

October 1975

## AMCS Activities Letter, No. 3, October 1975

William Russell

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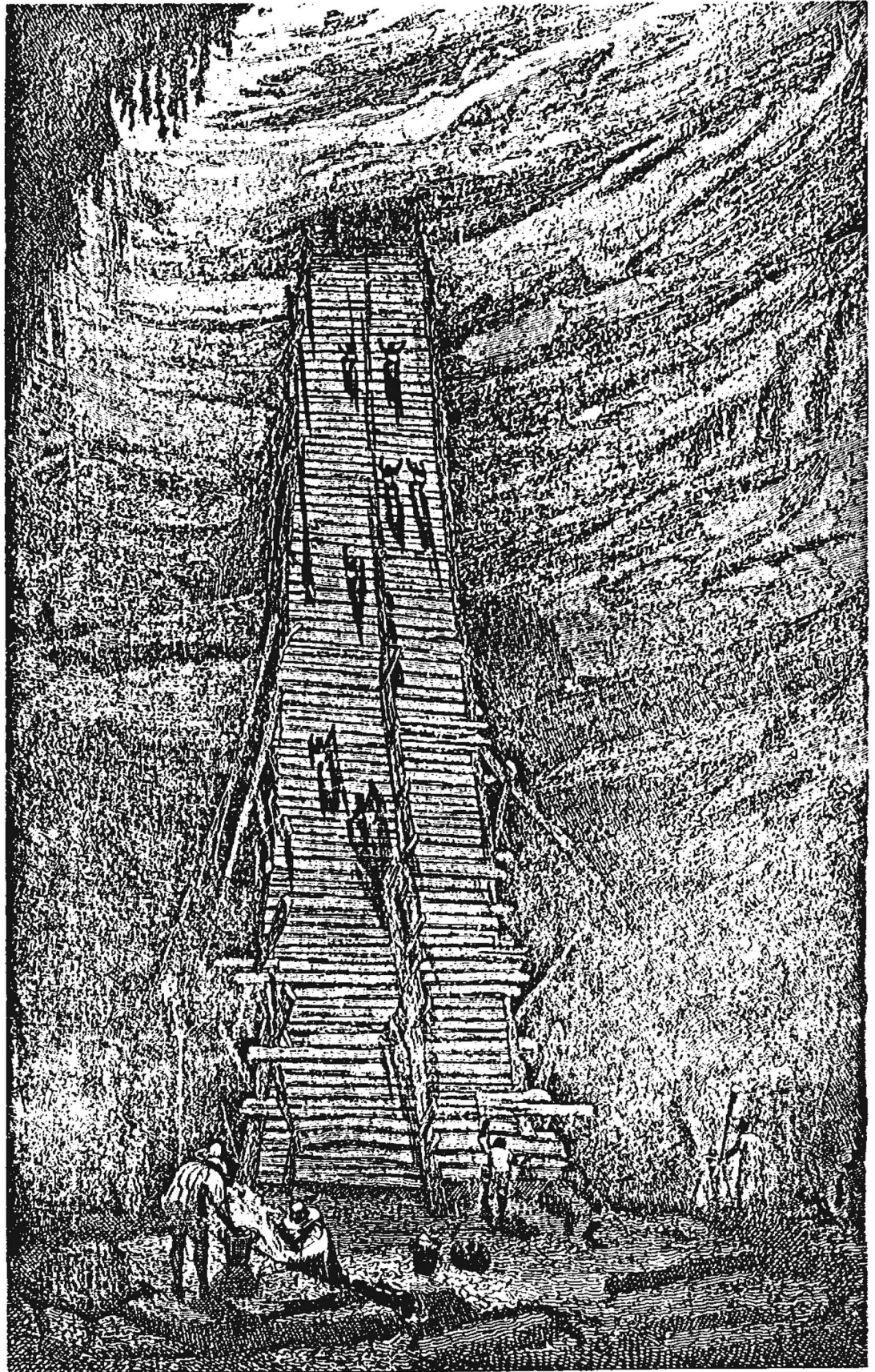
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ACTIVITIES LETTER  
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## AMCS ACTIVITIES LETTER

Edited by Bill Russell

Typing and Editorial Assistance  
by Pat Asnes

Fall Report

Letter No. 3 Oct 1975

The AMCS Activities Letter is published by the Membership Committee of the AMCS to keep members informed of recent speleological activity in Mexico. Brief accounts of current trips are welcome.

This third AMCS Activities Letter covers the summer and fall of 1975. Activity as usual was centered in the Cd. Valles-Cd. Mante area of northeastern Mexico, but this summer cavers crisscrossed Mexico from the south bank of the Rio Grande to the beaches of the Caribbean. The last part of this issue is again devoted to a discussion of map symbols. This discussion has become more far-reaching than just reconciling the differences between the AMCS and the Hedges lists. Discussions have included the optimum number of symbols to be included on a list, the types of map lettering, and even the desirability of such almost universal symbols as the circle around the ceiling height. From these discussions should come a list acceptable to all cavers. The money to pay for printing the lengthy discussion of cave symbols comes from a special AMCS political slush fund. This fund was established when I was editing the first issue and the IRS needed overtime work to get out the rebates on time, so I decided to delay the first issue and use the money to print extra pages in the Activities Letter.

The cover of this issue of the AMCS Activities Letter is from an engraving by Frederick Catherwood of the Mayan ladder in Xtacumbilxunam, a large cave in northern Campeche. This engraving is reprinted from the John Lloyd Stephens book Incidents of Travel in Yucatan first published in 1843. The ladder was constructed by the Indians to bring water from the lower levels of the cave when the shallow wells in town went dry. This drawing is especially appropriate as a similar ladder is still in the cave today and was used this summer by AMCS members.

Steve Zeeman and Dino Lowery are now returning from the cold and dark of Alaska and should be back in time for Dino to do an original for the Christmas-New Year Issue.

Pierre St. Martin is now 1270 m. deep -- the French connected the M3 shaft with the upstream section.

From Norm Pace

If you need a new membership card, don't hesitate to write -- membership cards were printed free for the AMCS by Ronnie Fieseler and he used all the scrap paper in the print shop which produced enough cards to completely fill the average Iowa cave -- so we can easily send anyone an extra.

## 1975 Yucatan Expedition

James Reddell, David McKenzie, Suzanne Wiley, and Andy Grubbs

By Andy Grubbs

We left Austin on June 12 and drove for three days to the state of Tabasco. There we visited Grutas de Cocona near Teapa and Cueva Azufre near Tapejalapa. Cueva Azufre has a small sulfurous stream that swarms with hundreds of pink half-blind mollusks. Roots reaching down into the water are covered with sulphur crystals. To reach the cave our guides poled us 1 Km. up the river in a canoe and then we hiked another Km. through the jungle. The next day we visited the ruins at Palenque and swam in the last river we were to see before waterless Yucatan. Two days later we met Dr. Mitchell, his family, and William Russell at the cave Xtacumbilxunam in northern Campeche. Here we split into two groups to check the cave; one group explored a previously unchecked 30' drop and the other climbed down a 70' wooden ladder to search for the elusive river beyond the siphon lead. At the bottom of the drop, a passage lead through a squeeze to a second unclimbable drop, later pushed by the mapping team to another unclimbable drop. The siphon was still blocked by high water. The next day we looked for blind fish caves near Ticul. The next three days were spent near the village of Cumpich where we checked several small caves; one was the deepest free-fall drop in the peninsula, a 190' blind pit. We saw several promising caves that we didn't have time to enter. Most of our time was spent at the ruins of Kalumkin (Mayan for "throat of the sun"). A cave in the midst of the ruins has two entrances, one a pit 25' deep and 25' across and the other a small hole in a cornfield, leading to a 20' by 25' high main trunk passage and small, low, rock-and-dirt-filled lower levels. Mapping in several of the main passages had to be stopped because of bad air, but we did map 2850'. After Cumpich we rested in Merida and then left for southern Yucatan and northern Campeche. We spent three days finishing the map of Spukil, a very large cave of large interconnected rooms. Part of this cave is very warm and is not a pleasant place to map in. A lot of the formation areas are black and white, the black caused by soot from the torches of the ancient Mayas and the white caused by new crystal growth. After mapping Spukil we left for Grutas de San Jose and, though not finding it, we did find three other large caves. One of them was Grutas de Huachap which is located at a small ruin consisting of four temples overgrown with jungle. The entrance to the cave is a pit 50' deep, 50' wide, and 75' long. The cave has an old footpath that leads back to a small pool of water. We found a lot of charcoal on the floor. On our way out, we discovered a large side passage that we didn't explore for lack of time. We returned to Merida stopping on the way at several small caves and at a very nice swimming cenote. In Merida we put William on the jet to Houston and met with the Mitchells, then left for northern Quintana Roo, where we spent five days camping on the beach at Pamul and visiting nearby caves. Most of these caves ended rather quickly in water but we managed to do some good collecting. Near the extensive ruins of Coba, we visited a couple of small caves; one had a blind eel. The Mitchells left for the states, taking Suzanne with them, and we moved further south, along the road from Felipe Carillo Puerto to Valladolid. One cave along this route was a small cenote at an abandoned ranch. The cenote was a room about 30' in diameter and 40' from the skylight to the water level with a side passage extending from the surface to a mid-level ledge. In the water were lots of large cave shrimp and isopods. Twenty feet below, the bottom could be seen as it sloped off into darkness.

We spent two days near Valladolid; the first going into six caves and the second returning to the cenote at Catzín for further exploration. The Catzín cenote is a pit 50' deep and 100' across at the surface and the bottom is undercut and much wider. The cenote functions as a well for the villagers of Catzín. It is possible to rapell down to the central island and from there six passages are visible around the edge of the cenote wall. These tunnels contain several hundred feet of branching passage.

continued



After leaving Valladolid we went to Merida to rest and to pick up Suzanne and then travelled to northern Campeche to map in Xtacumbilxumam, Kalunkin, and finally located San Jose. We then went to Kaua in central Yucatan where we tried to find and map the left wall of this incredible maze; we didn't find the left wall but we did extend the map of the cave much further to the west than anyone had imagined it would go. The total mapped length is now 22006 feet; it is certainly the longest known cave in Mexico. Then we returned to Merida for a rest. The last leg of our peninsular caving was a swing through central Quintana Roo to Chetumal and then across Q.R. and southern Campeche to Escarcega. First we stopped at Loltum in southern Yucatan and spent three days mapping about one third of the Loltum cave. Loltum is a very diverse cave with some skylight areas, some large 75' by 75' main passages, and complex areas of small rooms where formations have come down to the floor making partitions. It rained the first two days we were at Loltum, causing a shower of water to come out of a high dome near the entrance, forming a small stream which ran down the side of the main passage and sumped in a small side passage. After we left Loltum, we went to central Quintana Roo where we visited a few small caves and then drove south all the way to Chetumal without finding any caves, though we did find a very fine lake to swim in. On the road from Chetumal to Escarcega, we also found no caves, though in southern Campeche we did find a few tiny dry dusty caves near Spukil along with some unusual ruins. 107 Km. east of Escarcega we found a large cave, Volcan de los Murciélagos, estimated to be 500' deep and 4,000' long. This cave is one of the largest and deepest caves in the peninsula. It is also the most horrible. The cave houses a colony of Mexican freetail bats that takes at least three hours to fly out of the cave. The evening flight of the bats can be seen from the highway. The entrance is a large pit 120' in diameter with a steeply sloping bottom. At the top of the slope it is 200' from the surface to the bottom of the slope. The slope is composed of old guano and small rocks and descends at least 200' to a short horizontal passage that ends in breakdown. By climbing down through the breakdown a small passage is reached that soon opens up into the main cave, a passage about 60' by 30' with a flat ceiling and walls that slope down toward the center. In the lowest places are some lakes and quick-guano pools. We tried to wait until the bat flight was over before entering the cave but one hour and forty minutes after the flight started, we decided that we would rather face the bats than stay out in the mosquitoes, so we entered the cave; two-thirds of the way down the entrance slope the bats became so bad that we had to hide behind some breakdown in the side of the passage. After an hour of waiting, the bats abated slightly and we were able to get down to a place where they were flying over our heads. The cave was very hot and unpleasant and we only stayed long enough to run to the back and then run out. We immediately left the area and drove to Escarcega. The next day we went to a couple of small caves nearby including one near a famous shrine. James then left for Merida and we headed north. We stopped at the river near Palenque to swim again and drive to near Ciudad Valles where we stopped for two days of caving using the new topographic maps. We were in the mountains west of Valles and found lots of 60' pits, saw a cave that was normally 45' down to a stream passage that now had a spring flowing out of it, and we found a lake that drains into a large sumidero. Except for August and September, the lake is dry all year and the cave that drains it and the caves that empty into it are dry. We drove on west from there and stopped at Sotano de San Francisco and saw the stream that runs into the 300+' entrance pit during the rainy season. We also visited some small caves near there, in an 8000' high karst area called "Valle de los Phantasmos", so called because of the strange karsted rocks found there. We then drove back to Texas stopping in the desert between San Luis Potosí and Matehuala where we got a lead while eating a watermelon.

continued

We were gone 54 days and travelled 6500 miles, visiting 50-60 caves, mapping some of the more important ones, and doing a lot of biological collecting.

The End

Incident of travel in Mexico  
from a letter from Ernest Garza:

...Then to Queretero and the Keystone Kops Kaper. Arrived at 1:00 A.M. -- large modern well-lit bus terminal. During my second visit to the restroom -- (my insides weren't quite right) -- two policemen approached me asking what I had in my pack. I told them what I was doing and they replied they wanted to take a look, so I started taking shit out of my pack. I had nothing to hide. Before I had all my stuff out they replied that there were two things not allowed -- my machete, which was wrapped in paper and stuffed carefully in the pack, and an open bottle of Tequila. He grabbed the machete, unwrapped it, and swished it through the air a couple of times saying "Este es una arma!" He said he had to take it to his commandante and I would probably be fined 200 pesos. He would disregard the bottle for the moment. No amount of rational talk would discourage these pricks as now they were looking for blood stains on the blade. These two apes told me to stay put -- they were going to call the commandante. They walked out the door and I through another into a waiting cab -- its driver reading a newspaper. He had a small car and I suppose he was startled by this guy jumping into the back seat with a full back pack. I was still struggling with my waist-strap trying to get it all in when I said "Vamanos" and he sped away. Spent a restless night behind a trailer park and walked to the highway and caught the first passing bus.

Morphologische Entwicklung Ausgewahlter Regionen Nordmexikos Unter Besonderer Breucksichtigung des Kalkrusten-, Pediment und Poljesproblems. By Gerd Wenzens. Dusseldorfer Geographische Schriften, No. 2. 330 pp. 14 maps, 17 figures, 1 table, 44 photographs. Dusseldorf, 1974. Price 45 Duetschmarks.

The author has studied three Mexican regions: Valle El Salado, Comarca Lagunera, and the west part of the Sierra Madre Oriental. The synthesis of regional results deals with the problems of Basin Ranges, of pediments, of karstic basins, and of calcite crusts, making a reconstruction of the origin of the relief possible. These studies show that it is not essential to assume large variation in the total amount of precipitation; the distributional changes through the year could also be the cause. This book gives many impressions about the evolution of karst landforms as one of many factors that act together to influence the morphogenetic process. Available from Geographisches Institut der Universitat Dusseldorf, D-4000 Dusseldorf, Universitatstrasse 1, West Germany. (2.4 Deutschmarks = \$1.00)

UIS Bulletin (Union Internationale de Speleologie)  
1974 v. 2 no 10, p. 21  
Translated by G.G. Forney, NSS Int'l Secy.

By Bill Stone as told to Bill Russell

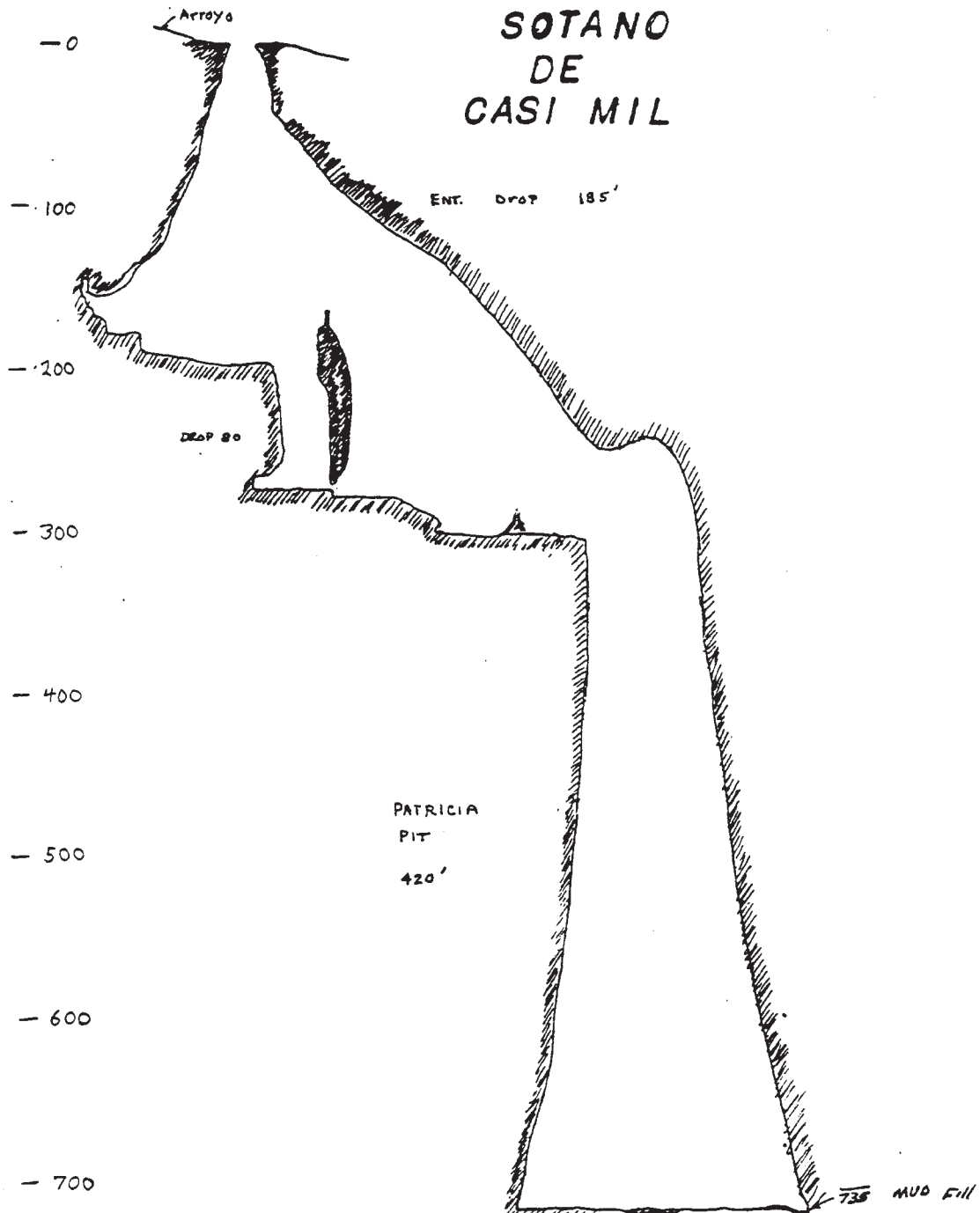
Bill Stone & Pat Wiedeman

We planned to meet Peter Sprouse, John Polak, Norm Pace, and group to visit the high parts of the Sierra de Guatemala, but our timing was off and we did not find them at the Nacimiento del Rio Frio. So we decided to drive up to the Otate Mine at the top of the Sierra de El Abra north of Valles. To cross the ranch by the highway one needs to get permission from the comisario at the ranch headquarters. We gave him an Activities Letter and found that if cavers would bring him maps and pictures, it would be good public relations and he would not think we were part of the CIA. We arrived at the mine and decided to check the sump in Sotano de Otate. We soon found the entrance and rapelled in, but an exhaustive search failed to find the 560 ft. pit -- and finally we realized we were in Cueva de los Indios.

Next we chopped from our camp down into the Diamante Sink following a small arroyo to a 10 X 3 ft. entrance to a pit. Excited at our find we congratulated ourselves on finding a virgin pit this close to camp -- only to notice that a tree by the pit was flagged with colored ribbon. We realized that we had chopped to the pit above Cueva de Diamante but in checking our copy of the Activities Letter we discovered the pit had not been entered. So we returned to the pit and rigged the entrance, a 185' free drop. At the bottom we popped through a small hole to a 35 foot climb down to the top of a 5 1/2 second pit. We returned to camp and now loaded down with over 1000 feet of rope, cave packs, bolt kit, and other gear, we trudged back to the entrance. After double rigging the entrance we reached the top of the big pit, and started down. The first 90 feet were against the wall, but then the pit began to bell out, and 300 feet down the pit was about 100 feet in diameter with the rope hanging in the center -- similar to Fern. We landed on a flat dirt floor with a mud sump at one side -- at a total depth of 735'. The pit we named Patricia Pit was 420 feet. During the rapell, I began to feel the effects of an encounter on the way to the pit with a Mala Mujer (the giant Mexican stinging nettle) and became dizzy and momentarily fainted when I got off the rope. I quickly regained my balance but realized how extended a two person group is in a 700' pit system. We decided to name the pit Casi Mil -- almost a thousand.

Returning from the Otate Mine we spent two days recovering at Micos, then walked up to Sotano de las Golondrinas. The climb out of Golondrinas was an almost psychedelic experience. There was an oscillating cloud at the 600 foot level with a hole burned through the middle by the sun. As we climbed out through the hole, sunlight formed circular rainbows around the climbers. Well worth a cold night under a wet blanket.

The Canadian Caver, Vol. 7, No. 1, contains more information on the trips to Chiapas briefly mentioned in the last AMCS Activities Letter. As usual there are excellent maps of the largest caves visited: Sumidero Yochib, Chen-ven-sil-mut, Sumidero de la Hondida, and Cochol. The Canadian Caver continues to be the best caving monthly printed in North America.





June 9

7

Dear AMCS

RE: Diamond Cave

After considering my telephone call with Andy Grubbs and reading AMCS Activities Letter #2, it seems that there may be some potential passage overlooked by the group in March. When we descended into the "Crystal Room" last Christmas, we followed along the right-hand wall, and ended up on the "bottom" about 30-40 feet above the floor of the Crystal Room as described in the Activities Letter #2. From the "bottom" as we knew it, one could duck under a natural bridge, or climb up on the bridge, and see down to the "true" bottom of the Crystal Room as seen in March 30-40 feet below. One could also see upwards, and so I assume the group in March descended basically trending to the left, and bypassed our intermediate level and ended up directly on the bottom, where the "Titan Missile" is (we were above the top of the Missile, but could clearly see it). The potential passage I refer to is reached by going the opposite direction from the natural bridge, into a narrow, jagged, sloping crevice. After a couple of relatively difficult climbs, one finds oneself looking down another pit, probably 50-70 feet deep. This is the one I described as having a large passage coming in just below the lip, but which would require rope to reach. It moved air.

Mark Minton

#### Price Increase on Mexican Topographic Maps

The prices on the 1 : 50,000 CETENAL topographic maps (15 X 20 min. quadrangles) have been increased from 5 to 10 pesos (40 to 80 cents). When ordering by mail, also allow a 5 peso (40¢) money order charge. If you will be in Mexico City, the main office is only a few meters from the San Antonio Abad subway station.

Oct. 12, 1975

Dear Craig,

I am writing to you as AMCS correspondent to make connections for Xmas trips to Mexico this year. Our party will be in Cd. Valles about Dec. 22 with a car and 4 seater Cessna airplane. Bob Stricklen, the pilot, and I are both experienced vertical cavers and would like to link up with groups in the area to visit whatever caves groups are doing and offer the use of the plane at cost to anyone needing the service to discover, photograph, or check out caves. The plane might also be available for transport to other caving regions, depending on the situation and we have tentatively decided to fly to Guatemala to visit friends and local ruins. We must return approximately Jan. 1 or 2. Please forward this letter and/or communicate our request/offer to anyone planning to cave in Mexico at Xmas. This especially applies to Frank Binney if he will have returned from New Guinea. Tell all to write soon if interested to:

Kelly Kellstedt  
Route 6  
Box 134  
Santa Fe, N.M. 87501

505-471-2333

### Trip Summary

Bill Stone, Steve Ward, Spencer McIntyre, Ernie Garza, Blake Harrison, and Jill Dorman  
By Bill Stone

After the hordes of cavers disappeared from the Sierra de Guatemala Fiasco, six remained in my truck to maintain the search for the "mile deep" hole. We had a good lead from John Graves of a large-entranced pit taking water up near Cuevas Minas, so we all drove up to San Francisco the first day. All but Steve and I dropped Sotano de los Lobos (620'). We went karst-whacking for about 6 hours (7-8 miles), finding two small pits, the largest perhaps 60' deep. The next day we drove out to Cuevas Minas and met an American geology student there who showed us all of the new air photos of the area. Graves' arroyo leaped right out when we used the stereoscope—right on the "contact" ! (John Graves from San Antonio, Texas, had originally located the pit.) It had rained most of the night so we had some slippery 4 WD'ing up to the cave, which was in a fairly obvious depression to the right of the road. The main entrance was about 70' tall and 30' wide — impressive. A side entrance bypassed the 30' entrance drop and we bombed on down the steep breakdown slopes to a 40' drop at about -40m. About this time we noticed a peculiar smell in the cave. Upon inspection Steve pointed out the stream of human feces entering from a small passage and going over the drop. SHIT ! After the 40' drop was a 10' drop to water. Another 400' of caving and downclimbing lead to another 40' drop, passing by beautiful orange pools of fungus ! The 40' drop lead to a 30' drop and terminal siphon at -120m. So we christened it "El Sotano Feo del Arroyo" for lack of a better name. We 4WD all the way to San Francisco coming in on the Lobos road and returned to Valles. Harrison and Dorman split via bus and the four of us left for a week at the Otate Mine.

I should mention — before Blake left the summer rains came in and it rained heavily for two days without let-up. Imagine trying to get up in a heavy downpour ! We all put wetsuit tops on at Los Sabinos and walked out to take a look at flood stage Sotano del Arroyo. We heard the rumbling from the trail, but when we arrived at the entrance it was awe-inspiring ! For anyone who has been there — imagine 1200 cubic feet per second of water pumping in the entrance drop ! It makes Yo Chib look tame ! So we figured with all this water going in here, imagine what the Choy is like ! The lower entrance to the Choy was completely underwater and 4' geysers erupted from the resurgence ! We estimated around 5000 cubic feet per second of flow.

Well anyways, back to Otate — The mine road really got wiped out by the rain and it took some aggressive 4WD'ing to make it. We packed up for a 4 day "black hole or perish" chop from the Estrella Sink. It took over 6 hours to get to the star-shaped depression, as we had to re-chop large sections of the trail with 70-80 lb. packs. We set up camp near Sotano de la Estrella and began our search. We chopped a major trail due west from camp which extended well over the west ridge. Then, spacing ourselves about 100' apart, we compass chopped south for over a kilometer and reversed the formation back to the main trail. This went on till we returned to camp. If the hole was as big as Russell said, we figured, we couldn't possibly have missed it. So we chopped further west to a knoll and found a 40' high tree which afforded a view of the western crest for over 10 miles. So we sat in the tree for over an hour, hypothesizing that if the pit were actually 100' in diameter, it would certainly have a parrot population. We spotted four distinct clusters on a 22 E of N bearing and chopped for over a kilometer on that bearing — right into the back of Cuesta ! Not random luck at all — we refound Cuesta with only a 50' error in the chop line. If the black hole was there, we would have chopped right into it. There may be a small chance that we just didn't wait long enough to get the right bearing on the black hole, so I invite all the birdwatchers to go out to that tree and look for another "parrot bearing" — Good Luck.

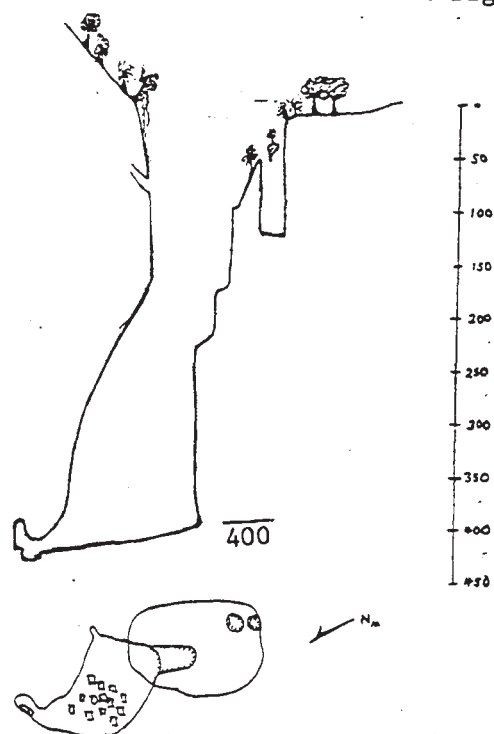
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Anyways we speleo-bopped Estrella and Cuesta, getting some interesting photos of disabled macaws on the floor of Estrella. These great beautiful birds are in reality quite spastic; we saw several fly gracefully into a wall of the pit and fall 100' to the floor -- it was pitiful after a while! It rained when we did Cuesta that afternoon so no "ray of light" shots were forthcoming. We hiked back to the truck the next day and tried to get a lead on the fabled "15 minute" pit, but the entire mining crew had split -- lock stock and shovels. The place looked like a ghost mine!

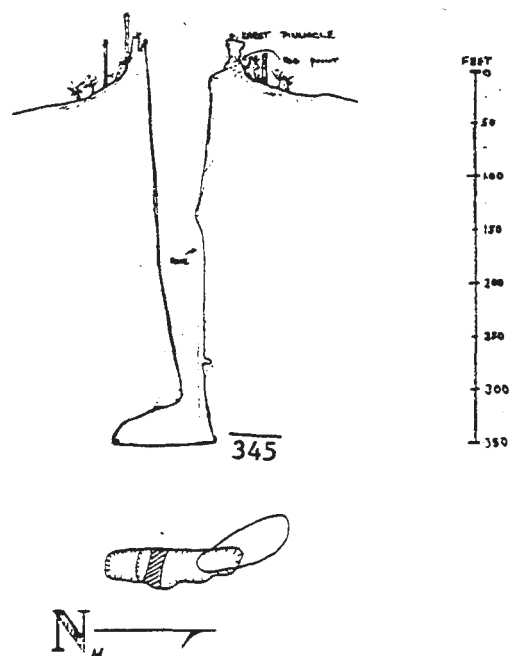
The next day we chopped around the Diamante Sink in radial patterns and found a 2' X 3' hole. This turned out to be about 130' deep, bottomed by Garza and McIntyre. Meanwhile I found 3 pits southwest of the road to camp. The largest of these was 50' in diameter, but bottomed at only 130'; the rest were just blind rabbit holes! I should mention that we received a flagging tape message from John Pollack and Norm Pace who did Diamante the day I left for convention in June. They said they went down -500' on the Minton route but stopped when they noticed all the debris on the ceiling -- apparently it floods easily so they split, recommending a dry season push.

Upon returning to Valles, Ernie left for the states and Steve, Spence, and I drove to Tancoyol to begin our 4th week of the trip (7th for me). We had two leads to check, both required long hikes. The first trip left for Las Flores, two hours north of town. A new road will be completed in December, so it won't be quite so bad. From Las Flores we hiked to San Antonio, four hours from town. The locals knew of two "deep" pits nearby, so we hiked out without packs. They showed us a 100' pit near a karst pinnacle and another pit which looked considerably deeper, in a karst pinnacle nearby. This was Sotano de la Palma Real, a 345' free drop which we bottomed the next day. Somewhat further away (still muy cirquita on the Mexican scale) was El Sotano del Rancho El Tigre, a 150' diameter hole which gave some impressive sounding rock times. We bottomed this the next day also -- the entrance drop was 400' shear to a room about 60' in diameter.

Sotano del Rancho El Tigre



Sotano de la Palma Real



continued

Two days later we took daypacks and scouted 12 miles of trails leading to Rancho el Teposan and Joya del Mague finding no less than 25 leads, some taking water, some fairly large-entranced, and mostly 100'-200' entrance drops. The exception was a 40' diameter pit in Rancho Tabago which the locals measured at 100 m. +, using a rock and a piece of string -- until they ran out of string ! Could be a deep one ! Anyways. All this time we were camped at the house of Sr. Bernardo Dias whose hospitality, coffee, tortillas, and venison will forever be remembered. We also bottomed Sotano de las Flores on the return trip from San Antonio. At -305' it is basically one shaft with small offsets.

Incredible public relations have been established in Tancoyol and surrounding areas. Lets hope everyone who goes there strives to keep it that way.

We arrived in Savallo two days later and made plans to hike to Tierra Fria where a 40 m. diameter pit was reported -- only two hours from Savallo. Steve was recuperating from some bad blisters and decided to bag the hike the next day. He must have been clairvoyant ! Spencer and I began what can only be called an epic journey ! Six hours after starting we arrived in Tierra Fria, not the two hour jaunt we were expecting ! Upon questioning the locals we learned to our incredible amazement that not only was there not a 40 m. diameter pit in town, but they didn't know of any pits at all less than 3 hours away ! Hay caramba.

So we hiked another 1 1/2 hours to Rancho Mojonera. Supposedly the guy in Tancoyol who gave us the lead was born there. This at least turned out to be true. However, as for the 40 m. diameter pit -- not so good. The nearest sotano they knew of was at least another hour down the trail. Believe me when I say that we were at the end of our blue lines by then ! It was getting late and a rainstorm was coming in, and all we had were daypacks. Reluctantly we hiked another hour to the town of El Quirino. Here at least the locals knew of a nearby pit. They said "Its very deep we think, due to the arroyo which leads in" to which my trail-benumbed mind instantly snapped out of its stupor saying "arroyo? arroyo?! going into a pit!" " Lets go". Well we followed the arroyo over 1/2 mile to the edge of a corn field where it made an abrupt left and dove into the blackness-- far out! The entrance was a little over 20' in diameter. The locals said water entered the cave every time it rained-- evidenced by the solution scour marks on the wall. Rocks bounced for 10-14 seconds with at least 4 seconds of free-fall to start. The entrance is well over 7000' in elevation. So with this promising lead urging us onward, we decided to attempt to make it to the highway by dark which they assured us was not more than three hours away. The locals said there were many other leads like that one nearby but we optioned out on the hike at the time. The name of the pit was Sotano de Cagualin. Well an hour later we crested the western ridge and could faintly make out the Jalpan-Rio Verde Highway -- a long ways down ! The sun was going down fast so we really trucked for the remaining hour of light -- fortunately it was all downhill. On the way we intersected a new dirt road which the workman told us was being built to San Juan -- only 1/2 hour from the pit ! With this enlightening news we hiked three miles down the road in the dark. At this point we should have stumbled into La Purisima. But Mutha Nature didn't know we were coming and stuck this stupid river between us and the highway ! (Actually the Rio Jalpan) Not being able to find a bridge in the dark merely increased our consternation as neither of us wanted to swim across the river. So we went down the side hoping to find "something" to cross on -- "something" turned out to be a 5/8" wire rope suspended 30' above the river -- not exactly my ideal bridge -- but it was all we had. Soooo snugging up my 1" webbing belt on the cable for a safety I crawled across the cable for 300" to the other side. The only casualty was Spencers hat which fell into the river in mid-traverse !

continued



The adrenelin still pumping through my weary bod, we stumbled into La Purisima and had a few refrescos. We then sat in the middle of the highway trying to hitch a ride back to Savallo. No luck -- But the local bartender invited us in and proceeded to get us totally wasted. (Not that we weren't already !) Around 2 A.M. we managed to get some sleep at a nearby house, whose friendly owner also stuffed us full of beans and tortillas. At 6 A.M. we were awakened by the shouting of "the bus is here" and we ran out, boots untied and gear dragging. 20 minutes of a hectic bus ride later we arrived in Jalpan. A short wait there and we were off to Landa de Matamoras. Things were going great till then, when we discovered how few vehicles went down the dirt road to Saucillo. So another 7 miles later we arrived at the truck -- 29 miles in 24 hours on foot and 30 miles of bus travel was about the most intense scouting endeavor I've ever experienced.

We split for the states the next day as I began my 3rd month in Mexico this summer.

### Soledad Area Report

The latest, I think, issue of the Philadelphia Grotto News, Vol. 12, 1973, contains the long awaited report of the several trips by members of the Philadelphia Grotto to the Soledad Area in Veracruz. This mountainous area is located just south of Cd. Mendoza, Veracruz. The report contains a location map and a description of several caves written by Bob Kezell and Warren Heller. Cueva de Cerro (= Sotano Itamo) was surveyed to a depth of 1437 feet below the entrance. The cave has a vertical range of 1491 feet, and is the largest and deepest so far explored in the Soledad Area. An example of the importance of using the local name for a cave is illustrated by the remapping of the same cave by a group from Austin in June 1974. The Austin group recorded a depth of 1437 feet -- forty feet less than the Philadelphia group but the zero point of the Philadelphia map is above the zero point of the Austin map so the actual depths are very close. However, with the numerous potentially deep systems in the Soledad area it is unfortunate that a great amount of effort was duplicated in producing two maps of the same cave.

Bill Russell

### Alpine Paleokarst

The thick cretaceous limestones of northern Mexico have been folded into sharp anticlines and the resultant fracturing has permitted the development of localized areas of sinkholes along the crest of the folds. The largest sink area yet investigated was on the Sierra El Laurel Quadrangle (G14C42) west of Saltillo. Along the crest of the Sierrala Concordia at an elevation of 3150 meters, several sinks up to a kilometer long had developed, but are now apparently being filled with alluvium. Another local cluster of sinks has been investigated north of Cueva del Porvenir on the Reforma Quadrangle (G14A61). These sinks have developed on the crest of the Sierra de San Marcos at an elevation of 1600 m. At this lower elevation the change from the more humid climate that favored the development of sinkholes to the present arid climate is more evident. Large alluvial fans are building into the main dolina, about 1 Km. long and 0.5 Km. wide. Several small sinks bordering the main dolina have been completely filled, the alluvium spilling over into lower sinks. It is apparent that, in the past, climatic conditions were more favorable for the development of surface karst, and karst features developed in the past are now rapidly being destroyed. Both these areas were investigated on almost the same day. Making the long climb up to the crest of the Sierra El Laurel was Maureen Cavanaugh, Blake Harrison, Jill Dorman, Mary Kraska, and Preston Forsythe. Back-packing into the Sierra de San Marcos were Peter Sprouse, Bill Russell, Logan McNatt and Speleocinematographer Thomas Moore.

### The Illusive Pit

Terry Sayther, Ivy and Crystal Atherton, Gill Ediger, Dan Watson, Jill Dorman, Mike McKee, Paul Duncan, Jim Clements, Dorothy Tucker, Bill Mayne, Craig Bittinger, Patricia Asnes, Jim Moore.

By Craig Bittinger

The trip started from Austin and Corpus Christi on a Friday afternoon. A camping spot near Candela was selected as the rendez-vous point. No trouble was encountered crossing the border and around midnight Duncan's truck pulled up to the appointed spot. Three hours later the Austin group arrived after a slight wait due to Jim's shock absorber falling off. Morning soon came and a caravan formed and headed west from Candela. After an hour of bumpy road, the group approached a spring in the desert and found that it hadn't been totally destroyed by the Mexican's highway construction. Several more miles of desert roads found us at the owner's ranch where we obtained permission to visit the pit. He insisted on sending a man on horseback to show us the way to the pit so after fixing Terry's truck we continued onward being directed by the horseman. After crossing several arroyos we arrived at a stock tank and got out to survey the best route up the mountain. Jim Clements amazed us by stepping on a rattlesnake and then leaping three feet into the air. Deciding to head straight for the pit Terry pointed his truck in the general direction and with lecheguilla and cactus flying we bounced up the mountain. After getting organized, people started up the mountain with the 80 lbs. of bluewater II rope. The 15 minute walk to the pit stretched into an hour hike through thick underbrush. The entrance was finally reached and the rigging began, one rope down the one meter in diameter entrance and a second rope down the two meter in diameter opening. The first people into the 436' drop encountered a Gordian knot about 300' down and were forcibly delayed while it was untangled. As the group ascended and descended, they were impressed by the huge cavity below and the tiny entrance high above. The climbing times varied from 15 minutes to an hour and by midnight all had left the pit, leaving derigging for the following morning. After a memorable hike through the cactus and brush in the dark, the group reached the trucks and collapsed. When the sun rose again, a group headed up to derig the pit. Arriving at their destination they discovered Dan Watson had already pulled the ropes and had them nearly ready to be carried down. Tying them to a pack frame, the group was soon off the mountain and ready to head back for the U.S. Terry and Paul decided to drive back through Lampassas and discovered that the road had turned into a sea of mud. Terry managed to four wheel drive through the worst places but Paul's truck died in the middle of a raging river and had to be pushed out by locals. Then he got stuck in a huge mudhole until a passing four wheel drive towed him out. All in all a good time was had by all and the Illusive Pit became more than just a name to 12 cavers who entered its depths.

### Notes on Cueva del Porvenir

As reported by Peter Sprouse in the October NSS News the illusive Cueva del Porvenir has finally been found. Several trips had attempted to reach this locally well-known cave 70 Km across the desert SSE from Cuatrociénegas, Coahuila, but were sidetracked or met with various misfortunes. However, with the new topographic maps (Reforma Quadrangle G14A61) and Terry Sayther's speleotruck, we were able to drive almost to the entrance. A group consisting of Terry Sayther, Nancy Sayther, Craig Bittinger, Bill Russell, Logan McNatt, Dennis Breining, John Ommaas, and Anna Vrba mapped Cueva del Porvenir, but only started checking the numerous entrances in the canyon walls. Cueva del Porvenir was found to be as reported, an impressive tunnel seldom less than 30 feet wide and 40 feet high, and for long sections a nearly circular tube 50 feet in diameter. Many domes extend upward beyond the reach of a powerful light. The passage is not well graded, but trends generally upward following the strike SE along the east edge of the Sierra de San Marcos. The cave apparently ends in a series of high domes, similar to Cueva de la Boca.

Sotano Hondo de Pinalito  
By Steven Bittinger

In December, 1974, Donna Atkins, Steven Bittinger, and Bill Mayne from Texas first visited Sotano Hondo de Pinalito. The cave is located near km. post 105 on highway 85 north of Jacala, Hidalgo, Mexico. Preliminary reconnaissance reveals a typically vadose multi-drop system as deep as the present limit of exploration at -175 m. Noticeable airflow encourages further efforts at exploration.

Sotano Hondo (as the cave is known by the inhabitants of the village of Pinalito) lies at the end of a small arroyo in the bottom of a large closed valley where it receives significant runoff. It is possible to drive to within a few meters of where the entrance is hidden in a clump of cedars. Although no other major caves have been explored in the immediate area around Pinalito, the altitude of nearly 2000 m. and widespread internal drainage suggest that extensive systems could be present.

Sotano Hondo is a fun and interesting cave to visit. Few formations are present, but the upper portions of the cave are scoured smooth and clean. The initial drop into the cave is easily rigged from a large tree which shades the entrance. From the bottom of the rope, a low passage dips down, then up to enter the first large room. Here a 3 m. climbdown (aided by a log) is followed by a climb down the left side of a 6 m. drop. A fairly long tie-off to a boulder then allows the immediate descent of a 20 m. drop. This is followed by a slightly overhanging but climbable short drop to the top of another short drop requiring a rappel. The rope can be rigged through a crevice on the right wall. A further short climb brings one to the top of a 3 m. drop into a small lake. This can be rappelled or bypassed by following a ledge along the right wall, then bridging the canyon to chimney down. The horizontal passage soon splits, the right-hand side ending in a sump, while a squeeze straight ahead leads to the top of a 30 m. drop. A rope can be tied off to some holes right on the lip of the pit. After a 5 m. crawl from the bottom of the drop, another climbdown is encountered -- this one requiring a few meters of handline. A steeply sloping squeeze on the right probably extends to the lower level passage which is more easily reached by a short rappel of 6 m. down a shaft on the left. A horizontal canyon leads into an area floored by breakdown where the passage soon doubles back under itself. At this point a tight vertical squeeze makes noticeable a flow of air that had previously been undetected. As an aid to returning back up through the squeeze, a handline is advisable. Doubling back again along the same prominent joint, the passage makes another drop of 25 m. The bottom of this pit was the maximum limit of exploration in December, 1974. From here a water crawl leads off, possibly being the route taken by the airflow. (See map next page)

It seems surprising that a cave so easily reached has not been explored before. Local inhabitants seemed quite friendly and indicated that there were other sotanos in the area which also received surface drainage. Another trip to Pinalito would provide the opportunity to map and explore further in Sotano Hondo and perhaps locate other equally promising caves in the area.

\* \* \* \*

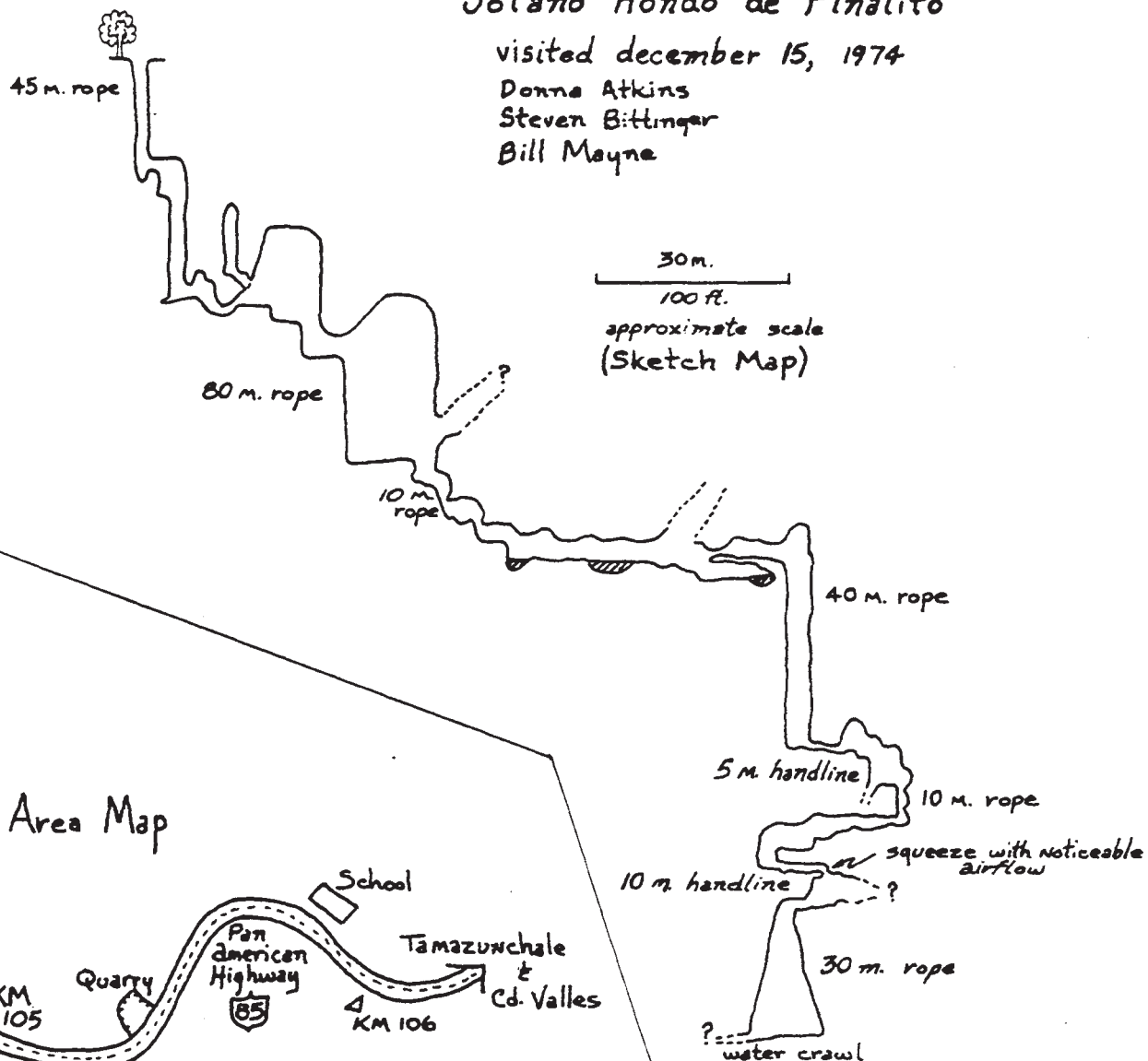
From Mike Boon "I'll have a note on Huistan cave names in the next Canadian Caver. Chen-sen-vil-mut is hopelessly wrong. Ch'ensibilmut is correct. Joya Chen or Hoya Chen (you have both on page 9) are both wrong. Joyo'ch'en is correct. Two of the people who surveyed the "sink end of the same system" were not members of the Alberta Speleological Society and none of these (myself, George Tracy and Tom Miller) who explored and surveyed the main passage (4000 of the 4600") in K'ocho' (upstream from Joyo'ch'en) were A.S.S. members

# Sótano Hondo de Pinalito

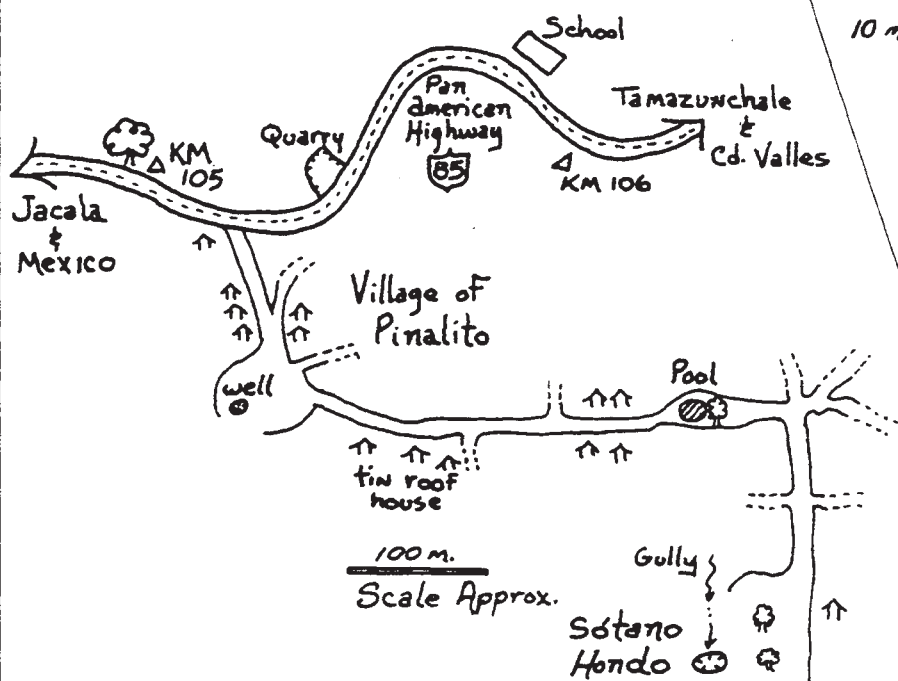
visited december 15, 1974

Donna Atkins  
Steven Bittinger  
Bill Mayne

30 m.  
100 ft.  
approximate scale  
(Sketch Map)



## Area Map





CAVE MAP SYMBOLS  
(continued)

15

The AMCS will try to keep all members informed on the important discussions now in progress that will lead to adoption by the NSS of an official list of cave map symbols. This list will hopefully standardize cave maps across North America. Your comments are solicited as mistakes made now will be difficult to correct later. The following letter from NSS President Eugene Vehslage to Will White summarizes recent activity by the NSS:

Dear Will:

During the June Board of Governors meetings at the Calaveras County Fairgrounds (alias Frogtown), a motion was considered to designate a set of map symbols submitted by the NSS Delegate to the UIS Commission des Signes Conventionelles (Jim Hedges) as the "NSS Standard Map Symbols 1975". Strong objections were raised to this by several Directors, mostly from Texas. It is my understanding that Bill Russell has a much shorter set of symbols that were published in an AMCS publication (which I received by second or third class mail). The Board voted to refer this matter to an Ad Hoc Committee. I have appointed you as Chairman of this Committee with the following members:

James Hedges, 8218 Sherrill St., Landover, MD 20785

William H. Russell, UT Station Box 7672, Austin, TX 78712

Tom Cravens, Meramec Community College, 11333 Big Bend Blvd., Kirkwood,  
MO 63122

Ronald G. Fieseler, PO Box 5672, Austin, TX 78763.

By carbon copy I am asking Messrs. Hedges and Russell to send copies of their respective lists of symbols to each of the committee members who might not have them, along with explanations as to what is better about their list, and, more important, what sort of compromise, if any, they see in making an official list of standard map symbols. I feel that it is the Board's wish (and certainly mine) that some sort of consensus can be arrived at before too long.

You are not constrained to limit your considerations to the two map symbol lists mentioned above, nor are you limited to consulting the named members of your committee. Please call on anyone and everyone that might make your final recommendations of the greatest value to speleology, in the broadest sense.

There will be a Board of Governors meeting on 11 October in Albuquerque and I plan to list a report from your committee on the Agenda. In the meantime, please keep me informed of how you are making out.

Good caving,

Eugene Vehslage  
President

At present it looks like the committee will adopt two lists, a short list that can be widely distributed and printed in any book containing cave maps, and a longer list containing many less frequently used symbols for special purpose maps. Both lists will need to be compatible, and use the same symbols for equivalent features. At present the long Hedges list is not compatible with the AMCS short list, the main difference being water and domes. There are many compromises available on the symbols for domes, and water appears to be the real problem. Hedges seems to feel that ruled lines are not "natural" and should not be used for a natural feature. The AMCS mappers feel that water is an especially important feature and needs a unique, easily recognized symbol. The AMCS list presented here for adoption by the NSS is the same list presented in the last issue of the Activities Letter except that water depth is given by a number in a square, rather than using the combined water depth-ceiling height symbol given in the previous list. The AMCS list is presented here in a one page format. The 32 symbols on this list can be effectively portrayed on a single 8 X 11 page, and includes all symbols in common use, as well as the geologic symbols. The AMCS feels it is important to include geologic symbols on all symbol lists to break the ignorance cycle. Cavers never see them so they don't use them. Geologic symbols should be used on most cave maps. The statement that the NSS or AMCS adopt the USGS symbols is of little help. The AMCS 36 symbol list should be adopted by the NSS and widely distributed. This should be as soon as possible as new lists of "standard" map symbols are proliferating rapidly.

Vehslage, White, Russell, Cravens, Fieseler  
About the map symbols committee:

5 August 1975  
8218 Sherrill  
Landover, Md.  
20785

As best I recall, Vehslage, White, and Russell already have received copies of both the symbols which I proposed and the accompanying manuscript. If not, or if you've mislaid your copies, please request new ones.

Cravens and Fieseler are receiving copies of the map symbols with this letter; copies of the manuscript will follow in about two weeks, after I can arrange to have it duplicated.

DUE TO THE DIFFERENT TIMES AT WHICH EACH OF YOUR COPIES HAS BEEN MADE, there will be minor differences both in the symbols and in the text. A few changes have been made due to recent information from the British Cave Research Association, others have been made on the request of Russell, one on the suggestion of Franco Urbani P., another because I think somebody was pulling my leg and I didn't realize it.

Making five identical sets of the thing would cost me about \$30 and I don't have the money. If you can't make do, then I suggest we wait until sometime next winter, when the Sociedad Venezolano de Espeleología publishes the whole thing and reprints will become available (in Spanish, of course) (Franco Urbani P. has made a beautiful translation of the manuscript !)

My position is fully stated in the manuscript. Hence, I won't address any specific subjects here, but will await questions from the rest of you.

The one serious conflict between AMCS and my compilation is in showing water. It is necessary to be able to map bed materials, bed contours, high and low stages, and other things simultaneously with "water" -- in a single color. My use of waterlines, drawn with a flexible pen, is easier and clearer than is AMCS' use of

mechanical shading -- the dots, contours, speleothem symbols, and what not stand out better among waterlines than within a uniform shading. If we are to use shading for water (and very few North American cartographers do so, I might point out), then many of the other symbols on my list will have to be jiggered, also.

The matter of length can be handled easily by having a "basic" list of a dozen or 15 symbols (less than AMCS) and a "comprehensive" list (which could be even longer than mine). Both would be "NSS Standard Map Symbols", each complementing the other.

Speleologically,

Jim

Russell, Vehslage, Martin

On map symbols

3 June 1975  
8218 Sherrill  
Landover, Md.  
20785

What is "wrong" with the existing set of NSS symbols is that there aren't enough of them, primarily. There also are some inconsistencies, and they might be edged a bit closer to the UIS standard list, but mainly there aren't enough. This is argued, beginning on p. 20 of the ms which I'm loaning to Russell. He is to forward this to you at the Convention as soon as he has read it (copy anything you like, first). It has 39 pages, which is more than either I or the NSS ought to afford to print up and send to the BOG plus mailing list. As I said, it's being published in Venezuela and should be available (in Spanish) before the end of the year.

If the consensus is that the 1961 list has "enough" symbols, then my paper is an interesting but impractical exercise and should be turned down.

Please note, Bill, that this is not "my" list, in 1961, it is Will White's, et al list; also, it was never adopted as the NSS standard list -- it was only proposed to the BOG and then forgotten. The NSS has no formally approved list of symbols.

A copy of the list of symbols will be mailed to Martin, care of etc, by Friday, if not sooner. He isn't getting a manuscript, because I have only one copy to circulate and I don't want it getting lost in the mail for half the summer. Covering letter will be included, though.

What is "better" about the set I'm proposing is thoroughly defended in the manuscript which Bill is to send Vehslage, c/o NSS Convention after Bill reads it. It's much more comprehensive, it's rationalized, and it's nearer to UIS practice in most respects.

Comments on Russell's critique of my preliminary list (substantially different from the version distributed to the BOG and to Martin):

The "committee" is not yet in existence; I've suggested to Vehslage that

the Crowthers, for instance, be asked to round up a review committee. The list I'm proposing is my own work, although it was compiled from many sources and with a great deal of assistance.

You will recall that the research was done about 5 years ago, so some people currently active as cave cartographers, such as John Corcoran, were not included because they hadn't become prominent. You will note in the "Acknowledgements" the following western cavers: Ray de Saussure, Bill Halliday Carl Kunath (one of the very best), Jim Quinlan, yourself (Russell), Dick Schreiber, A. Richard Smith. Terry Raines was contacted but characteristically failed to reply. I admire Raines' work, but he has never been very communicative.

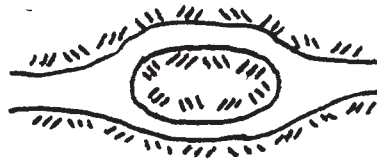
There's no argument, to my knowledge, that there should be a condensed, "basic" list and an exhaustive "supplemental" list. I would suggest the following for the basic list:

horizontal entrance	passage height (air-filled)	block breakdown
passage	stalagmites present	pit
cross section	stalactites present	dome
underlying passage	columns present	small stream
unsurveyed (unexplored) passage	rimstone dams	large stream
slope	flowstone on floor	lake
vertical drop		

This is a total of 18; more or less could be included. I'm not too concerned to argue over what would be appropriate, but 15 or 20 symbols should be the limit.

It is simply impossible not to have conflicts with other lists. I mean, you physically cannot come up with a list which does not have a few conflicts with "symbols commonly in use elsewhere to show a different feature." I've tried not to propose changing any symbol in common use in the US -- which is why I'm not entirely congruent with the UIS list of symbols, but there's no use trying to avoid conflicts with all other USA lists, not to mention avoiding international conflicts.

It would be a good idea to change my pillar symbol, yes. How about this type of hatching, it's often used overseas to indicate the bedrock wall of the cave:



Both the basic and the supplemental lists should be adopted as the NSS standard. Otherwise, we're right back to having no standardization. That's what we're trying to establish in the first place.

The only outright conflicts between AMCS and myself are:

massive flowstone -- I define this as "column"  
 stalactites -- I use the USGS symbol for chert  
 stalagmites -- do  
 bedrock floor -- AMCS resembles my "boxwork" symbol

When you say, "talus", I think you mean slab or chip breakdown. Talus is a



morphogenetic feature involving gravity erosion. Lots of chip breakdown lies where it fell, with no talus morphology.

I'm also making a deliberate issue of "siphon", because there is hardly ever a physical siphoning effect at these places. They are just low areas, traps, where water collects and fills the passage up to the ceiling. A true siphon, you will recall, consists of two reservoirs connected by a higher (but air-tight) channel containing moving water under a vacuum.

I'm not especially opposed to an "upper level" symbol, but the definition should make it clear that this is an uppermost level where two other, lower levels, also are present. It's not too logical to have an implied main level, and a lower level, and an upper level, when there never are more than two passages involved. That is, people start thinking of geomorphic levels and terrace levels and older and younger levels and pretty soon the map is full of implied cave history instead of being purely descriptive.

Your water depth symbol comes from some other standard source, I know. Mine, from Audéat, is less likely to be confused with numbers standing for other things.

I know of no other stateside cave map symbols list which uses ruled lines for water. This is common overseas, but essentially never in the US. I don't think you could make it stick, even if it were adopted -- which is why I'm not trying, even though the UIS calls for ruled lines. If I should agree to change this, then I'd have to rework several of my other water-related symbols. It's not worth it. See p. 16 et seq in the ms for a full defense.

Your "massive flowstone" is the same as Vineyard's "column", which is the one I'm using in preference to the older list. It's not that much of a difference that people would be confused, but it's not quite the same.

There's no difference between your "flowstone column" and an ink spot, which is why I'm not using individual dots for anything in my list. An ink spot always has to be associated with an obviously intentional marking on the paper, otherwise it will be ambiguous.

Your "dome" symbol could be reconciled with my "ceiling ledge" simply by adding dots between the dashes. Even so, there is no way, in your system, to represent domepits -- features with both height and depth in relation to the reference level (an intersecting passage). I guess I was thinking "vertical shaft", and it wouldn't be too good an idea to leave genetic cave interpretation up to week-end cave surveyors. Can you modify yours to include alternatively pits and/or domes or both in the same scheme of symbol?

I agree that, ideally, bedrock floor should be mapped, not assumed. On the other hand, if bedrock floor is mapped over a large area, the symbol will cause problems with mapping anything else. Try mapping a bedrock stream channel containing breakdown, for example. It will become extremely cluttered, especially after reduction. If there are speleothems on the ceiling above, it will become incomprehensible and require two or more maps, each showing one class of cave feature -- speleothems, water, floor materials. This is why I said "assumed" if not mapped. I won't argue over it, though, if you want to drop the "assumed" part.

Boxwork is so rare that there probably would be no harm in retaining your symbol. Few opportunities for conflict. One other criticism is that you cannot map the true areal extent of a bedrock floor as I can, because your symbol consists of disconnected segments whereas mine is continuous.

I'll go along with your "human debris" -- my cave area has many more arrowheads than pots, so I naturally drew an arrowhead.

You have no outright conflicts with UIS except your "column", which they use for "stalagmite."

Let me object that AMCS has too many symbols for a basic list, also: Leave out the "geology" -- most cave mappers aren't going to recognize faults or be able to measure strike and dip.

Depth and height below entrance are meaningless unless there is an accurate profile survey -- rarely the case.

Profile trace clutters and, besides, very few profiles are ever published.

Sump is rarely used.

All floor symbols except breakdown are rarely used. Usually, only geologists are going to map floor sediments. Spelunkers map breakdown because it gets in their way, but they don't worry about anything else.

Moving on to the text of your article:

Many of your comments are addressed in the manuscript; I'll reserve arguments until you've had time to read it.

The basic list should have an upper limit of 20 symbols, at most. AMCS is too long -- and I'm not saying this just to be aggravating.

Numbers are essential -- the depth of a pit, for example. You want to know how much rope you need, don't you?

In the revised list, the height of a dome is in a dotted circle, not a circle with a line under the number. That's a little less complicated.

The purpose of having different geometric shapes associated with numbers standing for different features is to prevent confusion. If the numbers stand alone, more or less beside their feature, when there are several numbered features, one is not quite sure which goes with which. Also, it is much faster to recognize shapes than it is to cognitively read and understand letters and numbers. The reader can pick out a number in a square as belonging to the pit much faster than he can read the number and decide that it probably applies to the pit.

I used my "dome" sign because it already is in wide use. However, yours will be more logical, if you can adapt it to domepits.

I kept "natural bridge" because many people use something similar. It is quite true that there need be no formal symbol, that coincident upper and lower levels with a ledge symbol at each end of the lower level symbol means the same thing. But there should be a defined example of this, otherwise many people will think that we forgot about it.

The flowstone symbol is widely used -- you mean, connect the squiggles?

The wall line is broken at "flowstone wall" because we don't know where the bedrock wall is located -- we should only map what we can measure and "know" with some degree of certainty.

The crossed pick-and-shovel is used on small scale maps; on large scale maps, the outline of the diggings can be mapped with the "artificial floor ledge" symbol. Another example -- where the limits of the workings are not known, as in many salt-petre mines, only a generalized symbol is appropriate.

I'm trying to get us into agreement with the USGS and other conventional geological maps -- hence the triangles for chert. Unless the draughtsman is extremely careful, triangles get out of alignment and their meaning (whether stalactite or stalagmite) becomes doubtful. I'm trying to eliminate as many of these open-to-question symbols as I can.

There's no mention of units on the list of symbols; in the manuscript, the section on the title block provides that the type of units shall be stated in the title block. Presumably, if the bar scale is in chains and furlongs, then the whole map is in chains and furlongs.

As I already said, you can't avoid numbers on the plan map because very few mappers provide profiles and cross-sections. Even a profile doesn't show ceiling

height variation, say across the width of a large room. You can either provide an inset map with ceiling contours, or you can provide numbers.

My "bedrock floor" symbol is from Vineyard.

In summary: I like several of your suggestions, and I have a few for you which shouldn't do too much violence to the AMCS system. Please consider my arguments where I still disagree and fire off another round of discussion.


My cover letter to the BOG, which went out last week with copies of my revised map list (the one I sent to you this year) states that AMCS is going to propose their list as a substitute "NSS Standard." If you're not there, I hope you can arrange for someone to provide copies to the BOG before the meeting is over, so that the AMCS list can be considered, or sent to committee, or whatever is done about this next time around.

Speleologically,

Jim

#### Comments on Hedges' Letter

By Bill Russell

The detailed comments were especially welcome and from communications a better list should develop. I like the new pillar representation -- in most maps where floor detail is shown it is not necessary to show the walls as the "cave" is full of symbols and stands out well, but where it is necessary to show pillars the new symbol is good. The upper level and lower level symbols actually are used only where passages cross and do not imply a "level" but only a crossing above or below. The wording on the new list has been changed so as to make this more obvious. In complex vertical caves with several superimposed levels the plan view of the entire cave frequently can give only the horizontal extent of the cave, with most of the detail given in profiles, insets, and cross sections. The objection that the AMCS symbol for flowstone resembles an inkblot does not seem valid as unwanted ink blots are rare and easily removed. The AMCS list uses a solid hatchured line for pits below the floor level and broken hatchured lines for domes, and combinations of these for a dome pit. Several years ago the AMCS decided to use broken hatchures for ceiling features and the first used a dot between the hatchures, but these were hard to draw and were omitted. Hedges should be aware that most cavers use "syphon" to mean a passage full of water, whether or not any syphoning action takes place. The AMCS list follows this common usage. Geology symbols should be included on the basic list; any surveyor who is able to map a cave can measure strike and dip. A dome pit is a distinctive feature that cuts through preexisting cave levels and perhaps a unique symbol should be provided for this, as for example, , but many compromises are possible. Water seems to be the main problem, and a discussion of water symbols follows excerpts from Hedges' article on cave maps.

Excerpts from: "What Ought a Cave Map to Show" by James Hedges

The following are excerpts from a longer article by James Hedges on cave maps. The parts of the article presented here are those sections dealing directly with map symbols.

#### ABSTRACT

Cave maps must serve a varied audience. While Level 2 maps (accurate Outline Surveys) satisfy the need for route guides during exploration, they contain so little detail as to be of little reference value to persons not already familiar with the caves shown. Level 3 maps, showing passage topography in addition to passage outline, are scarcely more useful. Modest additional effort on the parts of survey teams and of cartographers would clothe passage outlines and slopes with geographic, geologic, biologic, and cultural data basic to the work of many specialists.

Until cave surveyors, draughtsmen, and cartographers are possessed of a larger vocabulary of map symbols, they will be unable to conceptualize and to execute highly informative maps. Most of the phenomena basic to modern speleology have been adequately symbolized at one time or another. In this compendium, the most pictorial of these symbols have been rationalized and made stylistically compatible. Those previously advocated by the Union Internationale de Spéléologie and by the National Speleological Society (United States) are largely preserved.

Speleo-cartographers face three major technical challenges: (1) to devise a means of presenting highly informative maps of large caves at small scales, (2) to devise an inexpensive method of rendering maps of multi-level caves, and (3) to devise more-easily understood maps of caves having great relief.

Even the most detailed cave map will not be an effective vehicle of communication if it be cluttered, cramped, lettered poorly, or in other ways offensive to the eye. Cave cartographers should strive to produce maps which convey information in a graceful manner.

#### PREFACE

Cave maps are the basic documents of speleology. An adequate map shows not only the widths and trends of the passages. It contains, also, the location of the cave, directions for reaching it, a geological summary, an outline of hydrology and meteorology, data on biota and their ecology, notes on history, suggestions on scenic values, and comments on the accessibility of the various passages. The map should be a concise, encyclopaedic summary of the cave.

Permanently recorded observations, such as printed maps, must be communicated through time as well as across space. Effective communication depends upon the existence of symbols the definitions of which are uniform throughout the world and unchanging through time. Neologisms should be introduced only when needed to express new concepts or to record new percepts; in no case, should new symbols conflict with those previously adopted. Individuality is preferred in layout, draughting, and lettering, but cannot be allowed in symbolism.

Most organizations which publish cave maps have issued lists of standardized map symbols for use by their member cartographers. The National Speleological Society (United States) is not among these, although a committee chaired by William B. White proposed a list of symbols in 1961. At Dr. White's request, I have revised



that list to include a broader selection of symbols and to make the symbols recommended more nearly compatible with those of the Union Internationale de Spéléologie.

Surveying and draughting techniques have been discussed many times. It is not my purpose to review what is (or ought to be) matters of general knowledge. Nor am I concerned with the making of special-purpose maps. Rather, I would like to deliver myself of a few thoughts upon basic cave cartography, upon the most informative, legible, and attractive means by which the survey data may be permanently recorded. That is to say, I would like to discuss the geographic cave map.

Most of the draughting suggestions given can be adapted to mechanical drawing methods. All symbols remain clear and unambiguous, regardless of the materials and techniques used. However, all serious cave map cartographers should consider that pen-and-ink methods, once learned, are the cheapest, quickest, and most versatile of all. Avoided is the expense of elaborate draughting equipment, gone the stylistic restrictions of lettering guides, no more the incompatibility of size between commercially prepared adhesive transfers and the scale of the cave being represented. The ideal of a unitary, synthetic cave map, in which all lettering and symbolic elements are complementary in scale and style to the perceived character of the cave, can be achieved only by free-hand methods.

#### COMPARISON WITH OTHER STANDARDS

With the few exceptions discussed below, all symbols proposed in the preceeding section of this report are either identical with the symbols recommended by the UIS, are obviously similar to them, or represent features not symbolized by the UIS. They were drawn from several sources (see: "Literature Cited" and "Supplementary Readings"), but primarily from the "Proposed Standard Map Symbols (1961)" of the National Speleological Society (United States) and from the list of symbols adopted by the Union Internationale de Spéléologie in 1965 and published in 1966 by Trimmel and Audétat.

Some of the proposed symbols are different from those defined as representing certain features by the NSS, the UIS, or both. A few of the definitions set forth by the NSS were illogical or referred to non-existent features. These have been omitted, entirely.

The major difference between this compilation and the UIS list is in the problem of symbolizing water. European practice has favored hatched shading, while most North American cartographers have favored waterlines, dots, or other methods. An underlying principle guiding the selection of symbols adopted in this report was that only man-made features should be represented by rigidly geometric patterns. Natural features should always be drawn free-hand, for the sake of plasticity (after all, nature rarely is precisely geometrical). Thus, water, a natural feature, should be represented by a free-hand figure. Another, practical, reason for selecting waterlines was that dots and straight lines would conflict with symbols representing clay, sand, and other bed materials, and with depth contours. Waterlining with a flexible pen permits the superposition, in one color, of water, bed materials and (drawn with a fine tube pen) depth contour symbols on the same map.

#### PROBLEMS OF REPRESENTATION

##### Too-Few Symbols

The main deficiency in the Proposed Standard Map Symbols (1961) of the National Speleological Society and in most other lists of cave map symbols is

their limited scope. There are too few symbols included to enable a cartographer to portray all of the cavern features which are of potential interest to map users. This leads either (a) to the repeated invention of special symbols (which defeats the purpose of having a standard list), or more often, (b) to the omission of data.

Surveyors may neglect to record certain features because they are unaware that anyone might be interested in something for which no symbol exists. Should such a feature be recorded by the survey team, the draughtsman may fail to include it on the map out of ignorance of a means of portraying it. An expanded list of standard map symbols will help to educate map makers in the kinds of information which are desired by map users and will enable them to present these data more effectively.

### Too-Many Symbols

Many map users, and some leading cartographers, suggest that a comprehensive list of map symbols would be so complex as to be more confusing than helpful to the average caver. In truth, the preparation of Level 3 maps requires the use only of about 15 symbols, all of which are in common usage and rather self-evident in meaning. That an unabridged dictionary of the English language contains some 500,000 entries has not discouraged most of us from learning and using 1/100 th that number of words in every-day speech. At the same time, few of us could communicate accurately were we always restricted to a basic vocabulary of 5000 words.

### Too-Intricate Symbols

Of a piece with the objection about excessive numbers is the complaint that some symbols require more drawing ability than is possessed by the average cave cartographer. In fact, each symbol proposed in this report is sufficiently unique that it remains clear and unambiguous, even when scrawled with a dull pencil upon a muddy field notebook. Skill and artistry have very much to do with the attractiveness of the finished map; they have extremely little influence upon its information content.

## Comments on Hedges' Article

Bill Russell

It is unfortunate there is no organization eager to print Hedges' article on cave mapping -- perhaps the NSS geography and geology section could begin a discussion of cave maps and map symbols. Space in the Activities Letter prohibits printing the full text of the article and Hedges' complete list so those interested in the forthcoming selection of a standard list by the NSS will have for the most part to rely on Hedges' comments. Though most of Hedges' symbols will undoubtedly be adopted, there are so many that even if it were desirable they could not all be carefully considered, and many of his symbols are in agreement with established practice and are probably the best that can be devised.

However, in one important respect he does not follow the UIS or the AMCS list. This is in his treatment of water. Hedges feels that "only man-made features should

be represented by rigidly geometric patterns. Natural features should always be drawn free-hand, for the sake of plasticity (after all, nature rarely is precisely geometrical)." This need for "plasticity" would seem to be purely an aesthetic convention of Hedges'. The symbol that best portrays a feature should be used whether plastic or not. And in any case, the use of parallel lines to represent the surface of a cave pool, which is much more "precisely geometrical" than most man-made surfaces, would not appear to violate Hedges' convention. The edge of the pool is drawn freehand in both systems. It does not seem desirable to show both water and the deposits under the water. If both are to be shown, either the bed deposits should be shown on an inset, or the water should be printed in blue. And I cannot resist one last comment on style -- To me freehand lettering detracts greatly from the finished maps, calling attention to the calligraphy rather than the cartography and as commercial lettering guides and adhesive transfers are available in all useful sizes, a resourceful mapper should not be forced to use hand lettering.

A number of letters on map symbols have been received from cavers who are not members of the map symbols committee. All suggestions are welcome and now is the time to let members of the committee know how you feel as once a standard list has been adopted it will be more difficult to change a symbol. I will try to comment on the letters received in the next AMCS Activities Letter, but I can answer one question posed by the careful map reader Bob Thrun.

Speaking of symbols, what is the funny symbol on the Ventana Jabali map?



These are large tripods used to support a guano mining cableway.

\* \* \* \* \*

The following letter from Tom Cravens indicates his feeling that the work of the committee is to reconcile differences between existing lists rather than to develop the best possible list. Unfortunately the very number of lists and symbols makes even this task difficult

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Pennsylvania State University  
University Park, PA 16802

Tom Cravens  
Dept. of Sociology  
Meramec Community College  
11333 Big Bend Blvd.  
Kirkwood, Missouri 63122  
September 26, 1975

Dear Will,

I am writing to you regarding the Ad Hoc Committee on Cave Map Symbols. Let me begin by saying that I feel seriously limited with regards to my input to this Committee due to a lack of background material. As you may be aware, I was unable to attend the convention and thus missed the reportedly stimulating debate which lead to the creation of this Committee. I did receive some materials from Jim Hedges, plus an accompanying letter (August 22, 1975) in which I was asked to respond to three questions. Due to the short period of time involved, I have been unable to seek as many opinions and suggestions from knowledgeable cave mappers in the Midwest as I would have wished. I have, however, had an opportunity to obtain considerable input from Jerry Vineyard and much of the specific recommendations regarding choice of cave symbols were provided by Jerry.

In response to the questions posed in Hedges' letter of August 22:

- (1.) I favor a basic list of symbols which could be used in most situations. Additionally, a supplementary list containing symbols which would be used only in special maps or in atypical situations. It sort of appears that there are just too many symbols floating around for them to be effectively used as standard symbols.
- (2.) I am in favor of developing the basic list by drawing from both the Hedges' list and AMCS's list. I really don't see that it is a question of building on one list as opposed to the other, but rather selecting the most appropriate symbols from both lists.
- (3.) I am returning with this letter all the symbols from both lists which were sent to me by Hedges. (Due to cost of Xeroxing, this material is not being forwarded to all Committee members.) I have indicated in the margins those symbols which should be part of a basic list and those which I feel would best be included in a supplementary listing. Symbols without marks were deemed inappropriate for inclusion in either list.

In addition to responding to Hedges' questions, I should like to add that I do not think that a finalized set of symbols can be very effectively developed through a committee structured such as this. I assume that we are simply functioning to more or less mediate a dispute rather than put forth a finalized "masterpiece".

In closing, if you are in need of additional comment, please do not hesitate to contact me.

Tom Cravens

#### STANDARD LEGEND FOR CANADIAN CAVER MAPS

In order to save time and effort in drafting cave maps I am proposing a standard set of cave symbols to be used on maps published in The Canadian Caver. Starting with this issue maps will be published without a legend, unless special symbols are used. A list of recommended symbols is given below and will be published (in a condensed form) in each issue of The Canadian Caver. Unfortunately, there is no standard set of symbols in general use in North America so I have chosen a mixture of those used by the C.R.G., the A.M.C.S. and the N.S.S. (as recommended by James Hedges). Hopefully everyone will get together to produce an acceptable list of cave symbols eventually.

What must appear on every map is the name of the cave and at least the province or state it is located in, a scale both in metres and feet, north arrow, the map units (ie. feet or metres), survey instruments used (preferably with some indication of the accuracy of the readings) and the names of the surveyors. It is also usual to give the total surveyed length and depth of the cave. Other notes may be made at the discretion of the draftsman. Those familiar with the CRG system of grading may wish to use it. A good indicator of the accuracy of a survey is the closure error on loops, and this should be quoted when possible.

Peter Thompson

Canadian map symbols continued next page

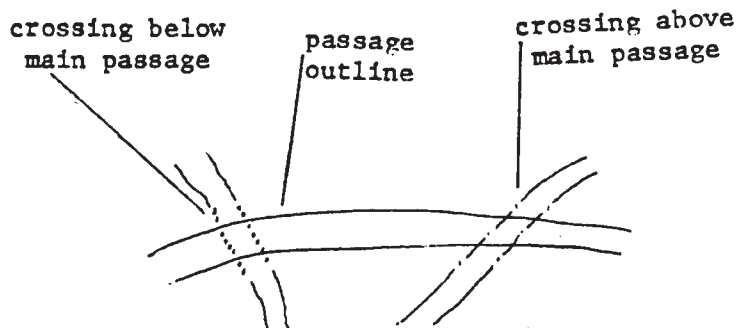


	FEATURE	NOTES
	Gravel	Can be mixed
	Sand	
	Clay or silt	
	Dome with height	Can be shown with slope (in degrees) if measured.
	Slope (down in splayed direction)	
	Domepit with height and depth	Note on map if cave breath- es or if air current dir- ection changes seasonally.
	Air current	
	Scallop or current- marking direction	In a dry passage inferred from scallop morphology.
	Height above datum	
	Depth below datum	Position of survey station should be shown
	Passage height	
	Guano	Maximum height
	Stalagmites	
	Stalactites	
	Columns	
	Soda straws	
	Rimstone (gours)	
	Flowstone on walls and floor	Active i.e. water-filled gours should show cross hatching.

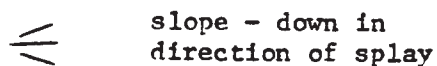
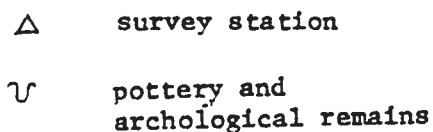
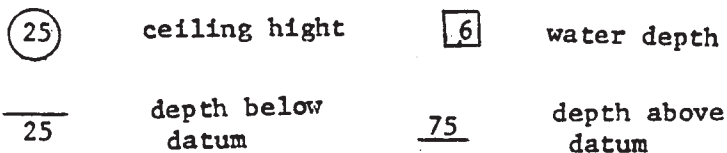
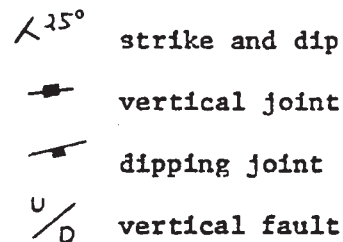
	FEATURE	NOTES
	Underlying passage	If more than two passages are superimposed, the plan of the third (etc) passage should be offset for clarity.
	Overlying passage	
	Unsurveyed passage	Some indication should be given as to whether or not the passage ends.
	Cross-section	Direction of view shown by arrow. All x-sections should be drawn horizontally.
	Limit of penetration of daylight	Under the most favourable conditions.
	Drop in ceiling height (down in hatched dir <sup>n</sup> .)	
	Abrupt drop with distance (down in hatched direction)	Distance must be in same units as specified on map. R=rope HL=handline L=ladder
	Ice	Applied to perennial ice only.
	Pool with depth	This is used to indicate both standing water and a pool in a streamway. <span style="border: 1px solid black; padding: 0 2px;">?</span> = pool >6 ft deep.
	Stream	
	Siphon (or sump)	Under "normal" conditions.
	Large breakdown	
	Small breakdown	

MAP SYMBOLS

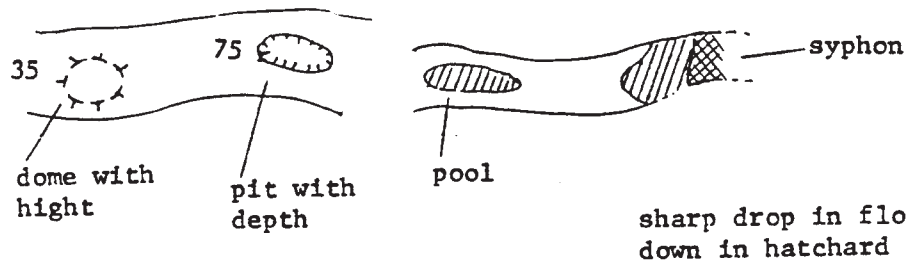
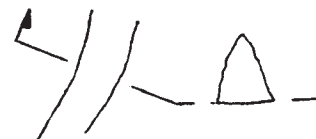
Passages



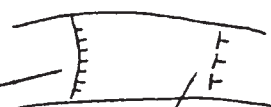
Geology



cross section  
viewed in direction of  
half barbed arrow

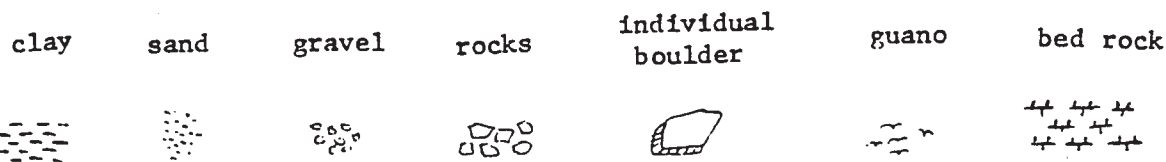


sharp drop in floor  
down in hatchard direction



sharp change in  
ceiling height -  
low side hatchard

Floor Deposits



Spelothems

