UNDERWATER SPELEOLOGY

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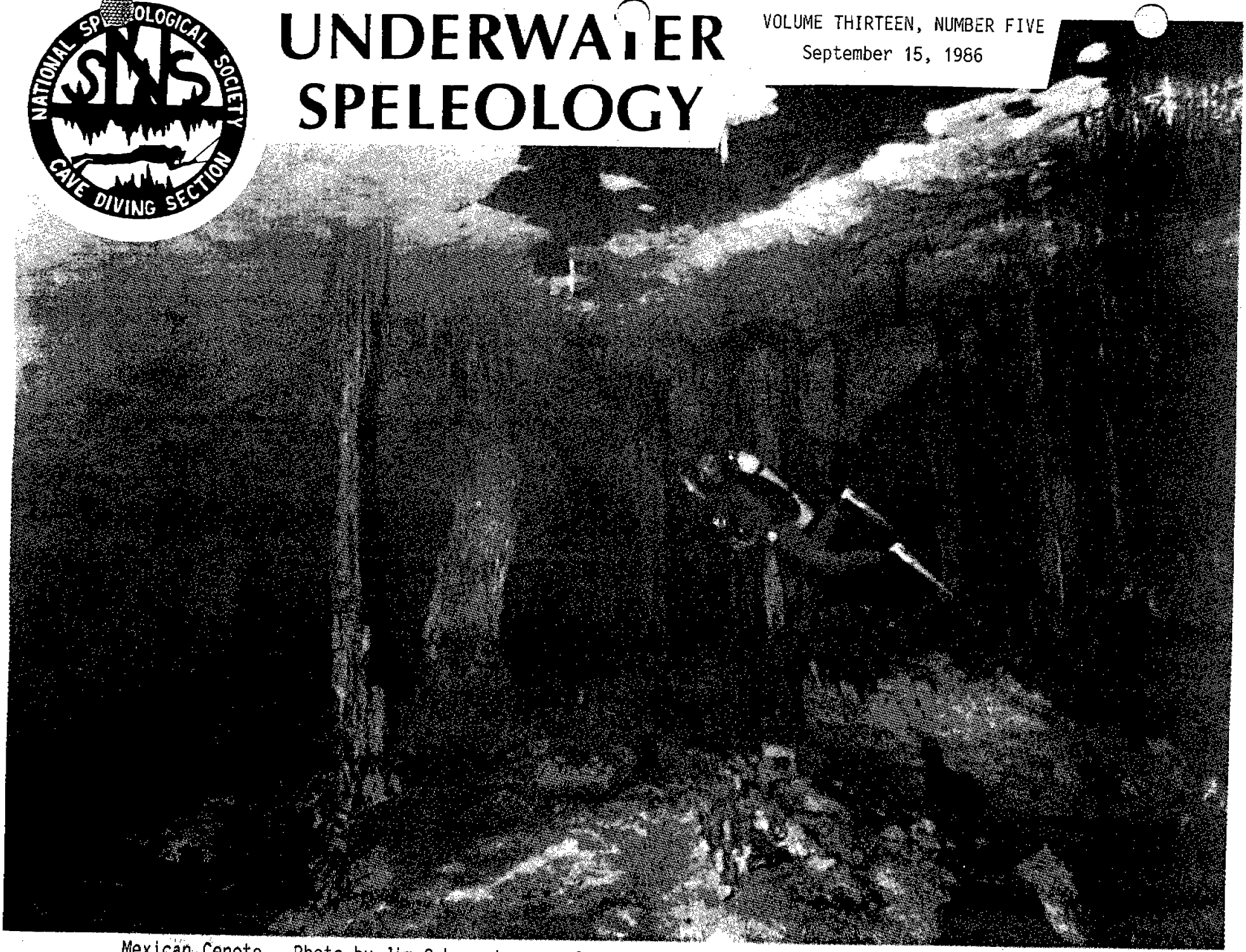
September 15, 1986



Mexican Cenote - Photo by Jim Coke, story p. 8

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Underwater Speleology is the official newsletter of the Cave Diving Section of the National Speleological Society, Inc. Section membership, which includes subscription to the newsletter, is open to all members in good standing of the NSS $5.00 per year. Subscriptions for non-members are $10.00 per year. Membership/subscription information, applications, and status may be obtained by writing to the Secretary-Treasurer c/o the Section's permanent address:

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NSS Cave Diving Section
P.O. Box 950
Branford, FL 32008-0950

All current news items, reports, articles, photographs, negatives, slides, cartoons, or other submissions for the newsletter should be sent directly to the Editor:

H.V. Grey, Editor, UWS
P.O. Box 575
Venice, FL 34284-0575

OFFICIAL NSS NEW BOOK ANNOUNCMENT

Cave Minerals of the World, by Carol A. Hill and Paolo Forti, with a historical introduction by Trevor R. Shaw

Grotesquely twisted helictites, cave pearls polished to a high luster, satin-petailed cave flowers, and the moonmilk of ancient medicine--all of these and ma other speleothems are portrayed in this n and exciting book. Almost 200 different minerals are described, and nearly 180 color and b & w photographs, drawings and graphs illustrate the splendor of cave minerals from all over the world.

272 pages (16 in full color); includes glossary, bibliography and index. $24.95 (pb); $29.95 (hb). Include $1.50 for postage & handling, plus $1.00 for each additional copy. Order from: National Speleological Society, Inc. Bookstore, Cave Ave., Huntsville, AL 35810.

MESSAGE FROM THE EDITOR

Have you noticed a lot of typos and misspelt words in this issue and the previous one? Well, the Editor has been unable to obtain "SpellCheck" for WordStar version 3.0 (1981), CP/M operating system (for Sanyo MBC-1000 or FDS-1000), from nationwide software distributors or even the manufacturer, MicroPro, itself. Can anyone help?

CORRECTION FOR UWS 13:4

The announcement article on the ICDSA, "International Cave Diving Safety Award on page 18 of the last issue of UWS (Vo 13, No. 4, June 25, 1986) was incorrectly attributed to Treasurer Joe Prosser. It turns out to have been written by Milledge Murphey in 1984! Thank you, Joe, and my apologies, Milledge. --Editor.

CALENDAR

Oct. 25-26 - NACD Cavern Workshop for Open-water Instructors, Manatee and Ginnie Springs. Workshop Chairman: Steve Gerrard, 5714 Ed White Ct., Tallahassee, FL 32301, (904) 877-8196.

Oct. 30 - Nov. 2 - Annual International Diving Symposium, Florida State Univ. Conference Center. Contact Greg Stanton, 010 Montgomery Bldg., FSU Marine Laboratory, Tallahassee, FL 32306, (904) 644-3450.

Dec. 27-28 - NSS-CDS Winter Workshop, Branford High School, Branford, FL. Theme: "Innovations and Explorations."

TWO DIVERS DIE IN SPRING - Associated Press - Sarasota Herald Tribune - August

DEFURNIAK SPRINGS - an underwater accident in a freshwater spring in the Florida Panhandle has claimed the lives of a diving instructor and student from Georgia, officials said.

Michael P. Clennan, 37, of Lawrenceville, Ga., and Brenda Ellen Beudnot, 26, of Newman, Ga., died Sunday in Panhandle hospitals. They were part of a 16-person diving group from Atlanta.

"There have been numerous accidents at his same place," said Walton County Sheriff's dispatcher Jeanette Cooksey. "This one is really enticing to divers because of the caves. It has numerous caves."

Clennan and Beudnot, however, were diving in a spring rather than a cave. The accident occurred Saturday night at Morrison Springs in Walton County, Cooksey said.

DOUBLE DROWNING AT MORRISON SPRING
- from a letter to the Editor by John Burge of Pensacola

...For the NSS-CDS Accident Analysis records and for possible inclusion in a near term issue of Underwater Speleology, following is a summary of the facts pertaining to a fatal dive accident at Morrison Springs, Ponce de Leon, FL.

On the evening of August 30, Michael P. Clennan, 36, and Brenda Ellen Beugnot, 26, made a fatal dive into the lower cavern of Morrison Spring.

After talking with the Walton County Sheriff's Office, the spring proprietors, and Stewart Gregory of Diving World, who headed the rescue attempt (recovery), the following facts have been accumulated:

- Clennan and Beugnot were on a dive trip from Georgia to Morrison Spring.
- He was a PADI-certified rescue diver. He had no cavern- or cave-diving training whatsoever.
- She was certified as an open-water diver the day of her fatal dive.
- At approximately 7:15 pm several divers from the group participated in a training night dive under supervision. Each diver had a single light, and attached to their gear was a single cyalume stick of different colors to differentiate between instructors/supervisors and students.
- At the completion of this dive, several divers (4) decided to do a dive into the lower cavern.
- All divers were open-water rigged, i.e., none were cave rigged.
- Clennan had approximately 1200psi; Beugnot had approximately 1700psi.
- He had a single Oceanic 2000 Recharge [light]; she had a single Ikelite non-recharge. Each had a single cyalume attached.
- Clennan had stated that they should all surface at 500psi.
- No guideline was used.
- After a short period in the lower cavern, the other two divers indicated "low on air" and surfaced. Clennan indicated that he and Beugnot would stay a little longer. Time was about 8:40 pm.
- Upon surfacing and swimming ashore, the other two divers stated that they had had an "anxiety attack" on the way up because they couldn't find the exit from the cavern for a while.
- Gregory and other divers immediately entered the water to look for Clennan and Beugnot. By this time 5-10 minutes had elapsed since the other two divers had left the lower cavern due to low air.
- The rescue (recovery) divers found Beugnot's body against the ceiling of the lower cavern, Clennan's body on the floor. Both masks were on; both regulators were out of the victims' mouths.
- There were no lights on in the cavern when the rescue divers entered, and the cyalume sticks were too dim to give any meaningful illumination. The exit could not be seen from inside the cavern--it was a dark night...no moon.
- Both victims were given CPR until turned over to EMS.
- Both died in the hospital.
- Gauges on both tanks at the surface showed less than 50psi confirming a complete out-of-air situation at 80+ feet.
- The coroner's report indicated severe embolism by Beugnot. No data yet on Clennan.
- End of facts.

Here is another tragic accident by two mature (age-wise) open-water divers in a cave environment without any training and without proper gear, and in violation of

- the light rule
- the line rule
- the air rule
- the training rule
- good judgment

Clennan and Beugnot were the 3rd and 4th fatalities in the last 6 months resulting from open-water divers doing night dives into the lower room at Morrison

Spring. If anything positive has come out of this accident, it will be that Morrison Spring is going to allow signs to be installed and perhaps even a permanent novice line in the lower room. Up to now they would not allow it in spite of repeated requests and suggestions. Hopefully, they will also adopt some operating rules conducive to diver safety.

The media coverage has been loaded with inaccuracies and somewhat on the sensationalism side locally.

-- Sincerely, John Burge (NSS# 26601)

TRIPLE DROWNING AT DEVIL'S EYE -
by the Editor

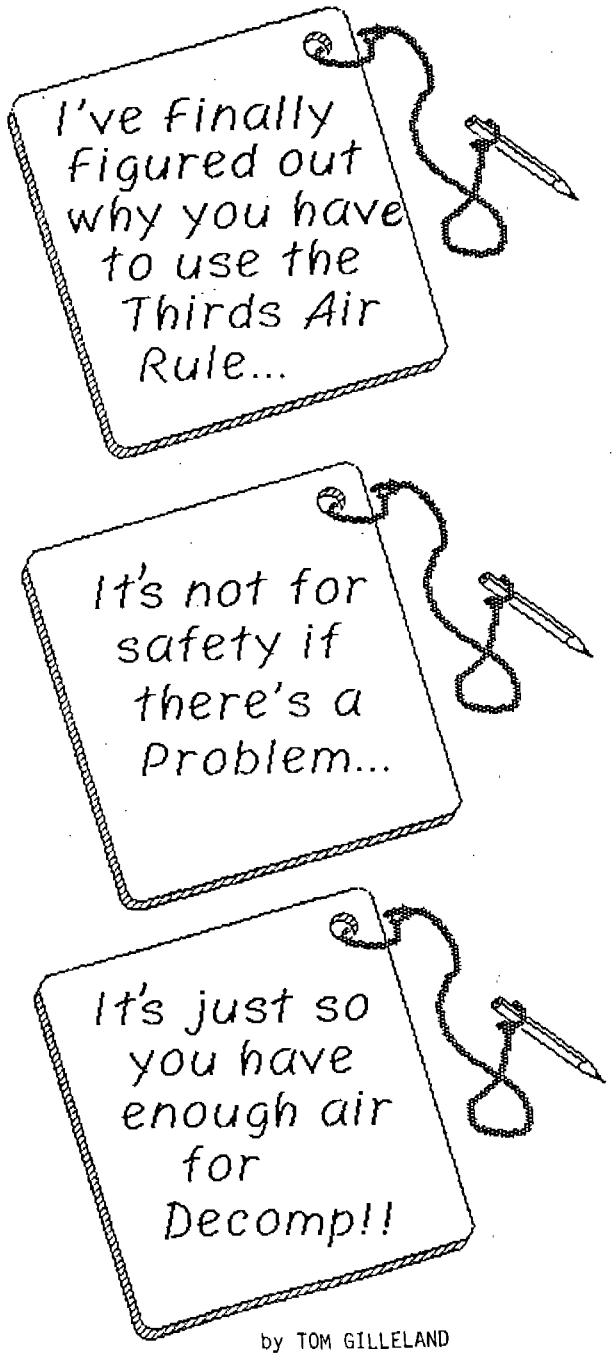
Tuesday, August 12, 1986, three brothers, aged 29, 31, and 36, drowned after becoming lost while diving past the ambient light zone at Devil's Eye Spring (the Ear entrance) in willful violation of the Ginnie Springs resort "No-Light" rule for open-water divers, which they had agreed in writing not to defy.

It almost goes without saying that 1) they were open-water divers without any training whatsoever in cavern or cave diving, 2) they did not use a guideline, 3) they did not--by any stretch of the imagination--plan their air according to anything that even remotely resembled the third's air rule, 4) they did not have adequate scuba, and 5) they did not have proper lights for cave diving (although when the bodies were recovered, the lights of all three divers were still burning--even the Micro Tekna light).

According to Mark Leonard, who, along with Wes Skiles, made the recovery, the three men were seen earlier in the day making a dive at Ginnie Springs. They later made one dive in the Well entrance at Devil's Eye, and at one point were caught by the Ginnie Springs caretaker carrying underwater lights (such as they were) in defiance of the "No-lights" edict. Apparently they hung around waiting until no one was around to stop them, and then dove at the Ear. Each diver was using a single tank and it is thought that they had made at least one previous dive (at Devil's Eye) on the air fills, and possibly two (the earlier dive at Ginnie). Two of the divers carried small, 3-D-cell Dacor lights, and the third diver carried a tiny Micro Tekna light.

The divers were apparently attempting to make the traverse between the Ear and the Eye. One body was found just past the tight restriction near the Eye (on the upstream, or Ear, side). The second body, on the far side of the room past the restriction. And the third body was found in the "Devil's Dungeon." I asked Mark if there was evidence of silting being a factor in the deaths and he said, "Oh, come on! Have you ever seen any silt at Devil's Eye that wasn't completely gone in less two minutes?"

The drowning incident received quite a bit of attention from the press. In the local paper, the Sarasota Herald Tribune, there were a two different write-ups. To give credit where it's due, the paper did make some attempt to point out that the divers were not trained in cave diving, broke the Ginnie Springs "No Lights" rule, and disregarded all the established principles of safe cave diving. In a Miami Herald editorial sent to me by Jeff Bozanic, a strong statement was made urging legislation that would require cave-diving certification.



by TOM GILLELAND

LETTER AND ARTICLE FROM GEORGE VENI:
CONCERNING CAYE CAULKER CAVE DEATHS

6 July 1986

Dear Sandy [Fehring, Past CDS Treas.],

I'm currently away from home for a couple of months and would like to submit some info for Underwater Speleology and yours was the only CDS officer-type address I could find here. I hope you don't mind forwarding this to the current editor.

Enclosed is a copy of an article from a Belizean newspaper on a recent cave-diving fatality. The paper is dated 8 May 1986, but as I indicate on the photocopy, it is a misprint and should be June. The article is pretty straightforward--rare for Belize--but having visited the site of the drowning a few days after it occurred, I have some additional information. According to the owner of the dive shop on Caye Caulker, the divers came from Ambergris Caye and wanted to rent gear to dive the cave. He warned against diving there and would not rent them gear because his general policy is to not rent gear but sell dive trips. Hearing this they returned to San Pedro, on Ambergris Caye, procured some equipment and came back to dive the cave. Other people on the island informed me that just before their dive they were drinking pretty heavily and were probably slightly intoxicated. If true, the sad results are ot surprising.

About the cave itself, the Dive Shop owner Frank (sorry but I forgot his last name) has been in it several times and was very helpful. The entrance is a 3-5 m diameter pit, with a constriction or two, that drops about 24 m into a single large room. The room has been explored by Italian divers and some Americans. The various explorations have left skads of dive lines radiating, circumnavigating, and crisscrossing throughout the room. Following the set lines can be very confusing and may have been a factor in the drownings. We discussed that a worthwhile project would be to rip out all the old lines and start fresh.

The cave has not been surveyed, but it has been measured to be 670 m (2200') long by 550 m (1800') wide! This clearly will rank as the third largest room in the world when surveyed, if the measurements are correct. The ceiling height ranges from 7-25 m and the deepest point in the cave so far is 33 m. The photos I saw show it to be extremely well decorated. The cave has not been completely explored. Recently, a nearby cave was found to also open into another large room. From the way Frank described it, sand flushing down the caves' entrance pits is filling an area where the two caves may connect. A detailed survey may reveal that the two caves are actually one immense room and that it may rival the #1 spot held by Sarawak Chamber in Borneo. However, this may open a big controversy as to whether they are really one room or two--the cave may have formed as one room, but the sand fill may give it the physical impression of being two. Anyway, Frank said some American cave divers were to be coming down soon to survey the caves, but he didn't mention names (I'm not the only one with a faulty memory). Hopefully they are CDS- or NACD-affiliated so we'll hear something of their results.

George Veni, NSS #17322

P.S. Divers interested in visiting the cave must get permission from the Dept. of Fisheries, Belmopan, Belize, Central America. The recent drowning has made them a bit antsy, so it's best to write to Frank (c/o Dive Shop, Caye Caulker, Belize, Central America) for an idea of their current moods about exploration.

"CAYE CAULKER CAVERNS CLAIM TWO SCUBA DIVERS" - reprinted from the Belize Reporter, May 8, 1986 - submitted by George Veni

- Belize, Wed., June 4 -

San Pedro Town on Amergris Caye is still in a state of shock following the drowning death of one of its finest and most experienced scuba divers, 35-year-old Adolfo Ayuso, and his buddy, American sportsman Art Williams [sic] of Austin, Texas, last Monday while they were exploring an underwater cave off the leeward coast of Caye Caulker.

The two men had set out with a group of five others to explore the cavern, believed to be one of the world's largest and most treacherous.

Ayuso and Samuels [Williams??] were the first to enter through the narrow opening that led to a series of interconnecting caves and tunnels which appear to stretch on for miles. Mike Perez, the third man in the cave, later related that he became alarmed when Art Samuels approached him in the darkness, apparently in a state of panic, and then disappeared from view.

Perez said he returned quickly to the surface and alerted the others on board that Samuels was having trouble. Pete Ayuso, Adolfo's younger brother, quickly made for the cave, where he found Samuels in an unconscious state. Desperate efforts to revive him failed, and a post-mortem examination performed in Belize City later showed that the American had died from drowning.

Attempts to find Adolfo Ayuso lasted all day Monday and continued into Tuesday and Wednesday. Divers from San Pedro, Caye Caulker and even the British Garrison took turns searching the cave, but without success. They concede that he must have drowned, trapped perhaps in a crevice or having lost his way in the darkness, and was unable to find breathing space.

Others in the diving party included Niko Varela, 27, Mike Perez, 20, Damian Vasquez, 18, and Tom Walker, the only other

American in the group.

Adolfo Ayuso is survived by his wife Yolanda and four children--Zobeida, Maribel, Tulita and Adolfito. Art Samuels is survived by his parents, Molly and Ecc Samuels, a brother Philip, and a 7-year-old daughter, Erin Risa.

A memorial Mass was held today for the two lost divers at the Catholic Church in San Pedro. It was followed by a 35-boat procession to the scene of the accident where garlands of flowers were put inside the cave and left to float on the water outside.

Funeral services for Art Samuels will be held in Beaumont, Texas on Sat., June 8.

The underwater caverns behind Caye Caulker have held a sinister fascination for divers ever since they were discovered more than a dozen years ago. The unexplored caves are interconnected and are believed to be among the largest in the world.

LETTER FROM JIM COKE OF AKUMAL, MEXICO CONCERNING DOUBLE DROWNING IN BELIZE

I just received a letter from a good friend of mine who owns Belize Diving Services in Caye Caulker, Belize. Frank wrote me concerning the double fatality in the Giant Cave System that occurred in July. To quote Mr. Bounting from his letter:

"A dive shop at San Pedro brought 6 divers over to dive the cave--4 lived to tell about it. It was a classic dive in the respect that if anything could be done wrong, they did it.

"They made the entry with no guideline, every other person seemed to have a light, single tanks without backup regulators or octopuses, and their plan was to turn around at 80 feet, which is a little narrow as you know. The guide, I was told, was 'San Pedro's best.'

"At the jog the 3rd person in line got smart and wanted to get out, so he and the last 3 went back to the surface. After a few minutes 2 of them decided to find the other 2 that were still down [in the cave]. When they got to the jog they ran into the 2nd person who was disoriented and in a state of panic. After they got away from him they waited until he became unconscious and then took him to the surface.

"He had 500 psi left in his tank when he was taken out of the water and when I asked them later if they gave him CPR they said yes; they put the regulator in his mouth and pushed the purge button.

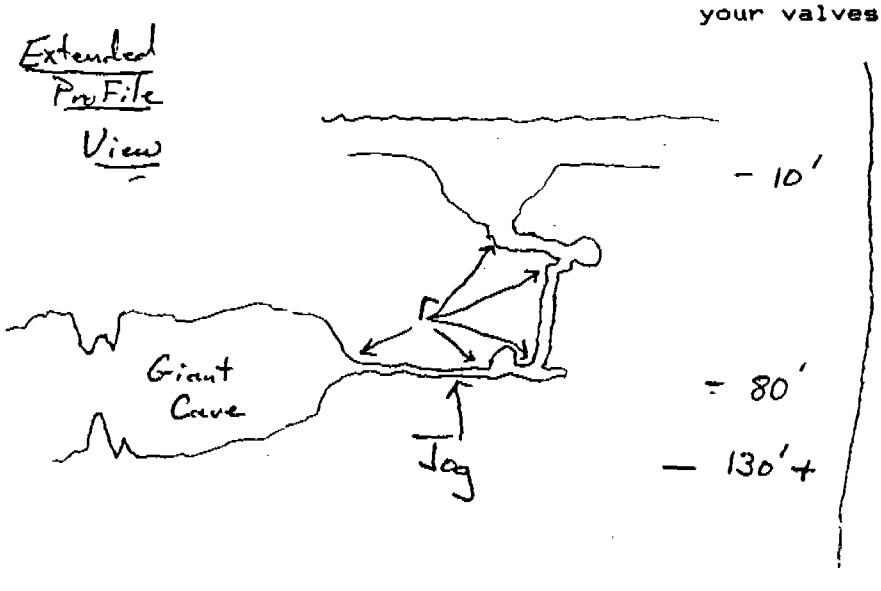
"After they were sure he was dead (a little sarcasm), they started bounce diving looking for the guide. One of the guys made 5 dives that afternoon without any knowledge of the decompression tables. I was out with divers at the time everything happened and when I returned they stopped me to see if I would help them. I told them I [had] just finished a deep dive and would have too much decompression time to do. Since it was 3-1/2 hours since the guide had made his entry I didn't think there was a chance of him being alive."

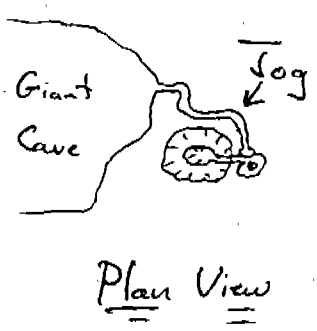
These are Frank Bounting's words concerning the accident. To summarize: untrained open-water divers, failing to use a continuous guideline, failing to save 2/3's of their air for the exit, with no proper lighting. This sounds like other familiar scenarious, unhappily.

Safe Diving, Jim Coke.

O-RING FAILURE OF POSSIBLE INTEREST

An open-water diver recently told the UWS Editor of a manifold-to-regulator O-ring failure which might be of interest to cave divers. The Venice diver, Don, said that in the 20-30 seconds it took him to turn off his valve as he swam to the surface (he only had the one tank on the boat and so didn't want to waste it) he lost 700 psi from his single 80-cubic-foot tank. For a cave diver diving with a single tank, that would be a lot of air! Always be sure to check your O-rings seals for leaks before the dive and make sure you can reach your valves to shut them off underwater.





[Drawings by Jim Coke]

A_REMINDER! - RESCUE/RECOVERY TEAM MEMBERS

Please be sure to notify the National Crime Information Center (NCIC) in Jacksonville, FL, of any change in your address or phone numbers within 24 hours. This is absolutely necessary if the Recovery Team is to maintain its credibility and efficacy. NCIC Phone: (904) 633-4159

PEACOCK_SPRINGS_TO_BECOME_STATE_PARK - reprinted from Florida Scuba News, September, 1986

One of North Florida's most popular dive sites, Peacock Springs, near Live Oak, has been sold to the State and will become a state park. A spokesman for the Department of Natural Resources said the area will probably remain open to divers while funding is set up to operate the area, but "it's too early to predict what's going to happen at Peacock," C.W. "Pete" Hartsfield said.

Hartsfield, the Department of Natural Resources chief of the Division of Parks Operations in North Florida, said that "we don't anticipate doing anything with the area in the immediate future" because we don't have the funding.

"There are a lot of things that need to happen before we can do anything," Hartsfield explained. "The acquisition process is months ahead of the operations and our funding does not include any money for staff and operating at Peacock."

Although the State has bought the property, it has not been leased to the Department of Parks yet, so no official action can be taken to control diving at Peacock. Hartsfield said it may even take several months before the property is leased, "depending on how the beaurocracy is running."

"It would be necessary to have on-site personnel before we can take any management action at Peacock," Hartsfield said.

The next step for the Peacock area will be for the Department of Natural Resources to request funds from the next session of the Florida Legislature for staff to operate on an interim basis until public use facilities can be constructed. A land-use planning team has to visit the site to determine what type of recreation facilities are needed and "they haven't even had a chance to visit the site yet," according to Hartsfield.

"If it [Peacock] remains high on a priority list, it may take three years before you would see new roads and picnic and camping facilities open to the public," Hartsfield said.

Once Peacock becomes a state park, Hartsfield explained that the same kind of diving procedures that are currently being used at Manatee State Park will probably be implemented. "We want to keep amateurs out of caves," but he said they want to keep it open to properly trained divers.

The State is concerned about diver safety and will probably regulate access to the cave and require divers to have the proper cave-diving equipment and cave certification.

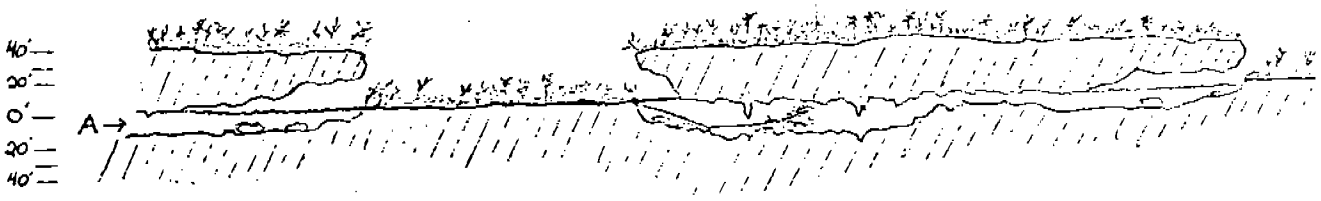
National Speleological Society Cave Diving Section records indicate that 27 divers have died in Peacock Springs since 1960--the most diving deaths recorded for any spring in Florida. The cave-diving group stresses that none of the divers who drowned there were trained for cave diving.

Peacock Springs was bought from The Nature Conservancy, a non-profit conservation organization that buys environmentally sensitive lands for preservation, so they can be sold to and protected by the government. The Conservancy bought the land in April, 1985.

George W. Wilson of The Nature Conservancy said, "It's a great day for the people of Florida," in a story in the Florida Times-Union regarding the State's acquisition of Peacock Springs.

The Treasurer and Newsletter Editor go cave diving....
800 feet back in a Bahamian Blue Hole....

Ojo
East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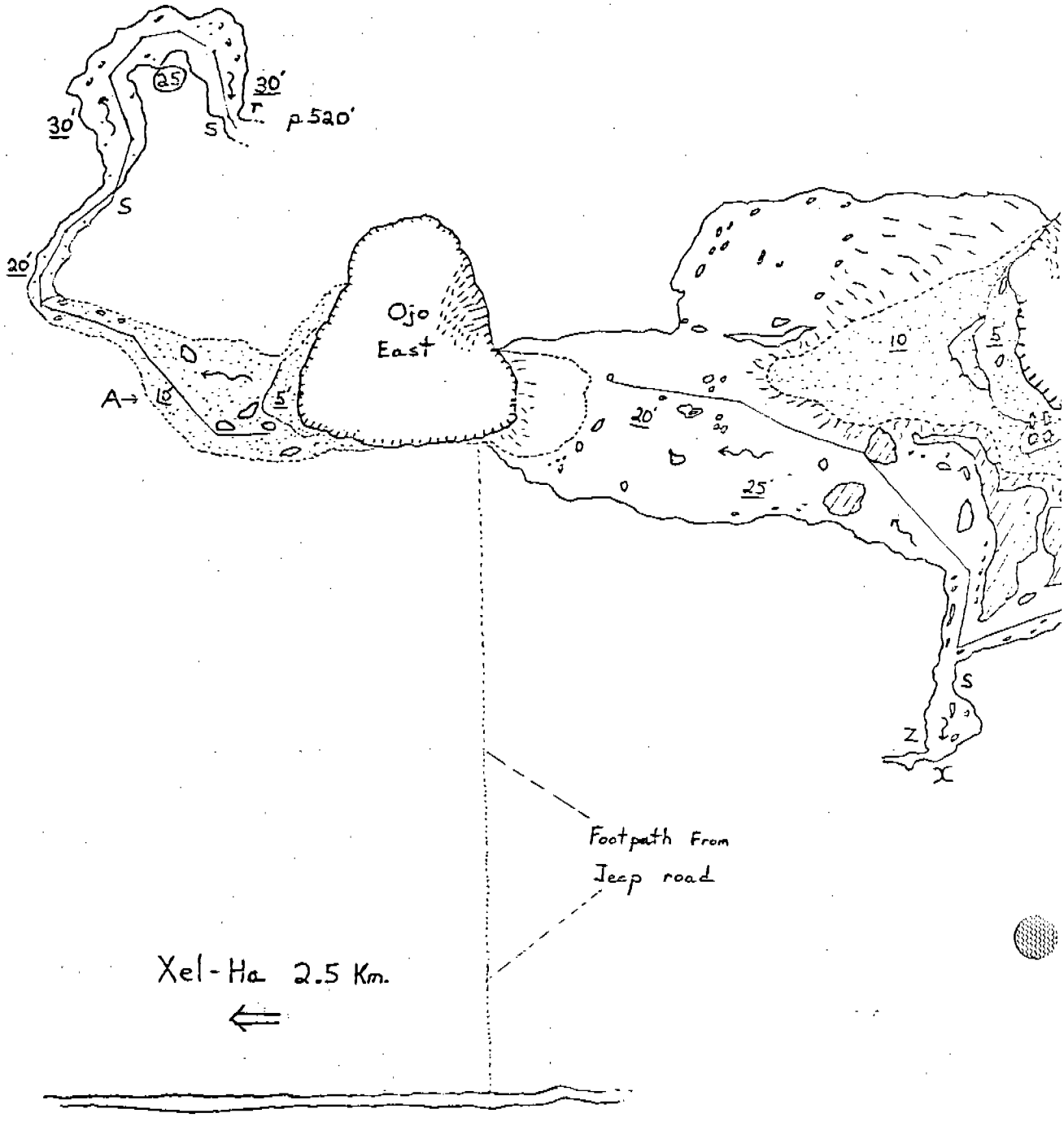
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Dos Ojos Cenotes

Xel-Ha

Quintana Roo, Mexico

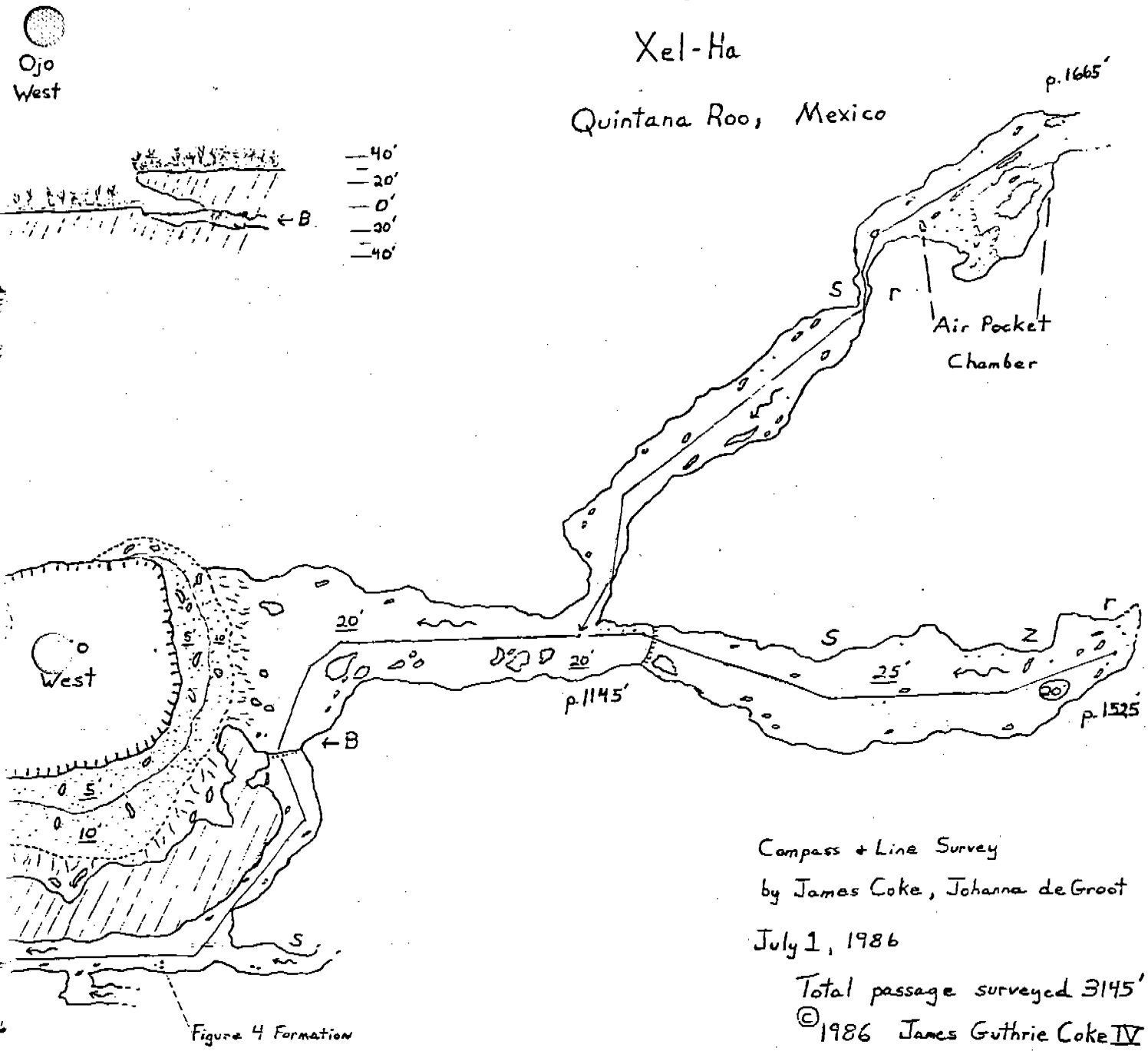

Figure 4 Formation

Compass + Line Survey

by James Coke, Johanna de Groot

July 1, 1986

Total passage surveyed 3145'

Cave is completely underwater

Floor depths in Feet

Map Symbols as per NSS Cave Diving Section

0 20 100 200 Feet

30 60 Meters

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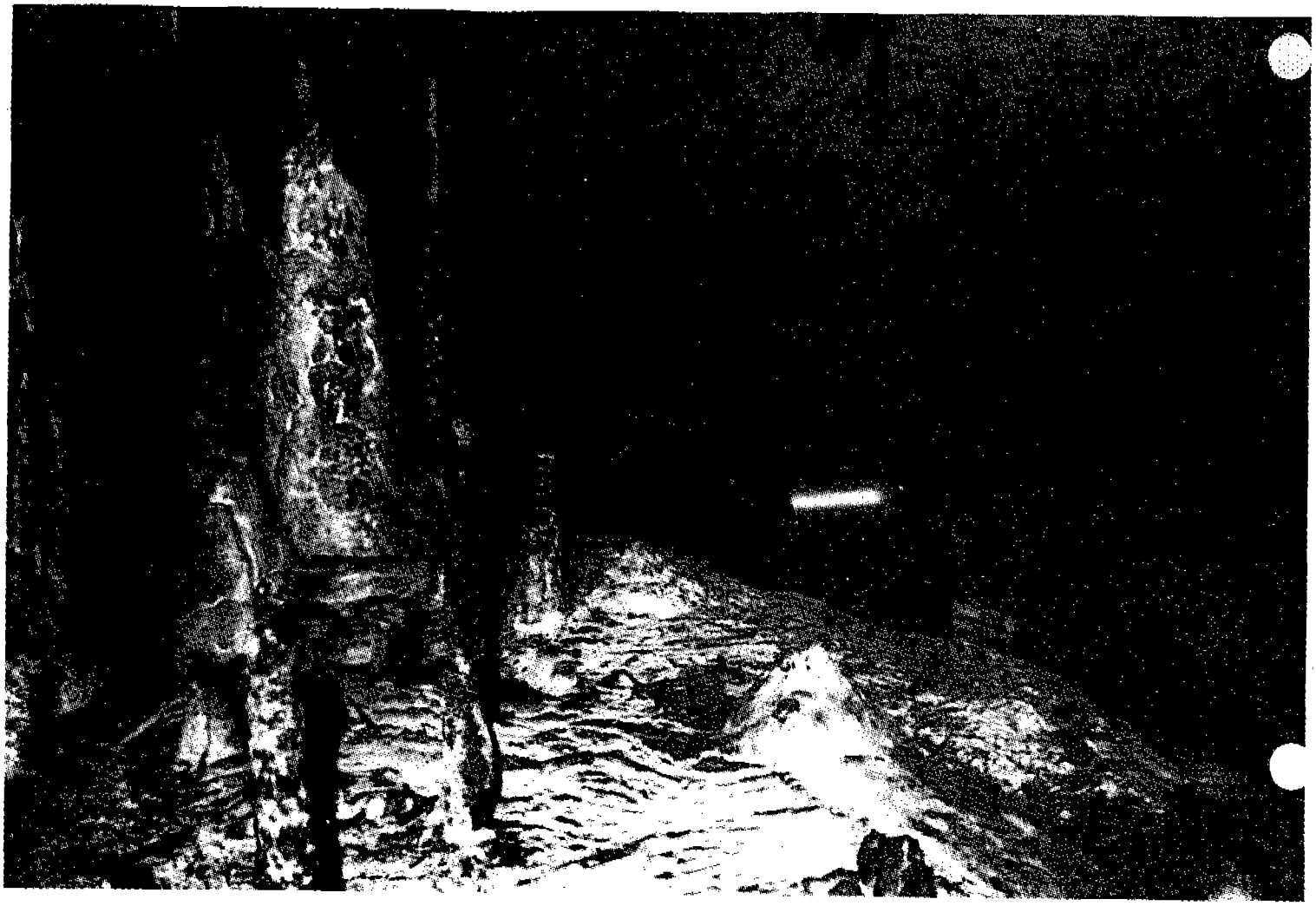


Mexican Cenote - Photo by Jim Coke

DOS OJOS CENOTES

- by James Coke and Johanna de Groot

The "Two-Eyed Cenotes" near Xel-Ha cannot be classified as either one of the largest or deepest underwater cave systems in Quintana Roo, Mexico. It is, however, a very large cavern an cave system having a variety of different speleothems and diverse cave structures. Immense caverns are connected by low white tunnels; off-shoot cave passages narrow into wide silty bedding planes full of soda straws and pencil columns. One side passage appears to resemble bedding-plane character until it opens into a large chamber containing an 8' air pocket in its ceiling. The Air Pocket Chamber is an oddity as it lays some 725' from the nearest cavern opening! The special character of this underwater cave is further magnified by the adventure of getting to these cenotes over a 4-wheel drive road, and by the presence of Mayan artifacts near some cavern openings.

It was early this year when first I heard rumour of these interesting peculiarities in the Quintana Roo karst west of Xel-Ha. Approximately 2.5 km inland from the coast lie three caves close together. One, an air cave with a final pool of crystal clear water, the two others being cenotes supposedly connected underwater. All were reputed to have artifacts from previous Maya visits. Armed with these rumours, I approached a local guide, asking him if he could substantiate the existence of these caves.

Eliseo Morales chuckled at my questions, telling me that he was the only guide who could show us those caves. Chuckles soon turned to surprise, though, when I told him we wanted to dive in the double cenotes, saving the air cave for a later trip. Reluctantly, Eli agreed to guide us to the cenotes if we could provide a jeep. The date we set was to be on his next day off; that Sunday never came until two months later.

The first of June saw Johanna de Groot and me in Eli's front yard adding water to an overheated jeep. The addition of another passenger, Eli's cousin, was noted as the four of us started down the road, resembling an overloaded wheel barow. An hour's drive over the "No Problema for Una

Heep" road found us at the start of the path to Dos Ojos. Willey's radiator gurgled for joy.

Do Ojos at first glance appears as a double crater; the end of the path brings you to a sheer 30' cliff overlooking the East Ojo. By taking a side path one can descend into the cenote by using a tenuous breakdown slope. The undercut spring and siphon entrances, decorated by hanging white flowstone, are natural echo chambers. Long-tailed Flycatcher birds make their homes here. Their dove-like moans echo eerily in these openings. Mayan artifacts in the West Ojo caverns lend even more character to these cenotes.

Access to the underwater cavern/cave system is best made by using the spring side of the East Ojo. The permanent line begins 80' from shore in clear view of the opening of the West Ojo siphon side. The commonly shared caverns is by far the largest I've seen in Quintana Roo. Its size and beauty make the Carwash Cenote Cavern (Tulum, Q.R.) look like a sandbox! As for Johanna's impressions:

"June 1st, 1986 had finally arrived (my birthday) and it promised to be a special day indeed. Jim Coke and I went out early in the moning loaded up with cave-diving gear and ready to do some unique exploring. We picked up Eliseo, our guide, and his cousine, put "Willey" the jeep in four-wheel drive mode, and made our way along an overgrown logging road. The drive was only 2.5 km but took us close to an hour.

"Where we stopped was a small path leading into the jungle and Eli beckoned us to follow him. The path led on for 500' and ended in a cliff; down below we could see the dense jungle which had once been a large, ancient inland lake or cenote. Why had Eli brought us here? He beckoned that we follow him again, taking us down another path which led to the bottom of the cenote. There was the opening: crystal blue water and pure white flower-shaped flowstones.

"After a few trips we had our gear down and were ready to go exploring. We couldn't believe the size of the opening, and no sooner had we descended into the darkness, than we saw rays of daylight bearing in ahead of us--another cenote, with an opening as large as the one we had just entered. Could there possibly be a third opening? We descended again and set off exploring through large rooms, passage-ways and bedding planes. Our lights finally reflected off the ceiling and the excitement built. Upon examining the ceiling we discovered only a large air pocket. We turned the dive here and began the first of many surveys."

Surveying Dos Ojos presented an interesting challenge. The cenotes required two lengthy land surveys in order to set land "bench marks" to tie the cave system into perspective. Underwater surveying techniques were used on land with success; biting bugs on the other hand made the underwater cartography much more desirable. Due to the size of the main caverns, numerous wall-to-wall measurements were taken as dual-line technique was just not a feasible option. Some wall measurements shown on the survey are close approximations, especially in the passages with low bedding-plane character.

There is still much to be explored in the Dos Ojos Cenotes. Shallow depths make for long dives free from the worries of decompression. Numerous side passages beckon with the lure of the unknown. Two tunnels which are partially surveyed trend towards the direction of the air cave 2000' away. The final pool in the air cave, with its "crystal clear water," certainly is part of the Dos Ojos underground water system. The question is whether or not passage size and configuration will allow us to visit this air cave from the basement! A change in name might be suitable then. Tres Ojos?

DAN BUTLER TO BE NEW CAVE DIVING SECTION REPRESENTATIVE IN HAWAII

The Board of Directors of the Cave Diving Section of the National Speleological Society, Inc. is pleased to announce the appointment of Dan Butler (NSS# 24515) as the Section's representative in Hawaii. Dan is an NSS Basic Cave Diving Instructor as well as a PADI Cavern Diving Instructor. He is also a recipient of the Abe Davis Safety Award. Prior to moving to Hawaii, Dan was well known throughout north Florida for his exploration and training effectiveness. Dan can be reached at:

840 Hays Circle
Honolulu, HI 96818
(808) 833-3765

Courtesy of Wes Skiles

A CURRENT LOOK AT CAVE DIVING AND THE DPV: THE TEKNA DV-3(X)

- by Steve Straatsma and Dustin Clesi

The use of diver propulsion vehicles in cave diving appears to be on the increase. However, riding these motors through subterranean labyrinths requires additional considerations to the safety margins for the diver--a current concern of the major cave-diver training organizations.

The most common unit seen at Florida springs these days would undoubtedly be the Tekna DV-3(X). This unit has won widespread popularity due to its relative low cost, logistical ease, and low maintenance requirement.

The scope of this writing will focus upon these particular units, suggesting both safe diving precautions and listing reported cases of TEKNA unit malfunction... implying (as with any other unit) "what could go wrong."

The Tekna diver propulsion vehicle is available in two units: the DV-3, single speed without options, and the DV-3(X), multi-speed unit wth charger, propeller screens, variable pitch propeller, and carrying case. The DV-3(X) weighs 44 lbs. topside and 3 lbs. submerged. It is powered by a direct-drive, barium-ferrite, permanent-magnet motor delivering 600 rpm (according to factory specs) and a speed of up to 2 knots can be attained by a fully equipped cave diver in an average flow system. Energy levels are maintained via two sealed, rechargeable gel-cell batteries, which deliver 50 to 80 minutes burn time. the system is 12-volt, 15 amp hours, giving the diver a range of up to three miles. Outer shell construction consists of high-impact xenoy resin, which is reinforced. The unit sports a retail cost of about $1,195. The manufacturer now offers additional options including a detachable "T" bar for rider seating and an instrument console for mounting on the fan guard.

Photo by Mario Mitchell

Several modifications have been made by certified cave divers. These include removal of the prop screens on the 3(X) unit to increase nozzle intake. Primary light heads are mouted on the fan nozzle, which are easily detachable. Compasses, depth gauges and accessories are found to be mounted as well. Diver attachments (other than the "T" bar) would include a swivel snap at the solar plexus attached to the unit's bridle. Attachment using the crotch strap method also has been successful with duct tape or cable ties, as the bezel often comes loose. Headlamp disconnect is popular among some experienced users in order to prevent additional power drain or to remove what may be construed as an additional light source. (The nose headlamp should not be considered as a qualified backup light!) To eliminate hand fatigue on extended dives, cotter pins have been inserted through a drill hole in the trigger grip, locking the unit into the "on" position--although not recommended for obvious reasons. Rubber bands or surgical tubing have proved much safer in holding the trigger down and effecting a speedy stop.

The safety margins should be greatly enhanced while using the DPV in the overhead environment. Helmets are a wise investment! It is a helpless feeling watching your buddy on the cave floor--reeling from a blow to the head by an unsuspected ceiling projection. 7 to 8 ft. hoses for alternative air source usage can bean the difference in an emergency. Redundancy is best maintained in groups of two to four units, as the towing function is quite capable in spite of battery level depletion. Many divers routinely carry towing straps with quick connect features for this possibility.

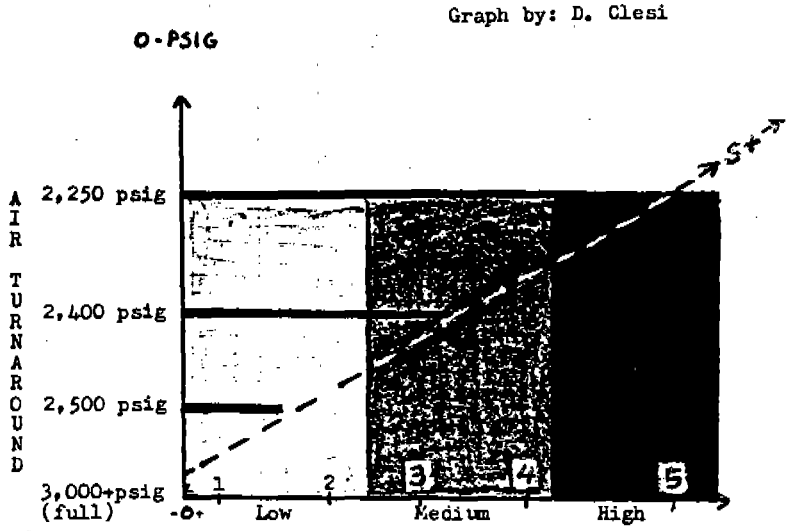
Of course, towing another cave diver alone from the outset of the dive greatly reduces the safety margins. Buoyancy at speed and buoyancy at stop should be given consideration. More often than not, the diver encounters negative buoyancy at stop and compensation is required. This is particularly important while in low, silty areas where swimming the unit is imperative. The potential for lung overexpansion with DPV's is real, although most probably in open water, due to the circumferences of many caves. Lastly comes the safety drill. As with new gear usage and/or teaming with an unfamiliar buddy, the "S" drill continues to prove its value.

Because the TEKNA-equipped cave diver easily exceeds his previous swimming penetration limits, the third's air rule is no

longer an acceptable safety minimum. A recent survey indicates an average 200% penetration gain on a comparable air volume. One approach suggests the classification of a particular system's flow into three grades: 1) low, 2) medium, and 3) high, versus the planned penetration distances using the "fourth," "fifth," and "sixth" rules. (See chart.)

DIVER PROPULSION VEHICLE AIR SAFETY

Graph by: D. Clesi



FLOW VELOCITY

1-Little Dismal Sink
2-Peacock Springs
3-Ginnie Springs
4-Little River Springs
5-Manatee Springs

The dotted, diagonal line suggests, for your consideration, that the safety margin increases with flow velocity while utilizing the appropriate air rules. The locations on this scale of several of the more popular Florida motor caves, have been roughly interpolated from feet-per-second flows as recorded on a given date.

Mechanical deficiencies of the DV-3(X) unit should be pointed out. The incidents below have been reported by NACD and NSS-CDS divers, as well as the "most frequents" by authorized repair shops.

Reported internal component weaknesses include:

- Lamp-plate bolt-pressure stress at excessive depth. Incident: Diepolder #3 Sink, 2-84, 180 ft., Diepolder Guides; involved severed bolts with no internal flooding. DPV operable to 220 ft.
- Rear-shaft seal leakage - cause: poor machining of sealing surfaces on select units. Incident: open-water Gulf dive, 5-85, Steve Straatsma.
- No internal sealing of the motor compartment unless retrofitted by the manufacturer or an authorized shop.
- Insufficient hydrogen catalysts causing internal gas buildup and/or related explosion. Two incidents with injuries on boat deck and in a shop reported.
- Reed switch failure upon motor activation. (A "frequent," Unique Sports, Tampa, FL.)
- On/off cable/pulley malfunction.
- Debris accumulation in stator grip handles. (Mostly attibutable to poor user maintenance.)
- Bearing failure causing rear-shaft bearing freeze-up. Incident: 10-84, 2-86, Steve Straatsma--same unit.
- Motor burn-up. Unit suddenly ceased operation while under power with no advance clue. Incident: open water, Key West, 4-86, Mario Mitchell.

Reported external component weaknesses include:

- Body shell O-ring extrusion. Incident: Devil's Eye, 5-85, Vaughn Maxwell. Incident: open-water Gulf dive, 4-86, F. Brisard. Users incurred partial flooding in both cases.
- Lamp lens implosion. Incident: Cayman Wall, 4-86, 130 ft., Vaughn Maxwell. Incident: Sullivan Sink, 4-86, 130 ft. Bill Gavin.
- Propeller blade/shaft breakage. Incident: Devil's Eye, 2-86, Mario Mitchell. Incident: Devil's Eye, 5-86. Luis Menoyo.
- Charger over-volting. User reported 48-hr. offgas period in this case. Incident: Scuba West (Dive Shop), Hudson, FL, 5-86, Paul Heinerth, with injury. Moisture suspected to be the cause, resulting in an explosion.

The importance of diver training and experience cannot be emphasized adequately when introducing the DPV to cave diving. In many, if not all, scenarios, the minimum level of diver competency should include the full Cave Diver certification. The Cavern Diver is simply not qualified. It is the opinion of some that the Basic Cave Diver, in most cases, is only halfway down the road to becoming a competent and experienced cave diver in the swimming mode...much less apt at properly handling a full-blown DPV emergency at depth or distance. Know yourself and your capabilities...what if? Know the system...is there the possibility of distance vs. time confusion? Know your buddy...can we depend on each other for a swift, safe exit?

Lastly, a note on cave conservation. Occasionally, as in the "excitement of the moment" or upon reaching an objective, the DPV user may forget to leave nothing but bubbles. A fan trench here, a silt "angel" there, or broken projections on the cave floor reduce natural beauty to be enjoyed by all. Awareness of this fragile environment and general courtesy to the next team are keys in this area.

In summary, the cave diver's DPV can be a valuable tool to reach a specific

objective or just a pleasant alternative to the "pull 'n glide" when the diver has credible training, sufficient experience, and puts safety first. Motor City is not necessarily Detroit!

Authors' note:

*In light of the fact that official DPV air rules and DPV safety equipment have yet to be endorsed by the major cave-diver training organizations, the aforementioned suggestions and comments remain those of the authors.

**Special thanks to the Tampa Scooter Boys, TEKNA (we like you anyway), and those Florida cave divers who shared their time, knowledge and experience with us.

COUNTY COMMISSION AGREES TO LISTEN TO DIVERS ON RAINBOW RIVER - reprinted from Florida Scuba Times, September 1986

Almost single-handedly, Nuella Talley of Talley's Pro Dive in Crystal River, has taken on the Marion County Commission fight for scuba divers' rights to dive Rainbow River, a navigable Florida waterway. the Commission has finally agreed to listen to scuba divers by placing the subject on a county agenda to be heard sometime in the next few weeks. For exact time and date, call Nuella at (904) 795-2776.

Divers were supposedly singled out because of the damage they are doing to the river, but Nuella said she has in her possession a copy of a letter from a University of Florida authority commissioned to examine the problem. The letter states that it is not the divers in the river, but the property owners along the river banks that have done the most damage to the River by destroying protective vegetation along the banks and the edge.

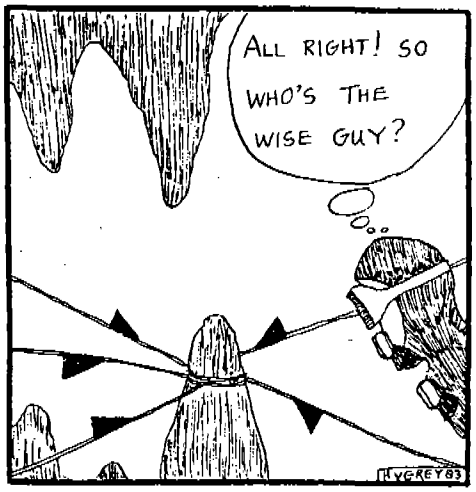
Demere Mason, an attorney in Jacksonville and an avid diver, has offered legal help in the batle for divers' rights.

Nuella said divers need to be well represented at the County Commission meeting, because if the County Commission does not rescind the ordinance, it could set a precedence against divers and ultimately affect other waterways and the future of diving in Florida.

The controversy heated up in June following an "emergency meeting" by the Marion County Commissioners. At the meet ing, they enacted an old ordinance and "put it back into effect" to prohibit scuba divers from using the crystal clear waters of Rainbow River, a navigable waterway near Ocala.

The law singles out divers and restricts only their rights to the river, but does not effect the numerous canoeists, tubers, swimmers or boaters who use the river.

Nuella said divers need to have a strong showing at the meeting but that it would be difficult to get the word out so she is asking for our readers' help. Write to Nuella Talley at P.O. Box 124, Crystal River, FL 32629 or call her at (904) 795-2776.



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