



# UNDERWATER SPELEOLOGY

... much  
... During this time,  
... as much as 200m below its  
... and it was then that rivers and  
... their way down through weak-  
... limestone to form vast caverns,  
... stalactites, to reach  
... ch reduced Atlantic. Time  
... melted, and the slowly rising  
... e caves, arresting the  
... ipstone formations and  
... count of a geological  
... when revealed, will  
... scientific study of  
... ical climatic and sea

stalactites and  
... tting them to radio  
... ic analysis will  
... the minimum level to  
... n since that time to  
... velopment. It ought  
... with eustatic sea  
... other means (dating  
... d benches, etc.).

specimens from a  
... epts, recording  
... ese sites. Some  
... rried out at  
... here the  
... and

possibly  
... formation  
... t may  
... lnage

The Expedition has the approval of the  
Royal Geographical Society.

... Holes represent the next stage in the  
... velopment of this exciting and often  
... dangerous sport casting a challenge not only  
... in terms of sporting achievement, but in  
... applying the knowledge and experience gained  
... over a considerable number of years to  
... projects of scientific and technical importance.

#### TEAM LIST

Robert Palmer  
Martyn Farr  
Geoffrey Yeadon  
Rob Shackleton

Leader, Diver  
Deputy Leader, Diver  
Diver  
Diver

Dr. George Warner  
Dr. Mel Gascoyne

Ecologist, Diver  
Geologist

Rodney Beaumont  
Sally Farr  
Sincha Stroes

Engineer, Diver  
Base Camp Organiser  
Scientific Assistant

#### REFEREES

Dr. A. C. Waltham  
Dr. O. C. Lloyd  
Prof. K. Simpkins

Field dates: August - September 1981.  
Contact address:



# DEATH WAITS ABOVE THE SURFACE

by Václav Krížá

In Czechoslovakia, a small country in the middle of Europe, countless numbers of natural beauties can be found. The deep woods are full of deer and other animals, the high mountains have perfect skiing areas, and wild rivers which are run down in kayaks only by the most daring and experienced individuals. However, our country lacks one thing; it has no sea. In spite of this handicap there are several thousand active sport divers here. To satisfy their passion for diving, they make use of reservoirs, mountain lakes, deserted river arms, and flooded granite quarries. The most experienced divers look for adventure in the underground waters of extensive caves and abandoned mines. I have been diving since 1960 and have made several thousand dives. Nevertheless, I feel that I survived the following adventure with my friend Jan only in order to be able to relate it to others.

It was Saturday, March 3. My eyes glided over the white walls of an ordinary hospital room in Northern Moravia, 400 km northeast of our capital city, Prague. However, the conventionality of the place is somewhat affected by Jan's and my presence here as patients. We have no appendicitis, pneumonia, or gall bladder ailments. Two oxygen bottles stand quietly beside our beds among the coming and goings of hospital personnel. In the intervals between the visitors and physicians to whom we explain endlessly what happened and how we feel, we are trying to recall all the details of our surprising diver resurrection. It is clear that we owe our narrow escape and our lives to the skill of our friends on the surface. I stare at the ceiling trying to piece the broken mosaic together. Only slowly am I beginning to realize what we have been through.

Our whole diving group had arrived at the dive site on Friday afternoon. The wooded valley welcomed us with snow a half meter deep, a bright sunlight day, and the gay company of our local friends and divers. After

exchanging several pleasantries we shovelled off the snow drifts, pitched our tents, and set out to have a look at what had enticed us to this place, an old flooded slate mine.

From the top of a big crater whose rim was still covered with snow, we grinned down trying to see the narrow entrance to the mine. With our generator now running, its halogen searchlight began to light the dark walls. We began to move all the necessary gear for tomorrow's dive into the mines rocky depths; the rubber boat, diving apparatus, the ropes, and all the other miscellaneous gear. Owing to the constricted entrance, it was not easy work.

Just past the entrance, however, the orifice grew larger and a rock corridor eight meters wide and five meters high descended downward into the earth's depths. After about seventy meters the corridor ended at the surface of an underground lake. The cave grew broader here. Illuminated with the searchlight and diver torches, the lake revealed her size and magnificent beauty to us. It was about fifteen meters wide and forty long. At the end of the corridor and along the left wall there loomed another large orifice in the rock. Beyond, several underground galleries connected by tunnels had been cut in the slate.

We took our gear and stored it in the first hall. Here, the floor was flat and relatively dry. Only occasionally, droplets fell from the ceiling onto the rock floor. Other passages leading off from here tempted us, but there was no water there. Leaving that rocky labyrinth alone, we inspected the lake more closely. We inflated the rubber boat and set out upon the lake for an underground boat ride. Around us, the towering rock walls echoed the patting of the paddles on the lake's surface.

Our attention was soon attracted by an orifice along the far wall. This orifice



an instant. Our friends on the bank did not even dare to breathe. The deep silence broken from time to time by their bubbles, only intensified this special atmosphere. Time passed and fine waves patted the side of the rubber boat. After twenty minutes the loops of wet rope recovered began to increase. That was the end to their fun, as the water temperature was a cold 34°F. The bubbles increased and after a while two black heads appeared. The divers purred blissfully and expressed their content with the clarity of the water and with their investigation of the pool in general. We learned from them that the lake was twenty-two meters deep, that there were several small galleries in the walls, and that all the galleries were broken down. As it was rather cold, we hurried back to the bank.

Next came Jan's and my turn to dive. We would dive the small pool behind the rock wall. We put on our diving dresses, and together with Milan, still in his neoprene suit, were loaded into the boat for the pilgrimage over the lake's surface. Here, light was the most important thing. When on the lake we were accompanied by the light from the searchlight, but behind the wall we had to rely solely on our torches. We put up the boat below the overhang and took out the ropes, aqualungs, and all the other necessary diving gear.



The busiest man in the group was Karel. He controlled the stop watch and recorded everything. The pond seemed shallow, so Jan using only his snorkel dived in to find out what was hidden below the surface, all the time cautious to raise the sediment as little as possible. On returning he informed us excitedly that under the back wall at a depth of about four meters, he had discovered the entrance to a flooded corridor. With a two meter rope I tied myself to Jan who was on the signal rope tended by Milan our navigator. Everything seemed alright so we started off.

The corridor was small and the water so clear, we could see the entire room. Keeping our orientation was not difficult. We sank to the bottom slowly and at four meters approached the wall where the passage entrance was visible. We moved carefully inside. Fortunately, there was sufficient room for both of us inside. In the light of our torches we could see old timber sleepers leaning against the corridor wall. These sleepers proved that since the flooding of the mine,

We both have elevated pulses and blood pressures. I cannot help coughing and my chest is burning. I feel terribly weak, but have no other pains.

As they were taking me into another room, Marcela, Kveta and the two Karels standing at the door, everything becomes clear to me. That light dizziness just before the end, that was gas. Later that evening I learned the details of our rescue from my friends.

Milan, the navigator, a skilled and experienced diving veteran took no risks. The last clear signal which was caught by him was

that we had discovered a new space and were alright. When Jan did not answer further inquiries within thirty seconds, Milan started action immediately. Mindful what he might be risking and that he might be rebuked, he began pulling us toward life. Only through intuition, experience, and perfect skill in reviving us, he and the others succeeded under difficult conditions to save not only our lives, but also our health. Another half a minute or so and they might have been too late. And that is why I concluded that safety measures count most. As to cave diving, we cannot take any risks.

## CAVE DIVING IN HELL

---

by Forrest Wilson NSS 16631

Hell is the appropriate name for a village in a remote, hot part of a karst island. The exposed limestone is extremely jagged and cratered with potholes and small pinacles. Walking through this karst, covered with sticker vines, in the hot sun while wearing tanks and wetsuits only adds to the accuracy of the name.

Hell is a very small community in the village of West Bay on the north west part of Grand Cayman Island. The Caymans are located south of Cuba and west of Jamaca.

Dickie Walls moved to Grand Cayman about three years ago to be a divemaster at a resort. His job kept him from finding time to do any cave exploration until recently when he went into business for himself. Dickie heard about the cave from the landowner and waited for another cave diver to visit to help check out this lead.

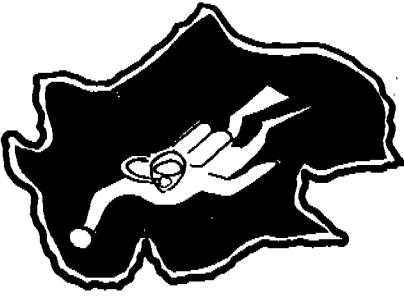
The entrance is on the property of a man named Carl, hence the name Carl's Bad Cavern. Another name came into mind when I stepped barefooted into a smelly brown pile while donning my wet suit. Hardcore, or fool, are names that come to mind for divers that would go to a tropical paradise only to venture inland over such terrain to a hole not over six feet wide and filled with tannic brown water.

Dickie and I first entered Carl's Bad Cavern on May 31, 1981. There was a rumor

that another diver had been here before, but the description of the cave and the lack of marks or line make this questionable.

The cave drops quickly to twenty feet over a silty floor before going under an overhang leaving only about three feet clearance. The water reportedly usually clear was tannic to fifteen feet after which it got colder. From fifteen to twenty five feet there was a layer of hydrogen sulfide. The cave begins to level off at about forty feet. The ceiling is high and narrow, possibly developed along a joint. There are a few dirty stalagmites. The walls and ceiling are covered with a course organic silt that percolates down when bubbles hit it. The visibility is not totally blocked, but it is necessary to stay near the line. The maximum passage width is only ten to twenty feet, but the dark walls and poor lights (who would have expected to need cave lights on Cayman) make it seem larger. We left a line in the cave, but it is not knotted, nor is the cave surveyed. We traveled generally west from the entrance for about 200 feet. Although the passage continues, it gets tight.

Cayman is rumored to have an extensive dry cave system in West Bay and another near East End. Since there are a number of fresh water wells on the island, it is possible that other cave systems exist, or possibly a large system like those on Bermuda or Grand Bahama Island.



## ACCIDENTS AND INCIDENTS

---

by John Zumrick NSS 18788

The purpose of this column is to share these experiences in print with others so that all of us can cave dive more safely and hopefully avoid having the same problems ourselves. We encourage all cave divers to send in reports of dives on which problems have occurred, whether a participant in the dive or not. Please include the date, location and all pertinent details. If you like, include your own analysis of what went wrong and how the problem might have been avoided. DO NOT MENTION ANY NAMES! The purpose of this column is not to fix blame or embarrass anyone, but to help us all to cave dive more safely.

-----

Several years ago, I was called to treat a diver with a case of cerebral air embolism. As is often the case, the diver made an uncontrolled ascent after he lost his air supply. The cause of the loss of air, however, was anything but usual. It seems that the tank burst disk had ruptured while the diver was at 90 feet. Not only did he lose his air, but the tank became negatively buoyant and made his ascent that much more difficult.

The burst disc had not burst while the tank lay in the boat exposed to the sun, but rather after the diver had been at 90 feet for about 10 minutes and the tank had cooled. Engineers have speculated, though without any real assurance, that the disc had been weakened by high pressure while the tank lay exposed to the sun and later burst when it attempted to reseal itself as the pressure was reduced by the cooling and the diver's breathing.

To guard against such a possibility, some cave divers have begun using two burst discs in their tank manifolds, or have closed off that orifice altogether. Unfortunately, this obviates the pressure relief function the

disc was supposed to provide. It seems that a better approach would be to design a valve whose burst disc vents the tank through the valve's orifice so that no air loss could occur while a regulator was attached. Then we divers would have the best of both worlds.

Another gear related problem happened to an open water diver who was making his first and almost last cave dive. It seems this diver, wearing only a single 80, had to make an uncomfortable exit through heavy silt after venturing some distance into the cave. Even though the dive had been prolonged, particularly by the delayed exit caused by the silt, the diver was astonished to note that he still had 2000 psig left in his tank. After swimming about at 20 feet in open water for a few minutes, he noted that he still had nearly 2000 psig remaining. Pleased with his excellent air consumption, he went to the dive shop for a fill preparatory to another dive. Imagine his astonishment when the tank filler gauge read only 100 psig and the valve emitted only a short puff of air.

In this incident at least three things went wrong. First, poor design and construction had allowed the screws to come loose. This does not appear to be an isolated incident, as the same thing has happened to me on at least two occasions. In both cases the manufacturer had used neither lock washers or a locking adhesive to insure that the screws would not come out. Second, the diver had obviously not maintained his gear well enough. Finally, the diver was not checking his gauge often enough. Had he checked it more often, he would have noticed that the tank pressure was not dropping smoothly with time as it should have.

Even though we are all experienced cave divers, could this possibly happen to one of us! Is it, perhaps, possible that when making a comfortable dive through a familiar cave system that you don't check your gauge closely enough?

# NATIONAL SPELEOLOGICAL SOCIETY, INC.

*affiliated with the American Association for the Advancement of Science*

## cave diving section

### CAVE ACCIDENTS

For quite some time now cave recoveries have been done by a relatively few individuals. Often many hours pass before recoveries can be properly completed and the divers have to travel many miles to perform this necessary community service. The cave diving membership has now grown to such a size that there are divers in nearly every county in or around the Florida area. What is being proposed is to form a network and referral list of competent and capable cave divers. This list would then be submitted to all County Sherriffs' Departments in Florida to aid in the event of a cave diving accident. Divers who may not wish to do a recovery can be of assistance by providing area and referral information to inquiring law enforcement authorities. The prerequisites are not necessarily former experience in recoveries, but area familiarity and safe diving techniques. Your participation in this service is asked by filling out the accompanying form and returning it immediately.

A target date for completion and finalization of this list has been set for December 15, 1981 at the NSS Cave Diving Workshop in Branford, Florida. Every year thereafter the list will be updated and resubmitted. We hope that by establishing this service that cave recoveries in the future can be handled in a safe and professional manner which reflects favorably on the cave diving community.

-----  
NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ COUNTY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

HOME TELEPHONE NUMBER \_\_\_\_\_

WORK TELEPHONE NUMBER \_\_\_\_\_

RECOVERIES: YES \_\_\_\_\_ NO \_\_\_\_\_

LOCAL SITE INFORMATION: YES \_\_\_\_\_ NO \_\_\_\_\_

CERTIFICATION: NSS \_\_\_\_\_ NACD \_\_\_\_\_ OTHER \_\_\_\_\_  
(specify)

Fold and mail to:  
Jeff Parker  
402 E. Carolina  
Tallahassee, FL 32301

*Dedicated to the exploration, study, and conservation of caves*