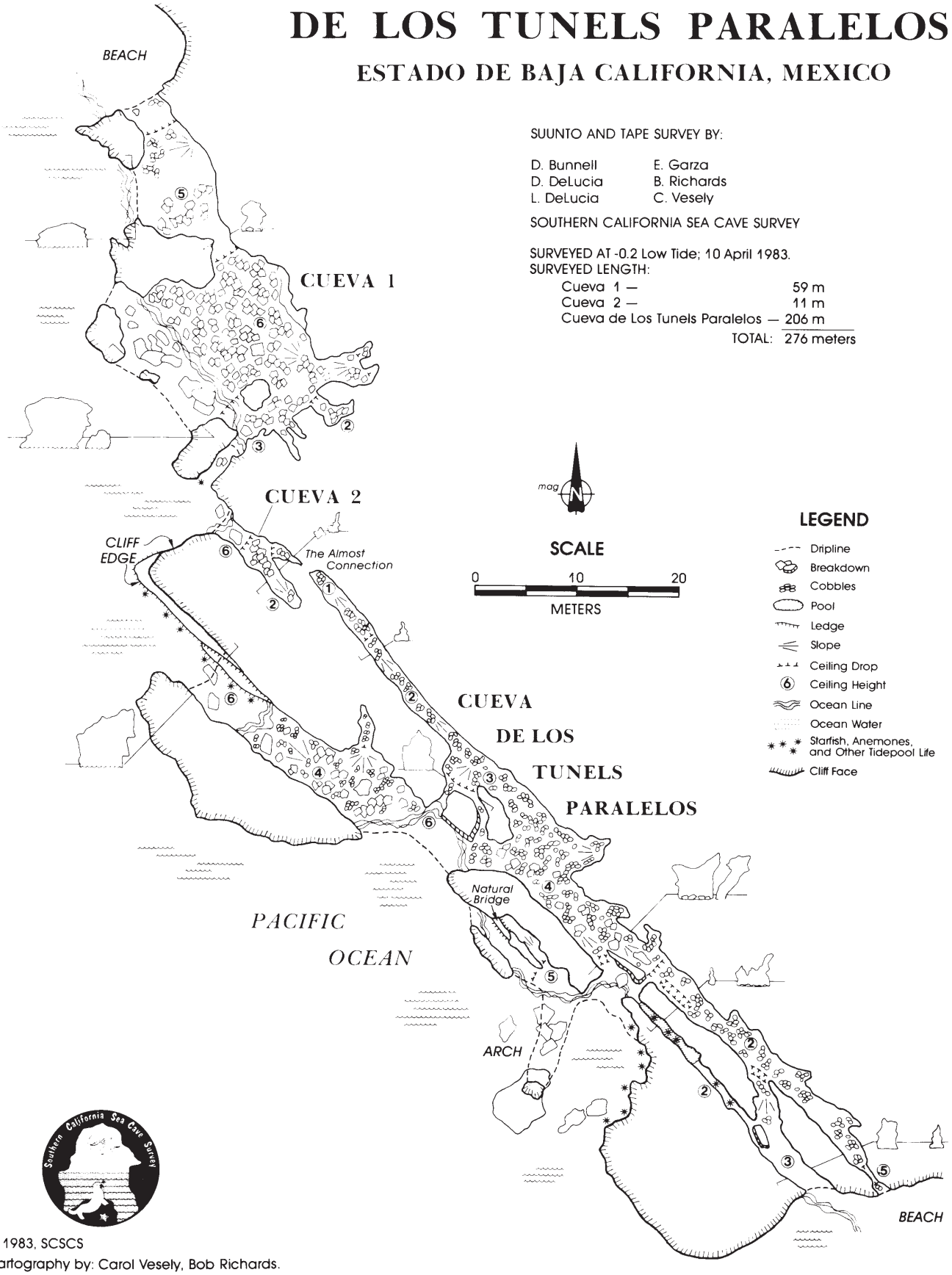
SURVEYED AT -0.2 Low Tide; 10 April 83, 1 April 84.

SURVEYED LENGTHS:

Cueva Y—	33 m
Cueva Rayo De Sol Para La Mar—	270 m
Cueva De Las Focas Puertos—	128 m
Cuarto Con Muchas Ventanas La Mar—	119 m
TOTAL:	550 meters

CUEVA
DE LOS TUNELS PARALELOS

ESTADO DE BAJA CALIFORNIA, MEXICO



SUUNTO AND TAPE SURVEY BY:

D. Bunnell — E. Garza
D. DeLucia — B. Richards
L. DeLucia — C. Vesely

SOUTHERN CALIFORNIA SEA CAVE SURVEY

SURVEYED AT -0.2 Low Tide; 10 April 1983.
SURVEYED LENGTH:

Cueva 1 —	59 m
Cueva 2 —	11 m
Cueva de Los Tunels Paralelos —	206 m
TOTAL:	276 meters

Cartography by: Carol Vesely, Bob Richards.

good 70 meters parallel to the ocean before reaching another entrance. Don returned to inform us of his discovery, but by this time we had all assembled on a nearby beach where Ernie and Dave could land the Folboat. From the boat, Ernie had spotted the entrances he had seen before. Once we were all assembled on the beach, we didn't know which direction to head first: there were several entrances in all directions. Don and Dave quickly swam out to a little cave that cut through a sea-stack about 30 meters offshore, while the rest of us headed for an intriguing opening to the south of the beach. This cave opened into a large room with several seaward entrances. Exiting through the farthest entrance and continuing along the cliffs, we came to another little sea cave only a few meters from the first one.

THE PARALLEL TUNNELS

Past this cave, the waves crashed strongly against the cliffs, but using careful timing we were able to traverse around the next corner and into the cave that Don had discovered earlier. This unusual sea cave consisted of three interconnecting walking passages that all ran parallel to the ocean. In one of the passages, in total darkness, we found several white sea anemones and one pink one. Sea anemones typically appear green due to a symbiotic relationship with a green algae that requires sunlight for growth. The back of the longest passage ended in a crawlway that almost connected to the other small sea cave around the corner. We named this unusual and impressive cave Parallel Tunnels. At 206 meters, this was the largest sea cave we'd found on the Baja peninsula.

After surveying Parallel Tunnels and the two other caves nearby, we headed across the beach in the direction of the point. Immediately we came upon another walking-height entrance. It led into a large inner

A sunbathing seal at one of the entrances to Cuevas de los Focas Puertos. (Dave Bunnell)

chamber (25 x 35 meters) that was beautifully lit by twelve different entrances. The floor was strewn with pink and lavender rocks that nestled a fantastic array of starfish, anemones, urchins, and other colorful tidepool life. Waves of blue-green water crashed through the several seaward entrances, but the tide was low enough so that the back passages in the cave were dry. We surveyed 119 meters in this picturesque grotto, which we named Cuarto con Muchas Ventanas al Mar (Room with Many Windows to the Sea).

Heading out one of the entrances on the other side of the room, we found ourselves on a small cobblestone beach. With our attention focused on the small cave entrance on the other side, we didn't notice a family of spotted harbor seals sunning themselves on the beach until we were about five meters from them. Frightened, they hurried for the water before Dave could get his camera ready. As we popped through the small entrance, we were again startled by another dozen harbor seals who apparently make their home in the cave. Barking loudly at the intrusion, they too scurried into the ocean for safety. The cave opened into a long, dark room with a small beach at the back and a long water passage dimly lit by

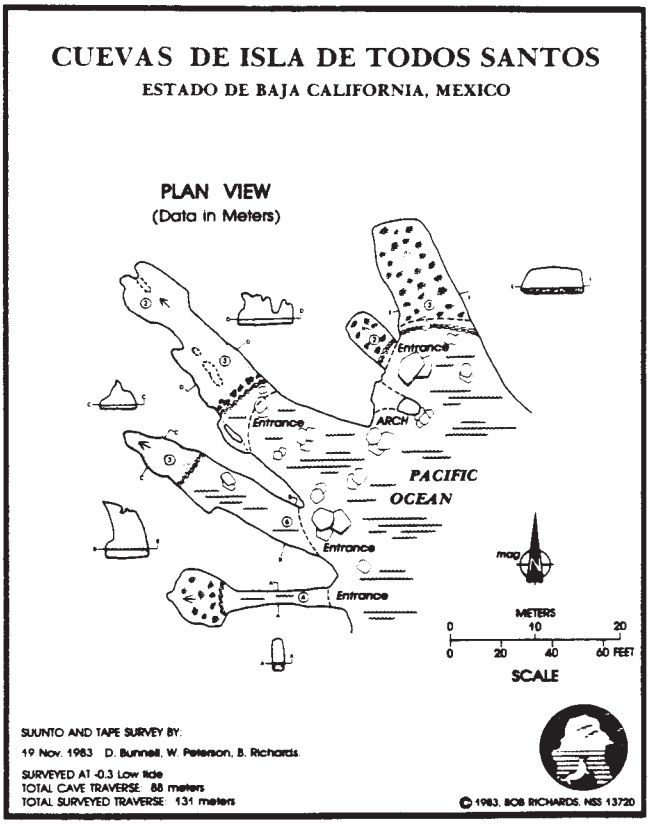
Bob Richards stands above an entrance to Cueva de los Focas Puertos. (Bill Liebman)

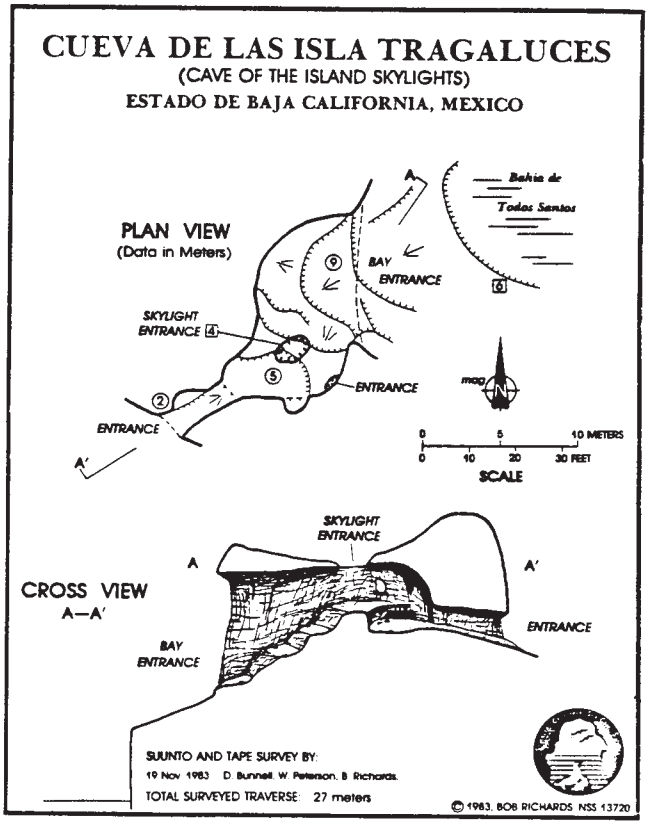
an unseen underwater entrance. The eerie blue glow, the smell of seal excrement, and the crashing of the waves, combined with all the seals frantically swimming around, made this cave much less friendly than the last one. Dave and Don braved the sea lions and surf to complete the survey at 128 meters for Cueva de los Focas Puertos (Cave of the Harbor Seals). Time was running out, and, although we knew there must be many more sea caves towards the point, we felt our first trip to the area had been quite productive.

TRIP TWO

On our second trip, we were fortunate to have a real boat along to scout the cliffs from the ocean for caves. We joined up with Walt Peterson, who is gathering material for a large adventure-type guidebook to Baja. For some reason he is very interested in caves, and has even passed out handbills in various places offering money for information about cave locations. To date he's found nothing in the way of limestone caves. Somehow he found out about our mapping efforts in Baja and wrote to us with an offer to help us out with his boat (in return for some sea-caving "adventures" to include in his book). In November, we along with Bob Richards, Ernie Garza, Don DeLucia, Lisa DeLucia, and Bill Farr met him at La Bufadora. Five of us piled into his 15-foot aluminum fishing boat. Ernie, Don, and Lisa were towed behind in the Folboat, at least until the front end pulled off and they were left to paddle on their own, while we took off to do some scouting.

It wasn't long before Carol and Bill were so seasick that they had to abandon ship. Bob, Walt and Dave continued on, sighting numerous entrances as they rounded the point. Then Walt said that he had been told





of a cave with "seven rooms" on the island and asked if we were interested? We sure were, so off we went to Todos Santos, some eight kilometers away. The crossing was a bit rough, but we landed in a beautiful little cove with sea lions on the rocks. From here we hiked overland over a cone of volcanic rock. We could see several relict sea caves, one a good 40 meters above the sea. We climbed down the cliffs and soon located a series of rather average sea caves, none over 25 meters in length. Apparently the "seven rooms" meant seven little caves in close proximity. We mapped these (Cuevas de Isla de Todos Santos), while Walt took pictures of the "action" for his book. At one point a large swell surprised him and soaked him and his expensive medium-format camera. Finishing these, we climbed back up the ridge and entered a small hole. To our surprise, it cut through the ridge and exited through a huge shelter cave overlooking the bay. Two skylights in the roof added to the unique quality of this relict sea cave, Cueva de las Isla Tragaluces.

TRIP THREE

Our third trip was in late January of 1984. Only Bill Farr was able to join us, and the three of us decided to check out an area that Walt Peterson had told us about, located about five kilometers south of La Bufadora on the ocean side of the point. This is an area of very high cliffs, many offshore seastacks, and numerous cave entrances visible but not easily accessible from the top of the cliffs. On this trip, Bill introduced a new technology for seacave exploration: a lightweight, styrofoam "boogie board" and fins. This proved to be as mobile as the small boats we had been using and offered several advantages: (1) everyone has his or her own independent method of transportation. (2) Unlike rafts, boogie boards aren't easily punctured by sharp barnacles. (3) They are easier to launch than a raft through rough surf. (4) They are lighter and less awkward to transport than an inflated raft. (5) They don't take time to inflate. And (6) they offer you some protection by putting something between you and the rock. Ideally, you can wear a helmet and gloves along with your wetsuit, and you are ready for whatever the ocean can dish out on an average day. In any event, we scouted the cliffs, Carol and Dave in the raft and Bill on his boogie board. Even at low tide, most of the caves seemed to be filled with a rather violent surf. We paddled into one good-sized room in which the water glowed from sunlight streaming through an underwater opening. We could see passages going off the back of the room, but the surf was too radical to attempt landing. Further along the coast, we landed at a beach near a strange pinnacle-shaped sea-stack. We located an unusual fissure cave formed in breccia, which began as a walkway, constricted to a crawl,

opened up into walkway again, then ended at another crawl. Dave watched in amusement as first Bill and then Carol got stuck trying to push this crawl, lured on by reverberating echoes of surf in some hidden chamber beyond.

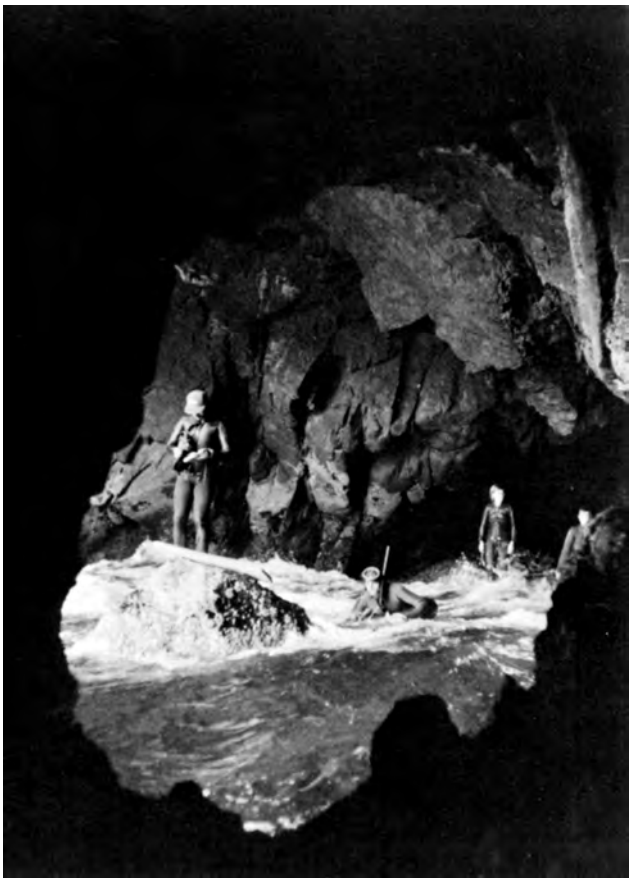
This having been the only approachable cave in the area, we went further south to a prominent seastack with two caves and some incredible tidepools big enough for snorkeling. The area is rich in tidepool life, including red and purple urchins, giant anemones, starfish, tubeworms, and various sponges. We capped off the day with a lobster dinner at restaurant El Gordo overlooking the Bahia Papalote near the blowhole.

The next day was spent in a reconnaissance, circumnavigating the entire point on foot, which takes several hours. We noted numerous caves on both the ocean and bay sides. There were several seastacks containing tunnels with rather radical-looking surges. For some reason we weren't very motivated to map that day and we simply noted some good leads for the next trip, when we would have more help.

TRIP FOUR

By this time our glowing reports of the Baja area had aroused the curiosity and enthusiasum of several other members of the Southern California Grotto. In addition to Baja regulars Bob Richards, Bill Farr, and ourselves, we were joined by Bill Leibman, Rich Breisch, and a number of sea-cave novices. Armed with wetsuits, fins, rafts, boogie boards, and inner tubes, we headed directly for the point to check the leads on the bay side that we had spotted on our reconnaissance trip. On the hike out, Rich discovered that inner tubes and sharp cactus don't mix! Following the coastline east from the point, we first encountered some small arches and tunnels with sporting surges. As these caves weren't very big, several of our new sea-caving recruits decided to part company with us and visit Sistema Punta Banda. They chose the wrong time to depart, because immediately after they left we found a beautiful little cave, Cueva Mar Piluello, with the best tide pools we had seen in Baja!

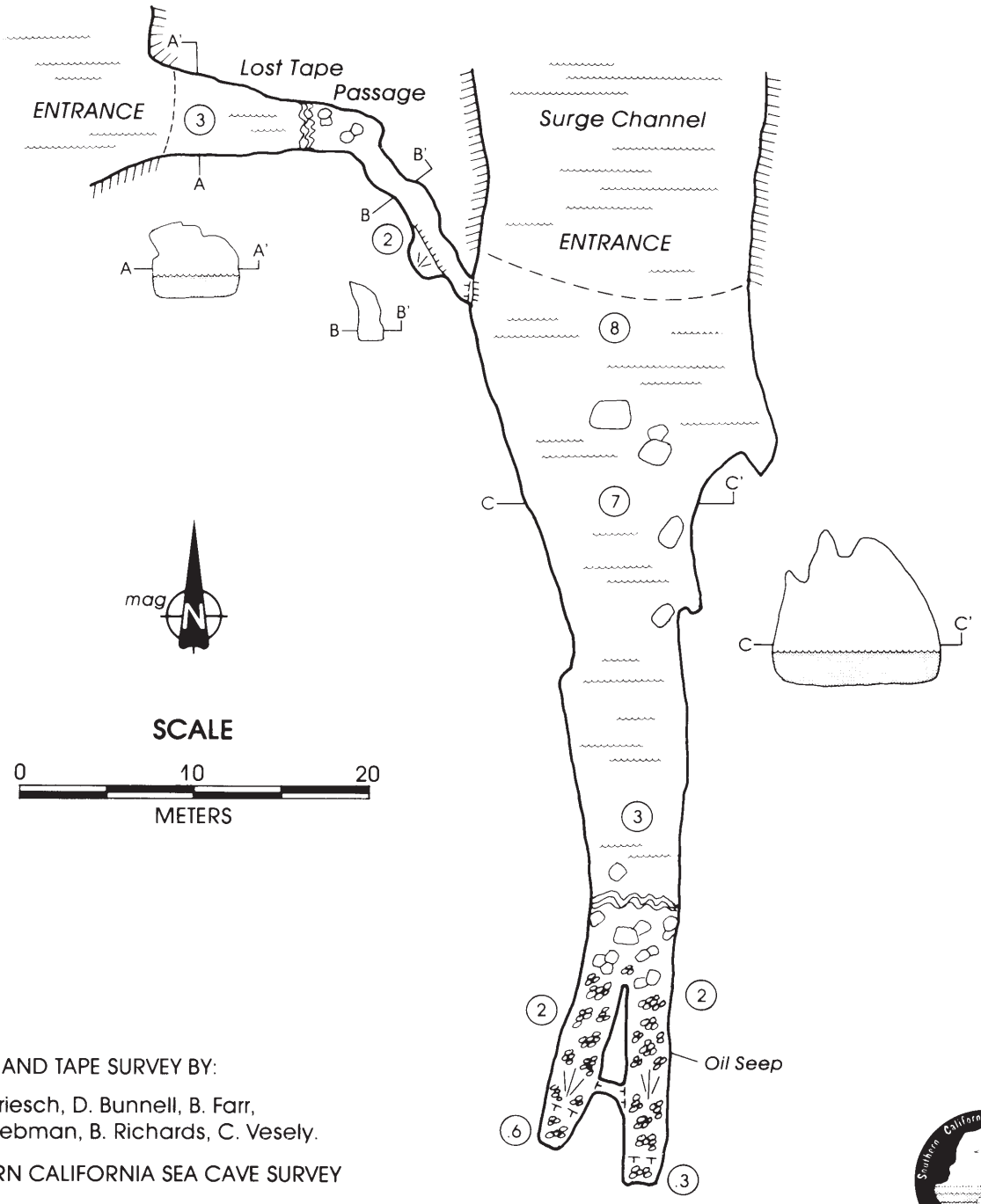
After mapping this and a few other caves, we headed for an impressive, water-filled entrance measuring 15 by 15 meters that we had located on our last trip. Before entering this cave, we watched from the top of the cliffs as the waves crashed against the rocks just inside. Even with boogie boards it looked like it would be tricky. Bob, Bill Farr, and Carol gave it a try, but only Bill made it to the beach in the back of the cave. Bob and Carol were left bobbing around in the surge like corks, because they



Looking from a side passage into the main passage of Cueva de Resaca Violento. (Dave Bunnell)

CUEVA RESACA VIOLENTO

ESTADO DE BAJA CALIFORNIA



SUUNTO AND TAPE SURVEY BY:

R. Briesch, D. Bunnell, B. Farr,
B. Liebman, B. Richards, C. Vesely.

SOUTHERN CALIFORNIA SEA CAVE SURVEY

SURVEYED AT 0.0 Low Tide; 31 March 1984.
TOTAL SURVEYED TRAVERSE: 91 meters

didn't have fins. Then Dave, Rich, and Bill Liebman showed up after mapping another cave, and finally we all made it past the rocks and into the cave. Dave discovered an interesting side-passage, which was about 1.5 meters above the water. Climbing into it required careful timing to avoid getting washed away by the ever-growing swells. The passage led to another entrance in another cove. By now the swells were growing really violent, as a storm was coming in. As Dave took the tape out to the drop line, a huge wave came in and ripped the tape from his hands. There was no way to recover it, as the ocean carried it away immediately. Fortunately we had brought a second tape, but we realized that we needed to finish our survey quickly. As Bill and Carol stood on the rocks near the entrance waiting for a lull in the swells, a powerful wave knocked Carol from the rock and carried her 15 meters into the cave. Eventually all made it out safely, but not without a few tense moments. We named this 91-meter long cave Cueva de Resaca Violente (Cave of the Wild Surf).

RAYO DEL SOL

The next day the weather appeared rather iffy, with clear skies alternating with rain. We decided to go for it anyway, as we were keen on examining the leads Dave had spotted adjacent to Cueva de los Focas Puertos. Unfortunately the surf was so rough that one could barely enter any of the large caves found on the first trip. Hoping that things would improve as the tide went out, we sat and watched as the sea lions played in the surf crashing into Cuarto Con Muchas Ventanas. Finally we continued on and located a spot to climb down into the cove just north of Focas Puertos. Rich was down first and came back to report that there didn't seem to be much there, but he hadn't ventured into the water. Relying on intuition, Dave quickly put on his wetsuit and went to explore.

Dry entrances to Rayo del Sol para la Mar. (Bill Liebman)

Climbing around a rocky point, he went through a large shelter with a double entrance, around a corner through a fissure, and into a large, dimly lit chamber containing harbor seals. These quickly scurried off, startled by his sudden intrusion. The surf was crashing violently through three seaward tunnels, and it was obvious that this was a big find -- virgin sea cave! He poked around in some dark tunnels branching off the room, then ran back excitedly to inform the others. When we returned, a spectacular sunbeam was streaming through the entrance, illuminating the large inner chamber. Bill Liebman suggested the name Rayo del Sol para la Mar (Sunbeam by the Sea) for the new find. It took us several hours to survey this large cave, which, at 270 meters, is the second longest sea cave we've surveyed. The surf was too radical to survey out of the three seaward entrances, so we used a combination of triangulation, overland survey, and survey along the cliff face outside the cave to determine the lengths of the seaward tunnels.

As Bill Liebman took the tape around to one of the entrances, he was pounded by the crashing surf. At times you could barely make out his

silver helmet in the surge. Somehow he was able to hold his position, and we tied in the entrance. Dave attempted some photography in the inner chamber, which proved rather frustrating. Thinking he was well out of the surf zone, he had set his camera on a tripod and had set some flashguns nearby. Suddenly an unexpected swell came in and washed away a flashgun as well as upsetting the camera, which fell lens-first into the water. It was a no-win situation in any case - too much light coming in the entrance for typical time exposure and flash techniques and too little light without a flash. Sea cave photography certainly presents some difficult challenges.

Due to its close proximity to the cave we had surveyed on our very first trip, we decided to tie this new cave together with Focas Puertos and Muchas Ventanas by an overland survey. Despite the low tide, the violent surf made it difficult to enter Focas Puertos, and much of Muchas Ventanas was submerged as well. We had wanted to show the others through Parallel Tunnels, but it looked a bit too sporting to enter. All in all, we felt that this last trip was our most productive trip of all.

We have by no means exhausted the potential for large sea caves at Punta Banda. While we have basically covered the west side of the tip, the area on the east side to the southeast of Resaca Violento is largely unchecked. The cliffs are very high here and access from above is more difficult. There are reports of other large caves out on the Islas de Todos Santos. Of course, there is also a lot more of Baja to search for sea caves. We plan to visit the Isla del Carmen (near Loreto), where there are reports of large sea caves requiring a boat for exploration....

CAVERNAS MARINAS DE PUNTA BANDA

Desde abril de 1983, cuatro viajes ha sido realizados al área de Punta Banda de Baja California Norte, para explorar las cavernas marinas a lo largo de la costa. Muchas cuevas fueron exploradas y mapeadas, de las cuales sobre salen:

Cuarto con Muchas Ventanas al Mar	119 metros
Cueva de las Focas Puertas	128 metros
Cueva de la Resaca Violenta	91 metros
Rayo del Sol	270 metros

SOTANO DE VASQUEZ

by Patricia Mothes and Roy Jameson

Sótano de Vasquez is a multi-drop cave approximately 2.3 kilometers long and 277 meters deep. It is located in a doline near the crest of the Sierra Tamalave in Tamaulipas, México (topographic sheet F14A59). The Sierra Tamalave is an anticlinal ridge extending south from the Sierra de Guatemala, a much higher range northeast of Ocampo. Access to the cave is provided by a system of trails at the end of a short dirt road, south of Puerto de la Virgin, on the El Limón-Ocampo highway.

The cave is developed in massive beds of the El Abra limestone of Cretaceous age. Although it is a vertical cave, there are six levels of horizontal passages within it. The highest level has an extensive fossil section, with abundant speleothems and deep mounds of dessicated guano. It also has an active section that leads to the other levels. These other levels begin as clean, cobble-floored canyons, but contain muddy and wet sections as well. The lowest level has a lake. Based on its elevation, and on the presence of a population of eyeless Characin fish of the genus Astyanax (Mitchell et al, 1977), the lake is believed to lie near local base level.

The entrance is a 101-meter-deep pit fed by a short arroyo. The pit is a roughly cylindrical shaft that bells out slightly with depth. The lip of the shaft, at the end of the arroyo, lies some 20 meters below the top of a cliff on the high side. Seventeen meters below the lip is a large ledge. There are several good rigging points on it for the following 84-meter free drop.

At the base of the entrance shaft, on Level 1, there are two main passages. An "upstream" route leads to a 7-meter climb into the fossil section. This section begins as a wide, well-decorated chamber, the Turkey Room. At its end is a canyon leading to the Guano Trenchlands. Here guano is so deep and soft that it is necessary to stay on the trails established during the original explorations. Trails mostly wind along the perimeters of passages in trenches up to 2 meters deep. Beyond the Trenchlands, there is a 30-meter drop into the Guano Drift Room. Descent or ascent of this drop is accompanied by a continuous rain of guano, due to the rubbing of the rope against the guano-covered wall at the lip of the drop.

Rimstone dams in the Turkey Room. (Roy Jameson)

Downstream from the base of the entrance pit, the passage is cleanly washed, with many cobbles. A 30-meter pitch leads to Level 2. This level is formed by a horizontal canyon. There are several short fissures leading off of it. A short distance from the base of the 30-meter pitch there is a muddy climb. Above this, the passage is well-decorated.

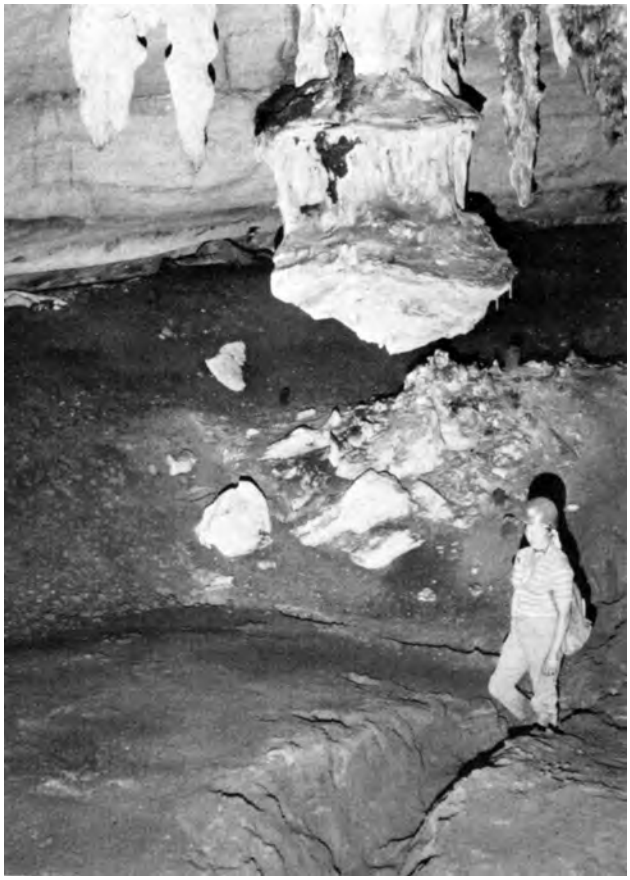
Level 2 is linked to level 3 by a 10-meter drop down a fissure. The main passage on Level 3 is a short canyon. About 30 meters from the pit there is a junction at the top of a 15-meter climbdown to Level 4. At the top of the climbdown there are two fissures on Level 3; they rejoin at the beginning of a muddy crawlway leading to several small fissures and rooms.

Level 4 is mostly a horizontal canyon, Glow Worm Canyon, but in places the passage is a low tube. Near the beginning of the canyon, there is much mud and organic debris with glow worms, millipeds, and other fauna. Near the middle of the canyon there are several pits dropping to the fifth level. The best route, however, to Level 5 is about 50 meters farther along, just past a prominent bend. The top of the pit is covered with popcorn.

LOWER LEVELS

Level 5 consists of narrow fissures, some covered with popcorn, and some muddy. At the end of the main fissure system is the final drop, nearly 80 meters deep. The drop begins as a narrow fissure, The Narrows, but then bells out into Cricket Chamber.

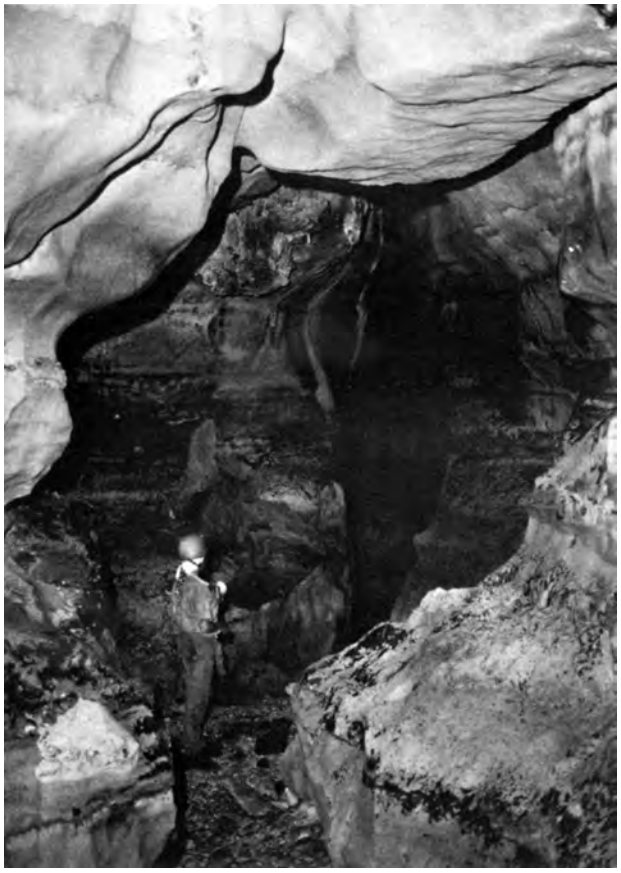
Cricket Chamber, on Level 6, leads, in one direction, up a slope to a plugged fissure. Near the end of the fissure and about 5 meters off the floor, there is a lead worth bolting into. In the other direction is Fish Lake. In early spring, during the dry season, a final chamber can be reached by pushing a low air space in Fish Lake. This passage, with chest and neck-deep water, has noticable airflow. The final chamber has a steep, slippery mud slope leading, apparently, to several domes. A trowel is needed to dig footholds and handholds; during the one visit to the chamber the slope was only partly ascended.



Patty Mothes in the Guano Trenchlands. (Roy Jameson)

THE EXPLORATION

Sótano de Vasquez was first shown to Amador Cantú, Charles Fromén, and others by a Señor Vasquez who lived in a nearby community. On that trip in November 1971, the entrance pit was descended to the level of the 17-meter ledge. In December 1972, Frank Binney, Craig Bittinger, Steven Bittinger, Paul Duncan, Ronnie Fieseler, Ernie Garza, Roy Jameson, Peter Strickland, and Nora White returned



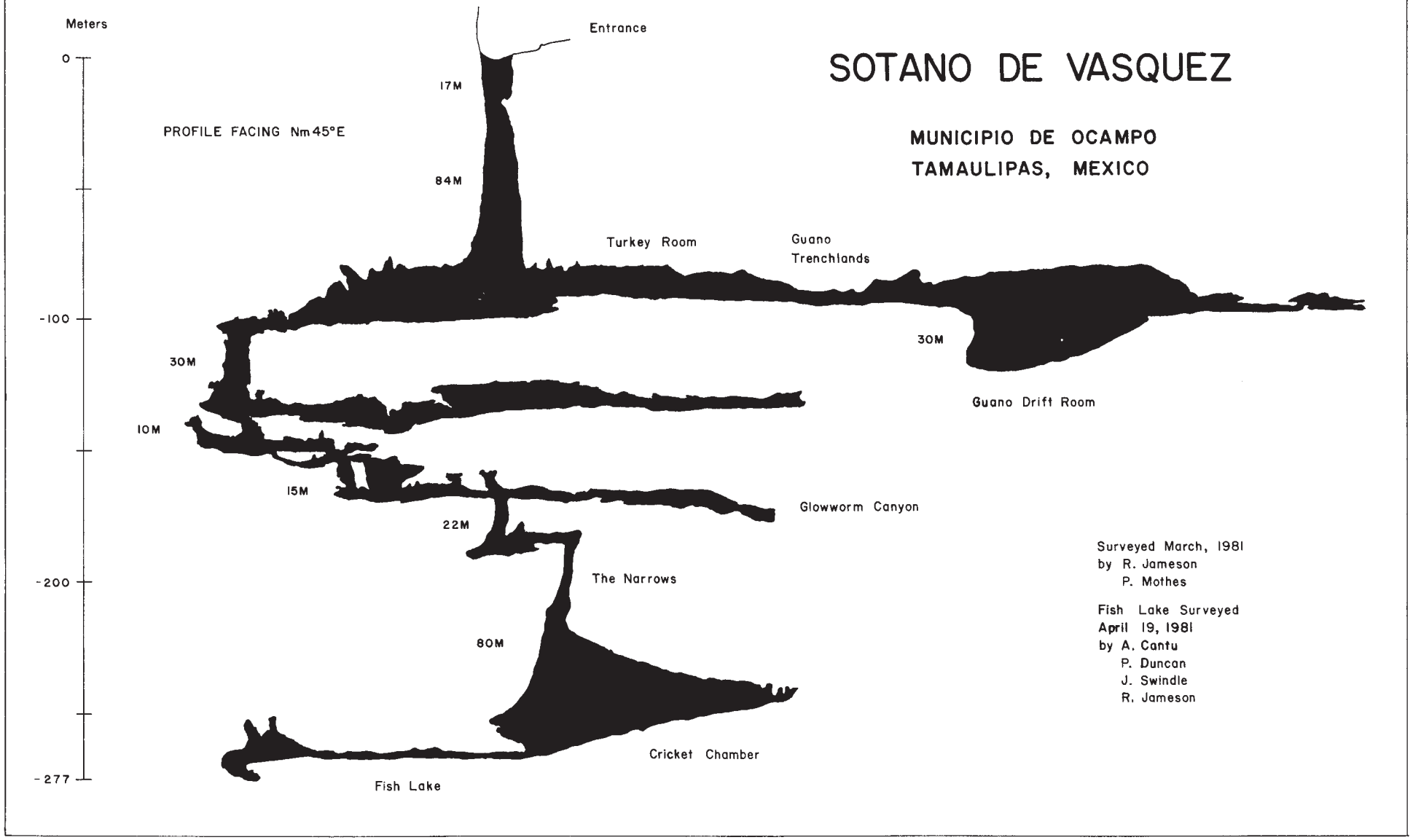
Horizontal canyon passage in Level 2. (Roy Jameson)

and surveyed over a kilometer of passage, reaching Glow Worm Canyon. Fish Lake was reached on a survey trip in February 1973 by Don Coons, Jim Rodemaker, and Peter Strickland, who collected blind fish for Robert Mitchell and William Elliott. Thereafter, the survey notes were lost for several years, and only the top section of the cave was drawn up in pencil copy.

We went to Vasquez in early March 1981 and remapped the cave in a series of eleven trips. We camped in a small clearing at the end of the dirt road leading off Puerto de la Virgin. The twenty-minute hike from camp to the cave, via cattle trails, was heavily infested with ticks, and we found it necessary to hold de-ticking sessions before entering the cave each day. Another unpleasantry was the lack of water on the mountain or in the cave. We eventually had to haul water from Ocampo and then ration it, but we found that two or three gallons per day per person was hardly enough after trips mapping in the guano drifts. We began the mapping in the upper levels and worked our way down. Toward the end of the project, when we were about to start mapping through Fish Lake, Amador Cantú, Paul Duncan, and Jay Swindle made a surprise visit. Recruiting their help, we pushed the lake several hundred meters to the final chamber.

SOTANO DE VASQUEZ

El sótano de Vasquez se localiza en una dolina cerca de la cresta de la sierra Tamalave, en el estado de Tamaulipas. Esta es una caverna de tiros multiples de aproximadamente 2300 metros de longitud y 277 metros de profundidad. La caverna se desarrolla en un maciso calcareo de la era cretasica. Dicha caverna contiene seis niveles horizontales. Sin embargo es una cueva vertical. Sótano de Vasquez fue visitada por la primera vez en 1971 y fue mapeado en 1972 y 1981.



SOTANO DE VASQUEZ

MUNICIPIO DE OCAMPO
TAMAULIPAS, MEXICO

Surveyed March, 1981
by R. Jameson
P. Mothes

Fish Lake Surveyed
April 19, 1981
by A. Cantu
P. Duncan
J. Swindle
R. Jameson

CAVE DWELLING POPULATIONS OF

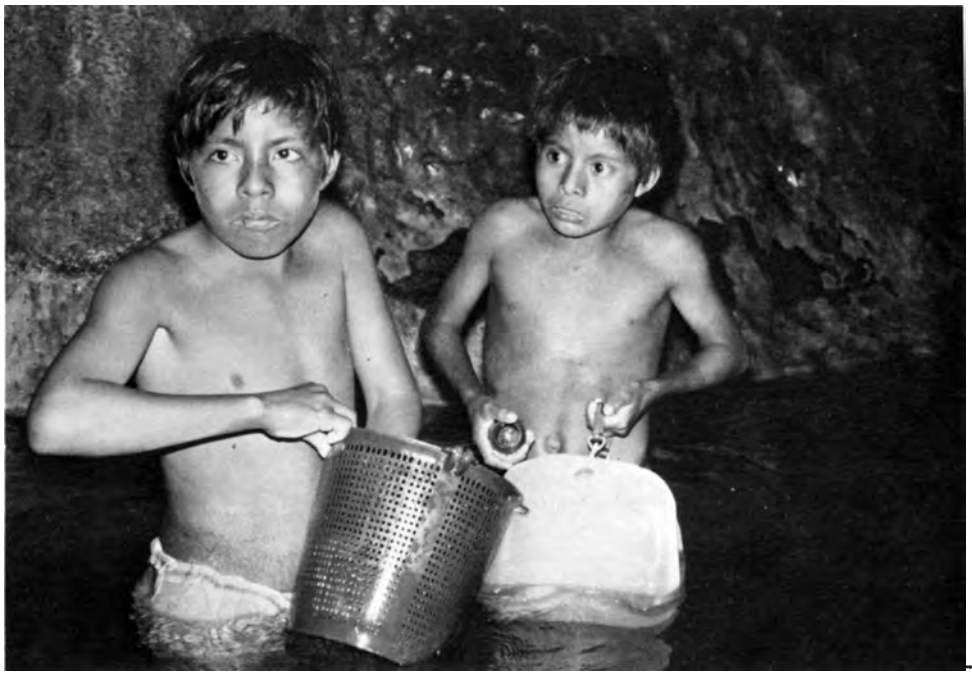
Rhamdia (Pimelodidae)

IN MEXICO

Doyle Mosier

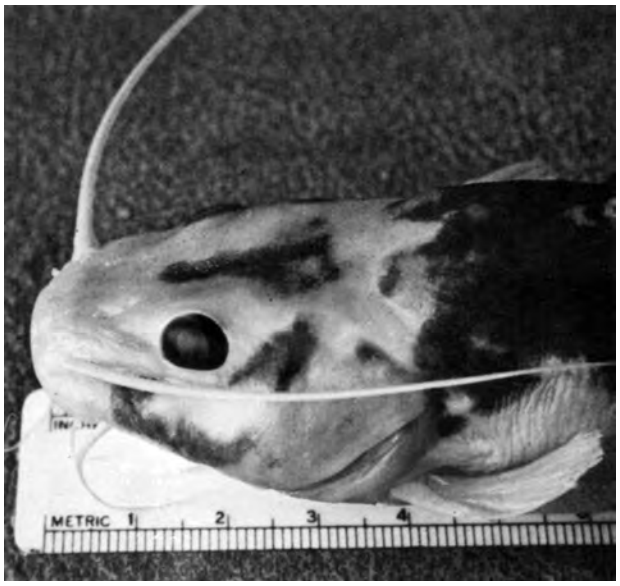
Although cave-dwelling catfish of the genus Rhamdia have been known from México for fifty years (Hubbs 1936, 1938), it was not until 1972, when James Reddell and others collected the troglobitic Rhamdia reddelli in the Acatlán region of Oaxaca, that the occurrence of eyeless forms of Rhamdia in México was confirmed (Miller 1984). Since then, bagres exhibiting various degrees of eye development and pigmentation have been found in several caves throughout southern México. None of these have been described. An additional cave-adapted form, Rhamdia laticauda typhla, has been described from Belize (Greenfield et al. 1983).

Epigean species of Rhamdia occur through southern México northward to Veracruz on the Atlantic slope and to the Río Tehuantepec basin on the Pacific slope. All of the known cave populations are within this range on the Atlantic slope. Mexican species of Rhamdia can be divided into two distinct species groups; The Rhamdia guatemalensis species group contains the common and widespread R. guatemal-



Local boys help collect in Cueva de Plan de Ayala.

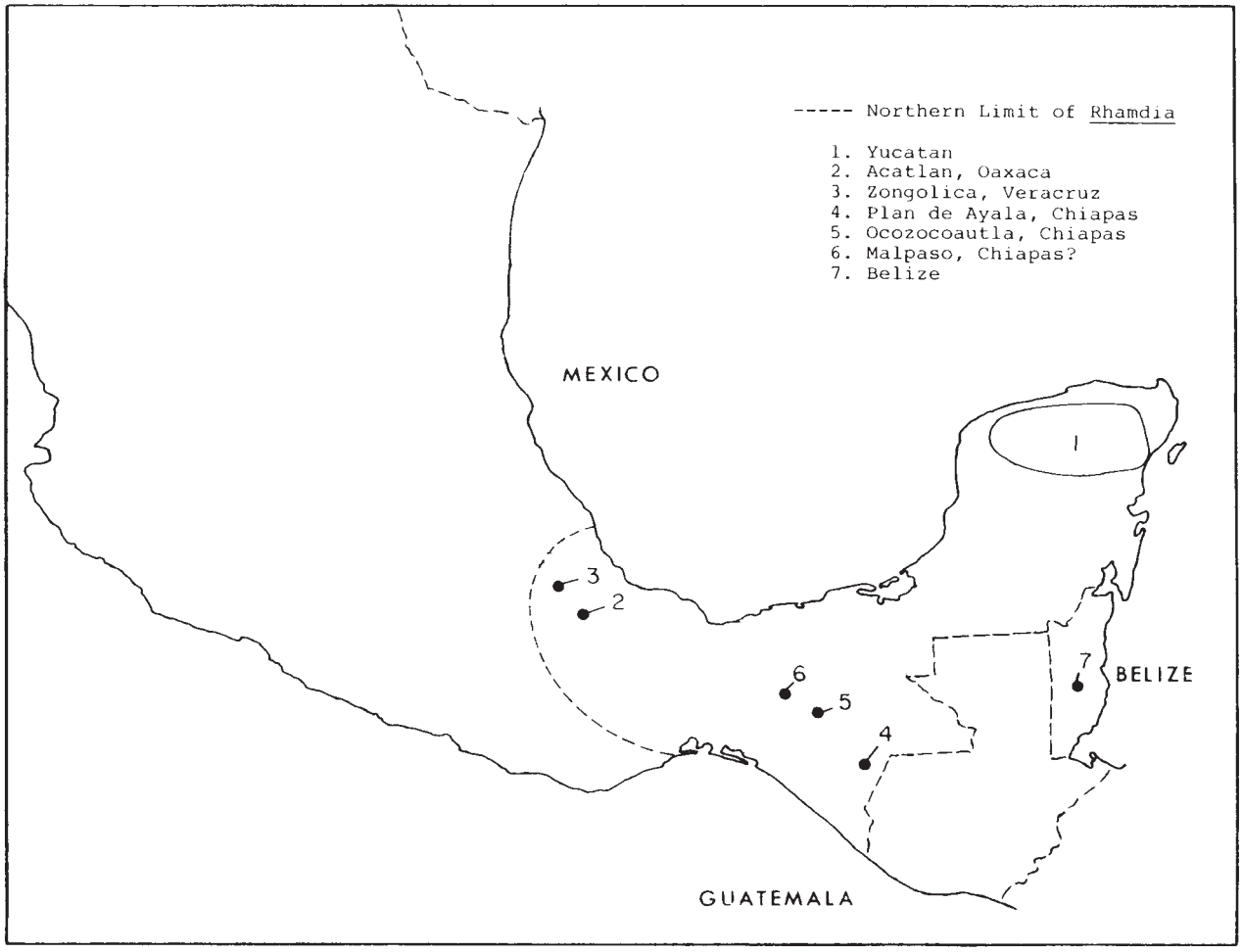
(Doyle Mosier)



Uniquely pigmented Rhamdia guatemalensis. (Doyle Mosier)

ensis, which occurs on both the Atlantic and Pacific slopes, and possibly two undescribed epigean species in Chiapas. The Rhamdia laticauda species group consists of R. laticauda on the Atlantic slope, R. reddelli, also on the Atlantic slope in Oaxaca, and R. parryi on the Pacific slope.

I am presently investigating the evolutionary genetics of all Mexican species of Rhamdia, emphasizing the cave-dwelling forms. This work is in the early stages, however, and since it is becoming apparent that this genus may represent a significant component of the cavernicole fauna in southern México, it seems worthwhile to briefly review the various cave populations of Rhamdia known to exist in México.



YUCATAN

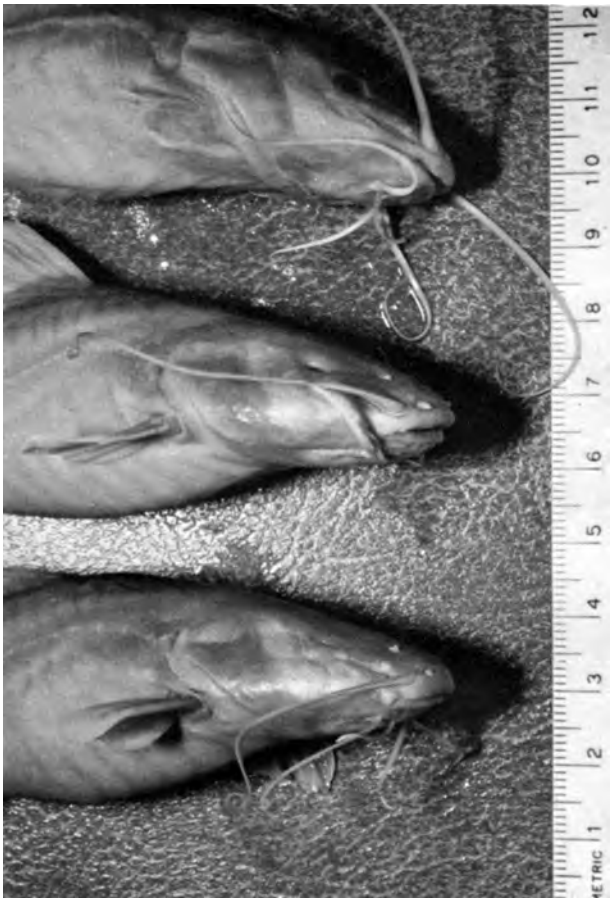
Hubbs (1936,1938) reported four subspecies of the common epigean species, Rhamdia guatemalensis from the Yucatán peninsula. Two of these, Rhamdia guatemalensis decolor and R.g. stygaea, are cave restricted. Rhamdia guatemalensis depressa, the common peninsular form, occurs in cenotes throughout Yucatán. All of these subspecies are eyed and pigmented, but the two cave forms have slightly reduced eyes and are lighter in coloration than the cenote form. In July 1983, James Reddell and I collected a single abnormally pigmented specimen with a white head and brown body from Cenote de Libre Union. Whether this individual represents a genetically distinctive form is yet to be determined. Other similarly pigmented bagres could be seen in the cenote but were not collected. I hope to obtain more specimens for further study in the future.

OAXACA

Troglobitic Rhamdia have been collected from two caves in the Acatlán region; Cueva de Maravillas and Cueva del Nacimiento del Río San Antonio (the type locality for Rhamdia reddelli.) These are both large caves with extensive pools of water. Cueva del Nacimiento del Río San Antonio contains only R. reddelli, which is closely related to Rhamdia laticauda. Cueva de Maravillas has two different forms; R. reddelli and a yet to be described form distinguishable from R. reddelli by the presence of a long, ribbon-like caudal fin. Gloria Camacho de Montiel and I collected R. reddelli in the pools nearest to the entrance in Cueva de Maravillas in April 1984. According to James Reddell, the undescribed form is found in the pools farthest from the entrance.

VERACRUZ

Since 1981 Steve Robertson has collected a Rhamdia laticauda-like



A large degree of eye variation is found in this Vera Cruz form. (Doyle Mosier)

form in the Zongolica area from Cueva de El Tunél, Sumidero de El Popoca, and Sumidero de Cotzalostoc. An additional specimen was picked up by Philippe Ackermann from Sótano de Ahuihuitzcapa at -455 meters (see AMCS Activities Newsletter No. 13). These fish are particularly interesting for two reasons. First, they exhibit the largest degree of eye variation yet observed. In a single collection from Sumidero de Cotzalostoc there are specimens with normal-sized eyes, others with no eyes, and even some with asymmetrical eye development--(an eye on one side of the head but lacking on the other). Secondly, the Zongolica region straddles two major river drainages. The caves to the north lie in the Río Blanco basin, and those to the south are in the Río

Altotonga drainage. Thus, there are potentially two geographically isolated populations in this area.

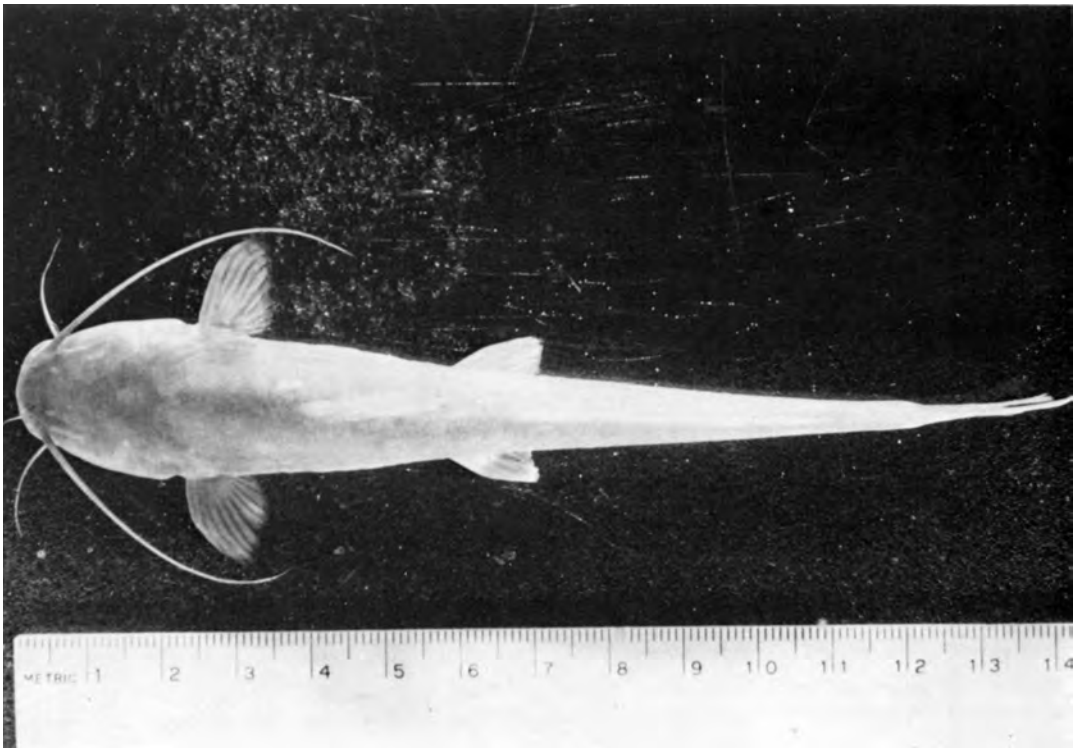
CHIAPAS

In April 1984, Norma Edith Hatch and I found an eyeless, depigmented population of Rhamdia in Cueva de Plan de Ayala, located near Ejido Plan de Ayala, southeast of Comitán. These catfish are highly cave-adapted; of nearly one hundred specimens examined, only one had small, vestigial eyes. They are also the most isolated. The apparent ancestral stock for this population is a presently undescribed surface form known to occur in southern Chiapas. Local residents indicated that the nearest resurgence is about twenty kilometers from the cave. We were also shown two vertical entrances to caves that also contain catfish, but did not have time to collect in them.

During the same expedition, we also collected Rhamdia in Cueva de Tempisque, near Ocozocoautla. Eight specimens were taken from this cave. While all had well developed eyes, six were pigmented and two were albino. These fish appear to belong to the Rhamdia guatemalensis group and are probably conspecific with an undescribed surface form found in the area.

The remaining cave-dwelling population of Rhamdia known to occur in Chiapas were collected by Sbordoni, presumably from the Malpaso area in northern Chiapas. I have not examined these specimens, but Robert Miller confirms that they are blind and depigmented.

The amount of cave adapatation manifested in the various Rhamdia populations found in Mexican caves varies widely. It is not yet known whether any of these represent genetically distinct species, but given the geographic and morphological diversity of these forms, it seems likely that some will ultimately be described as new species, while others will only be



Possible new species from Cueva de Plan de Ayala. (Doyle Mosier)

considered morphotypes of the closely related epigean forms.

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PEZGATO RHAMDIA

De los varios tipos de pezgato rhamdia, solo uno se ha encontrado verdaderamente troglobio: Rhamdia Reddelli. Los otros tipos tienen los ojos reducidos, y no se sabe con certeza si pertenecen a otra especie.

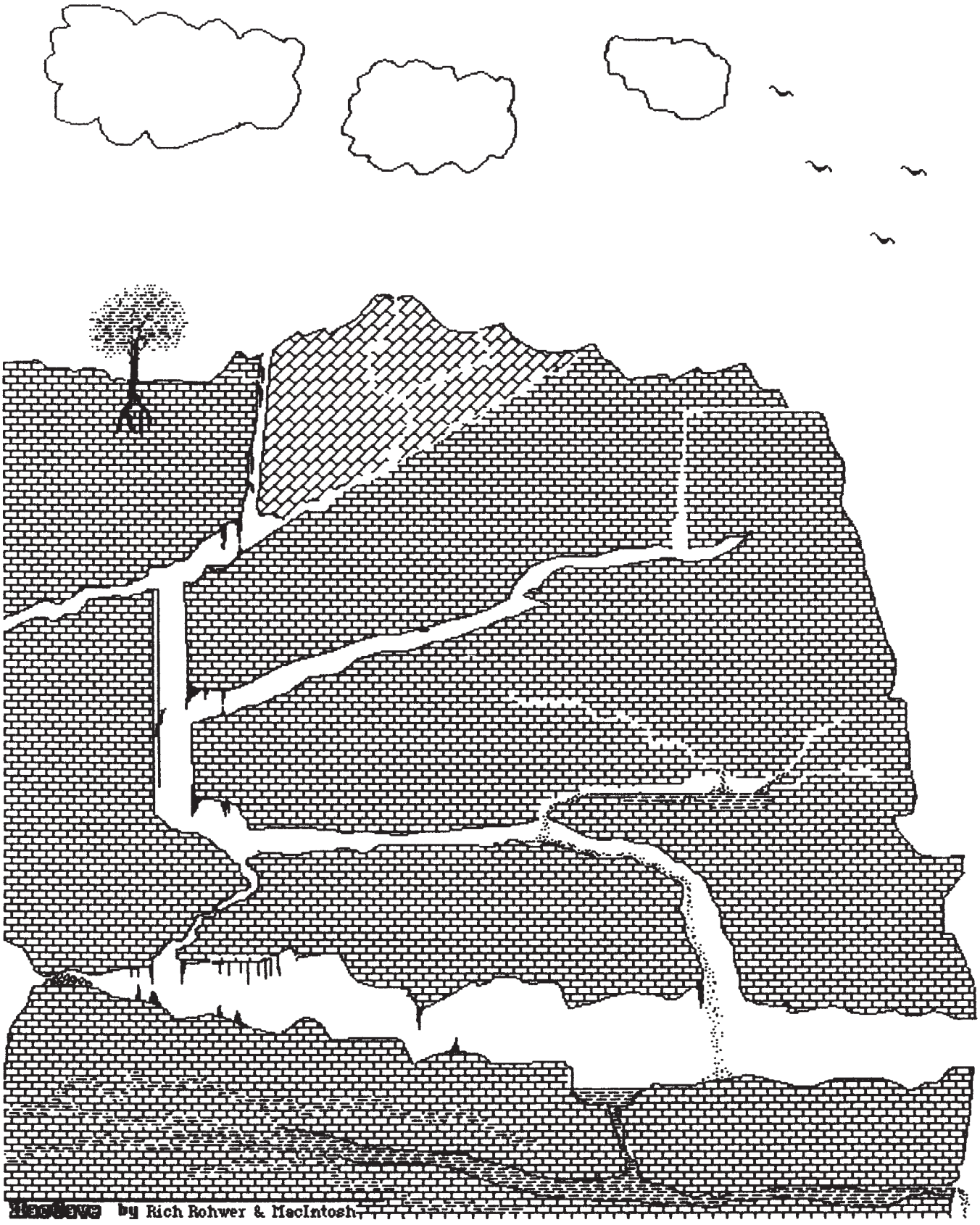
NEWS FROM BELIZE

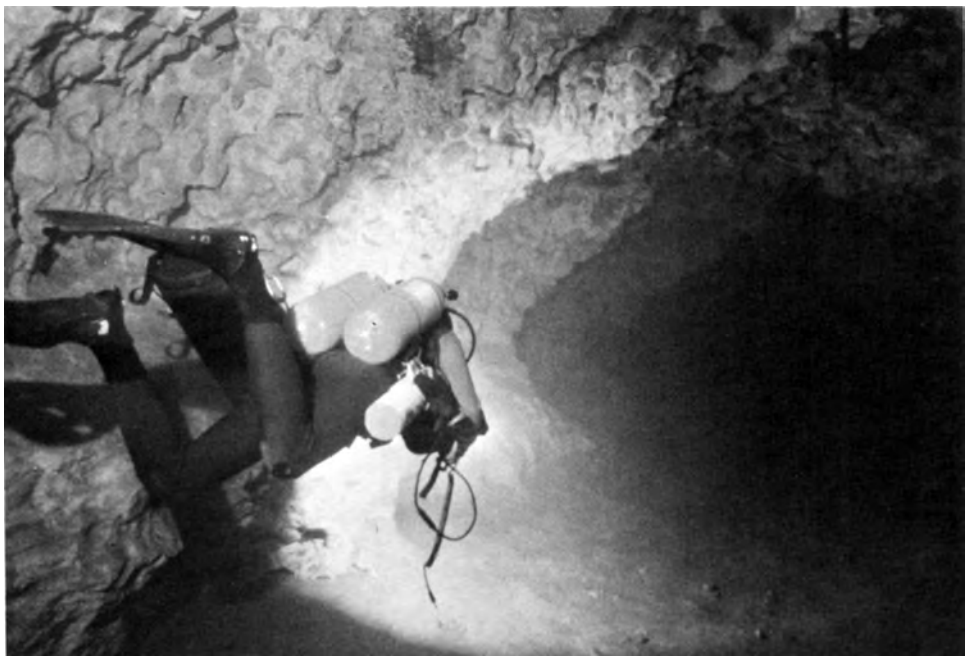
Sixteen cavers of the 1984 Chiquibul Expedition, aided by the National Geographic Society and the National Speleological Society, conducted an investigation of the sinks of the Chiquibul River in the southern highlands of Belize. The project involved two three-and-a-half week phases, and necessitated the backpacking of food and equipment a distance of 20 kilometers into a basecamp set up in a cave entrance.

During the dry season in April and May, 23 kilometers of cave passage was mapped in various fossil systems in the area, with 11 kilometers being in Actun Tunkil, now the longest in Central America. Midway through the cave the explorers found the Belize Chamber, measuring 450 meters long, 50 to 200 meters wide, and 65 meters high. Most of the caves explored had large passages, averaging 40 to 50 meters wide, and up to 100 meters wide in some places.

In exploring a 150-meter-deep sink with an 80-meter rappel, the cavers found Mayan artifacts, indicating they must have descended ladders and ledges to enter the pit.

Source: Tom Miller


by Rich Rohwer & MacIntosh



The Challenge of the PENA COLORADA

Bill Stone

As Dr. John Zumrick, my wife Pat, and I flew home from the Huautla area in May 1982 we were feeling optimistic. We had just dived the 524-meter-long first sump in Cueva de la Peña Colorada and explored nearly a kilometer of large dry gallery leading north, towards Sótano de San Agustín. According to the computer plot we developed later, there was a 9-kilometer gulf between there and the closest known passages in the upper cave system. We knew that eventually we would have to set a camp beyond Sump II if the exploration from it became too remote. No one had ever attempted a camp of long duration beyond a sump before.

During the summer of 1982 we put together the team for the spring 1984 return expedition. All expedition members took part in a series of three week-long training sessions. The Peacock Springs system of Suwannee County, Florida bore a remarkable similarity in size, depth, clarity, and silting conditions, and hence was chosen for the training site. Members of the team practiced techniques of precision buoyancy control, line laying, silt control, and stage-diving. All of the classroom work was administered by John Zumrick, a certified NSS cave diving instructor.

DIVE EQUIPMENT

In addition to the training opera-

Sump I. (John Zumrick)

tion, there was an ongoing program of research and development to produce light-weight, long-range diving apparatus for the expedition. The success of the mission was, in many ways, directly tied to the transportability of the scuba. The basic design employed composite filament-wound tanks, similar to the ones used for the dive at the bottom of San Agustín in 1981, but weighing a pound less and capable of handling pressures as high as 6000 psi. One of the greatest obstacles we faced was developing a versatile, yet standard expedition rig that could be used interchangeably among the various members of the team.

Sherwood Selpac Corporation and Acurex Aerotherm, companies that had been crucial in our use of high pressure systems in the past, again rallied behind the effort with surprising zeal. Selpac Southeast, Sierra Precision, and Rubatex contributed critical subsystems that made it all work. The result, test dived in November of 1983, was an odd-looking yet reliable piece of hardware. For the primary dive lights, we used a compact, variable-power head that I had developed over the past three years. It utilized a 30-watt quartz-halogen bulb and a separate canister of dry D-cell Nicad batteries that gave 3.5 hours operating time when fully charged. General Electric Corporation of Nela Park, Ohio and Gainsville, Florida provided forty-four of these units built to our specification.

THE WHEELS ROLL

By January of 1984, we had secured the backing of forty institutional, corporate, and private organizations. The Explorers Club of New York and the National Speleological Society granted official sponsorship status to the expedition, and Rolex USA came through with a generous grant. Seven tons of food and hardware had been amassed and were by now cluttering houses in various parts of the country. Given the size of our expedition truck and the incredible cache of equipment in it, we anticipated severe problems entering México. So great was our concern that negotiations were initiated in the spring of 1983 with the Mexican government to secure federal permission to conduct the operation and insure our safe passage through the country.

Although the planned site for the expedition basecamp was in the municipality of Huautla, we would have to cross directly through another municipality--San Miguel Huautepec--and hire our porters and burros there for transport of the materiel down into the canyon. With Colonel David Rivera Breton of the 28th military battalion working on our behalf, presidente Alfonsin Alvarez Carrera extended us a friendly greeting and granted permission to operate in the municipality.

BASECAMP

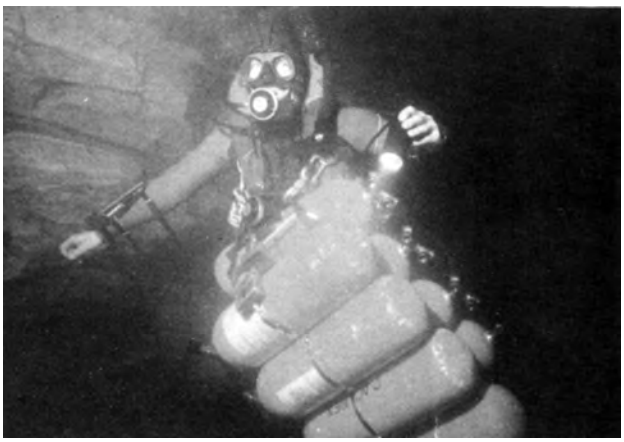
Over the course of three days, 147 men and burros were required to move our equipment to the bottom of the canyon. An additional 36 men worked on clearing the dense jungle for the site of basecamp. Three days later basecamp was fully established. Two white 5-meter-by-9-meter custom-fabricated jungle tents housed the mess hall, equipment storage, and maintenance areas. Sets of pre-

Loading a burro for a trip down into the canyon. (Bill Stone)

fabricated tables, benches, and storage racks were assembled and the equipment and provisions were sorted and stacked. Sitting around the table that night at dinner was an unusually versatile group of individuals. Our team consisted of John Evans, Bob Jefferys, Rob Parker, Clark Pitcairn, Noel Sloan, Angel Soto, Gary Storrick, Pat Wiedeman, Sergio Zambrano, and myself, all experienced cave divers from the United States, México, and Britain. Additionally, Jay Arnold and Mark Tillman from California had signed on to produce a documentary film of the expedition. Not present that evening was John Zumrick, who was back in the U.S. finishing some tests for the Navy's Experimental Diving Unit, and who would not arrive until early March.

WORK BEGINS

With basecamp set up, we immediately began preparing the diving gear and pumping tanks. There was unspoken excitement. A group meeting was held, and it was agreed to put Gary and Clark, our best divers, in first, each with a set of doubles. All of the equipment had to be backpacked to the new canyon entrance, roughly a kilometer upstream from the compressor station. From there it was 600 meters through large breakdown and mud-floored passage to Sump II.



Rob Parker with the eight tank sled at -20 meters. (Bill Stone)

On February 27, Clark and Gary kitted up at Sump II. As soon as Clark submerged, he could pick out the telltale reflection of a pool on the far side with his 30-watt primary light. The sump was only 14 meters long and 3 meters deep. Gary then returned to inform us of their find: a large trunk gallery took off on a northwest bearing. We gave them three hours to check it out. The rest of us then helped Jay shoot a scene entitled, "Explorers Carry Equipment to Sump II." No sooner had this been done when we heard whoops from the lake--the divers were back. They had explored some 200 meters of large diameter breakdown passage before being stopped at another sump.

SUMP III

The following day, we put seven divers through Sump II. We were on the far side of Sump II within half an hour. Clark, Pat, Noel, John Evans, and Bob surveyed from there to Sump III. Rob and I each carried a full single tank to Sump III and kitted up for an exploratory poke. The visibility was exceptional--30 meters easily--and we could see that Clark and Gary's borehole had simply continued on underwater. We leveled off at -20 meters and finned a long way. I began to feel we might have bit off too big a job for those single tanks. As we approached our one-third limit, the passage shot up a near-vertical shaft. At 190 meters penetration, we could make out a mirrored surface, and we popped up into a large lake chamber, perhaps 50 meters in diameter. The only way on appeared to be a 15-meter diameter hole in the roof, 20 meters above the lake. Rob free-climbed the pitch and took off. Thirty minutes later he returned, saying he had seen half a kilometer of 10-meter-diameter gallery and had stopped at a "whacking great chamber". Illuminating the chamber, he was unable to

discern any walls or ceiling. We returned to basecamp, intending to organize two survey parties for a long push.

WHACKING GREAT

The trip took place on March 1, after repeated supply runs through Sump II to stockpile tanks. Pat and I, the last team through Sump III, stacked our gear on a convenient flowstone bank and swam across the lagoon to the base of the 20-meter pitch. Shortly, we had a line up and were on our way. Rob, Pat, and I began surveying. Two hours later, we arrived at the Whacking Great Chamber. In the space of the next hour we barely scratched the room. The width was taped at 60 meters, but the length was pushing 200 meters. The ceiling was estimated at 40 meters. We had come into the room at the low end of a giant breakdown pile. It rose to a saddle in the middle of the room before it sloped back down into a canyon filled with big, water-scoured boulders. From a distance, it was easy to visualize the rainy season torrent boiling up from that canyon, flowing across the low saddle, and then dumping back down into the tunnel leading to Sump III.

Rob, Pat, and I pressed on with the survey down into the canyon ahead. We ran down 200 meters of 10-meter-square passage until the bedding began to dip down into the water. It looked like a sump. Fortunately, it had a meter of airspace, and we swam 60 meters to a sandy shore on the far side. The three of us looked at this big, flat, sandy area and at one another, and said almost simultaneously, "Camp I."

The passage then took on truly large proportions, 15 meters by 20 meters, and shot up a 20-degree slope. Rob extended his hands out toward the tunnel, as if he were presenting it to us, and exclaimed, "Now...this is what I came to México for!" In all, we surveyed 800 meters that day, stopping

Upper level formation passage above The Whacking Great Chamber. (Bill Stone)

at the base of a 20-meter shaft where the big horizontal tunnel went up on end at a vertical fold. Given the climb and the remoteness of the lead beyond Sumps II and III, we concluded that a camp would be necessary for any future effort.

CAMP I

Back in basecamp, we selected six of us to staff the camp. Freeze-dried food rations were then prepared for a ten-day push. Eight full tanks with regulators and backpacks were subsequently stocked at Sump III, along with some 800 pounds of peripheral equipment. To get dry gear such as sleeping bags through the sumps, we had developed machined PVC tubes with pressure end-plates and O-ring seals. Using these tubes, and a 5/16-inch PMI

handline through Sump III, Rob, Bob, Noel, John, Gary, and Clark moved into Camp I. The worst problems were the duffels of freeze-dried food, which required 135 pounds of lead bricks to get them to sink. All the containers compressed to one-third their volume as they reached maximum depth in Sump III. They were then so "negative" that 75 pounds of lead had to be jetisoned to get them off the floor. When coming out the far side, the packages re-inflated like little life vests, and the duffles would rocket up the shaft to the lagoon. By 10:30 p.m., March 5, the six of them had leveled out the site for Camp I on the sand pile we had discovered earlier.

BOREHOLE

The following morning, Rob scaled the 25-meter shaft at the limit of exploration and rigged a fixed line. They then embarked on one of the finest discovery trips yet logged beneath the Huautla Plateau. More than one and a half kilometers of gallery was seen that day, most averaging 10 meters by 20 meters in cross-section, and heading north. At the end, they had come across a 60-meter-diameter room--the Relief Chamber, named for the great vertical variation across its width. Two passages emanated from this room. One went west and sumped in an area of deep silt. The other went north to a 20-meter flowstone shaft. They descended this a day later, only to find that it too led into a deep blue pool--Sump IV.

The 60-meter swim through the Grand Lagoon before Camp I. (Bill Stone)

Despite this disappointment, it was resolved on the spot to return to Sump III and pick up the two fullest tanks. Clark would then use these for a solo push on IV. Because of the lack of tanks this side of Sump III, Bob and Gary would return to the surface for a restock. That afternoon, Rob, Noel, and Bob finished a climb in the Whacking Great Chamber, where they discovered 200 meters of outstanding formation gallery, 10 meters by 15 meters. It contained numerous white, crystalline stalagmites towering 8 meters tall and measuring 3 meters across at their base. But it did not, as had been hoped, lead to another entrance.

SUMP IV

Late on the afternoon of the fourth day, Clark kitted up at the base of the flowstone shaft at Sump IV. This one had the cleanest entry and the greatest promise. The other sump, down in the silt mounds, had been labeled Sump IV-A. Clark's dive was a light-weight operation, relatively speaking, and was the forerunner for our modis operandi in more remote locations to come. Despite the inherent danger in diving solo, it sped up the operation and gave us the most productivity for a given amount of hauling. Special precautions were taken to allow the diver rapid access to the valving system and easy monitoring of its performance.

At 4:53 p.m. he disappeared into the blue tunnel. Noel and Rob could see the big light-beam flashing around for some time. The pool then went black, the ripples settled, and the surface became glass-smooth. They waited patiently. Two hours passed and Clark had still not returned. Noel turned to Rob and said, "Got any ideas on what to do if he does not

come back?" Rob rubbed his chin, and they stared at the sump some more.

SURFACE RECON

While the underground exploration was taking place, the surface crew began looking for new entrances.There was no lack of prospects. The canyon walls were peppered with black holes. Unfortunately, all of these were more than 200 meters off the floor, guarded by sheer, cactus-studded walls. The most spectacular hole easily measured 50 meters square. Sergio Zambrano and I came across an old Mazatec trail that led us out over the top of the big hole. John Zumrick, who had just arrived, and Pat set up an observation post on the Peña Colorada. With the aid of a pair of binoculars and a 3-watt FM transceiver, they homed us in on the target. At 5 p.m., in the failing light of dusk, I rappelled over the edge and began a 50-meter freefall descent into the mouth. The exposure was awesome, which made the discovery we were about to make all the more incredible.

I had scarcely undone my rack and radioed for Sergio to come down when I noticed something peculiar. There were two raised, circular stone platforms, perhaps 10 meters in diameter and nested one on top of the other. In the middle were two large, flat, rectangular slabs measuring 1 meter by 2 meters. At the head of each was a similar stone that was raised vertically.

We shortly went off down the big tunnel, setting a fast pace for 600 meters. The dimensions never varied--20 meters wide with a broad arched roof 10 meters overhead. It was bone dry, and there was a 2-centimeter layer of fine dust on the floor, absolutely undisturbed. The temperature began to rise sharply near the end, where the ceiling sloped down into the dirt. Just as we turned to head out, Sergio noticed three unmistakable carbon markings on the wall. We also discovered burnt wood particles from some crude torches scattered along the floor. We were not the first explorers of this cave. No one else visited Cueva del Altar until over a month later, when Gary and Sergio returned to complete the survey. But the question remains--how had they, the ancient Mazatecs, done it?

SOLO SUCCESS

Back at Sump IV, a greenish light glimmered in the distance, and Clark surfaced to a barrage of questions. Sump IV was 55 meters long, reaching a maximum depth of only 10 meters. Beyond, there was a 100-meter-long airbell that ended at Sump V, and then things got complex. Sump V was a flooded phreatic maze at a depth of 12 meters. He had spent the majority of two hours underwater, poking in every

One of the many lakes beyond Sump VI enroute to Camp II.

branch, before he wound through the correct route. Near the end, he could make out a reflection of air-filled passage up through a narrow rift. He was 140 meters into the dive and was determined to know what was up there. A minute later his head was in the airbell, but he was also solidly wedged in the fissure. The safety line had wrapped around his fins in the struggle to back out. But he forced his way through to Chamber 6. Looking back, he could see a much wider bypass around the fissure. He re-laid the dive line through the larger route, then, in full dive gear, walked down 100 meters of passage. He came to a climb that he felt would require technical gear to scale. With this information he returned. It was an outstanding piece of exploration for one man.

Within two days the entire camp team was back at Sump IV. Since the next obstacle was a vertical shaft, it was decided to put the two best climbers, Rob and Bob, on the next push. They took along a dynamic rope and a climbing kit. Rob and Bob found a pleasant surprise waiting for them beyond Sump V. Having ditched all but their farmer-john suits and a daypack, they discovered Clark's wall to be free-climbable. For 200 meters they ascended a steeply inclined ten-meter diameter, scalloped tunnel. Then they began descending steeply for another 180 meters to another sump, Sump VI. An active stream led into a long lake, which they were able to swim some 60 meters to where another incoming shaft brought yet another active stream. Sump VI was clearly a downstream sump, and it looked deep. Rob volunteered to dive it if someone would come in to support him. But first, they decided to climb up the infeeder passage on the far side of the sump. To their surprise, it gradually opened up into another large, steeply ascending, scalloped tunnel. It was nearly identical to the one between Sumps V and VI, with the exception that there were now domes all along the route that were dumping water into the system. Bob and Rob had scaled three pitches and run down 350 meters of large tunnel. What came next was totally unexpected--a 57-meter freefall shaft. They fortunately had a 70-meter static line along with them. Bob descended first. It was 12 meters in diameter and totally free. The rope landed in a sump, dark and deep.

SUMP VI

Three days later, Rob kitted up back at Sump VI. The dive was 70 meters long at 12 meters depth, and ended in a sand bank with an airbell overhead. There was a narrow passage going off, but the stream sank in the sand. Rob dropped the tanks and scooted up the fissure. It soon met a large canyon, and shortly he realized he'd looped around back to the beginning of the sump. Noel and Rob went back to recheck the place where the stream entered the sand. There was no possibility of following it. There were only two options left now: scaling the incoming domes beyond Sump VI or diving Sump VII.

Working on gear at the Sump IV depot during the second push on Sump VII. (Noel Sloan)

SUMP VII

On March 16, barely three days after the first camping team returned to the surface, John Zumrick, Pat, Bob, and I arrived back at Camp I for a push on Sump VII. Two days later Bob and I, assisted by John and Pat, set off for what was to be a 19-hour trip to Sump VII. I kitted up at the top of the 57-meter shaft and rappelled with the tanks, a dual front-mounted set, tethered below me. Bob assisted with kitting up in the water. In the course of two dives, I worked down through a breakdown complex to a depth of 40 meters. There the passage took off as a large, horizontal tunnel measuring 10 meters by 20 meters and crystal clear. Being solo and near my safe air limit, I called the dive at that point. I presumed that John, who was the better diver, would be up for the next push.

Back at Camp I, John expressed serious concern over attempting a deep penetration dive in VII without some unusual precautionary measures to protect the divers from a case of untreatable bends. These included: Camp II set at the top of the 57-meter shaft, now known as Sherwood Shaft, beyond Sumps IV, V, and VI; pure oxygen for decompression; a buddy; and intravenous steroids and other IV-drugs for on-site treatment of the bends, in the event that something went wrong. The divers would have to rest over an hour at the base of the shaft after decompressing on oxygen before beginning their ascent to Camp II, and would spend the night there "degassing" before heading for Camp I. The operation took place from March 24 to April 3. John Zumrick and Clark were to do the exploratory dive, with Rob and I being the designated survey/push team. We were equipped for a 40-hour bivouac beyond Sump VII. Four days into the cave, John and Clark did the dive. They reached a penetration of 125 meters beyond the end of my line at a depth of 49 meters. Clark said he was suffering from narcosis, and he dropped the line spool in the process of tieing it off. It plummeted to -55 meters and still remains there. They gave it the best we could hope for. The gallery still continues 10 meters by 20 meters in cross section, crystal clear, beckoning, and heading north.

ALTERNATIVES

John and Clark's effort had required 3000 pounds of equipment to accomplish. At that point, given the team and technology available to us, we made the tough decision to begin the de-rig. Four or five days were spent scaling up into high passages in hopes of bypassing Sump VII. Four domes were attempted, and all eventually became too tight or unclimbable. In all, we had spent twenty-three days working beyond Camp I. Camp II, set beyond four sumps, was occupied for six days. The surveyed length of the cave was 7.8 kilometers, and for all our effort we had closed 30 percent of the gap to the Sótano de San Agustín.

We spent the remainder of April scouting the Camarón and upcanyon areas, derigging the main cave, and searching for leads off 524-meter long Sump I. Two multishaft systems were explored near Camafon, Sótano del Cafetal (-110 meters) and Sótano de Don Felix Carrera (-260). Two notable caves were accessed via technical ascents up the walls of the canyon: Gourd Cave, which had extensive ancient Mazatec structures similar to those found in Cueva del Altar, and Vine Cave. The latter held great promise as the key that would lead us back into the mountain beyond Sump VII.

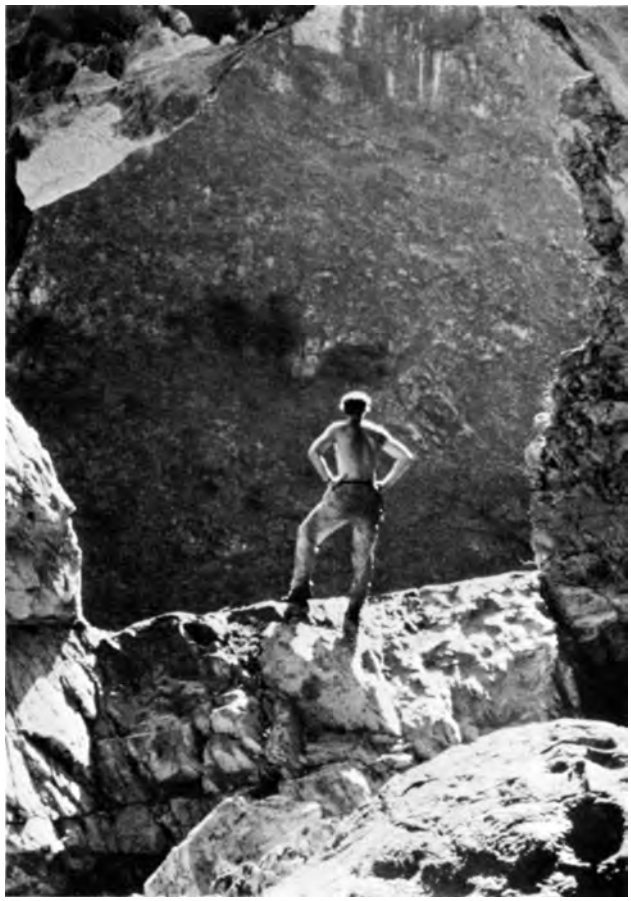
It was evident from the plunge pool at the base of the cliff that water had flowed from Vine Cave on a regular basis at some time in the past. Rob and I scaled the sheer 70-meter cliff to the entrance and saw some 350 meters of booming 10-meter by 15-meter gallery before coming unex-

pectedly to a sump. A day later Bob dived it with an inverted back-mounted rig and succeeded in reaching a continuation of the big gallery 120 meters away. Upon ditching his dive gear, he ran down another 350 meters of steeply descending passage before coming to yet another sump. It was big and clear, and there was a large active stream entering it. This sump went 200 meters and ended in a mud plug.

MORE LEADS

An unexplored stream-sink known as the Sumidero Santa Catarina, located in the broad valley below San Miguel, had been discovered in the spring of 1981, but had not yet been entered. What made it so tempting was that it was perched 500 meters above and 500 meters north of Sump VII. But Gary and John Evans were able to explore only 100 meters before it choked in an impassable fissure.

The Western Resurgence, another interesting lead left over from the 1982 reconnaissance mission, was explored on two solo dives by John Evans and myself to a penetration of 150 meters and a depth of 20 meters. Its course was predominantly due south, and it still continues as a 3-meter-by-3-meter tunnel with noticable flow. However, this direction takes it into the mountain range across the Río Santo Domingo from Huautla. Thus it does not appear likely that it is a part of Sistema Huautla. We found another large spring on the north side of the river that also carried enough water to account for the system. Unfortunately, it became impassable 30 meters into the dive. The diving effort to re-explore Sump I in Peña Colorada resulted in the discovery of a considerable amount of additional underwater passage, as well as a connection to a new, third entrance. But the hopes that an offshoot branch might head west and intersect a hypothetical active stream channel never materialized.



Looking out of Vine Cave towards the Peña Colorada. (Rob Parker)

THE CHALLENGE

So we were never able to find a bypass to Sump VII. Were the results of the effort worth two years of paperwork, a month of specialized training, and four months of tank hauling? To this I think most members of the team would answer "yes." Perhaps the most significant accomplishments of the expedition were not the distance reached and the number of sumps passed, but the advances made in psychology, logistics, and safety in the exploration of this last frontier of caving. More than six hundred cave dives were logged during the course of the expedition, with a perfect safety record. A better feel for the amount of diving done is given by the survey

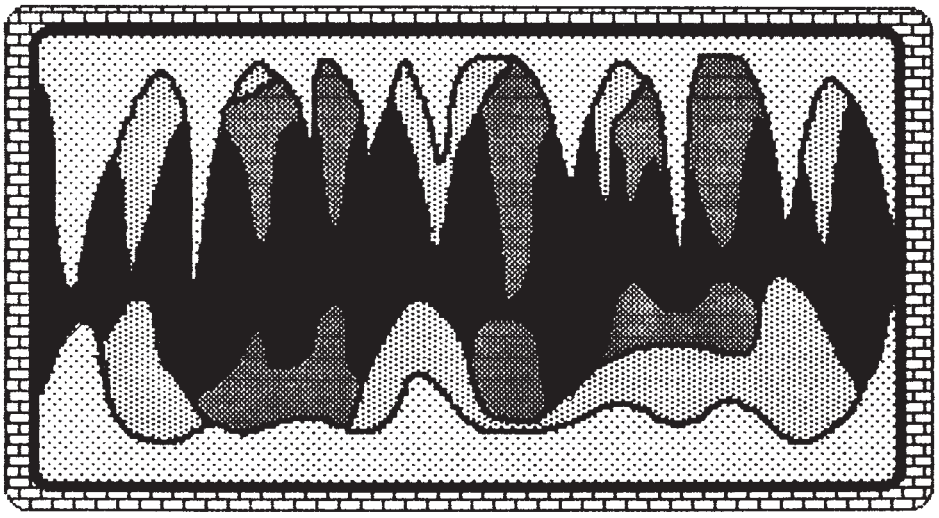
Cueva de la Peña Colorada
Municipio de Huautla de Jimenez y Municipio de Mazatlan
Oaxaca, México
Suuntos and tape Survey by the U.S. Deep Caving Team / The Huautla Project
May 1981
B. Stone
P. Stone
April 1982
B. Stone J. Zumrick
P. Stone
Feb. – May 1984
J. Arnold N. Sloan
R. Beauchamp A. Soto
J. Evans B. Stone
R. Jefferys P. Stone
S. Miller G. Storrick
R. Parker M. Tillman
C. Pitcairn S. Zambrano
P. Quick J. Zumrick
Drafted by Bill Stone
August 1984
Numbers beside pitches indicate required rope length for rigging
ALL UNITS METERS
PROFILE 90° VIEW
North-West Corridor
Peña Colorada Canyon
4.2 Kilometers upstream from main entrance
Elevation (Datum : Main Entrance)
100
50
0
-50
Sherwood Shaft
70
Camp II
(Occupied 6 Days)
25
H2O (+18)
Sump VII
LEGTH : 165+
DEPTH : 49 Ceiling
55+ Floor
Acurex Aven
20+
15
Stream sinks in sand
Sump VI
LENGTH : 40
DEPTH : 12
H2O (-1)
Profile 0° View
Organic Debris
Chamber V
Sump V
LENGTH : 130
DEPTH : 12
Sump IV
LENGTH : 55
DEPTH : 12
H2O (-26)
The Relief Chamber
White Hall
Sump V-A
LENGTH 30
DEPTH 3
H2O (-19)
Sump IV-A
LENGTH : 125
DEPTH : 20
The Pothole
50
10
30
Camp I
(Occupied 23 Days)
Grand Lagoon
Elevation
150
100
50
0
-20
The Whacking Great Chamber
70
Wrath of the Rimstone
Sump III
LENGTH : 190
DEPTH : 20
H2O (+2)
Profile 0° View
Profile 180° View
Canyon Entrance
Dry Gallery
Sump II
Sump II
LENGTH : 14
DEPTH : 6
H2O (-16)
Canyon Entrance
Dry Gallery
PAT'S PASSAGE
SUMP XIII
H2O (-24)
Sump I
LENGTH : 524 Min. Traverse
809 Including Side Passages
DEPTH : 20
Sump I
Sump XIII
LENGTH : 120
DEPTH : 25
Profile 0° View
Entrance No. 2
La Peña Colorada
Datum Elevation (0)
0 100 200 300
METERS
© 1984 Bill Stone

of the known caves of the Peña Colorada canyon: of the 9 kilometers charted by the expedition, 2.16, or 24 percent, were underwater. Given this percentage, is there any hope of traversing the center of the Huautla Plateau via the base level gallery? There are options, based on closed circuit scuba, open to development that may allow us to do it, but the highly specialized long-range and redundant systems needed would probably take three to four years of concentrated effort to produce. This would, in theory, allow a small team of three to four divers to crack Sump VII, and the ones beyond, and eventually complete the dream of reaching the Sótano de San Agustín from below.

EXPEDICION PEÑA COLORADA 1984

Un grupo de 11 espeleólogos retornaró en febrero de 1984 al cañon Santo Domingo en el maciso calcáreo de Huautla. Con la meta de bucear la resurgencia de Peña Colorada y conectar así con el sótano de San Agustín, de tal manera que el grupo usó el maś avanzado y sofisticado equipo de espeleobuceo. La cueva de la Peña Colorada fue explorada para 9100 metros, progresando esta vez 7830 metros en dirección de San Agustín. La exloración se desarrolla sobre nueve sifones, dando un total de 1350 metros de pasajes inundados. Debido a la longitud y duración de las exploraciones, dos lugares de acampar se establecieron. Todos los sifones encontrados han sido formados en el plegamiento del estrato calcáreo, y el estrato impermeable parece ser el responsable del resarrollo de dicho nivel acuifero.

El mayor obstáculo fue el sifón VII, pues se localiza al fondo de un tiro de 54 metros. La exploración terminó en un pasaje horizontal de 10 por 13 metros en diametro a una profundidad de 56 metros. Ocho cavernas más se exploraron con el fin de saltear el séptimo sifón. Destacandose entre ellas la Cueva del Altar y Vine Cave. En esta última se topografiaron un kilómetro, buceandose dos sifones. En los pasajes seniles de Cueva del Altar se encontraron un santuario antiguo fabricado en rocas en posición vertical. En el sección superior del maciso calcáreo se localizaron el sótano de Don Felix Carrera, consistiendo en varios tiros que terminen a 195 metros.



Gruta del Precipicio

A Mexican Classic

Bill Steele

The Spanish word "precipicio" translates to "precipice" in English. Any caver who has been to the cave knows why it was named that. From the word "Go" up that mountain it is one precipice edge after another. I wonder if there is another cave anywhere with such an ordeal just to get to the entrance, and, of course, back down again. From the road below, a black dot can be seen way up on a formidable set of cliffs. That dot becomes a classically-shaped phreatic tunnel when you're standing in it.

I went to Gruta del Palmito (usually called Bustamante, the name of the nearby town) many times before I finally got to see the cave inside that far-off, high dot known as Precipicio. I had heard that it was a cave you would probably only want to do once. When you camp in the Bustamante Canyon, you drive underneath the cave's commanding view. You wonder at the original quest of the Houston cavers who attempted the direct approach of skirting cliffs and stair-stepping this way and that up to the impossible entrance. From the road it appears you could rappel down to the entrance, but there is no apparent way to get to the top of the cliff it is in.

Eventually an ingenious route up to Precipicio was found. Way over to the right, around a ridge that slopes down the mountain, is a steep spine of outcrop that soars up to become the

top of the cliff that Precipicio punctuates. I was on a trip once that got up to the cave in two hours from the vehicles. It's a tremendous climb, and the view gets better with every meter gained. But to climb up, do the cave, and climb back down in the same day is just a bit too much. I did it that way my first trip, and will admit to having a better time on subsequent trips. These times we took sleeping bags and other provisions for an overnight stay in the passage just inside the entrance. When you camp up there, you can linger longer in the cave. Getting back to the entrance camp late at night doesn't matter. You can come down off the mountain in sunlight the next day.

INSIDE

As the accompanying map shows, there are nice-sized passages in Precipicio. There are some drops, too. The entrance passage is a beautifully sculpted, oval-shaped tunnel, with very light-colored walls. It leads over 250 meters to the first drop. The top third of this 42-meter drop is against the wall. A wide ledge is encountered then. Below this ledge the bottom two-thirds of the drop is free-hanging down to the floor of a 30-meter-high fissure passage. This high passage goes two ways. In the southerly direction, an overlook into a large room is encountered. Down this 13-meter drop is the Bustamante-like part of the cave. At the base of the drop is a steep breakdown slope. At the top of the slope and back down the other side, are tree-trunk-sized stalagmites. This large room is the one most people come to tour. It is photogenic and impressive. It dead ends after about 250 meters, but brings smiles to the faces of those cavers who appreciate spacious, adorned caverns. This big passage can occupy a group for several hours, seeing it all, and photographing the forests of formations.

North, away from the drop into the formation area, the passage leads to places that have enticed a few cavers in recent years. The passage heads back toward the stair-stepping cliff face the entrance is in. A 2-meter-diameter pit against the left wall leads to the lower level, named the Worm Tubes. There are five drops in the Worm Tubes. It is there that the air movement in the cave is most pronounced. More on that later.

DOME PUSH

In the fall of 1979, Mark Minton and I climbed up to a dome at the end of the passage beyond the pit to the Worm Tubes. The dome was difficult even to get up to. A room with crumbly walls had a ceiling that on one side opened up into blackness above. It had to be done. We climbed up on the wall, squeezed into a fissure, then after a couple of climbs, came back out to the dome. The wall of the dome was a crusty climb that looked promising. The ceiling curved away in a direction we sensed was toward the outside cliff face. We spoke of what a great addition to this cave it would be to have a through-trip coming back out to the Bustamante Canyon walls.

We were approximately 20 meters above the ultimate bottom down below. Plenty of dirt and crust fell as we moved around, constantly reminding us of the exposure. I took a turn and made a jam move in a crusty corner, up to a stable stance. Mark stood and was prepared to pull me in if I should happen to pull off and sail down past him. Three meters above me I saw a projection that begged for a lasso. I tied a big loop in the end of the rope and in a few throws snagged it. The loop wasn't as far back on the projection as I would have liked, but the pull-test I gave it felt good. I

Opposite: A view of Gruta del Precipicio from the canyon. (Keith Heuss)

Breakdown passage below the 42-meter drop. (Keith Heuss)

pulled myself up while clawing into the crust and dirt wall. I moved up maybe a meter, then decided more protection really was prudent. I backed down and shook the rope. It snapped off the projection and fell around us.

It was four years later, November 1983, before we were back at that dome lead. We had bolts and pitons and several people. Some people went to see the mountain-formation room, some began rigging down into the Worm Tubes, and Mark and I returned to the dome climb.

Soon we had set a good belay-stance bolt. Mark belayed with a belay plate, and I got up over two meters to a place to put another bolt in. After the second one was in I lassoed the projection, as I had done before. This time I got it on better. When Mark was ready to feed me rope, I climbed on up and got even with the projection. It wasn't too good! The top had a flat spot, but then sloped down. I could see a groove from the time before, and was really glad that I hadn't climbed up on it then, unbelayed.

There was another three meters to climb above the projection. When I had done that, I found that there was no passage up there. You just couldn't tell until you got all the way up. Mark joined me at the top after I had placed a last bolt. In moments we heard someone coming: it was Robert Hemperly. He came hand-over-handing up to us. He had left his vertical gear back at the top of the Worm Tubes.

HIGH LEVEL LEAD

From the top of the dome, we could see what looked like a high-level passage on the opposite side of the dome. On the way back to the Worm Tubes, Mark, Robert and I, aided by our Wheat Lamps, searched for and finally saw a way up to the high level passage. The climb looked close to impossible without inserting direct aid of some kind. It would be a chimney that would be body-length wide in places. Robert volunteered to try it. He started the climb, and in moments was close to halfway up. At that point we asked him to catch a rope and take an end with him. If he got up, we preferred a rope to be able to join him. He caught the rope and took it. At one point he appeared to have his feet higher than his head in his wide chimney. It was just marginally climbable. Finally, he was there, and said that the rope was tied off. Mark began his ascent. He was less than two meters up, with Jumars engaged, when in a flash he was falling! I scurried out of the way, and instantly Mark was on my heels, shouting for me to climb out farther. When all had cleared, we looked closely and found that a watermelon-sized rock was where I had been sitting. And in the canyon below, with Robert's loop tied around it, was a rocking chair-sized rock. Robert had tied the rope to a loose rock 15 meters above us.


THE CANYON PASSAGE
THE BIG ROOM
La Gruta del Precipicio
Municipio de Bustamante , Nuevo Leon
Suuntos and Tape Survey by the AMCS
January 1973 —— February 1974
The Canyon Passage * The Big Room * The Worm Tubes
Steve Fleming
John Graves
Stan Moerbe
Mike Walsh
Steve Fleming
Preston Forsythe
John Graves
Blake Harrison
Mary Kay Kruska
Stan Moerbe
Wayne Russell
Mike Walsh
Dan Watson
Gill Ediger
Jill Ediger
Preston Forsythe
John Graves
Neal Morris
Barb Vinson
Drafted by J. Graves , B. Harrison & N. Morris
UPPER ENTRANCE
MAIN ENTRANCE
BLAKE'S DOWNFALL
THE BALCONY
BREAKDOWN MAZE
N
meters
THE WORM TUBES
THE CANYON PASSAGE

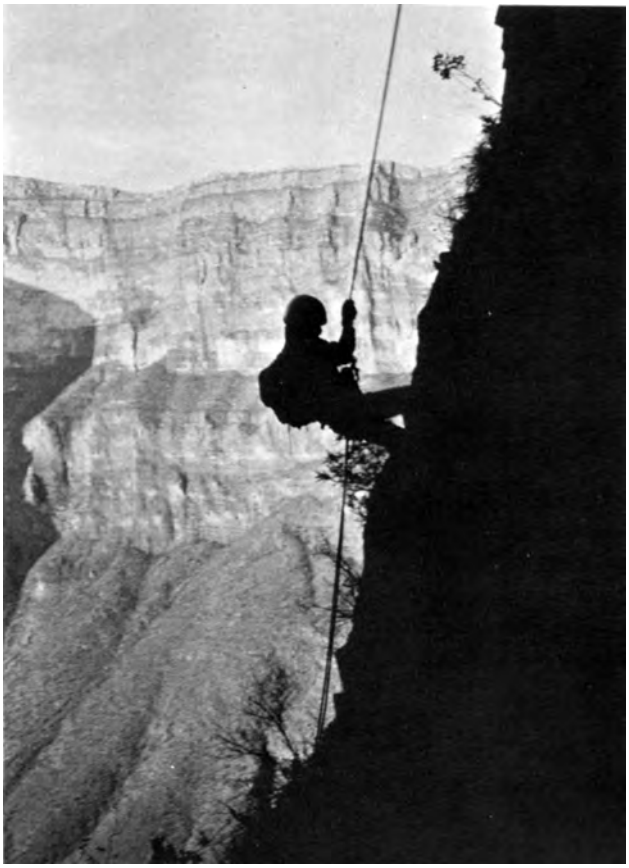
THE WORM TUBES

The upper level did'nt go. We joined the people in the Worm Tubes in time to take the lead where they had found a rock jammed in, blocking passage to the top of a pit. We removed the rock and went on down three more drops to where it really gets tube-like. In the end we saw nothing not already shown on the map, but there is strong airflow down there. The air goes mainly down a steep slot, 15 centimeters wide. Something surely is down there. It's probably lower levels, or a lower entrance.

When we came out of the Worm Tubes, I heard voices and knew something must be wrong. The people talking would be the folks who had supposedly headed to the camp in the entrance a couple of hours before. They told me the rope was hopelessly placed 30 meters above. Two of them had already climbed up and tried to retrieve it, but had come back down. The rope was caught back in a really bad crack. I figured I had technique enough to manage the climb, so I had a great chance to fun with these guys without really being worried. I said, "Well, if you guys couldn't make it, I guess we're stuck here. My wife won't get concerned until Monday, she won't do anything about it until Tuesday, and no one will get here until Wednesday, perhaps Thursday." I could see their eyes promptly enlarge. I then offered to have a go at it. The rope in the fissure was awkward to climb to, but possible for a Huautla veteran.

THE DESCENT

One thing I've done on two of my four trips to Precipicio is the great pull-down rappel from the entrance, straight down toward the road. I recommend a 100-meter rope to do it. From the entrance you double-line down to the entrance of another cave immediately below named El Gato. It is a very short cave, never getting out of



Rappelling on a pull-down trip from Precipicio. (Maureen Handler)

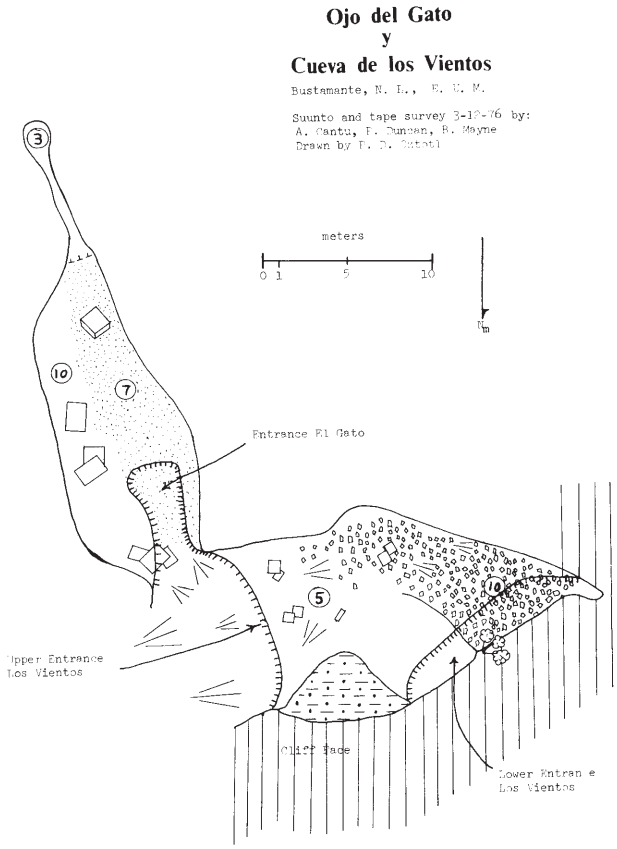
twilight. From El Gato a short step of the pull-down route leads into the upper entrance of a two-entrance cave -- El Viento (the wind). This cave slopes down 30 meters to another entrance, where there is a drop-off at the end of an unstable talus slope. Here a stout bush is what everyone has tied to for the next rappel. There is a sling of webbing around the bush with one chain link on it. The sling is best replaced every trip.

At the bottom of the third rappel, a very steep brush-covered scree slope leads to drops that can be down-climbed or traversed around. Eventually it becomes less severe, and one can walk on down to the road, usually taking slightly longer than those walking down the way they went up. Some have taken an inordinate amount of time to rappel down. It is a technical undertaking, and straightening

out of ropes and rigging so that nothing will get snagged can absorb much time if you let it. (Editor's note: care should be taken on the steep slopes of the pull-down route. A caver recently took a fall there that resulted in a broken bone.)

Precipicio is a classic Mexican cave trip. Its proximity to Bustamante makes it a good double-header for travelling cavers hitting the area on the way through. For Texas cavers it is an exciting weekend trip of physical output and fun rope-work. There are ample camping spots in the entrance area for up to a dozen cavers, but be forewarned that there is absolutely no water available on the mountain. A gallon per person is the bare minimum for a Precipicio jaunt.

Precipicio is a good training cave for the caver just getting started in vertical caving. It is not to be recommended for a first cave, but is a good second or third vertical cave. A trip up there will show a new caver how strenuous caving can be, and how real cavers love it that way. Be aware that Precipicio is now void of any vandalism. There are footprints, but that is all.



GRUTA DEL PRECIPICIO

Una exploración fue hecha en la gruta del Precipicio, que se encuentra en el estado de Nuevo León, a fin de realizar dos escaladas en una bóveda. Sin embargo, no hubo algún pasaje en dicha bóveda.

Cueva de la Tia Rosa

Jim Pisarowicz

The sun was already low in the sky by the time we had made our way up the canyon to the cave entrance. Earlier that afternoon Louise Hose, Tom Strong, and I had inquired about caves in the small village of Potrero Redondo, Nuevo León. There we had acquired the services of Sr. Pablino Valdez, who volunteered to show us a nearby cave.

As we entered a side canyon, everything became familar. I had previously visited the Potrero Redondo area in September 1983 with Peter and Terri Sprouse and had been shown this same cave. At that time we had come down from above, instead of the hike up the canyon we had just completed. During that earlier trip, Peter, Terri, and I had not entered far into the Cueva de la Tia Rosa, because a large lake at the entrance had stopped our progress. It was now January 1984 and there was no lake, and the passageway looked inviting.

At the entrance, Sr. Valdez, who had informed us that he was 84 years old, pointed down the passage and told Louise that we would need lights. Louise and I had both brought flashlights, which immediately brought a broad grin to Sr. Valdez's face. He wanted to go into the cave with us. Tom, having forgotten a light, decided to remain outside.

Sr. Valdez was hard to keep up with, as he quickly made his way down the entrance passage. This was amazing, considering his age and that he was relying on the incidental light from Louise's and my lights. We followed after him as he virtually flew through the first 60 to 80 meters of cave.

Suddenly, Sr. Valdez stopped, looking as though he would fall off the large breakdown block he was standing on. I grabbed his arm. It felt like a strong steel cable. At 84 years of age, he may have been

Mapping near the entrance in Tia Rosa. (Jim Pisarowicz)

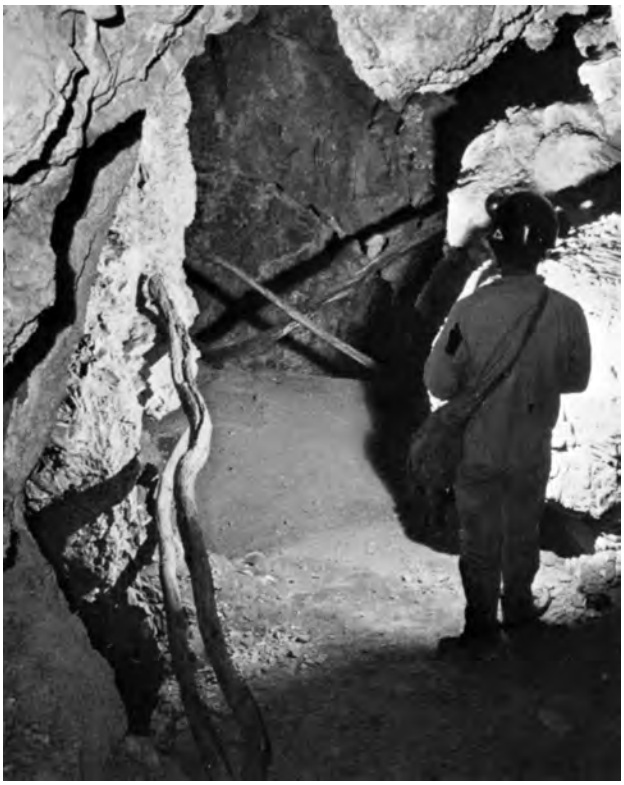
stronger than I am. At this point, it was becoming apparent that he was confused about how to proceed. We turned around and made our way back toward the entrance and the setting sun.

REVOLUCIONARIOS

Once outside, Louise began to engage Sr. Valdez in a halting Spanish conversation about the cave. We were amazed by his tale. Apparently Sr. Valdez, as a young boy, had acted as a courier and carried food to the cave for a unit of fifty revolutionaries. These men had lived near, and occasionally in, the cave for about one hundred days. He told of fighting in the mountains, but because of the lapses in his memory (he was only 8 to 10 years old at the time) and our intermediate Spanish, the fine details of this amazing story were lost.

The next day we again hiked the canyon to the cave, this time armed with a full compliment of caving and surveying equipment. We rapidly ran the survey line down the entrance passage, leaving several leads that we were going to pick up on our way out of the cave. This area was incredibly cold due to the tremendous wind that was blowing into the cave. We all shivered our way excitedly down these passages.

Before long we had passed our furthest penetration with Sr. Valdez. Here the cave made a sharp bend to the right (west). Going around this corner, Tom saw something moving very rapidly. Looking about the floor, he discovered a small tree frog. We were all amazed as we were over 100 meters into the cave. Poking around this area, we quickly answered the question of the origin of the frog and the even more interesting question of the stiff wind. Peering up a 15-meter dome, one could see a small spot of sunlight. The dome was called Hylidea Dome, in honor of the tree frog we had found there.



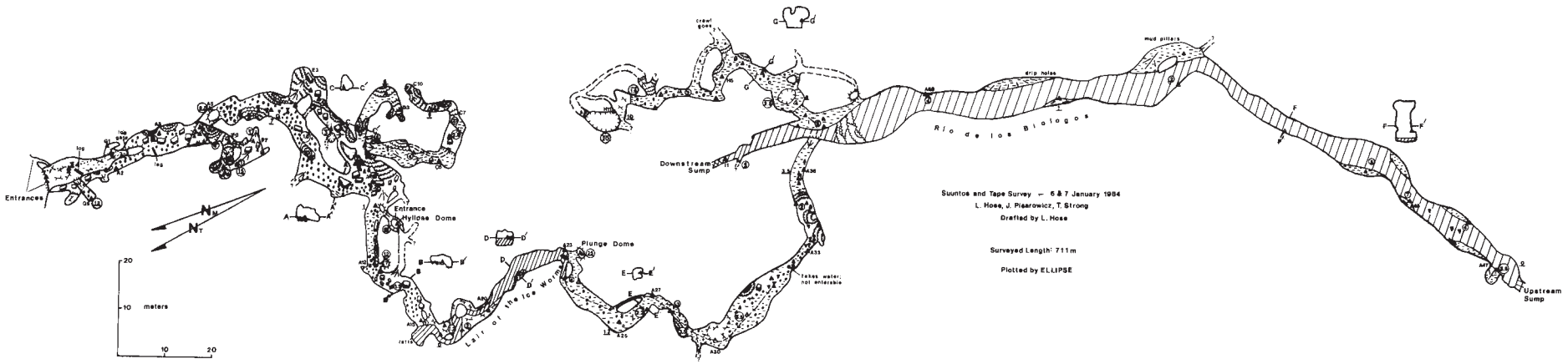
A primitive log gate. (Jim Pisarowicz)

We continued the survey to the west, but the walking passage soon ended. I took the only lead available which was under a low shelf. There I encountered a small lake. The passage was very low. As Tom and Louise were finishing the details on the sketch, I pushed ahead. After about ten more meters, I came upon a passage , completely filled with water. A thin layer of calcite-raft material coated the surface. Pushing on in the cool temperatures of the cave without wetsuits was out of the question. I returned to inform the others of this development.

As it was getting late, we decided to finish the side leads that we had passed on our way into the cave. After an hour or so of surveying side leads, we called it a day and planned on returning with wetsuits the following day.

CUEVA DE LA TIA ROSA DE POTRERO REDONDO

NUEVO LEON, MÉXICO



Suuntos and Tape Survey – 6 & 7 January 1984
L. Hose, J. Pisarowicz, T. Strong
Drafted by L. Hose

Surveyed Length: 711 m

Plotted by ELLIPSE

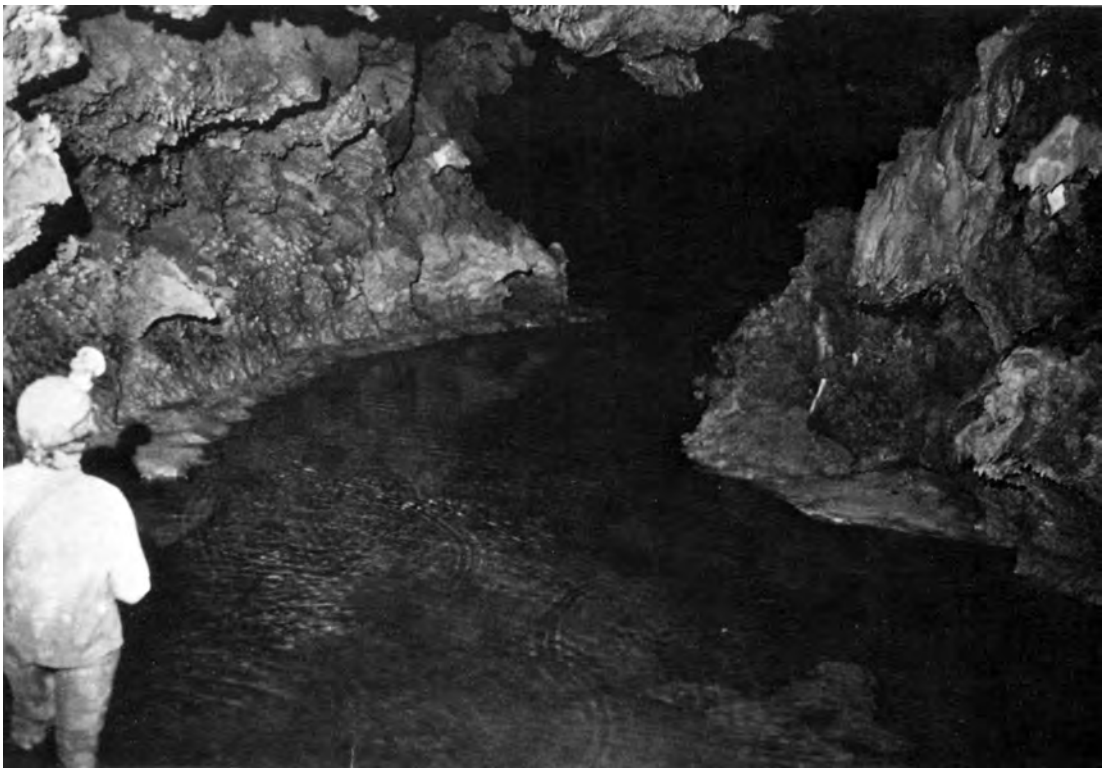
THROUGH THE LAKE

The next day, Tom decided to remain on the surface to watch the birds. Louise and I packed our wetsuit bottoms and made our way toward the calcite encrusted lake we had named the Lair of the Ice Worms. As it turned out, wetsuit bottoms were about the right attire for traversing the 30 meters of waist-deep water. Once out of the water, we encountered another dome. This one was much higher, perhaps 25 meters, but did not lead directly to the surface, at least as far as we could tell. We called this dome the Plunge Dome.

Continuing from the Plunge Dome, we followed upstream in a mud-lined passage with a small trickle of water. This led to an area containing some particularly fine displays of redissolved flowstone and other speleothems.

As we went around the next corner, the silence of the cave was broken by the sound of flowing water. Controlling ourselves, we patiently continued surveying. Three stations later, we broke into a large stream gallery. Looking upstream, we saw that the passage was fifteen or more meters wide, and right at our feet the water was cascading down a series of whitewater rapids. Without hesitation, we let out a hoot and immediately began surveying upstream.

But our excitement was short-lived, for on the next mud bank there was some writing. The letters were made out of rolled mud. Between two mud sculptures of heads, it said "Biólogos 82A." We did not know who had put this message in the cave, but figured that it might have been left by a university caving club from Monterrey. Somewhat dejected, we opted for continuing the survey upstream. As



Exploring the Río Biólogos. (Jim Pisarowicz)

the water got deeper and deeper, I began to wish that I had brought my wetsuit top. Finally, walking would no longer suffice. I took in a deep breath and stroked across the passage with one end of the survey tape. Several long swims were encountered, but the stream eventually sumped as the ceiling plunged down to the water level. We both were thankful, as we were getting a bit cold. It was time to see what happened downstream.

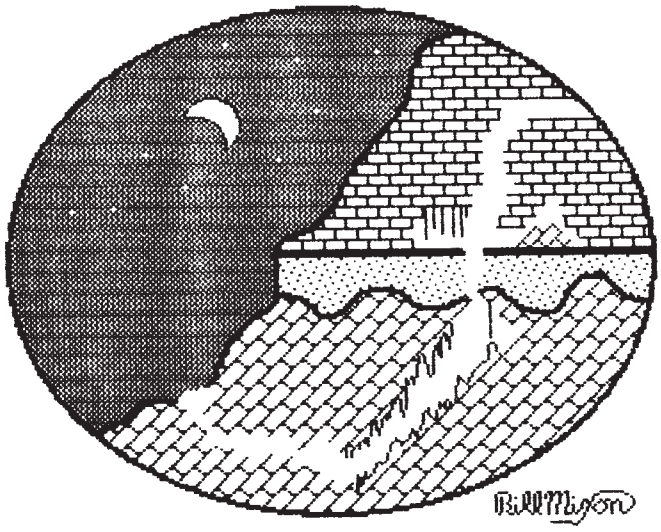
Unfortunately, the downstream passage soon sumped too, just beyond where we began the upstream survey. Still, it was pretty impressive stream gallery for 250 meters. We called the river Río de los Biólogos. Although we were both pretty cold, another lead had to be pushed. Just across from the passage where we had entered the Río de los Biólogos was another passage. This muddy lead went up from the gallery and eventually led to a pit 20 meters deep.

Since Louise had told Tom that we were going to be out by midnight, I made a quick recon through a small lead at the top of the pit. This lead gradually made its way down and around the pit. From this lead, one could make it all the way to the bottom of the pit, but it was time to leave.

Over 700 meters were surveyed with both sumps presenting themselves as divable leads (especially the upstream sump). As to the revolutionaries who lived in the cave? No evidence of the stay was found, but this is not surprising as the cave does flood. So as they say...Quien sabe?

CUEVA DE LA TIA ROSA

La cueva de la Tia Rosa se localiza en la villa de Potrero Redondo, en el estado de Nuevo León. La primera porción de la cueva es amplia, con lagunas y un riachuelo. Río arriba encontraron un sifón, al igual que río abajo, sin embargo ambos no presentan gran dificultad técnica. Otro pasaje secundario fue parcialmente explorado, pero no mapeado. La longitud total topografiada fue de 700 metros.



Christmas In Huautla

HUAUTLA PROJECT

Mark Minton

We struggled through the tight spots in Nita Zan trying to imagine how it would be with camp packs. Only nine months before, we had connected this newest entrance to Nita Nanta, where major discoveries had been made (AMCS Activities Newsletter No. 13). To continue our push toward a connection with the main Sistema Huautla, an underground camp was once again in order. The question was how to best get to the Football Stadium at -635 meters: the original route via the Naranja Passage, through the much faster but unworkably tight Nita Sa, or through Zan? One trip and we were convinced. Zan was large enough, and even faster than Sa. We also noted higher water flow throughout the cave, which necessitated rerigging of the 65-meter Maelstrom Shaft and which would plague us often in the weeks ahead.

CAMP II

With only a relatively brief four weeks in the field, the pressure was on to cave hard from the start. The morning of our fourth day, all eight cavers headed for Camp II with duffles: Hans Bodenheimer, Frank Bogle, Scott Davis, Gerald Moni, Rich Rohwer, Jim Smith, Lisa Wilk, and I--although Hans and I were only porters.

The first objective from camp was a traverse around the top of the first drop in the Rat Tail File Series, which Jim led easily. This is the closest point to Li Nita where we still hoped a quick, relatively high-level (-600-meter) connection could be made. The new passage continued much as it did in the pit series below, up crusty, long-dead galleries. The airflow was good, and when the rumble of a stream came into earshot, connection fever ran high. Our passage teed into a stream passage. Unfortunately most of the air seemed to come from upstream, which soon pinched. Downstream, after dropping over 100 meters in a polished black pothole passage, the water disappeared down a 20-centimeter wide crack at the bottom of a body-sized 22-meter drop. The final blow was dealt by the survey, which showed the new passage heading north, away from Li Nita.

While the others were in camp, Hans and I checked a blowing water-crawl found in a new cave, Nita Lajao, the previous spring. After rearranging a few cobbles and removing a couple of chert ledges, Hans reported walking passage with nice formations. Then he saw footprints! Indeed, we had emerged from under a previously unnoticed ledge into the White Room of Li Nita. The Lajao entrance is lower than Li Nita, however, so the depth of Sistema Huautla remains unchanged.

Two days later Andy Grubbs arrived. He, Frank, Hans and I entered Nita Sa to survey a major infeeder at -190 meters. Thirty-five stations were set in an extremely drafty passage dubbed El Refrigerador, until we lost the air up a dome. As we left we derigged the dozen or so drops in upper Sa, and thanked Oztotl we weren't using that route for camp.

Over the course of the next three days Brian Burton, Alan Warild, Julia James, Mike Doe, and Doug Powell arrived, filling out the expedition at fourteen people. With the camp crew also back on the surface, our two houses were packed to the gills. Plans were made for eight people to return to Camp II for a major bottom push, while the others had the chore of detackling the more than forty drops in the Naranja Passage.

SECOND CAMP

On December 23, Alan, Doug, Frank, Hans, Jim, Mike, Scott, and I headed into the -1000-meter breakdown pile of Nita Nanta. A single charge set at the end of the first camp had provided a few meters of access into the boulders. The next obstacle was removed

Opposite: Water at its highest in the Gorge. (Jim Smith)

Tight spot between Drops 9 and 10 in Nita Zan. (Jim Smith)

by a bout of frantic bashing by Jim and Scott. For the next couple of hours, all eight of us probed every nook and cranny searching for the way on. Several promising starts finally ended hopelessly, and morale began to fade. The immensity of the breakdown and large passage dimensions with ubiquitous airflow provided few clues as to the most likely route even for blasting. Finally Hans and Mike squeezed and dug through shale ledges half underwater and worked their way into a large room. With renewed vigor the rest of us followed, only to begin the process over again. The room was merely a temporary opening above the boulders. All routes were again blocked. Our diligence continued to be rewarded as the way on was slowly uncovered. When we finally began to think about surveying, we realized that we had two complete sets of everything, but no pencils. Perhaps it was just as well, since the trip ended up being 18 hours long (from camp), even without mapping.

HIGH WATER

As the camp crew rested on Christmas Eve, an ambitious derig was in full swing. Early that morning Gerald, Julia, and Lisa went into "old" Nanta and followed the Naranja Passage down to the 60-meter shaft at -400 meters. After the women had rappelled down the pit, Gerald untied the rope and dropped it to them. They then did pulldowns as they derigged eight drops in ever enlarging passage. At 11 p.m. they arrived at Camp II laden with coils of PMI. Meanwhile Gerald solo-derigged the seven pitches back up to the Grim Pit on his way out. The women confirmed our suspicions about the water -- it was coming up fast after almost 24 hours of rain. The Maelstrom Shaft was roaring, a nearly solid column of water 65 meters high. The Naranja Passage stream, which usually cascaded down the wall, now arced over a meter out into the Stadium. They decided to bivouac with us in camp and hope for the worst of the flood pulse to pass in the night.

The following morning Julia and Lisa continued their derig through-trip out Nita Zan. Fortunately the Maelstrom Shaft had been rerigged out of the water. The next, 86-meter Flakey Shaft, however, was flowing full tilt, at times making it hard to breath. Many of the climbs above were rendered difficult, as the normal route had disappeared beneath the water. On one climb a hold broke off and Julia took a short fall, but soon recovered. Later, as Lisa contemplated the route, she saw a tail of PMI emerging from a frothing cascade --the rope was completely hidden behind the falls. On another drop the end of the rope had been whipped up onto a ledge, but was fortunately still within reach. Finally, after

eight hours, they emerged safely back outside.

The camp crew returned to lower levels to map and continue working through the breakdown. We were all very anxious to know how far we had progressed toward our goal of Loggerhead Hall in Sótano de San Agustín. Since the route down from camp through the Rat Tail File Series is dry, we largely forgot the high water situation until we hit the Gorge. There the roar was ominous. It was almost too sporting, as Hans, for instance, rappelled into a pothole and disappeared over his head! The walls were slick, and one had to exercise great care to avoid being swept over the next drop. Alan rerigged the last pitch out of the main flow, and everyone made it safely. The survey was thwarted again, however, as our route through the breakdown was now underwater! The difference between December and March is remarkable in terms of water levels. Even at normal flow there was three to five times more water than we had seen the previous spring. Now there was ten to twenty times as much. We realized how lucky we were to have gotten out of the breakdown when we did. A half a day later and we might have been trapped.

NEW TRUNK

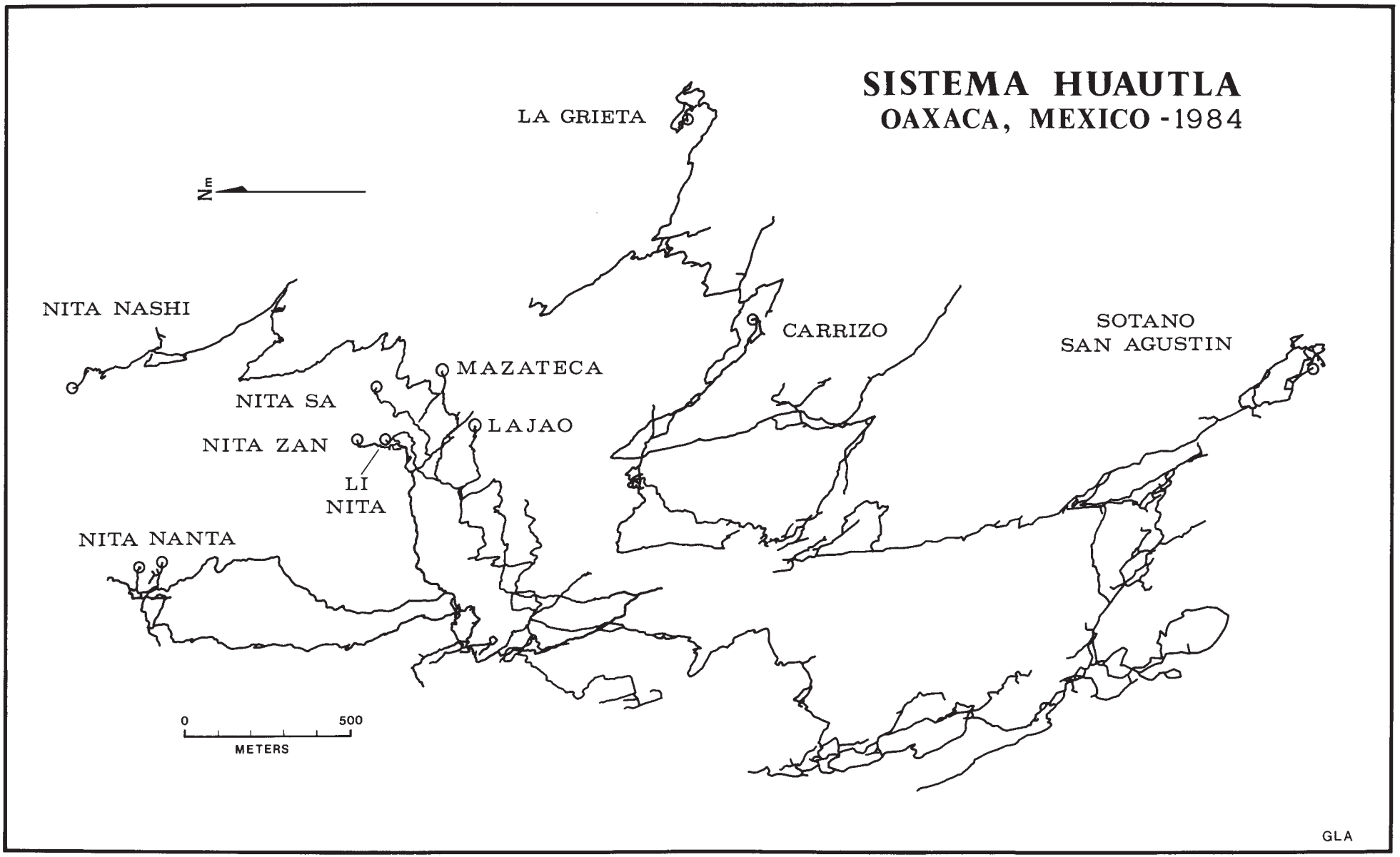
Alan, Frank, Mike, and I decided to continue the survey upstream from the confluence near the breakdown which had left off in large passage the previous spring. The borehole continued several hundred meters, and we wished it could have been as nice downstream.

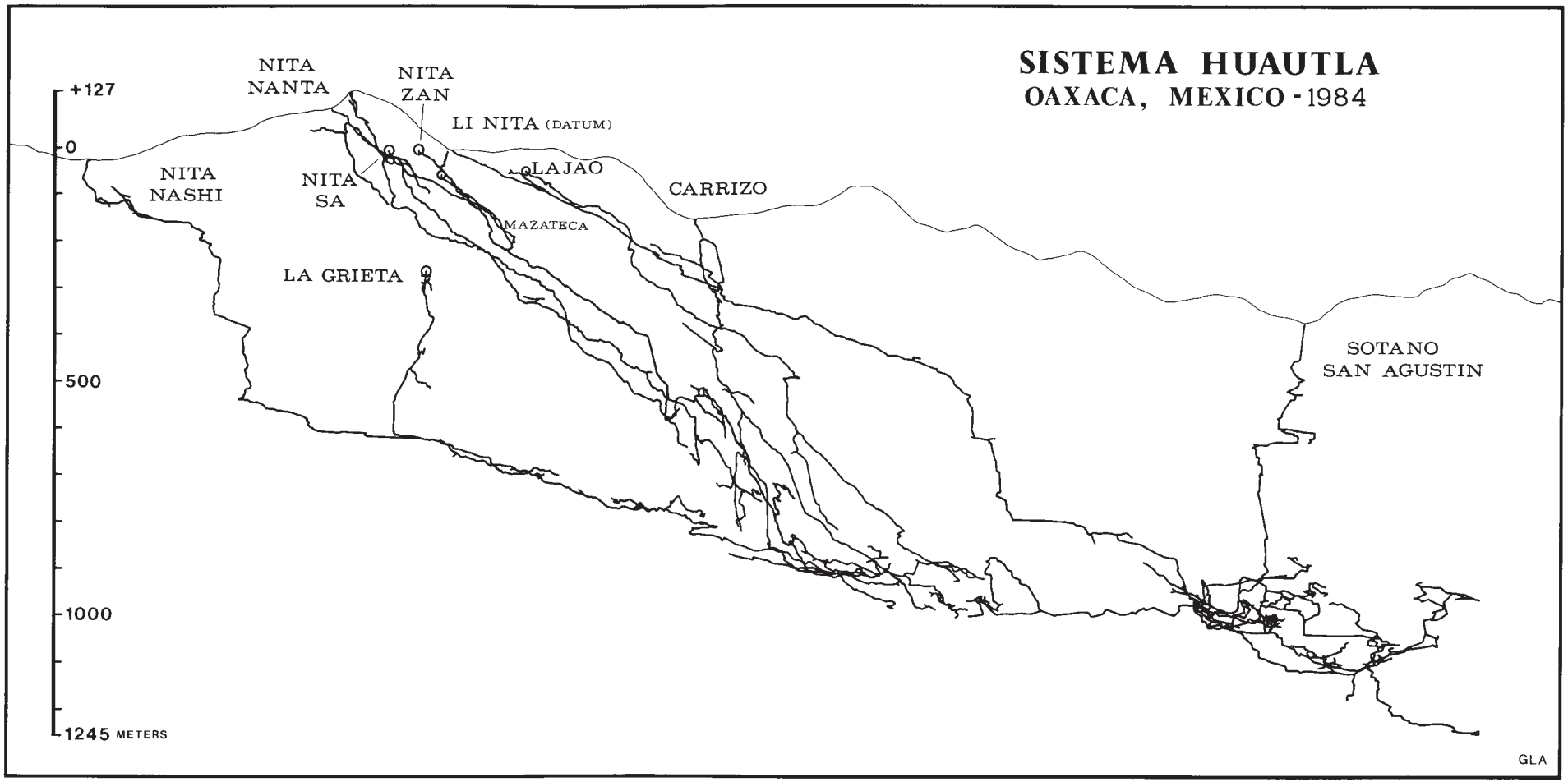
"Makes you think there's some cave out this way, doesn't it?" Alan remarked. Abruptly, the borehole narrowed to a canyon, which forked and ended at twin waterfall domes. Meanwhile Doug, Hans, Jim, and Scott took plenty of photos of the high water, then ascended and did a traverse around the top of the Corkscrew Shaft, the last drop in the Rat Tail File Series. The void visible across the shaft turned out to be large passage. After a brief climb up through a breakdown maze, they popped out into a fossil trunk with airflow! A quick reconnaissance revealed substantial passage with several leads, only a little of which was surveyed.

Lead climb across top of Rat Tail File Series. (Frank Bogle)

The remaining surface crew of Andy, Brian, and Rich was also busy with the derigging operation. On an 18-hour trip they returned to the Grim Pit and picked up the seven ropes Gerald had left, then derigged 14 more back as far as station NJ1, where an undescended pit lead needed to be checked. It was an active Christmas day as all fourteen people on the expedition were underground in various parts of Nita Nanta.

"Ropes are even dumber than duffles!" So declared Hans after hauling his camp pack out through Nita Zan, and then wrestling coils out of the


SISTEMA HUAUTLA
OAXACA, MEXICO -1984
LA GRIETA
N
NITA NASHI
CARRIZO
SOTANO
SAN AGUSTIN
MAZATECA
NITA SA
LAJAO
NITA ZAN
LI
NITA
NITA NANTA
0
500
METERS
GLA


SISTEMA HUAUTLA
OAXACA, MEXICO - 1984
+127
0
500
1000
1245 METERS
NITA NANTA
NITA ZAN
LI NITA (DATUM)
NITA NASHI
NITA SA
LAJAO
CARRIZO
MAZATECA
LA GRIETA
SOTANO SAN AGUSTIN
GLA

Naranja Passage on the final derig trip with Andy, Brian, Gerald, and Julia. Andy checked the lead at NJ1, only to end up looping back into known passage. The upper parts of the "main" Nita Nanta were finally derigged after four years of grueling, but ultimately very rewarding, exploration.

FINAL CAMP

With less than a week left on the expedition, we decided on one last camp trip. Doug, Jim, Mike, Scott, and I returned to the Football Stadium on December 30. We decided the risk of flooding was too great to probe the breakdown again, so we concentrated on the new passage across the Corkscrew Shaft. A tyrolean, doubly lined with PMI, made crossing the 55-meter drop safe and easy. We surveyed several hundred meters on an unusual southeast trend, then dug through a collapse and intersected a new shaft series. Lack of rope and time prevented any further progress. The remainder of the camp time was spent tying up loose ends and stage derigging.

Having spent a good deal of time at the unglamorous task of derigging, the surface crew was anxious for some new exploration. They began surveying Nita Mazateca, an impressively large entrance located by Chris Kerr the previous spring. A number of bones, coupled with a stiff breeze, earned the entrance area the name Meat Locker. On the second trip, Lisa rappelled down a drop and saw station EQ30, which Frank recognized as the Refrigerator Passage in Nita Sa. They had come in through the dome where the airflow disappeared on our previous survey. A day later another small cave was surveyed to another connection with Nita Sa. Thus Nita Nanta gained two new entrances in as many days!

SOLO 1000

On 1 January 1984 Alan Warild entered Li Nita for a daring one thousand-meter-deep solo trip. The cave had been totally derigged, so Alan used a special technique of rigging each drop completely free, using chocks, wire slings, etc., and pulling his rope down behind him, leaving only a doubled length of nylon cord to pull the rope back up. In this way he could negotiate all of the thirty or so drops using a single rope. The trip went smoothly, requiring 47 hours, including a few hours of sleep. (Note: Alan is well experienced both with this technique and with Li Nita. This is <u>not</u> a generally recommended practice!)

Nita Nanta has now seen five expeditions and has over 10.7 kilometers of surveyed passage, accessible via eight entrances. The depth is in excess of 1031 meters, although the exact figure is not known due to lack of survey at the bottom. Considerable progress has been made toward our goal of joining Nita Nanta to Sistema Huautla. Although high water cut short the most recent deep-level operations, prospects are excellent for a return in the spring of 1985. Think Deep!

PROYECTO HUAUTLA

El objetivo principal del proyecto Huautla de diciembre de 1983 fue la posible conexión entre Nita Nanta y el Sistema Huautla. Sin embargo, el alto nivel del agua impidió la conexión. Un pasaje de mayor dimensión fue encontrado en Nita Nanta, llamado el Rat Tail File Series, sin embargo la exploración completa no fue posible debido a la insuficiencia del tiempo. Además, dos entradas más fueron encontradas, sumandose así ocho. La cueva de Nita Nanta ya tiene una longitud de 10.7 kilómetros en pasajes topografiados y una profundidad de 1031 metros.

Discoveries In
MEXICAN CAVE BIOLOGY
1981-1984

James R. Reddell

The following report discusses some of the more interesting biological discoveries in Mexican caves made since my earlier progress report (AMCS Activities Newsletter No. 11, 1980). In the last three years two volumes have been published on the cave fauna of México (Reddell, 1981, A Review of the Cavernicole Fauna of México, Guatemala, and Belize, Texas Mem. Mus. Bull., 27; and Reddell, 1982, Further Studies on the Cavernicole Fauna of México and Adjacent Regions, AMCS Bull., 8). In addition, several papers have included descriptions of new species from Mexican caves. As a result of these publications, a total of 84 new species, including 56 troglobites, has been added to the known Mexican cave fauna.

Recent expeditions have produced still more new species, including a number of troglobites of unusual interest. While most work in the last few years has been concentrated in the previously studied areas, such as the Huautla, Oaxaca; Purificación, Tamaulipas; and Xilitla, San Luis Potosí, regions, other areas have received attention. Of particular interest have been the extensive collections made by Steve Robertson in the Zongolica, Veracruz, region. In addition, trips by David McKenzie, Dale Pate, William Elliott, Peter and Terri Sprouse, James Reddell, and others to several new or poorly studied areas including Potrero Redondo, Nuevo Leon, and various parts of Hidalgo and Coahuila, have resulted in the collection of new material of interest. Finally, recent collections in Yucatán and in Grutas del Palmito, Nuevo León, have produced new species of troglobites. Once again it is proven that even the best studied caves or areas can provide surprises.

A few of the more interesting recent discoveries are briefly discussed in the text that follows. In addition to these more notable finds, it should be mentioned that numerous other species have been collected, some already known, but others await description. With every new collection in México we are adding to our store of knowledge of the distribution and evolution of its cavernicole fauna. Large groups of animals, such as the millipeds, isopods, and centipedes, are now under study and are not discussed here, but are known to contain many species of interest.

SCORPIONS

One of the more interesting recent finds is that of an undescribed species of blind scorpion of the genus Typhlochactas from Cueva del Vandalismo in the Purificación region. This is the tenth troglobitic scorpion to be discovered in México. This species is of particular interest since it is from a higher elevation than any cave scorpion yet known. It is also the first time that two species of blind scorpion have been collected in the same general region, the other species, Troglocormus willis Francke, is

from Sistema Purificación and other nearby caves.

PSEUDOSCORPIONS

Several new species of pseudoscorpion have been found in Mexican caves in recent years. Three troglobitic species are of particular interest in that they come from areas already intensively studied. A new species of the genus Aphrastochthonius has been collected in Grutas del Palmito; this is the second troglobitic pseudoscorpion from that cave. Typhloroncus n.sp. has been found in Sótano de Huitzmolotitla, San Luis Potosí; this is only the second troglobitic pseudoscorpion from the Xilitla region. An undescribed species of the family Chthoniidae of uncertain genus was recently found in Cueva del Cenote Xtolok, Yucatán; this is the first troglobitic species of this family in the Yucatán Peninsula.

AMBLYPYGIDS

Most of the amblypygids remain to be studied, but of special interest is a blind species of the family Charontidae from the Zongolica, Veracruz, region. This is the first troglobite belonging to this family in México. The only other blind species of this family in North America is an undescribed species from Belize.

SPIDERS

Numerous new species of spider have been collected from caves in all regions. Of particular interest are two new species of the genus Leptoneta, one each from caves at Huautla and from the Purificación region. The most notable find, however, is of a blind species of Hahnia from Grutas del Palmito; this is the first blind species in the family Hahniidae. Also of interest has been the discovery of additional specimens of the blind tarantulas Spelopelma grieta Gertsch from caves at Huautla and Spelopelma stygia (Gertsch) from the Xilitla region.

OPILIONIDS

Collections both of surface harvestmen from entrance areas and of blind harvestmen from deep in caves in the Purificación area have included numerous new species. Of particular interest is a new genus of the family Phalangiidae (the harvestmen or daddy-long-legs) from several caves, new species of the genera Hoplobunus and Karos, and a second cavernicole species of the rare genus Ortholasma.

RICINULEIDS

A new species of ricinuleid of the genus Pseudocellus from a cave in Guerrero is one of the more highly cave-adapted species in the order. Additional localities for ricinuleids were recently found in caves in Yucatán and Quintana Roo (a new state record for the order).

COLLEMBOLA

New collections of springtails have included a new troglobitic species of the widespread genus Pseudosinella from Potrero Redondo; this species is the sole member of a species group very different from the other species of the genus. Also of note are new species of the genera Oncopodura and Neanura from Sistema Purificación. The latter genus has not previously included troglobitic species.

DIPLURA

A collection from Cueva de La Rosal in the Xilitla region includes what is possibly a member of the family Procampodeidae. This family is otherwise known only by two species, one in Italy and the other in California.

COCKROACHES

A new species of cockroach of the genus Aglaopteryx has been collected in Cueva del Jilguero in the Xilitla region. This genus includes several troglophiles in Chiapas but this is the first cave-inhabiting species outside Chiapas. Also of interest are specimens of the rare species Nesomylacris reddelli Fisk and Gurney from Cueva del Carrizal, Nuevo León, and Cueva de los Cuarteles, Tamaulipas. This species was previously known only from the Sierra de El Abra.

FISH

Steve Robertson has collected catfish of the genus Rhamdia belonging to an undescribed species from several caves in the Zongolica, Veracruz, region. This species is of interest in that the eyes range in size from near normal to essentially absent. The only other troglobitic Rhamdia is the recently described Rhamdia reddelli Miller from caves at Acatlán, Oaxaca. (See article in this issue on cave-dwelling catfish by Doyle Mosier.)

This brief summary of recent collections should indicate that we are still only beginning to understand the fauna of México. With few exceptions, all of this material has come from the better-studied parts of México and some of the more interesting specimens even from the very best studied caves in México. Every caver can help increase our knowledge of the fauna of Mexican caves by carrying a small bottle filled with 70% isopropyl or ethyl alcohol in his pocket whenever he goes caving. Specimens from one cave only should be placed in a single jar with a label written in pencil or India ink (never ballpoint). The label should give the name and location (including state) of the cave, the date of the collection, and the name of the collector and be placed inside the vial. These specimens can then be given to James Reddell, Peter Sprouse, or other Austin cavers. They can also be mailed to AMCS, P.O. Box 7672, Austin, Texas 78713; or to James Reddell, Texas Memorial Museum, 2400 Trinity, Austin, Texas 78705. The specimens will be sorted and mailed to the appropriate specialist for his identifications and in most cases returned to the Texas Memorial Museum to be placed in their Biospeleology Collection. The collector will be notified of the identifications and given an idea of their interest and value.

FAUNA ESPELEOLOGICA

Desde el último reporte bioespeleológico hecho por James Reddell en 1980, se han encontrado 84 nuevas especies en cuevas en el territorio mexicano. De las cuales 56 son troglóbios. Encontrando nuevas especies aun en áreas bien estudiadas.

1984 Dos Aguas Expedition

Mike Fischesser

In the summer of 1983 Paul Pinson, from Tampa, Florida, and I were sitting in my house in the mountains of western North Carolina discussing ideas for an expedition. We wanted to go to a remote place where no one had explored before. In this day and age that criteria is fairly difficult to meet. But from previous trips to México, I knew that there were still new caving areas to be explored. So I suggested to Paul that we call Peter Sprouse in Texas and see what he recommended.

Peter had mentioned in the NSS News that there were numerous regions to be checked out in México. Peter sent me a very informative letter describing three areas that had never been explored by cavers as far as he knew. We obtained the maps of each area and studied them to find the one we thought would have the best potential. We finally settled on an interesting plateau that was quite remote and was at an elevation of 2300 meters. The area was near a small logging town named Dos Aguas, in the state of Michoacán.

During February 1984, eight of us spent three weeks doing initial reconnaissance in the area. Our group consisted of Paul Pinson, Ray Rimmer, Frank McNutt, Mildred Neville, Opie Obert, Emily McCulley, Robbie Oates, and I. Our objectives were to find a large cave system that would require future trips to México, recon the plateau in general to determine the caving potential, and establish a solid foundation of friendship with all the local people to enable future groups to use the area. All of our objectives were met by the time we left.

TORRECILLAS

We established a base camp out in a beautiful field that was a caver's dream. All around us were small karst towers that kept reminding us each day that the area was rich in caves. A stream emerged from a nearby cave system, passed by our camp site and went underground again less than 200 meters away.

We spent a great deal of time getting to know people in the many scattered villages of the area. Everyone was very warm and friendly. Many gifts and gestures of friendship were exchanged during the three weeks. We made many friends among the local inhabitants and were even invited to a large wedding. The word we repeatedly received from people was that very few foreigners had ever visited their area, and definitely no one had ever come to explore their caves. This expedition was exactly what we were looking for. The local people were extremely helpful in taking us to caves. A big ceremony was always made of our visit to their homes. They would bring chairs and food out and wanted to hear all about what we had found or were hoping to find. We always told them we were not looking for gold or treasure but only for exploration, adventure, and scientific investigation. Paul spoke the best Spanish and would often serve as the interpreter.

We checked out over 30 potential leads during our stay at our first

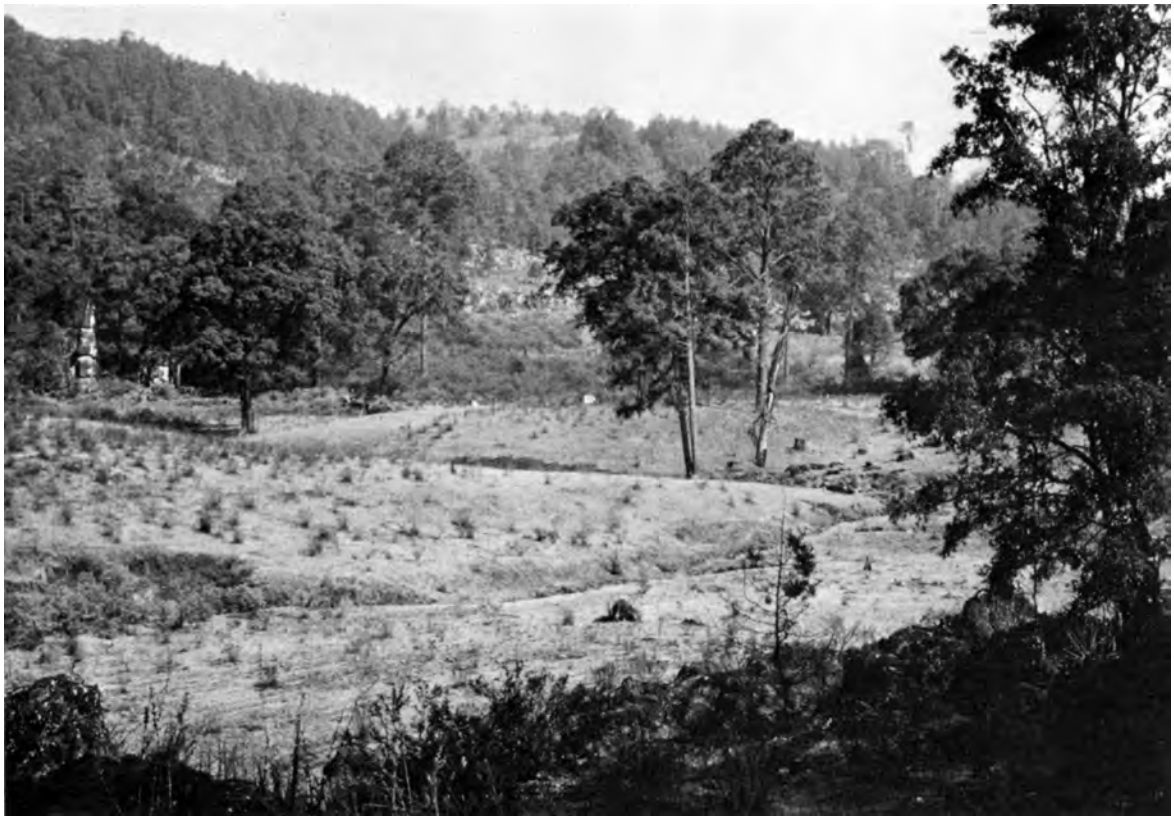
camp. Many beautiful and unusual horizontal caves were found. Several nice pits up to 40 meters deep were dropped. The deepest pit we found was one that we saw on the very first day as we were driving up the mountain toward Dos Aguas. It was a beautiful drop, with lush vegetation and large vines around the rim. It looked like a jungle scene from "Raiders of the Lost Ark." We drove on, expecting to find larger pits up on the plateau. There may be some, but we never found any larger ones during our stay. We decided to save the pit found on the first day until the end and do it on the way out. Its name is Resumidero de los Manguitos, and it turned out to be about 60 meters deep, with a tremendous belling out near the bottom.

Of the many small caves we checked out while in the first camp, the one with the emerging stream turned out to be the most interesting. The locals called it Torrecillas, and it was right by our camp. We discovered what appeared to be a burial chamber in the cave.

The whole time we were exploring out of the Torrecillas area, we kept wondering when we were going to find the key to the underground hydrology of the vast region we had been walking over for two weeks. Several exciting leads simply had not revealed the key to the puzzle. We finally moved our camp farther to the east, closer to Dos Aguas, but felt there was definitely a big system underneath us due to the many clues we had assembled in that area. We will continue the search in 1985.

DOS AGUAS

So we settled in the area south of Dos Aguas and began all over again talking to the locals about caves, and hiking the area checking sinkholes and taking notes. The day we moved camp,



Karst terrain in the Torrecillas area. (David McKenzie)

we located a spring that was in a large concrete box with a steel gate across the front. A large stream resurged from this spring. We were told it was the water supply for the town of Aguillas, which was roughly 20 kilometers away. We knew we had better not try and enter that system at that point, but dreamed about the cave that must carry all that water.

Within three days of our final departure we finally succeeded in discovering our "Big Project." We had been growing tired of hiking all over the countryside and not finding a giant Mexican cave, but Robbie and Frank kept us going. A man had casually mentioned to Robbie a cave with a large entrance farther on up the valley. We decided to go check it out and then hike several kilometers on back to camp.

When we got to the entrance we all began to get excited. It was approximately 30 meters by 40 meters and led down into an even larger entrance room. The cave didn't have a name, so we named it Cueva de Dos Aguas. Large passages took off in three different directions from the room. Two of them ended quickly. The third required a rope for a 7-meter free drop. It was decided that I would do the drop, run on down the passage for ten minutes and determine if it too was going to end, as the other leads had.

I came to a 10-meter drop and listened hard. Very faintly the roar of a large amount of water could be heard much deeper down. I went back and told the others that we would need to come back the next day, as we might well have found our cave. The next day we came back, armed with more rope and wetsuits. We descended the double-stage drop and walked down a sandy-floored passage and there was the stream! We didn't calculate the flow, but it was along the lines of a good-sized mountain stream. We turned downstream, and didn't get 10 meters before the water was chest deep. We put on wetsuits and continued. Over the next two days, in a total of three trips into the cave, we pushed upstream and downstream, and the cave is still going strong. In both directions the climbing, scrambling, and swimming is quite arduous and sporting.

From the Put-in, the large stream trends south to the First Sump Bypass, then back into the stream until one encounters the Turbine, which is the second sump. The Second Sump Bypass leads to a rimstone dam shaped like a question mark, hence the name Question Mark Junction. The lead to the left dies quickly, while right the passage leads to the Third Drop, 7 meters deep. Approximately 120 meters of challenging but fun stream-and-plunge pool passage is encountered leading up to the Third Sump. By going high just before a side stream roars in from the left, it is highly likely that the Third Bypass will allow us to go around the Third Sump. This is as far as we explored downstream. A blue bleach bottle was placed at the site of the possible bypass.

Generally the passages have been large in nature, probably in the range of 5 to 10 meters wide and 25 meters high. Upstream from the Put-In, the stream is quite different in character. The frequency of waterfalls and climbdowns is less, but the three major waterfall climbs are longer and trickier. After swimming, wading, and walking through Razor Canyon, the Knee Wracker Series, and the three waterfall climbs there is approximately 2 kilometers of easy walking passage that is very large, 3 to 7 meters wide and 25 meters high. Along the way, two major side streams add volume to the main stream. Neither side stream was explored, but initial poking shows them to be quite good leads themselves. A high bypass was found that would bypass the First Upstream Sump, and that is as far as we explored in 1984. We are very excited about the cave and its potential and will be going back in 1985 to focus on it as our primary objective.

The expedition members would like to thank Peter Sprouse for his help,

and encourage other cavers to contact him regarding other unexplored areas to check out in México.

TECHNIQUES

As a postscript to the expedition report, I would like to pass on the details of a new clothing system that I used this trip and found fantastic for Mexican caving. I wore a surgeon's scrubsuit as my outside layer of cave clothing. It was ideal for hiking to caves and for checking brushy, trailless country because it is lightweight, cool, and quite tough. It is made of a very durable blend of nylon, cotton, and stainless-steel fibers and is very fast-drying. In caves, I wore a long pair of lightweight polypropylene underwear and a lightweight polypro tee-shirt under the scrub pants and short sleeve shirt. This combination gave warmth, evaporation of sweat, and some padding. I wore basketball kneepads on the outside to protect the knees. The suit probably needs a layer of 8-ounce coated packcloth for the seat and knees. The cave we were in was not particularly rough on clothing, so another cave with lots of snaggy tight crawls and rough formations on the walls might be too hard on the scrubsuit. When it came time for the wetsuit, the scrubsuit went on right over it with no restrictions at all. The polypropylene pants and shirt could be packed away in a dry bag and put on later if long sections of dry passage reappeared, since they take up very little room. I was wearing an O'Neill wetsuit of one-eighth inch thickness, with long legs, short sleeves, and a good neck collar. When in and out of the water for 5 hours at a time, I began to get a tiny bit chilly, even when walking. So I put on a lightweight pile balaclava that I carry for emergencies, and it made a nice difference. I managed to reduce some of the significant heat loss from my head and neck. It dried out fast after swims and never made me feel too hot. It is a good item to have for fine tuning of the body's heat regulatory system.

I also used an Aqua Pak for my dry bag, inside my cave pack. This is a commercially sold river bag that has a double channel ziplock that is very effective. It never once leaked. It is fast and easy to get in and out of, and when filled with air, will help float you across a long swim.

In addition to this system, I was using a Roosa four-D-cell electric headlamp good for 50 hours of light, a Petzl Ecrin helmet, jungle boots, and neoprene socks. Most of the equipment was multi-purpose and performed perfectly. The reason I even add this to the report is because it was absolutely the best set-up of equipment and clothing I have ever had underground. I could crawl, climb, and swim with total freedom of movement and range of motion. It was very comfortable. I felt almost totally unemcumbered as we explored a variety of demanding underground passages.

DOS AGUAS

Un viaje de reconocimiento al maciso calcareo de Dos Aguas, Michoacán, fue realizado durante el mes de febrero de 1984. Más de treinta cuevas y sótanos fueron explorados, y unos de ellos fueron de más de 40 metros de profundidad. Lo más profundo, resumidero de los Manguitos, tuvo 60 metros de profundidad. Tres días antes de finalizar la expedición, una gran caverna fue encontrada, a la cual le llamaron Cueva de Dos Aguas, y fue parcialmente explorada por dos tiros río abajo. Una expedición se ha programado para 1985 en la cual dicha caverna será explorada y topografiada mas ampliamente.

Sumidero San Bernardo: A History

Steve Knutson

The San Bernardo Valley lies in the northeast corner of the state of Puebla, northeast of México, D.F. The nearest large town is Zacapoaxtla, which is on the paved highway from Puebla to Cuetzalan, but the valley is dominated by the community of Xochitlán.

By casual observation the valley appears as a normal stream valley, V-shaped and of relatively great relief. But as the main streambed nears its confluence with the large canyon of the Río Ateno/Zempoala (the Zempoala begins where the Ateno and Mapilco join), it suddenly descends into a sink, enters a tall opening, and almost immediately plunges over a 10-meter drop.

This sumidero was first entered by William Elliott, Bob Harr, Roy Jameson, David McKenzie, and James Reddell in December 1973 on a biological collecting expedition. They descended the first drop into a towering canyon passage that led to a second short drop, which they declined to do. They called the cave Sumidero de Cuetzal Temanes (see AMCS Newsletter Vol. 4, No. 5). However, when our group asked about the name of the cave, the local people called it Sumidero San Bernardo.

In January 1980 Maureen Cavanaugh, Bill Liebman, and I journeyed up the Río Zempoala in search of fresh diversions and decided to check out the obvious and tantalizing sumidero that was so close to the road. On the 18th we entered the cave and proceeded down several short drops for about 200 meters. We came to a drop into a broad, silent lake, framed in a beautiful phreatic span. We found the passage to be quite cathedral-like, with walls virtually unbroken by bedding planes and rising smoothly out of sight. All boulders and surfaces were rounded and smooth, and it was obvious that heavy water flow had created this fine cave. But the water was absent now. Upstream we discovered why. The main San Bernardo valley's stream had been pirated at three or more points before entering the cave. Now it most likely enters the sumidero only during hurricane rains.

LOWER ENTRANCE

Enthused by the grand main passage of the sumidero and the airflow that promised a lower entrance, we reentered the cave the following day. Alejandro Villagomez joined us, and we mapped about 200 meters from the lake, past a few more drops and swims to the top of a 5-meter pitch. Natural anchors for rigging the drops proved scarce, so we were forced to use pitons and bolts. A few days later, on 23 January, Alejandro departed and Ernie Garza joined us. We got more short ropes together and pushed on past more huge, beautifully sculptured grind holes to a lower entrance. The sun was just setting, and there was just enough light left to see that the cave had opened out onto the face of a cliff with a sheer drop to the Río Ateno far below. It was quickly becoming too dark to find our way up the cliffs above, so we went back through the cave, up the ten drops of no more than 15 meters each, and through the seven swims, all in only 600 meters of very spiritual passage.

LEFT HAND LEADS

There was still the question of two left-hand leads with airflow between the first and second drops. In the winter of 1980-81 Bill Liebman led a group, including Frank Binney, Barb Cannon, Mark Minton, Norm Pace, Rick

SUMIDERO SAN BERNARDO

XOCHITLAN, PUEBLA, MEXICO

COMPASS, CLINOMETER AND TAPE SURVEY

TOTAL TRAVERSE, 3930.65 METERS

TOTAL DEPTH, 214.82 METERS

RIO ATENO

LOWER ENTRANCE

199.62

T-54 TO LOWER ENTRANCE, 2-5-81
B. BOCKSTIEGEL, J. BURKIG, S. KNUTSON
T. RASMUSSEN. 729.85 METERS

170.55

T-54 120.71

T-0 TO T-54, 12-31-80, 1-1-81
B. LIEBMAN, M. MINTON, N. PAGE
R. RIGG, L. WILK. 820.82 METERS

FLOWSTONE FALLS PASSAGE
S. KNUTSON, S. LINN,
J. PISAROWICZ, M. STANDIFER
8-2-84 328.9 METERS

112.83

MAGNETIC N

87.7

CANYON ENTRANCE

611

MAIN PASSAGE 1-18,19,23-80
M. CAVANAUGH, S. KNUTSON,
B. LIEBMAN, A. VILLAGOMEZ.
644.97 METERS

EASTERN TRIBUTARY 2-25-84
S. KNUTSON, J. PISAROWICZ
M. STANDIFER 525.6 METERS

15.2

LAGO VENTANA

LAGO DE SILENCIO

GYPSUM CANYON 1-1-81
F. BINNEY, B. CANNON, J.
RODEMAKER. 518.75 METERS

GYPSUM CANYON

86.94

39.64

MAIN PASSAGE TO T-0, 12-29,31-80
B. LIEBMAN, R. RIGG, J. RODEMAKER,
K. WALDEN. 361.76 METERS

T-0

SUMIDERO ENTRANCE

0 100 METERS

Rigg, Jim Rodemaker, Kyle Walden, and Lisa Wilk, to push these leads. They found that both passages quickly joined to form a slowly descending stream passage that obviously had pirated the stream from the main passage. It had subsequently been pirated itself, and now carried little water. They broke up into teams, and from 29 December to 1 January they mapped 1700 meters, past nine short drops to a tenth drop. Knowing that I was coming late to push the same lead, these kind souls stopped at that point.

ANOTHER THROUGH TRIP

Later that month, Bill Bockstiegel, Jon Burkig, Chris Partridge, Todd Rasmussen, and I arrived. On 2 February Burkig and I entered with enough rope to rig the already explored portion of the cave, plus a little extra. We found a way to climb down the tenth drop, then rigged four more drops with all the remaining rope. Pushing on, we encountered only climbable drops before reaching a lower entrance and exiting. We found a route up the canyon side in the dark.

Three days later Bockstiegel and Rasmussen joined us in mapping from the lower entrance to the tenth drop. This yielded 600 meters, making the left-hand through-trip some 1800 meters long with thirteen short rope drops and a few short swims. On that trip we also mapped a large side-lead near the lower entrance. It went a couple of hundred meters to a flowstone cascade. We later went back and climbed this and a second cascade, only to encounter a third just beyond.

FLOWSTONE BLOCKAGE

The exploration of nearby Sumidero Santa Elena diverted attention from San Bernardo for a time, but it also demonstrated the potential importance of the flowstone-cascade passage, since that passage proved to be headed toward and not far from the Lost World area of Santa Elena. In February 1984 Scott Linn, Jim Pisarowicz, Mary Standifer, and I entered to attack the third cascade. Three bolts, a little aid, and some protection got us up, only to find a sheer 10-meter cascade not far ahead. I aided up it with bolts and pitons and saw a huge room above. It narrowed at one end to a passage that flowstone had gradually filled until it was completely blocked. At the blockage was a small spring, still depositing flowstone. The presence of huge, dry gours as much as 3 meters deep made the traverse through the passage interesting. The flowstone blockage was short of Santa Elena by only about 100 meters. The passage must have joined the two caves at one time--a great series of interrelated piracies.

On a later day we mapped a tributary of the main San Bernardo passage, bringing the total for the cave to 3931 meters. The depth of the cave is now 215 meters. A few apparent leads remain but these do not appear to be major.

SUMIDERO SAN BERNARDO

El sumidero San Bernardo se localiza en el noreste del estado de Puebla, en las cercanías del poblado de Zacapoaxtla. La primera exploración de la cueva fue durante una expedición biológica en 1973. Fue topografiado en 1980-81 y 1984. A 600 metros de la entrada el pasaje principal conectó a una entrada inferior localizada en un acantilado. Un ramal lateral fue explorado hasta 1800 metros, conectando a una otra entrada inferior. Cerca de esta entrada, otra pasaje condujó a unas cascadas de travertina. El cual terminó a solo 100 metros de distancia del sumidero Santa Elena.

ZOQUITLAN 83

Patrick Bestgen

The 1982 Belgian expedition to México was a turning point for the work of Belgian cavers in México. A nearly virgin mountain range was explored, and the presence of two important caves nearby, Sótano del Río Coyomeapan (-316) and Sumidero del Río Xocotlat (-308), indicated some interesting possibilities.

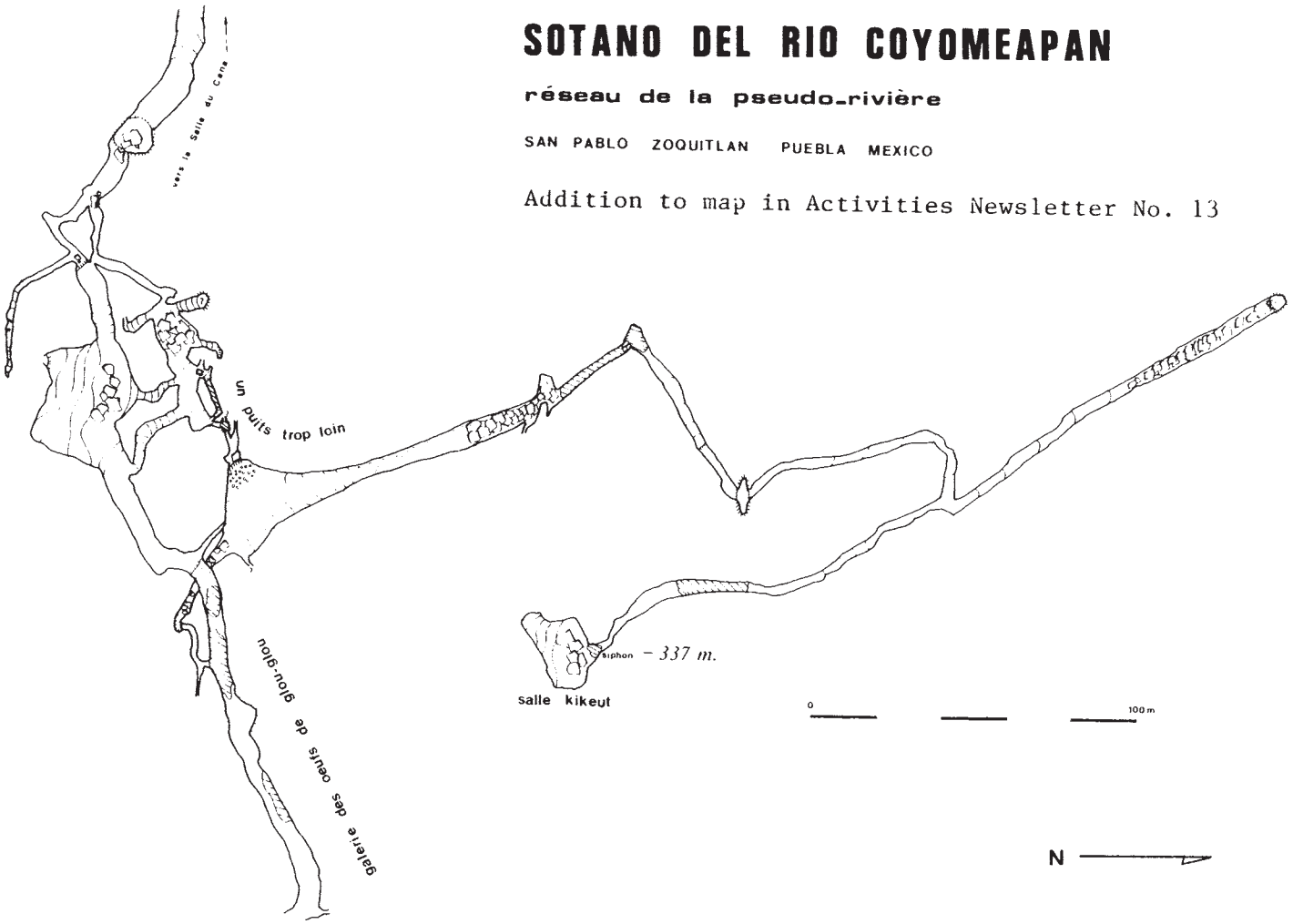
With this in mind, we left Europe in March 1983, with our equipment. As in previous years, light equipment was adopted. In México, the alpine technique is most efficient and offers great mobility. Guy Meauxsoone met us in Austin, and two days later we were headed for the Sierra Nahuatl, southeast of Tehuacán.

It may have been a light expedition, but a minimum is necessary all the same. Certainly we would be wrong to deprive ourselves of any luxury in view of the massive devaluation of the Mexican peso which made life such a terribly good buy. Thus, Phillipe and I were wedged between cases of provisions on the road up to Zoquitlán, Puebla.

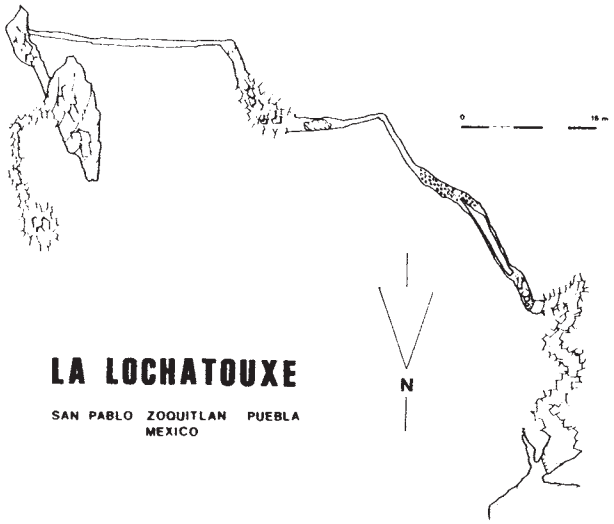
SOTANO DEL RIO COYOMEAPAN

Our first camp was located between Cerro Zoquitlán and Cerro Tzinzintepec, one day's walk from Tierra Caliente, the presumed area of resurgence. We immediately set ourselves on our first objective: continuing the exploration of Sótano del Río Coyomeapan. Lianas hung into the 82-meter entrance pit we were descending. Luckily it was dry, but that only made the wetsuits we were wearing very hot, like saunas that hugged our bemuscled and bronzed bodies. A swim brought us

View of the entrance to La Borrachón.

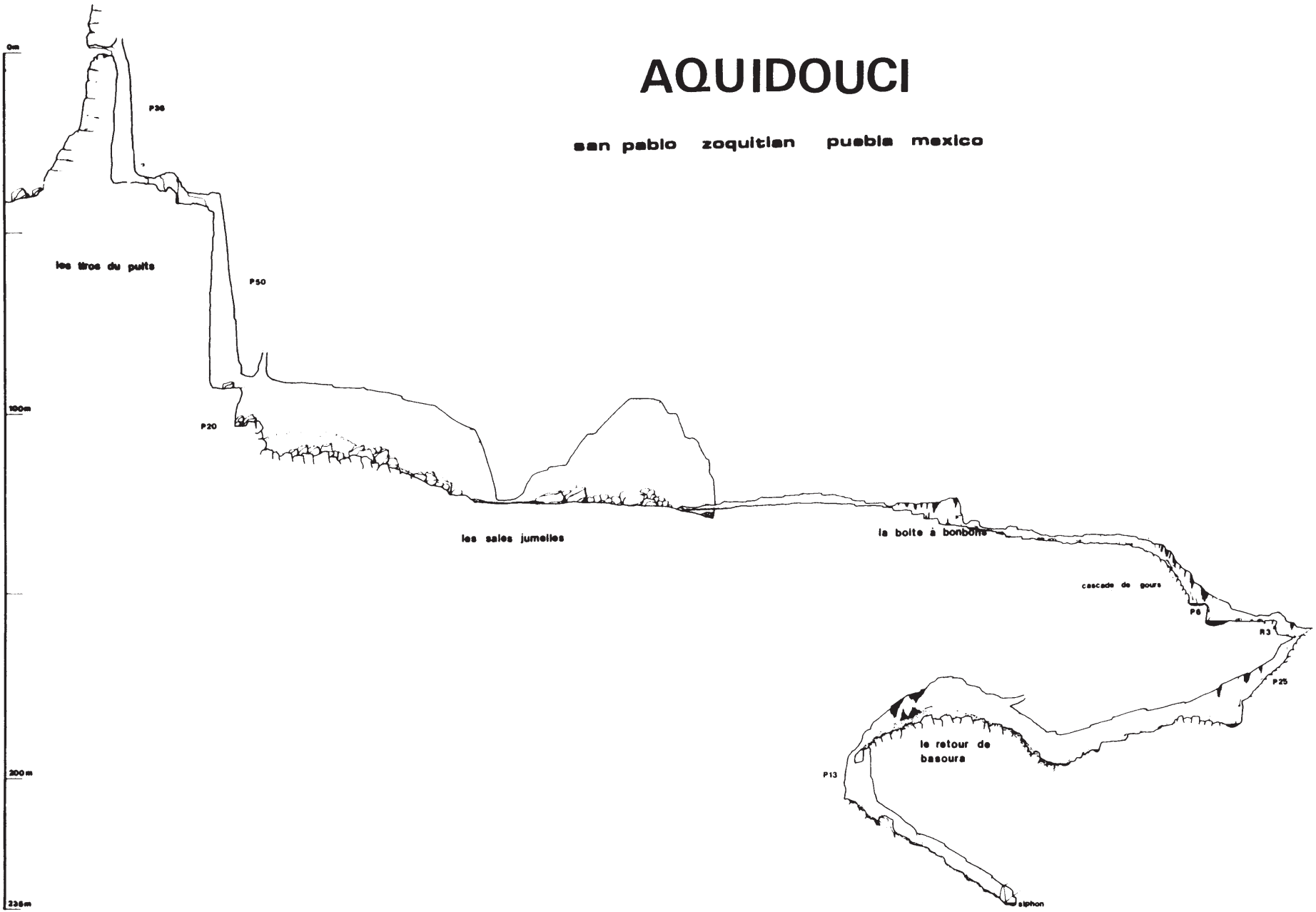


to a new gallery of blue marble polished by floodwaters, fairy-like and overwhelming. Although this gallery was deserted by the water, its evidence was all around. I scarcely dared to imagine the miserable debris we'd be if a flood overtook us. We retreated, having agreed to wait for the other members of the expedition to arrive before launching a decisive assault into the kingdom of Oztotl. The ascent of the entrance pit will stay engraved in my memory for a long time. The fading light of day and the cries of the parrots nesting in the walls gave the place a magical look, accentuated by the verdant dome of vegetation arching over the entrance. We emerged as if onto the surface of another planet.



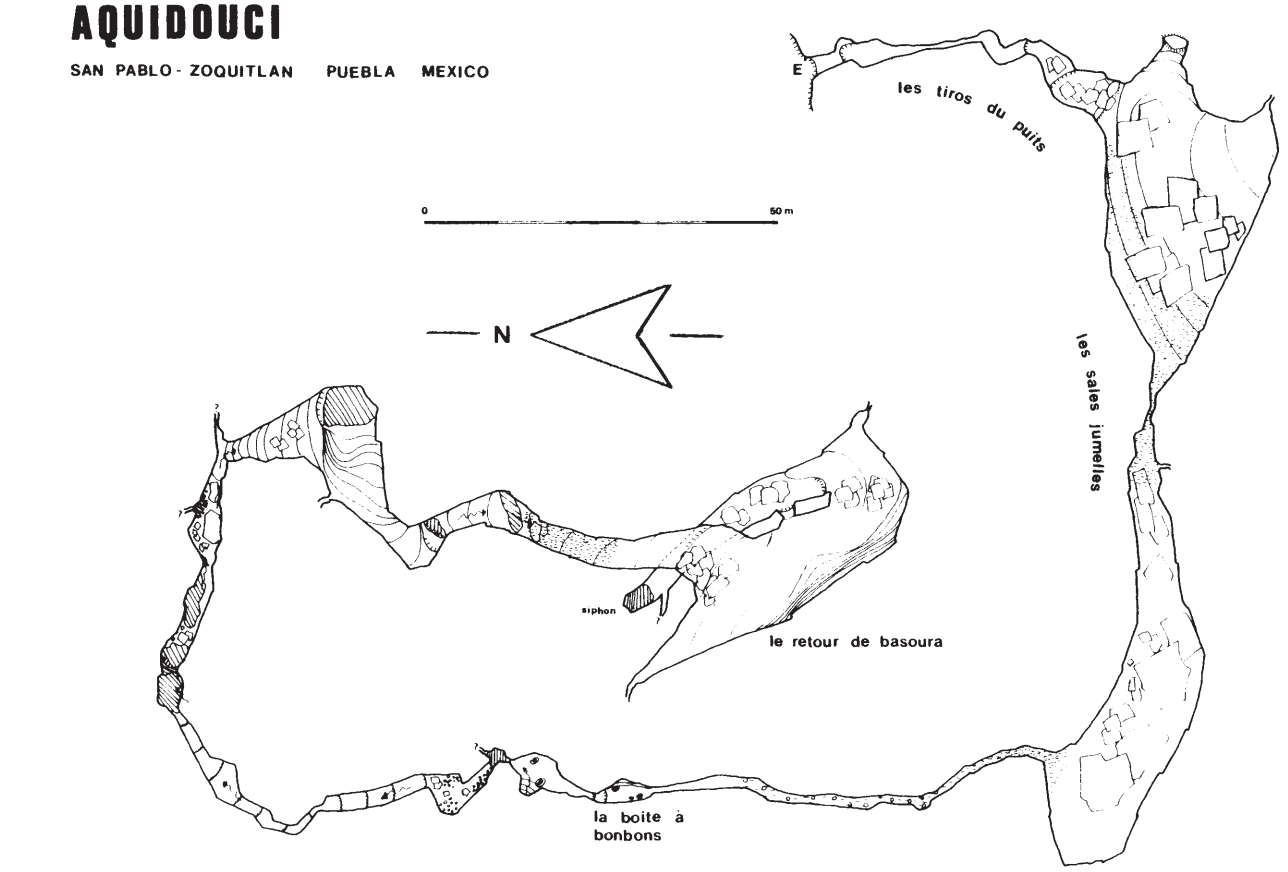
AQUIDOUCI

san pablo zoquitlan puebla mexico



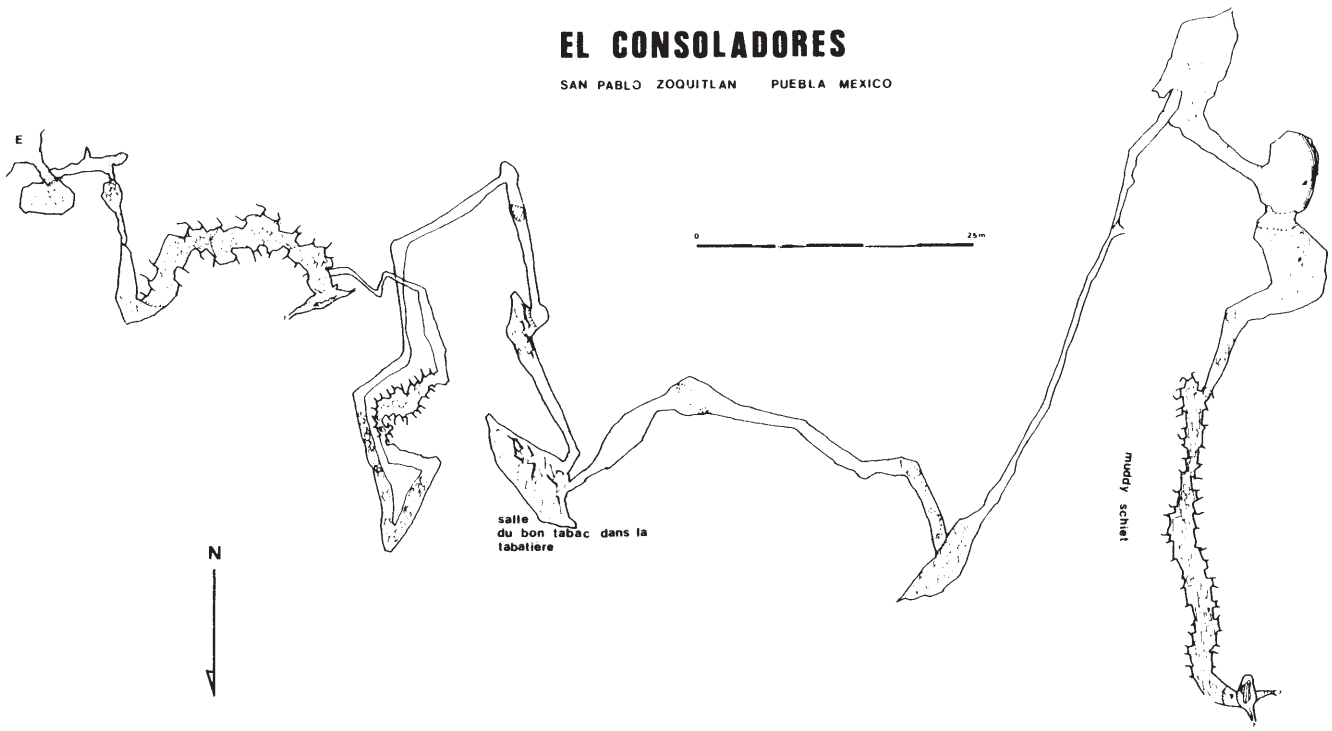
AQUIDOUCI

SAN PABLO - ZOQUITLAN PUEBLA MEXICO



EL CONSOLADORES

SAN PABLO ZOQUITLAN PUEBLA MEXICO



AQUIDOUCI

A moonmilk-covered slope gives access to a 40-meter pit, followed immediately by a 50-meter pit. This ends in a large room, followed by one of equal size. A new series of lower passages led to a pretty room, filled with concretions like a candy box. We then hit the active part of the system, a gallery of moderate size carrying more water. This friendly gallery ended in a 25-meter pit, and the water we were following disappeared between breakdown blocks, reemerging a few dozen meters later. A final 13-meter drop leads to a sump at -235 meters, which is fed by a water inlet, possibly from the big room above.

TABOOS

While Aquidouci was being explored, Etienne, Dave and I began the exploration of El Consolador, located near Sumidero del Río Xocotlat. We explored another cave, Lochatouxe, purely out of curiosity.

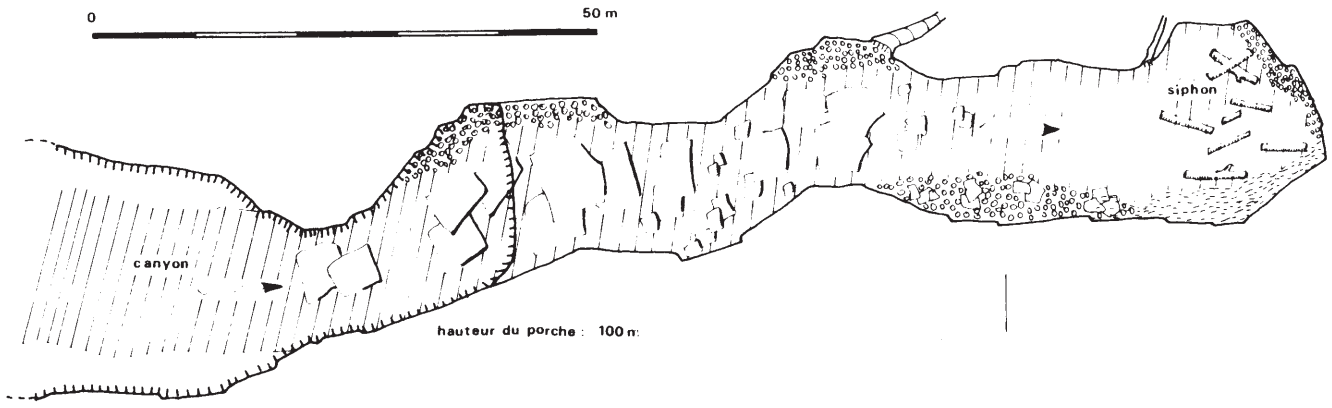
We returned then to the exploration of Sótano del Río Coyomeapan. We struggled with Oztotl for three days, and gained one kilometer of new passages. Further searches on the surface produced little success, although the local Indians mentioned the existance of big caves near Tierra Caliente.

Getting directions in the village of Ocopepila, we located Quipia Xitlama (Cueva de Xocotlat), by the Río San Francisco Xitlama. In 1978 it was visited by American cavers who were ejected from the area by the local inhabitants for reasons that remain obscure today. Maybe they had violated taboos or treasures, or offended the proud people of the sierras. We spent two days in Quipia Xitlama, splashing from one well to another.

Guy and I made a reconnaissance to the village Oztopulco, where we found a river canyon 200 meters deep.

CUEVA DE ALCOMONGA

ALCOMONGA ACHALPA PUEBLA MEXICO



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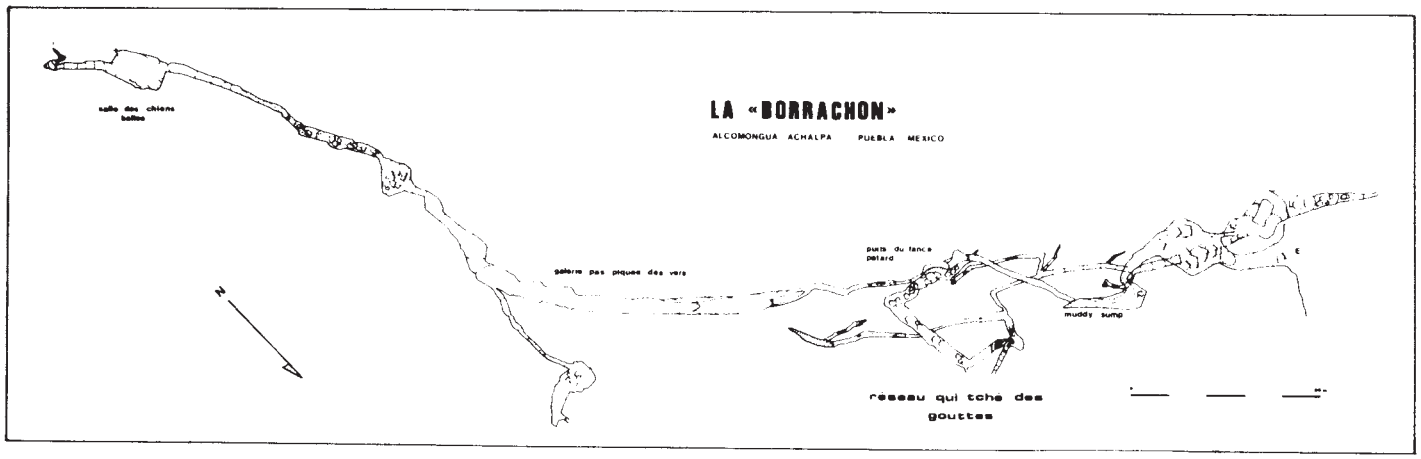


We befriended the locals over beer, and they took us to a cave called Xantilco. It had a 40-meter-high entrance into which daylight penetrated for 500 meters. We didn't go far in it, since the day's hike had been so long. Before leaving Oztopulco, we located several other caves a few hours walk away.

ALCOMONGA

The previous year the locals had told us that water going underground at Alcomonga came out at Tierra Caliente. We made it to Tierra Caliente despite bad weather and car trouble, and set up camp at the Loma Bonita schoolyard. Local officials confronted us and demanded a fee of 54,000 pesos. Borrachos and pistoleros were a problem.

At Alcomonga, we explored the large cave below the village, Cueva de Alcomonga. It goes for 100 meters to a sump filled with huge logs. (This may be the same as a cave of the same description that was explored by Don Broussard and John Fish in 1969 - ed.) In another dolina in the area we discovered La Borrachon. The 8-meter entrance drop leads to a small room and the Muddy Sump. A climb into a fossil gallery led to the Puits du Lance Pétard. The cave then changed character, forming a gallery of respectable proportions. We followed an ascending gallery to an unclimbable dome, and other passages were explored and chimneys scaled, with no more leads found. Back at the fossil gallery, we looked for a continuation beyond the Puits du Lance Pétard. After a few hundred meters the passage began to get steeper, and it ended in the most decorated section, the Salle des Cheins Balises. A small amount of water led us into new muddy passage, the last one explored. Lack of time prevented a thorough exploration.

Condensed from Speleo Flash No. 140

ZOQUITLAN 83

Espeleólogos Belgas del GSAB han explorado cierto número de cavernas nuevas en el área de Zoquitlán, Puebla. Aquidouci consiste de una serie de tiros y galerías terminando en un sifón a 235 metros. Cueva de Alcomonga tiene un sifón lleno de troncos. Otras cuevas también fueron exploradas incluyendo Xantilco, en donde la luz de la entrada brilla hasta los 500 metros dentro de la galería.

Caving Near
Plaza de Gallos, Guerrero

Ramon Espinasa Pereña

The Plaza de Gallos area in the state of Guererro first came to our attention when we read the article "Unstudied Karst Areas of México" in AMCS Activities Newsletter No. 11. At that time, my father, my brother and I were just beginning our interest in caves. This area was accessible by car and could be visited in a day from México City. It was also near Cacahuamilpa, where we had made our first ventures into caves. Geologically it did not look as promising as the nearby Tlamacazapa area, but it also was not as remote.

On 26 December 1981, the three of us made our first visit to the area. Upon arriving at the village of Plaza de Gallos, we met Felix Ortiz, a young man who answered our questions about caves by saying there were only two, the biggest of them being about two hours walk away. We immediately set out for the nearest one, Cueva de la Joya. An arroyo entered the cave and it looked very promising. We explored it down 200 meters of walking passage and a 20-meter long crawl, where it ended. It had ended so fast! We had hoped for a record-breaking cave.

We then set out on foot for the village of San Miguel. The trail wound among oaks full of flowering bromeliads. It was exactly two hours to our objective, and we passed several dolinas along the way. The Gruta de San Miguel, as it is called, turned out to be great. Its immense entrance chamber was bigger than anything I had ever seen. The afternoon sun lit up the farthest reaches of it. It had huge stalagmites covered with ferns, and a flat area at the bottom was big enough for the village people to have dances on. A small arroyo crossed it and dumped into a pit on the far side. I mumbled "We've done it" and started thinking of big pits, galleries, and chambers, and of a cave longer and deeper than anything in the world.

We nearly ran to the pit, which was climbable, and found that it narrowed down to a crawl. I entered and found that it ended in mud--no go.

SOTANOS

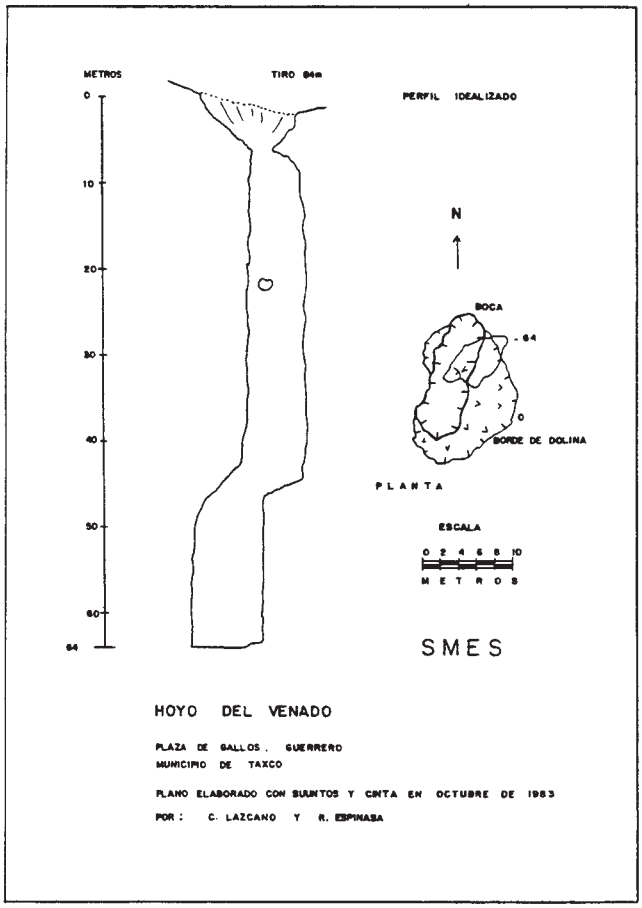
Nearly a year later, on 25 December 1982, we returned. When we arrived at Plaza de Gallos, we met Don Braulio, whom we asked about caves. Only La Joya and San Miguel, he said. Then we asked him for pits, sótanos, or any type of holes in the area. He proceeded to show us eight pits and two sumideros, one of which was explored 30 meters to its end, and he told us of many others. Among those he showed us was Hoyo del Venado, situated in a small dolina 2 meters off the trail to Cueva de la Joya and El Hoyito, near Zopantle.

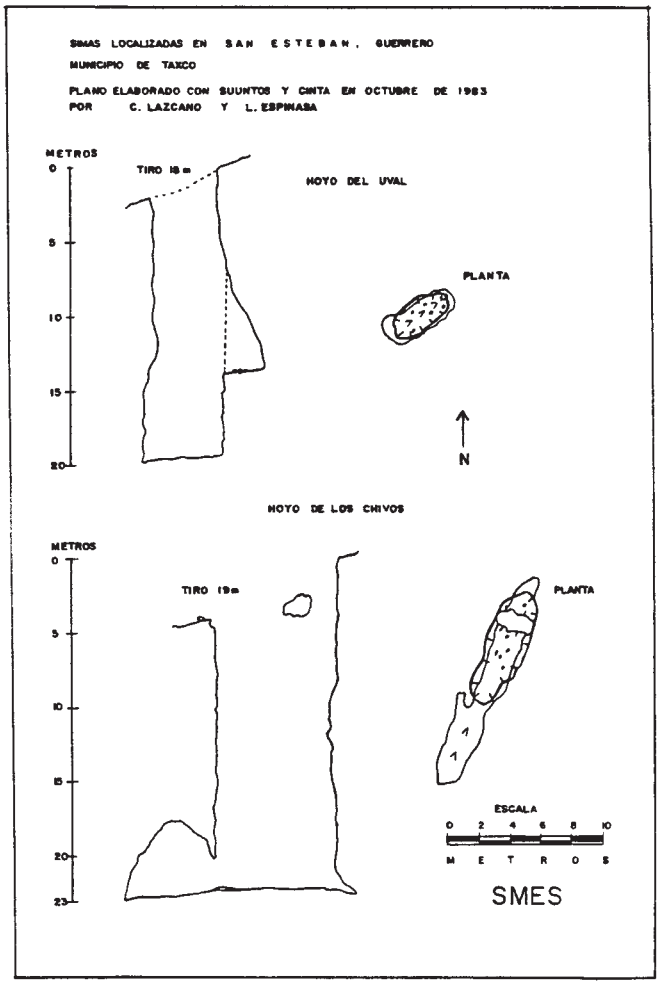
We had planned a trip to Zongolica on 12 February 1983, but snow had closed the road to Puebla. So we changed plans and went to Plaza de Gallos. In Zopantle we met Bernardino Velazquez, who showed us the three Sótanos de la Loma, one of which blew air. We also checked every dolina between there and Hoyo del Venado, and found two short resumideros, less than 20 meters long. I descended Hoyo del Venado on a 30 meter rope. I quickly found myself at the end of the rope, with maybe another 30 meters of pit below me.

On 7 May we convinced a SMES caver, Victor Granados, to come with us. We descended Hoyo del Venado, which ended at a flat floor at -64 meters. We also explored Hoyo del Candelero,

15 meters deep, and Cueva Roja, a 33-meter pit with walls of red mud. Victor found a lead in Cueva Roja by climbing up a very tight fissure, which connected to an upper gallery that followed the dip of the strata and ended some 50 meters farther on in a very tight crawl.

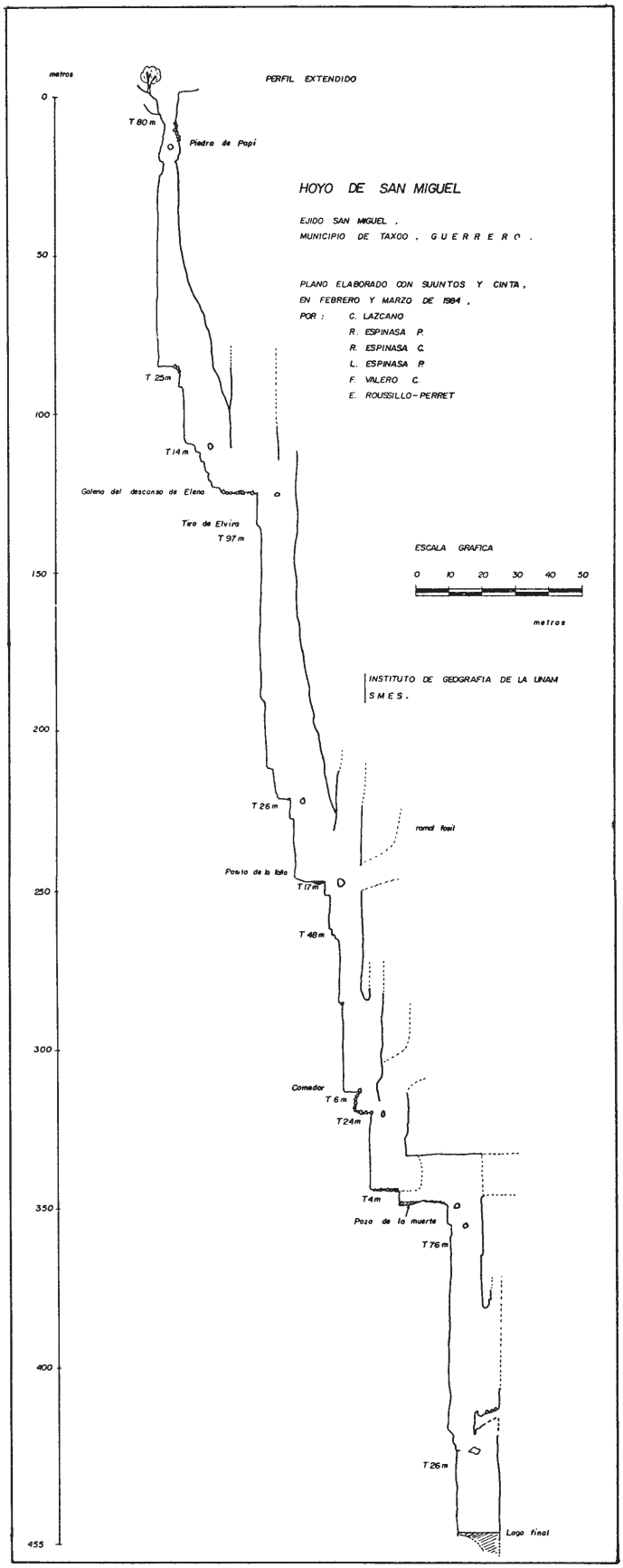
After all this lead-checking and exploring, we decided to stay in the area for a few days and map some of the more significant caves. From 29 October to 2 November 1983 my brother Luis, Carlos Lazcano, Elena Rousillo-Perret, and I camped outside Don Braulio's house. On the first day we found a resurgence near the village of Atzala in the Cañon Embarcadero. A beautiful blue river flowed from a fissure and cascaded down several flowstone gours. A resurgence cave a little higher up was explored to a sump, which is said to be completely dry in Pascua (Easter). We also mapped Cueva





de la Joya, and explored and mapped some of the pits shown to us previously by Don Braulio. We also visited Ixcateopan, the largest village in the vicinity, where the remains of Cuautemoc are said to rest.

The next day we mapped two sumideros, and descended two pits, Uval and Chivos, near San Esteban. Near Zopantle, we mapped Cueva de los Llanitos and explored and mapped down five drops in El Hoyito, a very promising cave that was not bottomed. On our last caving day, we visited San Miguel. We were shown a cave, which Carlos and Elena mapped, while Luis and I were shown a deep pit, Hoyo de San Miguel, and two others nearby. Hoyo de San Miguel swallowed an arroyo in the rainy season. In the afternoon we started mapping in Gruta de San Miguel, but quit after a few stations.



On the way back to México we stopped at Cacahuamilpa so Elena could see the cave, since she had only recently arrived from France.

On 29 January 1984, my father, Luis, Carlos, Elena, and a friend of mine, Paco Valero, returned to San Miguel to explore the pits shown to us the previous visit. We divided into two groups; Carlos, Elena, and Luis went to the two pits near the school, and the rest of us went to Hoyo de San Miguel.

BRUSH WITH DEATH

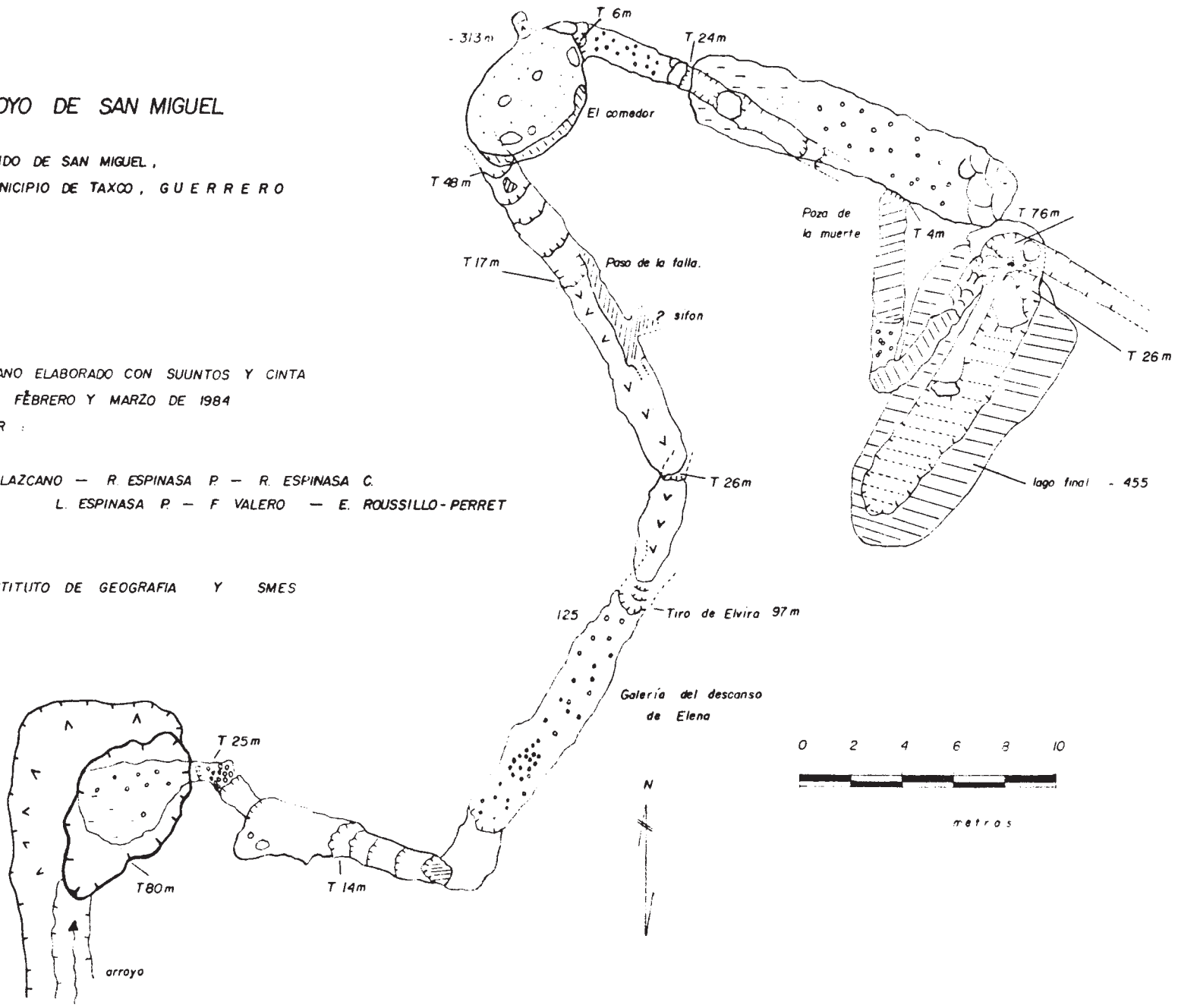
While placing the rope in position at San Miguel, my father slipped in the steep entrance dolina and fell into the pit. Miraculously he managed to grab the rope with his right hand. I also grabbed the rope, which wasn't tied. He stopped his fall and held onto a wedged rock, answering my cries. He tied into the rope and was able to climb out, and I hugged him, crying. A miracle had saved him. We learned never to work near a drop while untied, and not to trust one's own experience as a guarantee of safety (my father had more than 30 years of mountaineering).

Very carefully we went on with the exploration. We went down three drops, the entrance pitch of 80 meters and then ones 25 and 15 meters deep. These took us to a short gallery and a fourth very deep drop. Rocks dropped free for four seconds, then bounced for four or five more. We had run out of rope, so we exited. The others had bottomed their pits, 50 and 60 meters deep.

Our group returned to Hoyo de San Miguel on 25 February. Carlos, Elena, and I entered to rig, and the others followed a couple of hours later. The Tiro de Elvira proved to be very deep, 97 meters. This disappointed Elena and Paco, who waited on top. The other four of us went down three more pits to a depth of 310 meters, where we stopped at the lip of another pit. It was 8 p.m., and we decided to have a snack, hence the name Salón del Comedor. We were in the deepest cave in Guerrero, and it was still going and

HOYO DE SAN MIGUEL

EJIDO DE SAN MIGUEL,
MUNICIPIO DE TAXCO, G U E R R E R O



PLANO ELABORADO CON SUUNTOS Y CINTA
EN FEBRERO Y MARZO DE 1984
POR :

C. LAZCANO — R. ESPINASA P. — R. ESPINASA C.
L. ESPINASA P. — F. VALERO — E. ROUSSILLO-PERRET

INSTITUTO DE GEOGRAFIA Y SMES

very promising. We left the cave rigged and exited at 3 a.m. On the way back to México we stopped in Huajintlán to eat a can of abalones that Carlos took out of his bag to celebrate.

TO THE SUMP

A week later, on 3 March we entered the cave at 11 a.m. Less than an hour later, we were at the end of exploration. Paco and Elena started out after reaching El Comedor. We went down two more pits to a small chamber, which was followed by a short drop into a deep pool. It was my turn to go down first, so I gathered my courage and went down. I found that I could climb the walls to avoid the water, and, after some tense moments, I was at the other side of the pool. Carlos descended, and I pulled him over to avoid the water. My father and Luis, who came in later, descended directly into the water in true "sin miedo de la muerte" fashion, which gave rise to the name Pool of Death.

After a few meters of gallery, which contained the first flowstone in the cave, we came to another deep pit. Carlos went first and divided the drop into three sections by retying the rope to some rock protrusions. We were using 9 millimeter PMI, and it looked very thin in this deep pit. The pit was 76 meters deep and had what looked like a parallel pit off to one side. Immediately (we were growing accustomed to this!) we came to the lip of another pit. Rocks we threw in fell into water, but by that time I didn't care if I had to swim.

I came to the bottom of the drop 26 meters down. I was able to get off the rope on a little beach. I looked around for a continuation, but all of the walls entered the pool. It was a sump. Disappointed, I didn't even swim across to see if it could be dived. Carlos and I surveyed out while my brother and father derigged.

We were awakened the next morning by Don Patrocinio Bautista, the owner of the pit, who had come to bring us coffee. Before leaving the area, we met Sr. Vidal Bautista and Sr. Santos Bautista, comissary and second comissary of the ejido, who wanted to know the intentions of our work. We explained our project and gave them a drawing of the pit, and they were satisfied. They even arranged for some burros to carry our equipment to the car.

Hoyo de San Miguel is 455 meters deep, the deepest cave in Guerrero. It is a completely vertical cave, with practically no horizontal extent. I am sure there is much more to be explored in the Plaza de Gallos area, and we are already making plans to return.

PLAZA DE GALLOS

Se da la historia de las exploraciones en el área de Plaza de Gallos, Guerrero. A la fecha se han explorado 20 cavernas, siendo la mas importante el Hoyo de San Miguel, con 455 meters de profundidad.

Book Reviews

Sociedad Mexicana de Exploraciones Subterráneas, Boletín No. 2 -
Carlos Lazcano Sahagún, editor. July 1983, 45 pages. México, D.F.

The SMES has produced another high-quality cave report with this edition. Whereas the first issue dealt with only one area, La Florida, this one covers four.

Nineteen caves are described from the Tilaco, Querétaro area, including 649-meter-deep Sótano de Tilaco. Other deep caves described are Sótano de la Virgen, -352 meters, and Sótano de Otates, -276 meters.

To the southwest, sixteen new pits are decribed from near San Joaquín. In May 1981, the SMES searched the area near Jacala, Hidalgo, locating twenty-six pits, eleven of which they explored. Maps of nine of them appear in this issue.

The last area covered is that of Atoyac, Veracruz. Maps and descriptions are presented for the famous Gruta de Atoyac and the short but impressive Gruta de la Pila 6.

Reviews of the cave fauna of these regions are provided by José Palacios and María Magdalena Garcia Rendón L. Some new species are indicated.

SMES No. 2 is quite similar to the first issue, indicating good continuity and promise for a long range series. Again we are treated to a color cover, but apparently cost considerations forced the use of a lesser grade paper for the text. The thrust of the work is basically cave descriptions; more space devoted to details of exploration would make it more readable. A number of minor faults can be found: a rather large number of typographical errors indicate a lack of proofing, and the title is missing from the map of Gruta de Atoyac.

The SMES Boletín series is in the forefront of Mexican speleological publications, and it is certainly hoped that it will continue for a good while to come. The SMES, being a young group, has thus far kept pretty well caught up on publishing its findings in a professional, easily read form.

Draco No. 3
José Montiel Castro. November, 1983, 34 pages. México, D.F.

In this third issue of Draco, a significant portion is again devoted to techniques. First aid, vertical rigging, and lighting are addressed, and more information about cave accidents is presented, including an article about the 1980 Polish accident in Huautla. Notes on early activities by Mexican cavers are continued, and the final segments of the map of La Joya, Guerrero, appear here.

Various cave maps are included in this issue, most of them without accompanying descriptions. A large pit called La Hoyanca, near Calpulalpan, Tlaxcala, is shown to be 201 meters in total depth. It is not clear how deep the drop is. This pit should not be confused with the similar El Hoyanco in Morelos. Yet another map of Grutas de Tolaltongo is presented, this one a sketch. A sketch is included for Mina de Toscano, near Jamay, Jalisco.

The printing on this issue is improved, although it is still apparent that it is printed on a home press. Included is the third in a series of hand-colored geology maps, this one showing limestone areas north of México, D.F. The black and white cover printing is good.

The Draco series, while limited in scope, shows good continuity, and we will likely be seeing a good many more issues. But it seems to be (as does the SMES series) largely a one man show, and its long term survival may depend on more diversified participation.

Peter S. Sprouse

Note: The above publications are available from AMCS, P.O. Box 7672, Austin, Texas 78713. Write for a price list.