

THE TEXAS
CAVER

SEPTEMBER / OCTOBER 1999

THE TEXAS CAVER

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We encourage YOU to participate in this publication.

Please see page 95 for Submission Guidelines.

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ON THE COVER: Christy Quintana on rope in Mexico. Photo by Denise Prendergast

ON THE BACK: Christy Quintana under the showerheads in Grutas de Tolontongo. Photo by Terry Raines

OBITUARY

Christine Lynn Vanek Quintana 1972-1999

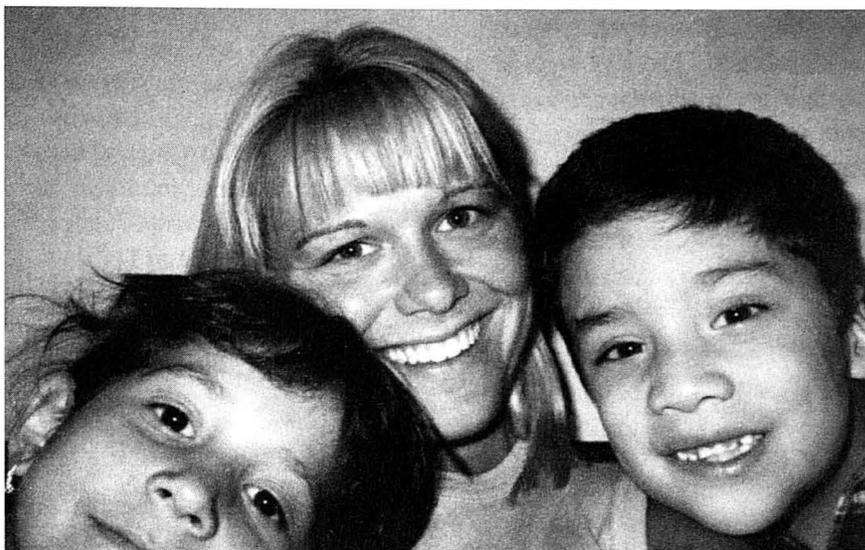
A large portion of this issue is devoted to our friend, Christy Quintana. Christy was killed on August 26, 1999, in a chance accident while caving in Mexico. She had been there for six weeks, living with a family, learning Spanish, and caving with many fine people.

Christy's death has been a blow to everyone who knew her. She joined the caving community in 1995. All over Texas, every caver she touched will miss her terribly. In San Luis Potosi, where in a few short weeks Christy found a place in their hearts, her loss is felt just as deeply.

For those of you who never had the chance to meet Christy, she was, as you will see in the following pages, a very special person. Those of you who knew her understand just how inadequate that phrase is.

To Christy's husband, Sean Quintana, her parents, Kenneth and Karen Vanek, her family, and friends, we can never fully express our condolences.

Thank you for sharing her with us.



Christy with two children of the Familia Rodriguez with whom she stayed with in SLP



*Out of my sorrow I shall make a song
So beautiful that others' grief will cease.
If one but listen, silently and long,
I promise him my song shall bring him peace:
One clear high note of faith, one note of cheer;
And one of courage, flung against the sky;
But not one tremulous, low note of fear,
And not one muted, agonizing cry.*

*Oh, I shall make my song a thing of light.
The darkness only can put forth a star:
And out of sorrow—darker than the night—
A song shall lift that men will hear afar,
And listening, with faces eager—glad—
Will say, "Where is the sorrow that we had?"*

Grace Noll Crowell

When I read this, I thought of Christy immediately. When I think of the smile on her face and how her eyes would just dance with excitement when she spoke, all of my sadness lifts—even if just for a moment.

There are so many memories: friendship, gossip, crossing the border, speleo-modeling, moments of mischief...

It is her memory that sings to me.

In life, she wrote this song.

She was so bright, and from the time I met her, there were always days that I wished I could be more like her—even if I was already "the other (blonde) Christy."

Christie Rogers



Christy and Logan McNatt horsing around on a Mexico trip
THE TEXAS CAVER

Remembering Christy

Compiled by Dale Barnhard

I think I was instrumental in my daughter's early love of caves. Because I loved to visit tourist caves, I would route our vacations around where tourist caves were located. Christy started wild caving after she began working as a guide at Inner Space Cavern.

-Karen Vanek

It seems just a few weeks ago we gathered arms full of Christy's garden veggies and sent her off to San Luis for the summer.

It always brightened my day to talk with her.

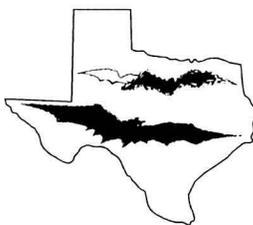


Christy playing around with her Mexican caving friends after a muddy caving trip

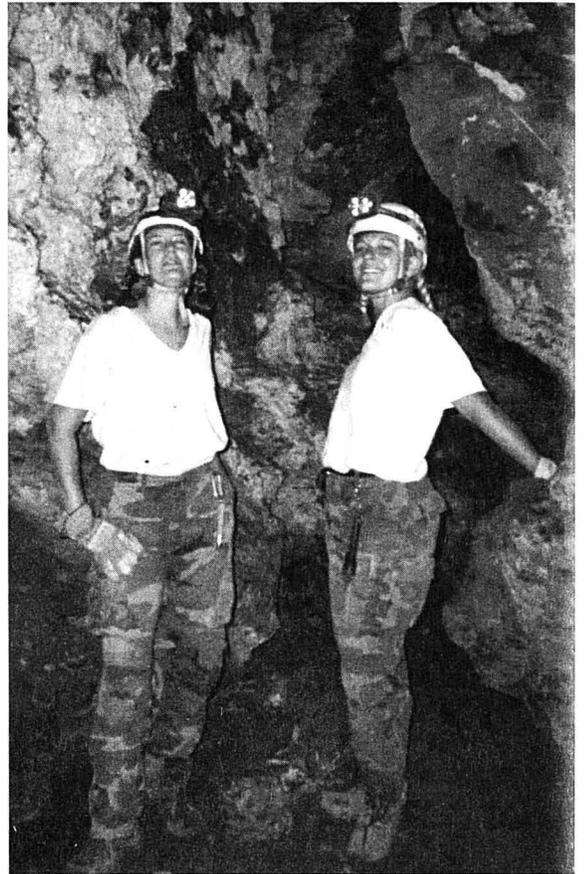
She was special because of her outlook on life. We remember Christy as always smiling and laughing. She was a very positive person. Probably the best tribute that each of us can give to Christy is to adopt her positive outlook. Everyday, each of us should smile and laugh as Christy did. If we do this everyday, it will become easier. If you can't think of any reason to smile, just think of the way Christy touched your life. Over time, the smiling and laughing will be easier. I think this would make Christy happy.

We had our first and only long conversation last year at Robber Baron Cave, during which I found her to be a highly intelligent, multitalented, and fascinating person. I had been looking forward to eventually getting to know her better.

Christy had such charisma; she touched the hearts of all that knew her.

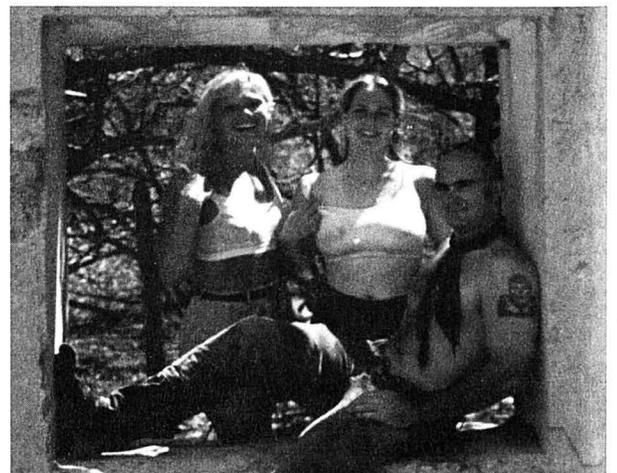


Christy is and was our ray of sunshine on every day in our presence.



Christy and Aimee strike a pose in Cueva del Brinco

The memory of her laughter, her humor, and her tremendous outlook on life will be something I will keep as a guideline in my own behavior. To leave this world with a history of positive experiences that she herself left with me is all I could ever pray for. God Bless you Christy and thank you for your smile.



Christy, Christy Rogers (the other blonde Christy) and Eric Flint hangin' out near Bustamante



Christy shows off her tan at the old Candela train station

Christy's life was a gift to all of us who knew her. Her exuberance for life was felt by all who encountered her. I'm grateful for having known her. I will always have an image of her driving in her jeep with a big smile on her face. Her time was done on this earth in such a short time, but she taught us well.

Christy was the bravest soul I ever met.

She was an exceptional human being, a beautiful person in all ways, an unending source of positivity and joy. I never saw her act in a hurtful or selfish manner. Around campfires, in caves, on the road, she was always smiling, and always made me smile in turn. "Some people come into our lives and quickly go; some leave footprints on our hearts, and we are never, ever the same." Christy did both of these things.

I will also miss Christy Quintana. She was a very special person. We all enjoyed working with her at Cobb Caverns and the many times she helped us with Colorado Bend State Park Earth Day. We can all find peace with her death by being thankful that we had her for a time, even though it was short. She will not be forgotten because of all the memories we all have of her. Just enjoy your family and friends for the time that we have them and we can honor Christy that way.

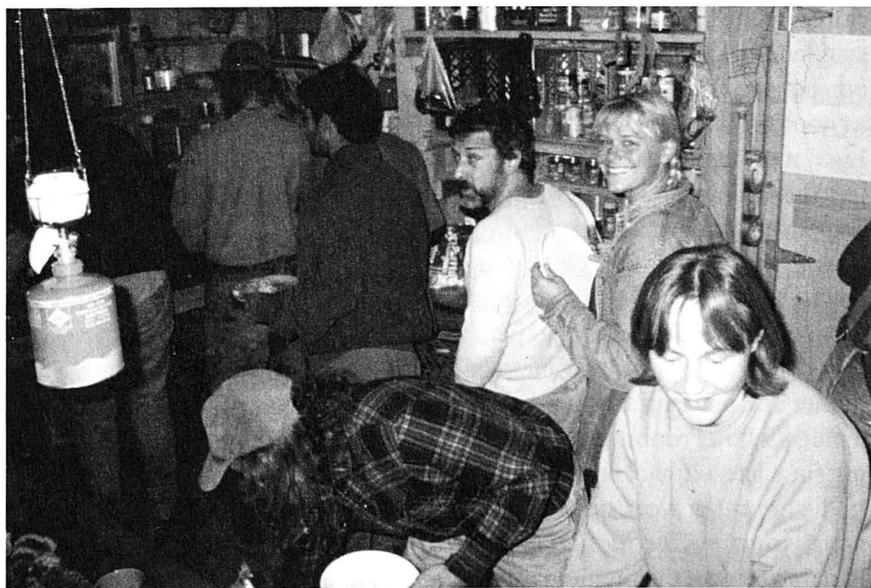
Now Christy is another star in the cavers' heaven. Remember her as a good caver, as somebody who passed away doing what she really loved.

Christy was truly one of those shining gifts from God, who brought us His meaning of love and how to live with our brothers and sisters. May we all learn from her life, for she showed us how to "shine."

She was such a beautiful vibrant spirit and I will miss her presence at the gatherings and in caves.

She walked among us as a very special person. Never, in over 30 years of caving, have I seen a person with such enthusiasm and joviality and intellect enter our ranks. There have been many cavers with enthusiasm. There have been many who were jovial. And there have been many who were intelligent. But none I have seen or known have combined all those qualities the way Christy did. She was indeed a rose on the bush of thorny cavers. She was a person who lusted for life and her death, untimely and cruel, should cause us who knew her, and many of those who didn't, to realize both the glory and tenuousness of life. She touched me closely with her vivaciousness and her cynicism—an irreverent reverentness for life and fun and people, that was so free and nonjudgmental it was almost saintly. She was a person that everyone that knew her wished they could emulate. I would like to say, but honestly cannot, that I will rest comfortably in the knowledge that my life was touched briefly by a truly great person. I cannot say that because I will not rest comfortably. I will always be tormented by the fact that our time with Christy was all too short. I want more!

I should be happy with what I've got...but to take just one more photo of her smiling face. Just one more...



Christy waits in line for grub at the Brinco field house

TRIP REPORT

Caving with Christy

Dale Barnard

Terry Raines had spent days studying various Mexican topographic maps. During Spring Break 1998, he, Christy Quintana, and I headed for the border. Christy and I hoped Terry had determined an approximate destination. Perhaps he preferred to leave the plan open. Perhaps he preferred to let us "discover" the plan as we went along. Perhaps he thinks that I am overly interested in *needing* a plan so he intentionally withholds it. Whatever the reason, when someone with thirty years of Mexico caving experience finds time to travel, I tend to use words like "yes sir!" in place of complaints. Indeed, as the trip went along, he seemed to have some vague objectives in mind, the first of which turned out to be Ciudad de Mante.

There we met with a local caver, Jean Luis Lacaille Moesquiz, who wanted some AMCS books. He invited us for a quick stop that turned into a six-hour visit. We were welcomed into the comfortable family home even though we wore raggedy caving clothes and smelled a bit foul. As we thanked our hospitable hosts for the afternoon and said good-bye, Jean Luis' mother repeatedly warned us to be very careful when we go south. We smiled and nodded. During the rest of the trip, we encountered some of the nicest people on the face of the Earth...and no banditos.

We drove to Ciudad Valles and had dinner at Cafe Don Juan. We stayed in a nice \$9 hotel room to avoid scrounging for a late-night campsite in the rain. In the morning, we resumed our southward journey through the state of Hidalgo toward the municipality called Calnali, which lies in the northern tip of

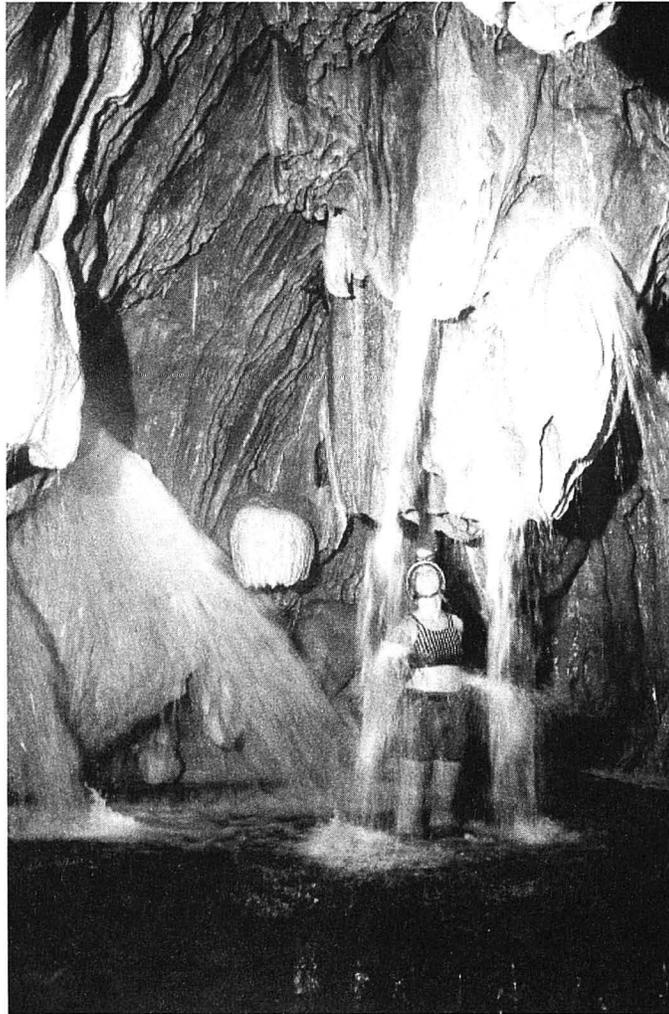
our targeted limestone band. Along the way, Christy and Terry made comments such as, "That appears to be an uplifted, tertiary sedimentary limestone sub-layer with an earlier underflow of volcanic solidification with metamorphosed surrounding layers." I made an occasional,

We crawled through the bloody droppings of a few frantic vampire bats to some short climbs, but the cave ended in mud plugs.

Back in town, Arnulfo arranged for a visit to a lower village called Tula where some caves might be found. We packed minimal caving gear and warm clothes in case we had to sleep without sleeping bags. Pedro, our tour guide, led us on the one-hour hike down to the small village next to a clear river. We followed him up-stream another 45 minutes to two horizontal caves at the base of some bluffs. The nicely decorated caves had plenty of walking passage, but both were fairly small: one about 100 meters long and the other about 50. We returned to town where Pedro's wife fed us pork chili and beans with tortillas for dipping.

Everyone in Calnali and Tula welcomed us. Their smiles and kindness distinguished this village from some of the larger towns we had visited thus far. After dinner, Pedro made sleeping arrangements for us in the home of a widow who had an unoccupied room with two beds in it. They asked us if we needed a second room for Christy. Terry relieved some of their visible tension by explaining that Christy was his daughter (a white lie), and that it was okay for her to sleep in the same room as the two of us.

After a good night's sleep, Pedro's father led us up an Arroyo toward a rumored sotano. He looked like an old man, but could have run circles around us as we hiked up the arroyo. After about an hour-and-a-half, our guide made a sharp left turn out of the arroyo and found the cave a short distance up the hill. His



Christy Quintana under the showerheads at Cueva de Tolontongo.

Photo by Terry Raines

equally intelligent-sounding comments like, "Isn't that a pretty grey rock?"

In Canali, we met the municipal secretary, Arnulfo Lara, who owns a restaurant. He welcomed us and offered us camping at his near-by property, which happened to contain a small tourist cave. In the morning, we followed the power lines to the little cave. We found the obligatory shrine about 25 meters inside.

sense of direction impressed me.

The cave sloped downward, following the angle of the rock layers. By listening to a rock tumble down it, we estimated it about 100 meters deep. Although we were tempted to rig the pit with jungle vines, we postponed our descent until we could return with appropriate rope at a later time. Unfortunately, the hike back to the truck turned out to be a bit farther than we had hoped and we never returned to the cave with gear.

Once back in the Calnali area, we were led on a "short" hike over several kilometers of rough trail to a nearby waterfall. The view of the falls justified the hike. From our high perch, we looked down on the water, which fell about 100 meters into a clear pool, and then roared down some narrower falls. As we made the final descent to the falls, a strong, chilly breeze relieved some of our urge to swim. However, the clean water still appealed to our dirty bodies. Christy did a face-plant on the rocky approach to the pool, which gave her a nice chin bruise to proudly display for the rest of the trip. The clear, chilly pool quickly silted up, but we enjoyed feeling a little cleaner. One the way back to the truck, one of our guides decided that he liked Christy enough that he wanted her to stay and live with them. The fact that she is married did not discourage him.

The next morning, we left Calnali and drove toward a new road that crosses from Molango straight to Ixmiquilpan, opening up some possible new caving areas. Just south of Molango, we found the new road. It skirted a near-vertical topography for many miles, bounded on one side with the mountain and the other with certain death as it dropped off many hundreds of feet, inches from the edge of the road. Terry marveled at the interesting limestone while Christy reminded him to watch where he was driving. I think that she may have put finger dents in the door handle where she nervously readied herself for a quick escape. Of course, the more she complained about Terry not watching the road, the more he exaggerated his interest in the lime-

stone observations. At some point, she tried to distract herself by telling a joke:

Grasshopper walks into a bar. Bartender says, "Hey, we have a drink named after you!" The grasshopper says, "Really? You have a drink named James?"

Later in the trip, we drove to a commercial cave and recreation area called Cueva de Tolontongo. We paid about 30 pesos each to get in, and it was worth it. The cave releases an entire river. Some of the water pours from falls above the entrance while the rest of it comes out of a number of fantastic cave formations. It gives the impression that the entire mountain must be full of water, desperately trying to escape through every nook and cranny of this large cavern. As we neared the entrance, a blast of hot, humid air hit us. Inside, it felt like a sauna. The water felt about 100 degrees F (40 degrees C), obviously warmed by some non-sulfuric thermal action. Terry had a waterproof camera and managed to capture some very nice shots while Christy and I popped flashbulbs for him.

Afterward, we drove northeasterly, back across the mountains on highway 85 toward Tamazunchale. We observed dozens of dolinas beside the road as well as some small caves in the road cuts. Locals spoke of many caves in the area, most of which would require an afternoon's hike. The fog eventually reduced our visibility to nil so we stopped at a side road and camped.

The next day, we drove north to a commercial cave in Monte Zulel, near Aquismon. We intended to make a map of the cave, but were informed that mapping the cave requires a permit from the secretary in Aquismon. (A permit to map a cave?!) We were free to photograph it, though.

We then drove up the valley to Sotono de las Golondrinas and inspected the new fence that guarded it. The rain became steady and camping prospects seemed a bit damp. Near the cave, Terry spotted someone walking through the jagged limestone. He asked the young man if there was an empty building

where we could spend the night. The man invited us to stay with his family just up the hill.

We piled into the little stick and cardboard house and found a small patch of dirt floor for our sleeping bags. Four people currently occupied this tiny home with only two twin-sized beds. Terry cooked soup for them while Christy and I brought our journals up-to-date, with the entry titles: "The Night the Gringos Came to Dinner." It felt like a large-scale invasion of an otherwise peaceful dwelling, which made their generosity even more appreciated. We slept shoulder-to-shoulder while baby chickens pecked on Terry's face through their cage.

In the morning, we walked up the hill to see Golondrinas in the fog. Even though we could only see about 50 feet into the massive, clouded chamber, its magnitude impressed us beyond words. The brand-new barbed wire fence around the pit did not impress us, though. Terry has since launched a campaign of letter writing to try to get the fence removed.

On the way down the bouncy dirt road to Aquismon, we picked up four adults, one child, and a baby. This brought our total to 8.5 people in Terry's Landcruiser. Impressive, if not a little absurd! In Aquismon, we had lunch with the secretary of the municipality. Several social hours passed before we finally hit the road for home.

We drove back toward Austin, stopping at Cueva de el Abra for some photographs, finally camping near Victoria at the "under the bridge" camp. The next morning, we crossed back to the United States, giving me a familiar disappointment. Until I can return to Mexico, I'll be wrestling with Spanish textbooks and maybe language school to prepare for our next trip.

"Caving with Christy" is condensed from an earlier trip report. This was Christy's first Mexico Caving trip.

ACCIDENT REPORT

Sotano del Aire

Joe Ivy

On Sunday, August 22, 1999, a group of cavers left San Luis Potosi to visit Sotano del Aire in the Sierra de Alvarez 50 kilometers (30 miles) east of the city. The group consisted of Miguel Angel Blanco, Rocio Medina, Christy Quintana, Cuauhtemoc Sanchez, Sergio Sanchez-Armass and Alfredo Silva. Christy, an avid Texas caver, had been in SLP for several weeks learning Spanish and living with a local family as part of the Spanish school. The Asociacion Potosino de Montanismo y Excursionismo or APME is a very active caving organization so it was natural for Christy to get together with them to enjoy visiting the many caves nearby.

The group left San Luis at about 10:00 am and arrived at Sotano de Piedra Agujerada around 11:00 am. After parking the truck, they began the two-hour hike to Sotano del Aire. Once they arrived at the cave, the entrance was checked for loose rocks and then rigged so that the rope hung free of the edge. Miguel, Christy, Rocio and Cuauhtemoc descended the 233-meter entrance pit (764 feet). Alfredo and Sergio remained topside and left the entrance at about 4:00pm to look for other entrances in the area. They returned at about 7:00 pm.

At about 10:30 pm, Sergio and Alfredo heard a massive collapse from the entrance. When they approached the entrance, they saw that a large portion of the left side of the entrance had collapsed and fallen into the pit. Sergio and Alfredo immediately yelled down the pit to see if anyone had been injured.

Miguel and Christy had been on rope in the entrance drop, with Christy

climbing first and Miguel climbing below her. They were about 40 meters (130 feet) below the entrance when the collapse occurred. Three large rocks struck Christy on the head and back. Miguel was on a flowstone ramp that placed him off to one side of the pit so that the rocks missed him as they fell. Some of the



Christy with Miguel Angel (center) and Françoise, a Canadian caver

rocks came to rest on this ramp in an unstable position. Miguel ascended to Christy and found that she had been severely injured and was unable to ascend. He assessed her injuries and found that her legs were paralyzed. After doing his best to stabilize and comfort her, he realized that the only option was to haul her up out of the cave. Miguel started climbing and reached the surface at about 11:30pm. The group then began rigging a haul system to haul Christy out of the pit. Having no rescue equipment available, the group had to cannibalize their own gear and make do with a "Georgia Haul"; that is, simply haul on

the rope with no mechanical advantage. Three large rocks that had been left very unstable at the lip by the collapse were secured using part of the original rigging and some of their clothing. They began hauling at about 12:30.

At about 2:30 am, Christy was about four meters (12 feet) below the lip. Miguel Angel rappelled down to help Christy negotiate the lip of the pit. At this time, Miguel realized that Christy had succumbed to her injuries and had died while they had been hauling her out of the pit. The group decided to continue to bring her to the surface in order to be certain that she had died. However, when Christy was about one and a half meters (five feet) below the lip, they were unable to raise her any further. Before giving up, the group checked again to be sure that Christy had died. Sergio then made the two-hour hike to the vehicle and drove back to San Luis to

get help. He arrived in SLP at 7:00 am.

By 11:00 Monday morning, a rescue team arrived at Sotano del Aire. The group consisted of Margarita Benavente, Miguel Jones, Jorge Landeros, Gerardo Morrill, David Solis and others. The rescue team first removed the rocks that were loose at the lip then proceeded with the recovery. By 2:00 pm, Gerardo and Tono descended to the narrow spot about 55 meters (180 feet) below the entrance in order to remove the rocks that had come to rest there the night before. Once the rocks were cleared, Tono descended to take food and water to Rocio and Cuauhtemoc who had been trapped at

the bottom by the collapse. It was decided that the two would be given the news of what had transpired only after they were out of the cave. At 4:00 pm, the authorities arrived to take initial statements and to take Christy to the morgue. By 5:00pm, Cuauhtemoc and Rocio had ascended out of the pit and learned of the magnitude of the accident of the night before. The group was back in SLP by 9:00 pm and stated official declarations to the authorities from 11:00 pm to 3:00 am.

ANALYSIS

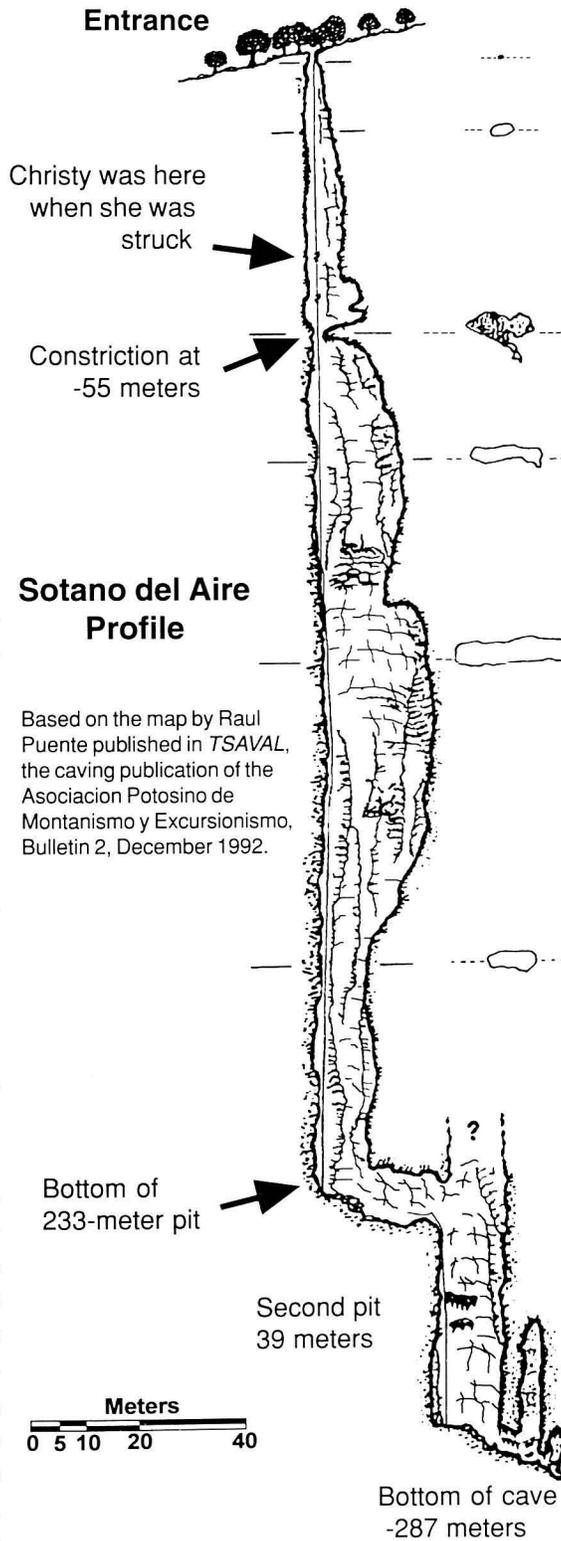
I believe that this accident was simply an “act of God” accident and that Christy was unfortunate enough to be exposed in the pit when a natural collapse occurred. The cavers in the group were doing everything right and a member of the group still got killed. Perhaps if they had chosen to go caving the day before or the day after, it would have been different. Why the rocks let go at just that moment is a mystery that no one can solve.

Once the collapse occurred and Christy was injured, the other members of the group were faced with an impossible rescue situation. Christy had been struck in the head, causing fractures of the cervical (neck) vertebrae, and in the lower back, causing fractures of the lumbar vertebrae. The cervical fractures were not life threatening at the time but the lumbar fractures immobilized her legs. Further, it is very likely that there had been some serious internal injury caused by the lumbar impact resulting in life-threatening internal bleeding, this is supposition on my part. The immobilization of Christy’s legs was the primary, life-threatening injury. Once the injury occurred, Christy needed to be in a trauma center within half an hour in order to survive.

In situations where someone is hanging immobile (such as unconscious or completely exhausted) on rope in a harness, a serious medical condition occurs where the blood is

Avascularization/RePerfusion Syndrome (CARP). The body reacts as if there is a serious bleed going on even though there is no actual blood loss occurring; that is, it starts to go into shock. As the amount of blood in the circulatory system decreases due to blood pooling in the legs, the body tries to maintain blood pressure by increasing the heart rate. This creates a vicious circle because the increased heart rate and blood pressure increases the speed at which blood is getting trapped in the legs. Finally, too much blood has been trapped and the volume of blood in the main part of the circulatory system is too small to continue to keep the brain, heart and other vital organs perfused with blood. Death occurs due to lack of oxygen to the brain and heart tissues. In testing done by a French caving group, it was found that healthy volunteers started having lots of trouble (dizziness, highly elevated heart rate) after as little as ten minutes of hanging immobile on rope. Loss of consciousness due to lack of oxygen to the brain occurred as rapidly as 15 minutes and no one maintained consciousness longer than 30 minutes. These were healthy subjects with no injuries. Even if she had had no other injuries, Christy needed to be off rope and on her back with her feet elevated within ten minutes of the actual impact. This was simply impossible.

Miguel was below Christy when the collapse occurred. Even in a perfect situation with an experienced, well-rested rescuer trained to handle emergency situations, it would take at least two or three minutes to get to Christy, assess her injuries, decide what to do, and then begin to climb. Miguel had already been caving for several hours and had no formal rescue training. Miguel had to climb another 40 meters before any attempt could be made to start a haul. Again, in a perfect situation, it would take a really fast climber at least 10-15 minutes to pass her and climb that



Based on the map by Raul Puente published in TSAVAL, the caving publication of the Asociacion Potosino de Montanismo y Excursionismo, Bulletin 2, December 1992.

being trapped in the legs, unable to return to the heart. This is commonly known as Harness Hang Syndrome or Compression

Continued on p. 92

ACCIDENT continued from p. 81

distance. Miguel was already tired and severely stressed by the situation. Once Miguel reached the surface, the three-member team had to build a haul system and haul her out. During cliff exercises here in Texas, it generally takes an experienced ten member, high-angle rescue team at least 5-10 minutes to build a haul system with pre-assembled equipment, then an additional 10-15 minutes minimum to complete a 40 meter raise. And that's assuming that they have all the gear they need and that the rigging is perfect. Even if they had somehow accomplished a miracle and gotten Christy to the surface in a short enough time to save her life, they were still a two-hour hike from the vehicle with a severely injured patient needing spinal immobilization and intensive care. Even with a miraculous haul out of the pit, they still needed a Life Flight helicopter to be

standing by very near the entrance and a state-of-the-art trauma center waiting for her at the end of that flight. A successful rescue just wasn't possible. There was just no way that these unfortunate souls could have saved Christy's life.

In wilderness and cave rescue, the folks most frequently rescued are folks who did really stupid, thoughtless things and got hurt because of it. Common accidents you read about are rescues of people (non-cavers) who went caving while they were severely intoxicated and fell down a pit that they didn't notice or people going into a cave that floods very severely when it's about to rain. But sometimes bad things happen to good people doing all the right things. And every so often, those bad things are fatal. In the 17 years I've been caving, I've had some close calls and watched as others had close calls but we were left with only amazing stories to tell, not serious

injuries. In the past, I've gone back to a cave I hadn't been to in a while only to see a big collapse had occurred in the interim that certainly would have killed or injured someone if anyone had been there. Since collapses like these happen so seldom underground, the odds of someone being there when it happens are very slim. Unfortunately, Christy happened to be in Sotano del Aire at just the moment that a large collapse occurred. Statistically speaking, it is still far more dangerous to drive on US highways than to go caving. There are some things that just cannot be foreseen or avoided. And the cavers with Christy had absolutely no chance of saving their injured friend as even with all the manpower and gear at their disposal, there was still no way to get her out of the pit in time. Miguel, Sergio and Alfredo did the best they could but all the cards were stacked against them and against Christy.

BUSTAMANTE continued from p. 83

leave him at home too.] Our group gathered and we left quickly for the surface, arriving with time to spare. The drive down the mountain was a treat as we watched an intense thunderstorm ramming nearby mountains.

After a quick swim in the springs, the caver community gathered for a wonderful banquet at the Hotel Ancira. The food was good, and the beers cold. Before long the crowd was treated with a really fun raffle. Whoopin' and hollerin' for each name, it seemed like almost everyone came away with one of many great prizes. Thanks to all the sponsors!

On our way back to camp, Grog ventured to buy some of the legendary mescal of Bustamante. During the night, he and Uwe managed to entice at least six people to try it. The overwhelming vote? Nasty! Local booze is really cheap, and you get what you pay for. Meanwhile, everyone seemed to be having a great evening with drumming and dancing in one area, storytelling and discus-

sions in several others. Our community strengthened relations this whole weekend. That's a wonderful thing.

Monday arrived and home we drove. After a pleasant breakfast with good friends, the drive back was uneventful. Just two minutes at the Columbia crossing, and a quick truck-search on I-35 (Uwe, is German after all), and we made it home in time to wash clothes and prepare for the week ahead. I love a good weekend. Thanks to my friends for being there, and to those of the greater caver community for making the opportunity.

Sponsors of the 1999 TSA Bustamante Project were: Asolo, Black Diamond, Bluewater, Cascade Designs, Chaco, Eagle Creek, Gonzo Guano Gear, Outdoor Essentials, PMI, Sweetwater, and Vasque, and Whole Earth.



RAPPELLING continued from p. 87

not advocating speed rappelling, just pointing out that melting through the rope just isn't going to happen. However, the top couple of bars *can* get plenty hot enough to burn you and raise some blisters so remember how close those bars are to your face!

The open-frame rack is still the old standard in the US. It's great for long drops and has complete adjustability of friction. A big drawback to this rack is the size and weight of the thing. It's just plain big and heavy. It also has a cumbersome lock off. And finally, there's a lot of technique to learn in order to use the rack safely and efficiently. Most US cavers will tout the open-frame rack as the safest descender available, but that's just what they originally learned to use. Once you've learned and practiced the techniques, the open-frame rack is great for some applications. And, just like every other descender, the open-frame rack is only safe and efficient if you know how to use it properly.

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ACCIDENT REPORT: SÓTANO DEL AIRE

Joe Ivy

On Sunday, August 22, 1999, a group of cavers left San Luis Potosí to visit Sótano del Aire in the Sierra de Alvarez 50 kilometers east of the city. The group consisted of Miguel Angel Blanco, Rocío Medina, Christy Quintana, Cuauhtémoc Sánchez, Sergio Sánchez-Armás, and Alfredo Silva. Christy, an avid Texas caver, had been in SLP for several weeks living with a local family to improve her Spanish. The Asociación Potosino de Montañismo y Expeleología is a very active caving organization, so it was natural for Christy to get together with them to enjoy visiting the many caves nearby.

The group left San Luis at about 10:00 A.M. and arrived at Sótano de Piedra Agujerada around 11:00. After parking the truck, they began the two-hour hike to Sótano del Aire. Once they arrived at the cave, the entrance was checked for loose rocks and then rigged so that the rope hung free of the edge. Miguel, Christy, Rocío, and Cuauhtémoc descended the 233-meter entrance pit. Alfredo and Sergio remained topside and left the entrance at about 4:00 P.M. to look for other entrances in the area. They returned at about 7:00. At about 10:30 P.M., Sergio and Alfredo heard a massive collapse from the entrance. When they approached the entrance, they saw that a large portion of the left side of the entrance had collapsed and fallen into the pit. Sergio and Alfredo immediately yelled down the pit to see if anyone had been injured.

Reprinted, slightly revised, from the *Texas Caver*, volume 44 number 5, September-October 1999.

Miguel and Christy had been on rope in the entrance drop, with Christy climbing first and Miguel climbing below her. They were about 40 meters below the entrance when the collapse occurred. Three large rocks struck Christy on the head and back. Miguel was on a flowstone ramp that placed him off to one side of the pit, so the rocks missed him as they fell. Some of the rocks came to rest on this ramp in an unstable position. Miguel ascended to Christy and found that she had been severely injured and was unable to ascend. He assessed her injuries and found that her legs were paralyzed. After doing his best to stabilize and comfort her, he realized that the only option was to haul her out of the cave. Miguel started climbing and reached the surface at about 11:30 P.M. The group then began rigging a haul system. Having no rescue equipment available, the group had to cannibalize their own gear and make do with a "Georgia haul," that is, simply haul on the rope with no mechanical advantage. Three large rocks that had been left very unstable at the lip by the collapse were secured using part of the original rigging and some of their clothing. They began hauling at about 12:30.

At about 2:30 A.M., Christy was about 4 meters below the lip. Miguel Angel rappelled down to help Christy negotiate the lip of the pit. At this time, he realized that Christy had succumbed to her injuries and had died while they had been hauling her out of the pit. The group decided to continue to bring her to the surface in order to be certain that she had died. However, when Christy was about 1.5 meters

below the lip, they were unable to raise her any farther. Before giving up, the group checked again to be sure that she had died. Sergio then made the two-hour hike to the vehicle and drove back to San Luis to get help. He arrived in SLP at 7:00 A.M.

By 11:00 Monday morning, a rescue team had arrived at Sótano del Aire. The group consisted of Margarita Benavente, Miguel Angel Jones, Jorge Landeros, Luis Landeros, Gerardo Morrill, Ricardo Peralto, Antonio "Toño" Ramírez, David Solis, David Solis, Jr., and Gilberto Torres. The rescue team first removed the rocks that were loose at the lip and then proceeded with the recovery. At 2:00 P.M., Gerardo and Toño descended to the narrow spot about 55 meters below the entrance in order to remove the rocks that had come to rest there the night before. Once the rocks were cleared, Toño descended to take food and water to Rocío and Cuauhtémoc, who had been trapped at the bottom by the collapse. It was decided that the two would be given the news of what had transpired only after they were out of the cave. At 4:00 P.M., the authorities arrived to take initial statements and to take Christy to the morgue. By 5:00 P.M., Cuauhtémoc and Rocío had ascended out of the pit and learned of the magnitude of the accident of the night before. The group was back in SLP by 9:00 and gave official declarations to the authorities from 11:00 P.M. to 3:00 A.M.

I believe that this accident was simply an "act of God" and that Christy was unfortunate enough to be exposed in the pit when a

natural collapse occurred. The cavers in the group were doing everything right, and a member of the group still got killed. Perhaps if they had chosen to go caving the day before or the day after, it would have been different. Why the rocks let go at just that moment is a mystery that no one can solve.

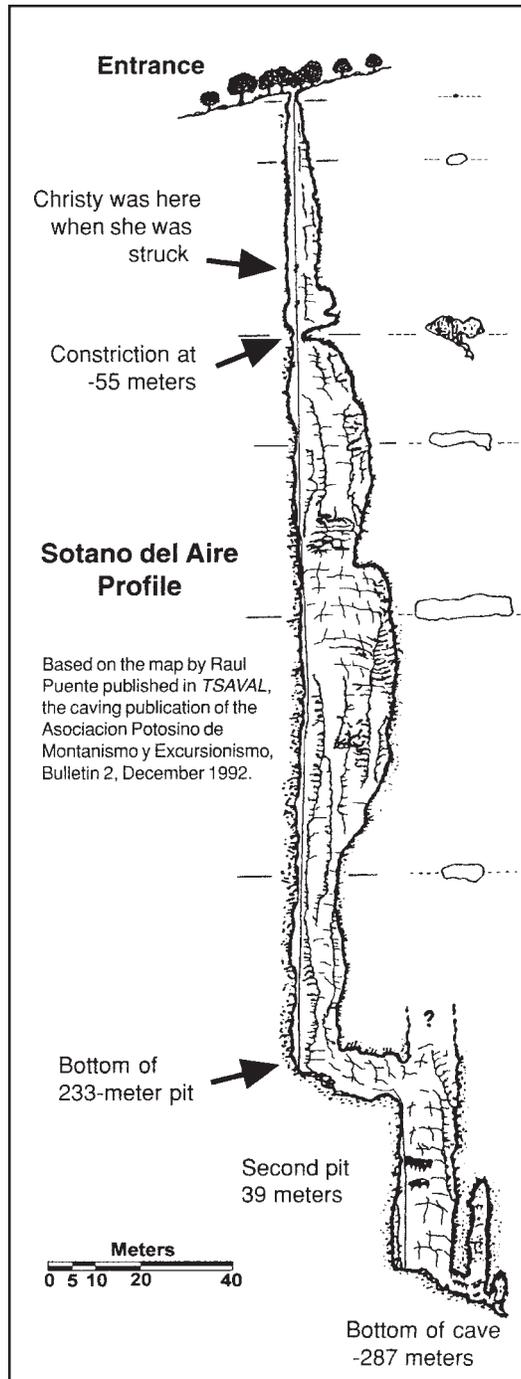
Once the collapse occurred and Christy was injured, the other members of the group were faced with an impossible rescue situation. Christy had been struck in the head, causing fractures of cervical vertebrae, and in the lower back, causing fractures of lumbar vertebrae. The cervical fractures were not life-threatening at the time, but the lumbar fractures immobilized her legs. Further, it is very likely that the lumbar impact had caused some serious internal injury with internal bleeding, but this is supposition on my part. The immobilization of Christy's legs was the primary threat to her life. Once the injury occurred, Christy needed to be in a trauma center within half an hour in order to survive. Given the location of the accident, this was impossible.

In addition, in situations where someone is hanging immobile on rope in a harness, a serious medical condition occurs when blood is trapped in the legs, unable to return to the heart. This is commonly known as harness-hang syndrome or, less commonly, compression avascularization/reperfusion syndrome. The body reacts as if there is serious bleeding going on, although no actual blood loss is occurring. That is, it starts to go into shock. As the amount of blood in the circulatory system decreases due to blood pooling in the legs, the body tries to maintain blood pressure by increasing the heart rate. This creates a vicious circle, because the increased heart rate and blood pressure increase the speed with which blood is getting trapped in the legs. Finally, the amount of blood remaining in the main part of the

circulatory system is too small to continue to keep the brain, heart, and other vital organs perfused. Death occurs due to lack of oxygen in the brain and heart tissues. In testing done by a French caving group, it was found that healthy volunteers started having lots of trouble, such as dizziness and highly elevated heart rate, after as little as ten minutes of hanging immobile on rope. Loss of consciousness due to lack of oxygen in

the brain occurred after as little as fifteen minutes, and no one maintained consciousness longer than thirty minutes. These were healthy subjects with no injuries. Even if she had had no other injuries, Christy needed to be off rope and on her back with her feet elevated within ten minutes of the actual impact. This was simply impossible.

Miguel was below Christy when the collapse occurred. Even in a perfect situation with an experienced, well-rested rescuer trained to handle such situations, it would have taken at least two or three minutes to get to Christy, assess her injuries, decide what to do, and then resume climbing. Miguel had already been caving for several hours and had no formal rescue training. Miguel had to climb another 40 meters before any attempt could be made to start a haul. Again, in a perfect situation, it would have taken a really fast climber at least ten to fifteen minutes to pass her and climb that distance. Miguel was already tired and stressed by the situation. Once Miguel reached the surface, the three-member team had to build a haul system and haul her out. During cliff exercises in Texas, it usually takes an experienced ten-member high-angle rescue team with pre-assembled equipment at least ten or fifteen minutes to assemble a haul system and then a minimum of another ten minutes to complete a 40-meter lift. And that's assuming that they have all the gear they need and that the rigging is perfect. This timing, compared to the length of time a patient can hang immobilized in a harness, is the reason the procedure usually recommended in such a case is to "pick off" the patient onto one's own descending gear and rappel with him to the bottom, but this can be done quickly and safely only with a considerable amount of training and practice, and in any case it could not have been done here because of the



unstable, freshly fallen rocks at the constriction in the pit.

Even if the team had somehow accomplished a miracle and gotten Christy to the surface in a short enough time, they were still a two-hour hike from the vehicle with a severely injured patient needing spinal immobilization and intensive care. Survival would have required a life-flight helicopter standing by very near the top of the pit and a state-of-the-art trauma center waiting for her at the end of a short flight. There was just no way that these unfortunate souls could have saved Christy's life.

In wilderness and cave rescue, the folks most frequently rescued are folks who did really stupid, thoughtless things and got hurt

because of it. Accidents you read about are things like rescues of non-cavers who went caving while they were severely intoxicated and fell down a pit that they didn't notice or recoveries of people going into a cave that floods very severely when it's about to rain. But sometimes bad things happen to good people doing all the right things. And every so often, those bad things are fatal. In the seventeen years I've been caving, I've had some close calls and watched as others had close calls, but we were left with only amazing stories to tell, not serious injuries. In the past, I've gone back to a cave I hadn't been to in a while and seen that a big collapse had occurred in the interim that certainly would have killed or injured someone there at the time. Since a

collapse like this happens so seldom underground, the chance of someone's being there when it happens is very slight. Unfortunately, Christy happened to be in Sótano del Aire at just the moment that a large collapse occurred. Statistically speaking, it is still far more dangerous to drive on highways than to go caving. There are some things that just cannot be foreseen or avoided. And the cavers with Christy had absolutely no chance of saving their injured friend, because even had they had all the necessary gear and manpower at their disposal, there would still have been no way to get her out of the pit in time. Miguel, Sergio, and Alfredo did the best they could, but all the cards were stacked against them and against Christy.

Accidente en el Sótano del Aire

Christy Quintana, espeleóloga de Austin, Texas, estaba pasando varias semanas en la ciudad de San Luis Potosí en agosto 1999. Visitó el Sótano del Aire con miembros de la APME. Al estar saliendo del tiro, grandes rocas se desprendieron de la boca y la golpearon. Sus heridas eran tan severas que murió en la cuerda. Su cuerpo no fue recobrado hasta el día siguiente. Otros dos espeleólogos quedaron atrapados en la base del tiro, ya que las rocas que cayeron bloquearon un punto estrecho del tiro. Salieron una vez que las rocas del borde del tiro fueron estabilizadas y que las rocas que bloqueaban el tiro fueron removidas.

Further Tributes to Christy Quintana

Texas Caver, 44(6), Nov/Dec 1999



Christy Quintana and pictographs in northern Mexico. [p. 99]

Continue Christy Quintana's Efforts to Help mexican Kids. [p. 115]

Christy collected clothes from the kids she worked with in Texas to take to the kids she met in Mexico. There are piles of clothes and school supplies that still need to be delivered. If you'd like to help and can take things to Mexico with you, please contact Aimee Beveridge at 512-444-4881 , or Becky Jones as 512-292-1878 , <joeivy@interserv.com>.

TSA Fall Meeting [p. 118]

...Mike Walsh remembered Christy Quintana to us.

Texas Caver, 45(1), Jan/Feb 2000

[p. 3]

Dear Editors Ivy and Jones,

Thank you for the sensitive and cornpassionate response to the death of caver Christy Vanek Quintana. Your dedication of so much space in your September-October issue showed us in one more way how she touched the lives of so many.

In addition, the article on the accident itself provided me with the names of those cavers who made such heroic efforts to save her. To Miguel Angel Blanco and Sergio Sanchez-Armas and all others involved in the rescue efforts, I offer my heartfelt gratitude for your super-human efforts under such traumatic circumstances. I can only imagine the stress you were under. It truly sounds like you used every means possible to not only make a safe climb, but to persevere untiJ the

final moments to save Christy. As her mother, I know how passionate Christy was about Mexico and about caving. You shared both of these with her and helped to complete her final dream. Thank you.

I also want to thank everyone who contributed in any way to the planning, collecting and writing about our daughter, Christy. This issue is a legacy we will treasure always. Finally, if anyone has any extra pictures or memories to share about Christy, please e-mail me at <kvanek@ohormail.com>.

Sincerely, Karen Vanek

[photo of bat] Many cavers donated money to Bat Conservation Inti. in memory of Christy Quintana. Photo ©Merlin B. Tuttle, BCI. Used with permission.

[p. 18]



***Continue Christy's Efforts
to Help Mexican Kids.***

During Thanksgiving and Christmas, cavers took nearly a dozen bags of clothes and school supplies to the villages of Tamapatz, Paxalja, Tampaxal, La Union de la Guadalupe, La Linja, and Santa Catarina, in San Luis Potosi, Mexico. Most of this was stuff that Christy Quintana had gathered. The kids Christy worked with in Texas have continued to collect clothes, shoes, toys, and school supplies for kids in Mexico. There's a lot that needs to be distributed.

If you're going to Mexico and can take things with you, please contact Aimee Beveridge at 512-444-4881 or Becky Jones at 512-292-1878 or <joeivy@interserv.com>.

Texas Caver, 45(2), March/April 2000

[p. 43, article by Terri Whitfield on Hoya de las Guaguas]

On Friday, after breakfast at the Taninul, we headed south toward Hoya de las Guaguas, finally parking our cars on the side of the road at the small village of Barrio San Isidro. We located the appropriate *jefe* and obtained permission to enter the pit, and we all signed the register and made a ten-peso "donation." In memory of our lost friend Christy Quintana, we

delivered the clothes we had brought for the children of the village. We planned to hire a local to carry our rope up the 45-minute hike to the pit.

Texas Caver, 45(5), Sept/Oct 2000

[p. 138]

Grotto Memorial Fund

Felicia Vreeland

In August of 1999 we lost Christy Quintana. Christy was one of the finest people I have ever met. In order to never forget what Christy stood for and to keep in sight her hopes for our grotto, I suggested to Chris that Vreeland Graphics offer a \$500 annual memorial tribute to the UT Grotto in Christy's name. This suggestion was embraced whole-heartedly, and the Christy Quintana Memorial fund was born. Like any newborn, the fund was without direction or purpose for the first year. It existed, and it had her name on it to keep her close, and that was enough for us.

In May of 2000, we lost Alejandro Villagomez. Alex was absolutely unbridled in his love of caving. Caving was fun first and work second; a trip with Alex was never to be forgotten. Alex's embracing of new cavers and his trips with newbies to Mexico were both acts of his selfless need to share the love of his sport. Always ready for excitement, Alex was the epitome of what makes caving fun. Never self-promoting and always slyly grinning, Alex was one of the finest cavers in the world. Where Christy promoted altruism, Alex believed training and prevention were the most important and often understated part of a grotto's responsibilities to its members.

In July of this year, Katherine McClure, Alex's wife, generously donated \$1,000.00 in Alex's name to the-already existing Quintana fund. With this wonderful gesture to Alex's memory, our fledgling Quintana fund has now become, the answer to both the wishes of Christy and Alex when they were with us. Officers of the grotto, Katherine, Chris, and myself moved to change the fund name from the Quintana Memorial Fund to the Grotto Memorial Fund (we cannot affiliate UT here).

The purpose of this fund would firstly be to achieve a monetary sum of \$1500.00 to be earmarked as rescue funds. This money will never be touched except for rescue-related purposes and will be rebuilt from the main fund to maintain a constant level. We have achieved that goal with Katherine's generous donation. Our next goal is to keep our annual recurring donation and all other monies collected in the fund to be used as voted by the fund board. The immediate ideas are two annual awards to be presented at TCR in Christy's and Alex's names. Any caver may be presented for nomination, but it will be the UT Grotto voting and administering the awards. Next, we will set aside assets to fill our wish lists for our grotto's training, rescue, and medical equipment.

Katherine, Chris, and I are assisted in the administration of the fund by board members Dale Barnard, Oscar Berrones, Ernesto Garza, and Peter Sprouse. These are lifetime appointments, rescinded only by the board members themselves.

Texas Caver, 45(1), Jan/Oct 2001

[p. 20, article by Ed Goff on Grieta de la Perdición, Nuevo León]

A rock dropped from the ledge and timed with a watch could consistently be heard ricocheting as it fell for more than 20 seconds. The treacherous aspect of the cave revealed itself when the last person to ascend the entrance pitch was struck on the helmet by a substantial rock that had spontaneously detached itself from the lip. (Coincidentally, this happened the same day that Christy Quintana was killed by rockfall in Sotano del Aire.) On this trip, the cave was given its name, Grieta de la Perdición.