



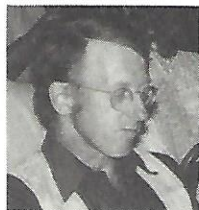
NSS NEWS

August 1988

Sumidero of the Rio San Jose de Atima

The 1987 NSS Expedition to Honduras

By Steve Knutson



The Sumidero of the Rio San Jose de Atima is 2000 ft above sea level in low, mountainous country in the Department of Santa Barbara in west-central Honduras. (Ed. A *sumidero* is a drain or sewer.) It is a well-known feature in this area of few people where logging and agriculture, primarily subsistence farming, has removed most forest cover. Unlike most Central American countries, there are not heavy population pressures on most areas of usable land. The people are nearly all of mixed Indian and Latin descent, speak only Spanish and appear more European than Indian.

The tree-lined Rio Atima flows peacefully through quiet pastureland and past the tiny town of Atima; a few miles downstream it enters a narrow valley where it is briefly bordered by tropical forest. It then flows north another half-mile, past Cerro Penaligüe on the west and a larger, unnamed mountain on the east, to where the valley suddenly closes around, ending in a tall cliff. The sleepy river suddenly gains life, plunging from its boulder-strewn bed down a crashing 15-ft falls into a huge canyon-like portal or *sumidero*. A little over a mile to the north and about 630 ft lower, it reappears from a similar, somewhat smaller, jungle-lined orifice.

When Jon Burkig and I first visited this cave in March, 1980, we stood at the upper entrance and marveled at this river grinding off into the great unknown—could it be explored? To our minds it looked pretty straightforward... just get into your wetsuit and go for it! If only we had the time...

The Ledges

In February, 1981, Jon and I returned with Todd Rasmussen, a Peace Corps veteran of Honduras. The weather had been rainy and the river flow was increased by about tenfold; past the falls at the entrance, it was white water as far as we could see. Going in at water level seemed out of the question, but we found ledges on the left-hand wall and proceeded. About 300 ft in there was a sharp turn, into total darkness. It was an awesome

sight from our high ledge to see the great canyon continuing, and so did our ledges. Spray from waterfalls kept these ledges slick and slimy; one had to watch every step. The dark, massive bedrock afforded no natural anchors; at rappels or upclimbs we placed bolts or pitons, and used handlines at tricky traverses. This caving took steady nerves—a miss-step would dump one into the maelstrom below with little chance of rescue. Our hardware ran out 1600 ft in, but the canyon continued so tall and narrow that both floor and ceiling were invisible from our narrow ledge, 70 ft above the river.

The Ten-Meter Falls

Political unrest kept us out of Central America until April, 1985, when Pete Shifflett, Mark Stock and I returned to find that

the ledges did not continue. We rappelled to stream level but found the going interesting; this effort is reported in some detail in the May, 1986, *NSS News*. We passed three major falls, the biggest and last of around 10 meters. With heavy flow and a sheer-walled canyon, even a 10-m drop creates a serious obstacle. Passing the Ten-Meter Falls occupied one whole push trip. When we ran short of hardware at a terrible chute, Mark went to the end of the last canal line and found a stretch of calm water. But we were finished, after only 2600 ft, in a cave over a mile from portal to portal, straight line. Considering the difficulties we had already passed, the potential effort required to finish this cave was appalling.

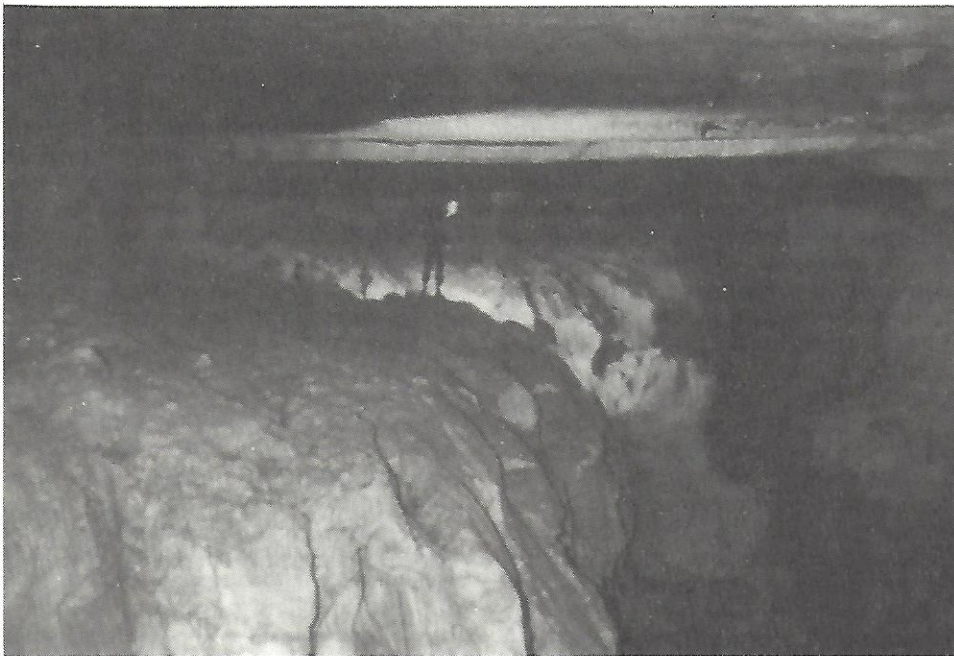
After derigging, we took a day trip around the mountain to scout the lower entrance

"Patience and fortitude conquer all things."—Emerson

"Too much patience will get you absolutely nowhere."—Dr. Who



The crew at the equipment dump outside the lower entrance. From the left: Pete Carter, Ric Finch, Randy Spahl, Paul Hill and John Wyeth.



The great ledge of the lower part of the cave. The river is in the 80 ft canyon to the right.

passage. Even though we took no climbing gear, we penetrated 3000 ft upstream, encountering only swims and small falls in nearly horizontal passage. A later survey plot showed a gap of *only* 1300 ft between the upper and lower sections of cave!

The Alien Pool

Our 1985 efforts showed that we could operate at stream level but that progress in the cave would demand a lot of rope and hardware, more than we could bring in by air. We decided to put forth a heavier effort in '86 and wrap up the cave.

In March, 1986, I drove the 4000 miles down from Oregon with a heavy load of gear; other cavers flew in or drove down.

When Bill Bockstiegel, John Blum, Jon Burkig, Paul Hill, Scott Linn, Rick Rigg, Dave Walker and I met at Atima, the river was down.

The ledges were rigged without incident, but floods of the previous year had modified the cave. One drop, that was climbable last year using a wedged log, required two bolts to get out over a plunge pool. It went slowly, but soon Blum, Burkig, Bockstiegel, Linn and I had pushed past Stock's calm pool. Beyond, the stream split into two falls in a wide chamber, the Twin Falls Room, there, far above, the upper section of the tall canyon split off.

Ahead, the stream canyon had a ceiling low enough to be visible with our lights, but it

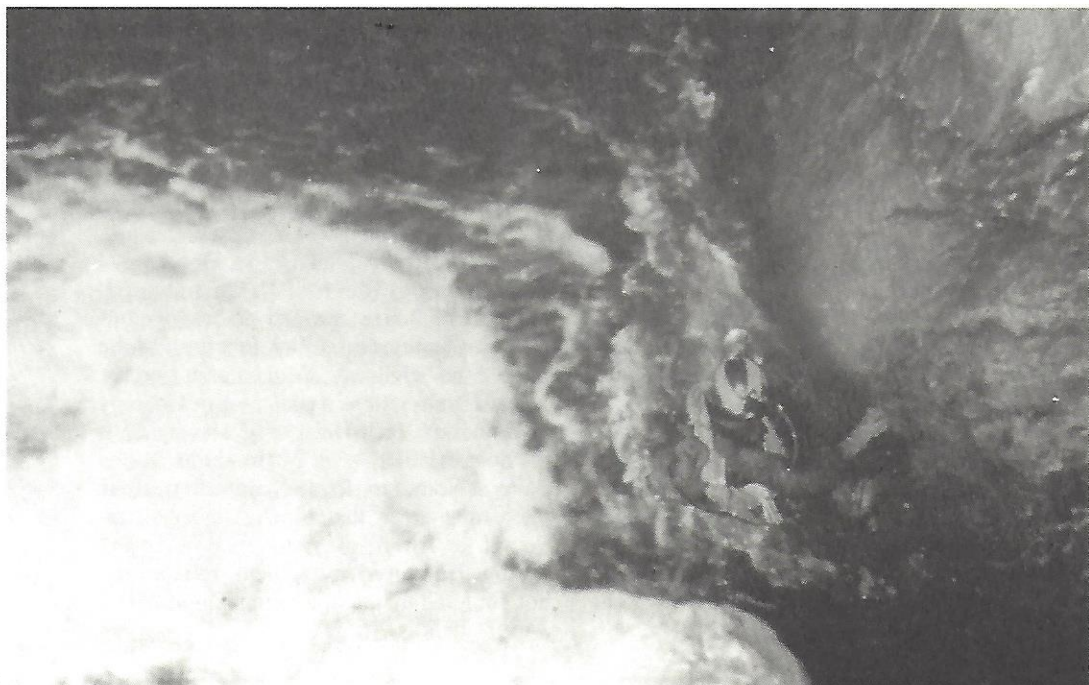
was even narrower than before and this did not bode well. As we rigged to the start of the narrow canyon, we saw that we would be dropping into fast water on the next push.

On that first push I severely twisted my left ankle when I stepped into a pothole; as I hobbled from the cave, I thought I would not be going back in. To make matters worse, the weather turned bad and occasional rain swelled the river. The next day, food poisoning claimed Linn, Blum and Rigg—they did not recover before leaving for the states. In the space of a day, our strength had vanished.

Burkig and Hill went back and entered the narrow canyon. The fast water led to the top of a deep falls. They descended this on the left, but at the bottom, swimming between sheer walls in a spray-covered, turbulent plunge pool, they discovered that the cave had turned right. Against the left wall, Paul, with the more streamlined outfit, led off that direction, only a few yards away from the crashing falls. Jon followed, but he nearly drowned in the down currents against the wall. The pool led immediately to the top of another falls, they would have to cross the fast, sheer flow at the top of that falls to continue their descent. They were forced to retreat.

A few days later, with somewhat recovered ankle, I joined the next push. When I tried to follow Jon and Paul across the terrible pool, the heavy currents pulled me under. I struggled for some time before retreating to the rope and back up. A disappointed Jon and Paul joined me and we came close to aborting the effort. If we had to cross that pool to continue to push the cave, someone was going to die!

With a belay from Paul, I crossed the top of the falls and did a short aid climb to a broad ledge. Another climb led to a wide ledge near the ceiling and right at the corner where the cave turned sharp right. With my



Randy Spahl negotiates fast water.

spot beam I could see that a rappel from the "Hippo Seat" had every chance of descending the next two falls—we were back in business! We named the cause of our in-cave troubles "The Alien Pool"—in that pool, no one could hear you scream. . .

The push might continue, but bad weather and sickness had used up the time of Blum, Burkgig, Linn and Rigg. With their departure we were suddenly short-handed; moreover, only Paul and I were willing to continue the push.

So, push we did, down from the Hippo Seat, down a swim to a 10-ft falls and through the heavy turbulence below to the top of yet another falls. Here we did an aid climb to a high ledge on the left. From the end of this ledge, we saw another chute far below with a falls beyond. It was just too much for us. On the last trip into the cave, it was all Paul and I could do to derig what we had done. We had been defeated.

The Encampment

On Sunday, March 8, we reached the ford of the Rio Atima, 2 miles above the cave.

Women were beating clothes on the rocks and a beat-up pickup was being washed in the water. Not much had changed and it appeared that Wyeth was correct—the dry season was well advanced and the river at its lowest. The abandoned logging road to our campsite was still usable, but a heavy storm could change that.

We stopped by the house of Santiago, the caretaker of the huge tract of land that included both our campsite and the cave. He was not at home, but his wife would tell him we were back and he would drop in to see us as soon as he could. . . there would be a lot of embracing, hand-shaking and good-natured conversation!

That night, we were dismayed by the clouds that rolled in and the lightning and thunder that soon followed. When it began to rain, we had the horrible feeling that this was to be another jinxed expedition. . .

We would have prayed to Chac, the Mayan rain god, but when the offerings of man please Chac, he *brings* rain, to help grow the life-giving crops. We did not want to please Chac.

It grumbled and rained fitfully through the night, but by morning it was over and the river had risen only slightly.

We split into two two-man teams with Paul and I each leading a team since we both knew the rigging and route to the end of last year's push. Randy would pair with Paul and John with me. . . This was a little chancy in a cave like this, but it allowed backup to each push as well as camp guards while a push was on. More important, though, it allowed exploration to proceed without involving everyone each trip. Cavers "burn out" rapidly in a cave like Atima with high river noise level, constant danger and frequent technical maneuvers.

The Initial Attack

Paul and Randy made the first trip in, rerigging the numerous short drops and handlines along the ledges of the first 1500 ft. After rappelling to river level, they proceeded downstream to the first major falls where they turned back after Randy led the slippery friction traverse to the next rappel point.

The 1987 Expedition Personnel

I have always enjoyed small-party expeditions; one is more personally involved, is more instrumental in overcoming challenges, and the sense of accomplishment is greater than with large expeditions. For 1987 I planned only two strong teams of dedicated push cavers. As the time neared, it appeared that I had a good Rio Atima crew: Paul Hill, Randy Spahl, John Wyeth, Pete Carter, Larry Cohen, Maureen Handler and Ric Finch.

A last-minute cancellation took Maureen, and Larry slipped and was injured on winter ice at home. Pete had agreed to join us but did not show. That left Paul Hill, Randy Spahl and myself on hand for the Atima effort. I called John in Tegucigalpa and he assured me he would be there. A call to Ric in Tennessee produced a similar commitment. We were four if John drove in and five if Ric managed to fly in. It really looked minimal and a risk of another defeat. How many defeats could one take before giving up completely? We loaded up and left for Honduras. Let's have a closer look at this tiny group of cavers:

Randy Spahl—A very quiet, reserved caver from Calgary, Alberta, Canada. Randy, though young, is a veteran of both Canadian alpine caving and Mexican tropical caving. I knew him from our efforts in 1983 at the great Sumidero Santa Elena through-trip in Puebla, Mexico. Though he seldom spoke up, I haven't seen an underground move he wouldn't try. Cynthia Ream says that when she told him he looked really sexy in his wet-suit, he smiled and quietly replied, "I know."

Paul Hill—A precocious young computer programmer from Salt Lake City, Utah. Paul is a veteran of western alpine caving with experience in Columbine Crawl, Great-Ex, and Little Brush Creek Cave. His tropical experience includes Belize and Guatemala as well as Atima in 1986; this latter experience would prove invaluable since only he and I had been to the end of the '86 push and knew the complete rigging along the devious route.

Pete Carter—Pete is an Outward Bound instructor from Olympia, Washington, with wet caving experience in Belize and West Virginia. His mountaineering and rock climbing abilities and stamina would be needed at Atima. Quiet and good natured, he was a natural for expeditionary caving.

John Wyeth—A citizen of the world, this British caver has expeditionary experience from New Guinea and Belize. John is an economist presently working on a coffee production project in Tegucigalpa, Honduras. I knew him from Tom Miller's Chiquibul Expedition in Belize and had no reservations about his stamina or ability. Randy and John formed the "civilized" element of our group.

Ric Finch—Ric is a professor of Geology at Tennessee Tech University. Having done his doctoral field work in Honduras, Ric is quite at home and had already done some interesting caving there, including a penetration of the Rio Atima resurgence in the wet season. He proved to be tough, reliable and not bothered by the unnerving conditions in a cave such as Atima.



John examines a wad of rope from a previous expedition found in the lower part of the cave and carried it out on the de-rig trip.

On Tuesday, John and I pushed the rigging down past the Ten-Meter Falls and to the end of the treacherous sloping ledge along the chute below.

As I led the climb to the bypass ledge at the Ten-Meter Falls, I thrilled at the feelings of isolation inspired by a cave like this. The tumult of the falls, makes conversation with your partner impossible unless you are face-to-face and yelling at each other; the narrow, towering canyon, its slick, dark walls rising vertically from deep, murky water; your light lost in darkness above, the ceiling a complete unknown. . . Yet there is beauty here, if only in the nearly-black, shining wet bedrock laced with white calcite veins, smooth and water-sculpted. As you make your way along the wall-to-wall water, you wonder, perhaps, what would happen if a flood were to come—what could you do? Try to nail your way up the wall to some high ledge and trust to your back-up team to re-rig whatever had been carried away and get you out? . . . or could you ride the flood and arrive safely at the lower entrance? But your mind soon reminds you of the terrible falls, the churning plunge pools, the log-jams and cul-de-sacs where you would likely die, horribly and alone. You also recall that the cave is smallest just before the lower entrance—in a heavy flood it sumps there, to drown you if you did make it that far, your lifeless body finally cast up far downstream, on some deserted riverbank. . . In Atima such things occasionally enter your mind.

The following day, Randy and Paul went in for the third trip in three days. They had been complaining of colds, but managed to rig the Twin Falls Room and on to the top of the Alien Falls where Randy led the climb to the Hippo Seat, taking a fall in the process.

So far, it had gone in excellent fashion. We had gotten in three trips in three days and had made good progress rerigging. There were disconcerting signs of the violence of floods, however. At one rig point we found a tattered piece of rope with *half* a carabiner snarled in it. Below the Hippo Seat, a rope had been left rigged across the top of the Alien Falls to expedite the retreat. This had been anchored to a bolt and piton on one side and a bolt on the other—this bolt had also been roped to a bolt at the Hippo Seat. The remains of this rope was still hanging, otherwise unattached, from the bolt at the seat. The chrome-moly piton had been pulled out as well as the bolt next to it; the bolt and hanger on the other side remained, but the locking biner had been ripped away, rupturing the eye of the hanger!

The Wankering Begins

I awoke Thursday with a headache and felt poorly, so we put off our next trip. Later in the morning two uniformed soldiers with automatic weapons, came by to see how we were doing. John told them in his best Spanish that we would not put up with a



Ric Finch does a short rappel with a load of rope.

repeat of last year's robbery when much of our vertical gear had been taken.

The route was now rigged to the Hippo Seat which was close to the farthest point of penetration last year. The next trip might break through and go all the way to the lower entrance. If this happened, the crew doing it would want to hike back to camp over the mountain, so we spent some time scouting and flagging the trails. As it turned out, we never did get them right.

That night it clouded over and began to rain, lightly, but fairly steadily. This continued into Friday morning, so we wankered once again—it was very difficult to want to go into the cave in bad weather. The river had risen an inch and it began to look like last year once again. So we acted accordingly and sat around under the kitchen tarp and read, ate, worked on gear, counted pitons or whatever. Suddenly, I noticed a person standing at the edge of the tarp, carrying a big pack. I stared for a moment and then realized—it was Pete Carter! He had come in by bus and local vehicles, a good omen if ever there was one—our team now numbered five and the weather soon cleared.

Just Another Push

On Saturday, March 14, John and I entered, expecting to get to virgin cave. We rigged the long Hippo Seat rappel and a canal line to the next falls, a short 10-footer. This was rigged and a canal line run through the tur-

bulence at the bottom and on down a canal to the top of the '86 Falls. We set up a belay and I redid the climb to a high ledge to the left of the falls. John followed and we edged along to the end of the ledge and looked down; we were 80 ft above a plunge pool and close to the ceiling. We rigged our remaining rope, a 200-ft 9-mm PMI regular.

John descended and returned. He didn't like the look of it at all. The current funneled into a narrow, dangerous, nasty chute. I aimed my Roosa-lite spot beam at the wall ahead and started working out a lead along some marginal ledges—yes, it looked possible to get around to a flowstone canopy above and past the chute. Before we committed ourselves to the traverse, John went back down to give the water a try. He dropped into the current and, lo!, an underwater ledge led to a notch to the left of the chute. John climbed over this notch and down to a slimy, sloping ledge that led along the chute for 15 ft to the edge of a 12-ft falls, but it was immediately obvious that this falls would have to be descended on the right, for the cave turned to the right at the falls. There was a ledge across the chute and it proved to be easy to cross, though a bit dangerous—at the very edge of the falls was a 2-foot-wide span with only part of the water going over it. The main flow went crashing down a grind hole to reappear partway down the falls. It looked like a huge Waring Blender—to fall in that would be bad news.

I got the hardware together and went down. At the notch I placed a knife blade to secure a handline for the chute crossing. A large crack on the far side accepted two medium angles, and we rigged the chute handline to it and the last of our mainline down the 12-ft falls. Our last canal line went on the end. John descended and fought a back current to the other end of the pool about 100 ft away. He secured the line to a jammed log—beyond a log jam was a chute and the noise of yet another falls. We had to be close to the lower cave, but it didn't matter. We were out of rope. Tired and disappointed, we started the long trip back out.

At the top of 10-ft falls, I ascended and watched as John came up the canal line and into the turbulence below the falls. Suddenly, he seemed to be drowning—his head was going nearly underwater and he had ceased making progress. I tried to signal that there was an underwater ledge just ahead and pulled on the canal line to help him get there. This apparently didn't help and John backed off, getting back downstream, out of the turbulence. He then made another attempt and came on through—he had forgotten to inflate his buoyancy compensator before entering the turbulence; as he reached me he mumbled something about "disease" and "swallowed a lot of water. . ." Such is Atima, but sickness we didn't need. early Sunday morning: "Hey, over the mountain?" "Thru-trip?" "Hell, no—out of rope, falls ahead; we didn't make it." "Damn. . ."

The Final Curtain

Soon after we returned, Sunday dawned as another good weather day. The other crew was well-rested and in good spirits. They added Pete Carter and headed for the cave at 10 AM. Ric Finch's arrival that day brought the group to six.

Previous surveys had shown that we had only a 700-ft straight-line gap to complete and that descent of the '86 Falls would complete the vertical descent. We had often discussed this, but Pete, Randy and Paul regarded it as a stale joke. They took a fresh 200 ft of 9mm PMI and picked up 400 ft of canal line from a stash in the cave. In just a couple of carbide charges, they had reached the end of our push.

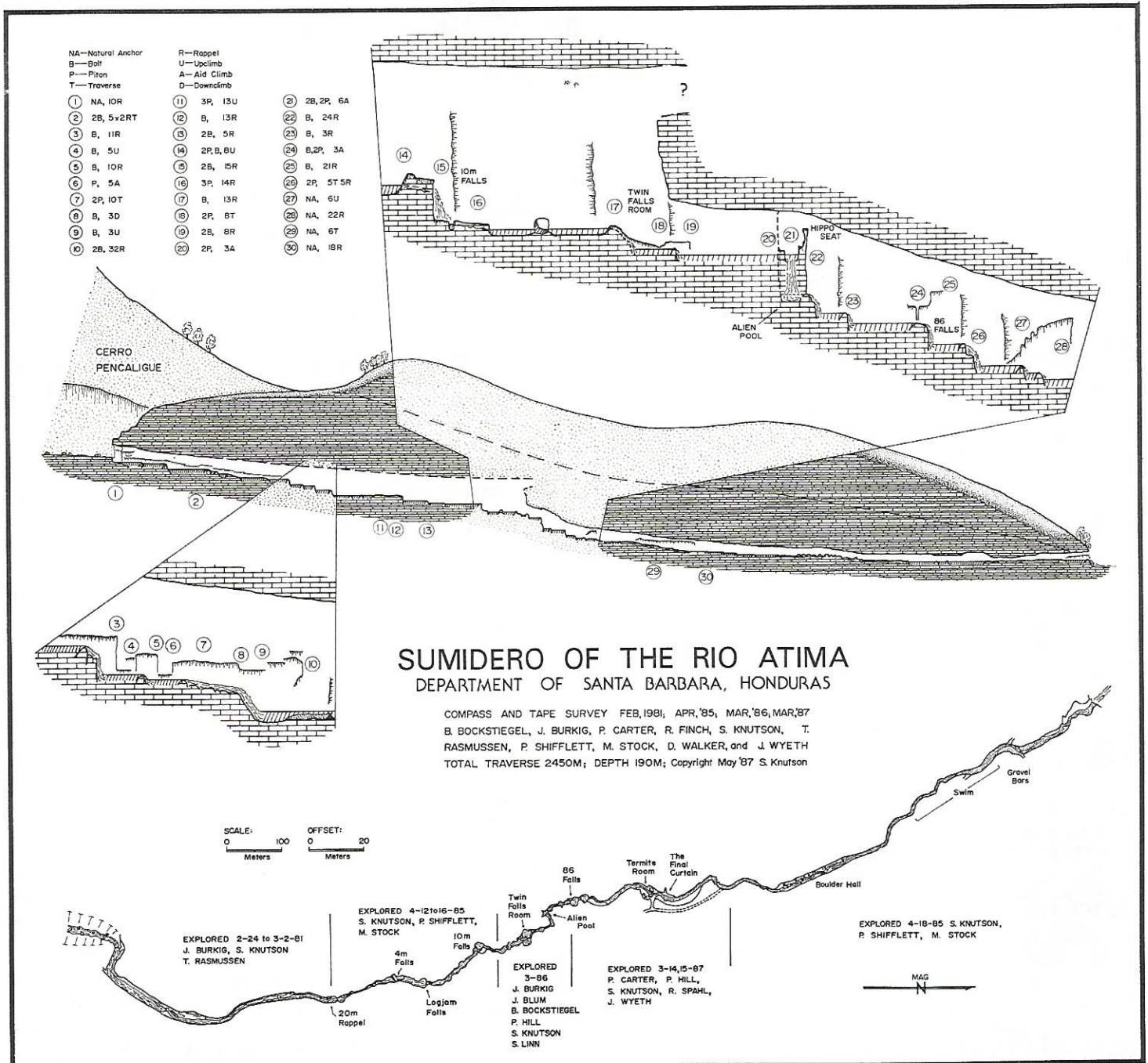
They rigged a hand line on a difficult,

potholed climb to a ledge about 50 ft up on the right. The ledge ended quickly but bypassed the gorge and the falls below. For the first time in the exploration, a natural rock anchor presented itself, so they rigged 70 ft of PMI and rappelled into deep, slow water in a narrow canyon. They payed out 200 ft of canal line to where the passage broadened greatly and the water shoaled onto a sand bar with huge breakdown blocks.

It occurred to the crew that this was a longer distance without a difficulty than encountered since the Ten-Meter Falls. After that, and especially after the Twin Falls Room, the river plunges down a series of rapids and falls in a very narrow canyon. We knew at some point this had to end, that the cave would broaden out into the mainly

horizontal, lower cave we had seen in 1985. But none of these people had been on that trip, so how would they know when they had entered explored cave and had a free "run" to the lower entrance? Still, they could feel that the character of the cave had changed.

The river continued into a gorge, but the passage was no longer just a narrow canyon; a broad ledge to the right offered an easy alternative. Indeed, the cross-section became a huge mushroom with the stem an 80-ft-deep river gorge and the canopy a 20 to 60-ft horizontal ledge, especially to the right side. They followed this for several hundred feet with only a few gaps requiring a 15-ft rappel and a 40-ft exposed traverse where they left a handline. Natural anchors were available on both difficulties.





The river runs between gravel bars near the lower entrance.

When the ledge ended, the river was far below, and they realized that this next rappel would finish their supply of mainline, leaving 150 ft of canal line. What if another difficulty was encountered? And even if they were in the explored cave, changes in log jams could easily require more rope. If they were eventually turned back, each step they took now would make the long and arduous retreat that much more difficult. . .

Across from them, as they sat on the edge of the canyon contemplating this, is a huge, golden flowstone canopy, extending at least a hundred feet up and down the top edge of the gorge. Suddenly, it occurred to them that this must be "The Final Curtain." They rigged their rappel and continued.

They left 100 ft of line in the canal below. Soon they came to a falls, of only 10 ft but unclimbable from below. Yet, there on a log jam Paul found a 13-ft piece of old Bluewater II, a remnant torn away from another year's rigging somewhere upstream. They attached it to a jammed log and pushed on.

They passed down a swim and left the last canal line in two short rapids. They had done more than the distance required to bridge the unexplored gap and felt sure they were in explored cave, but knew that some change wrought by floods might still require a complete retreat—they couldn't afford to pass an obstacle that couldn't be done going upcave. Another thought came to their minds, as they moved along in their great isolation: what if this cave *doesn't* go to the resurgence we know, but to a different one, farther downstream? But the mind doesn't hold such a thought for long—the consequences are too unbearable. . .

And so they went, through long swims, easy rapids and down short falls, to a low-ceilinged stretch where the river wound through gravel bars. This they knew was near the lower entrance and their elation began to build—they knew they had done it! They scrambled over slick rocks, down short rapids and over slimy grind holes. Finally, swim-

ming around a bend they saw, in Paul's words, "the blue glow of a newly-full moon lighting the partly cloudy sky. . ." Even normally reserved Randy joined in the yelling and hand-slapping that ensued. They dangled their legs over the edge of the lower entrance waterfall and ate the last of their cave food, savoring it and the glorious moment.

The Aftermath

When they arrived back at camp, we got out the caña and had a further celebration. With a cave like this, there is no assurance of success until the thing is done; there are so many ways to be denied. And in small-party expeditions there is no overpowering the objective; each person is involved and success depends on everyone.

There was still much work to do. Ric joined John and me, and on Tuesday we thru-tripped, mapping half of the remaining gap and doing some photography. We were almost out of the lower entrance before I recognized things I'd seen in 1985; it was so changed by shifting logs and sand bars.

The next day Paul was sick, but Randy and Pete mapped the rest and did more photography. Thursday we met with Santiago and his sons and arranged for help with a pull-down derigging trip the next day. One son would guard camp while Santiago and the other two came around Cerro Pencaligue with horses, arriving early Saturday morning at the lower entrance to pick up the rope and equipment. "How much would there be?" Santiago wanted to know. How much, indeed? We added up at least a kilometer of rope, there were pitons, bolt hangers and carabiners at most of the rig points, a couple of hammers and bolt kits and strings of unused hardware; to this would be added the personal gear of six river cavers. Santiago decided on two pack horses.

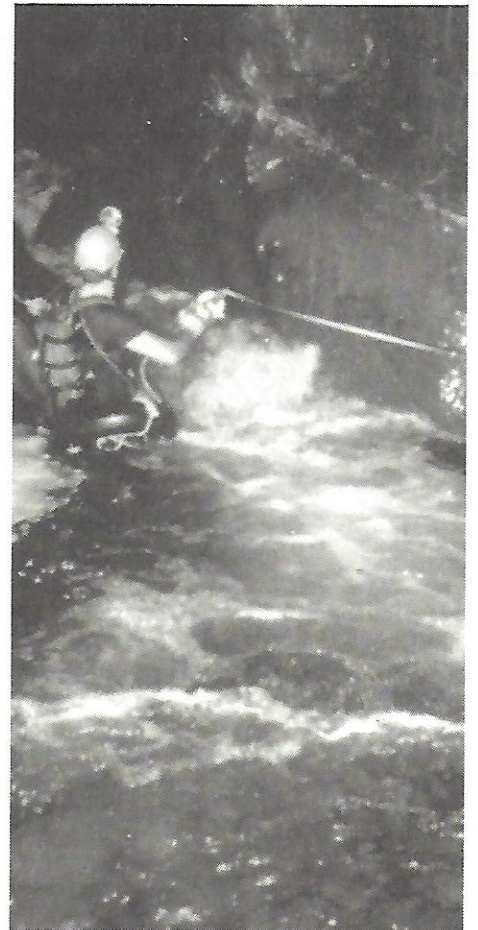
On Friday Jon and I teamed up and Pete and Randy teamed up. The two teams would take turns rigging and executing the pull-

downs. The remaining two started loading up. This went well, but by the time we got to the connection with the lower cave and the last of the major riggings, we each had more baggage than we really wanted. The last kilometer, though essentially horizontal, became an exhausting obstacle course of slimy rocks and ledges, tricky log jams, swims, short climbs and wading. Finally, we reached the lower portal; under dim starlight we staggered down the riverbed outside to where the horse trail crossed. There we made a pile of all the gear and made the long walk back over the mountain to camp, leaving Ric and Paul to wait for Santiago. Santiago later insisted that the baggage weighed over 500 lb—it certainly felt like it. We were indeed fortunate to have six cavers on-site during the derig.

Conclusion

In just two weeks the 1987 trip rigged, pushed, mapped, photographed and derigged a very challenging cave, mostly with just four cavers. Such success is a tribute to the attitudes and abilities of the crew.

Although not a long or deep cave, the Sumidero of the Rio Atima offers great resistance to exploration. In a 2.5 km thru-trip only 190 m deep, we used over a kilometer of rope in 54 riggings (that we



Mark Stock surveys to the edge of a small chute.



John Wyeth below short falls in the lower part of the cave.

INTERNATIONAL NEWS



By Jay Arnold

A Cave Research Foundation expedition to southern China located numerous caves during a three-week stay in late February and March and turned in 8 km of surveyed passage, expedition leader Ron Bridgemon says. The trip was a joint effort between CRF, the Speleological Society of South China Normal University at Guangzhou and the Institute of Karst Geology at Guilin.

Karst, caves and fauna were studied at Guangdong, Hunan and Guangxi provinces, including the Tongtianluo Shaft in northern Guangdong, which was 80 m across and 100 m deep. Wahuayan Cave was the focus in southern Hunan.

Several members of the SSSCNU were given extensive training in the use of single rope techniques, and CRF team members also presented papers and suggestions for cave preservation and the development of tour caves in China.

Besides Bridgemon, team members were: Bob Buecher, Dave Jagnow, Cal Welbourn, Ron Kerbo, Ian Baren, Phil Whitfield, Jim Eller, Debbie Buecher, Jim Goodbar, Mike Taylor, and Ron Simmons.

A major article is planned for a later edition of the *News*.

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Members of Proyecto Espeleologico Purificacion surveyed another 4 km in Mexico's longest cave, Sistema Purificacion, in March, boosting the system's length to 71.6 km, Peter Sprouse says. The team spent eight days in Camp I, mak-

ing new discoveries in the Confusion Tubes area and finding a dry upper level, Arrakis, heading east outside the previous bounds of the map. The new area is paralleling the main cave, which continues to have "too many leads to count," Sprouse says.

* * * * *

Three Mexican caves surpassed the 1000 m mark this past season as the pace of new deep discoveries south of the border continues to astound. An American effort at Sotano de Ocotempa in the state of Puebla pushed that cave down to 1041 m, according to Mark Minton, who says the cave likely will turn out to be about 1063 m deep when two new Belgian-discovered higher entrances are added to the survey. The cave now is being called Sistema Ocotempa, Minton says.

In the vicinity of Ocotempa, a Belgian expedition hit paydirt with Akematl (or Axematl), a new cave that went down to 1130 m, according to a note left by the Belgians in the caver's log at the Pena Fiel restaurant in Tehuacan (we hope to get official confirmation of this information at a later date.)

And south of Huautla in the Sierra Juarez, Americans Bill Farr and Carol Vesely led a return expedition to Cueva Cheve in March that pushed that cave down to 1038 m. About 15 people participated in the effort, during which the Proyecto Papalo cavers tied in an upper entrance to Cheve, Cueva Moscas. The resulting cave, henceforth to be known as Sistema Cuicateca, blossomed to 9.18 km in length before explora-

recall) and a lot of hardware. Efforts in such a cave are the epitome of cave exploration. Many caves of great length or depth are not really difficult—their exploration is just a matter of time. Caves like Atima offer a challenge that puts one at the cutting edge of caving. Perhaps one day we will come upon one that is truly "impossible"—wouldn't that be interesting?

Acknowledgements

I thank all those who supported any of the expeditions to Atima. Sponsors were Bob and Bob, Pigeon Mountain Industries, Bluewater, Ltd., Smith Safety Products, Keson Industries, Forestry Suppliers, Rite-in-the-Rain (Darlington, Ind.), the National Speleological Society, and the Western Region of the NSS.

We also acknowledge cavers of previous expeditions who became involved in the push of the cave: John Blum, Bill Bockstiegel, Jon Burkig, Scott Linn, Todd Rasmussen, Pete Shifflett, and Mark Stock.

tion ended at a boulder choke. The team pushed another cave, Osto de Puente Natural, to 441 m deep and 1 km long.

Minton notes that there now are 32 caves in the world deeper than 1000 m. Two years ago there were just 22. His Top 10 deepest (in meters) are:

1. Reseau Jean-Bernard, France, 1535.
2. Vjacheslav Pantjukhin, USSR, 1465.
3. Sima de las Puertas de Illamina, Spain, 1408.
4. Sistema del Trave, Spain, 1381.
5. Snieznaja Pieszcziera-Mezhonnogo, USSR, 1370.
6. Sistema Huautla, Mexico, 1353.
7. Reseau de la Pierre Saint-Martin, France/Spain, 1342.
8. Gouffre Berger-Reseau Rhododendrons, France, 1241.
9. Vladimir Ijukhin, USSR, 1220.
10. Batmanhohle, Austria, 1219.

Elsewhere in Mexico, Jim Smith got a positive dye-trace connection in early February between Mexico's deepest, Sistema Huautla, and a resurgence on the Rio Santo Domingo. The resurgence is about 10 km south of the Sotano de San Agustin entrance to Sistema Huautla—and around 1650 m below the highest point in Sistema Huautla.

Also, the 30-member British Black Holes expedition mapped 30 km of passage during a three-month stay early this year in the Sierra Zongolica in Puebla state. The Brits told Bill Farr they found hundreds of entrances, but nothing went very far. The best was a 4 km resurgence cave. One of the numerous surface pits was 250 m deep.