UNDERWATER SPELEOLOGY

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WORKSHOP PROGRAM ISSUE

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MAY 26-27

Cave Diving Section of the National Speleological Society, Inc.

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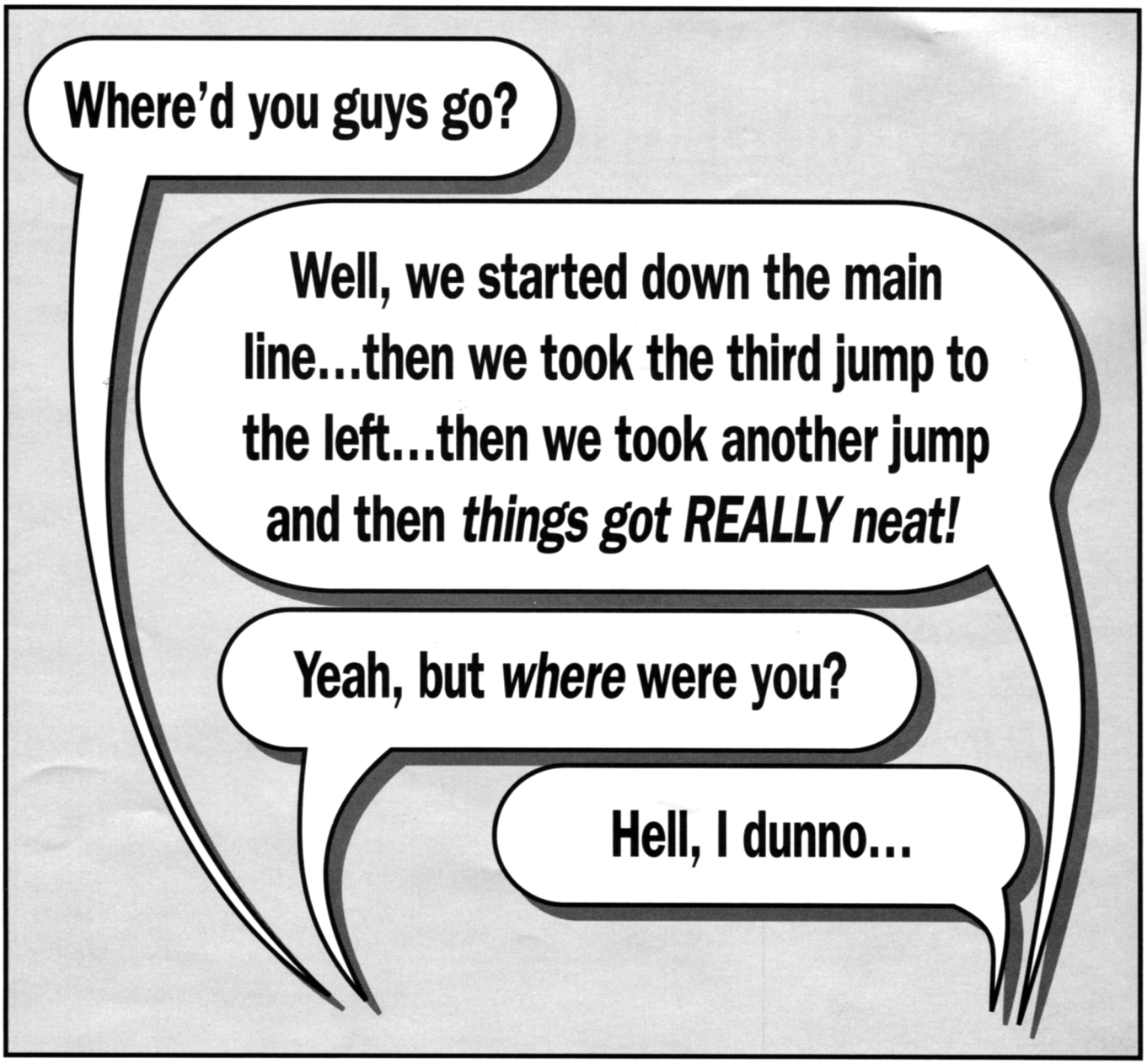

Don't Look Dumb. Get a Map.

Having NSS-CDS maps of Florida's most popular cave and cavern systems not only enables you to figure out "where you went," it also enhances the planning, safety and enjoyment of your dives. CDS maps are available in two formats: poster-size bluelines or convenient, laminated, notebook-size models. They're available to all certified cave divers (certified cavern divers may order either of the two cavern maps). Just enclose a photocopy of your C-card with the convenient order form you'll find page 15 of this issue.

Cave	Florida County	Blueline	Laminated
Blue Hole (Jug Hole)	Columbia	70001	71001
Blue Spring (Madison Blue)	Madison	70002	71002
Bonnet Spring	Suwannee	70003	71003
Cow Spring	Suwannee	70004	71004
Green Sink	Lafayette	70005	71005
Little River	Suwannee	70006	71006
Peacock/Orange Grove System	Suwannee	70007	71007
Rock Bluff	Suwannee	70008	71008
Twin Springs	Jackson	70009	71009
Cavern	**Florida County**	**Blueline**	**Laminated**
Ginnie Spring	Gilchrist	75001	76001
Morrison Spring	Walton	75002	76002

Map Prices

	Blueline	Laminated
Non-member: any quantity	$8.00	$10.00
Member: single map per order	$7.00	$9.00
Member: 2-3 maps per order	$6.00	$8.00
Member: 4-5 maps per order	$5.50	$7.50
Member: 6 or more maps per order	$5.00	$7.00

(Gosh, folks — it sure pays to belong to the CDS, doesn't it? If you'd like to get member prices on these maps, just complete the membership application on the back cover and include it and your membership fee along with you order.)

As you've already read, cave-system map orders must include a photocopy of your Cave Diver card (equivalent of Basic or Intro to Cave, or higher) or, for cavern maps, your Cavern Diver card. Additionally, cave-system maps may not be offered for resale by dive stores, instructors or other individuals or organizations. (Sorry, folks, but you know what happens if these things find their way into the wrong hands...)

UNDERWATER SPELEOLOGY

The official publication of the Cave Diving Section of the National Speleological Society, Incorporated

P.O. Box 950 • Branford, FL 32008-0950

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Did you already receive a copy of this magazine at the Workshop?

— Pass this copy on to friends • See page 4 for more info —

The NSS and Cave Diving — Founded in 1941, the National Speleological Society joins together thousands of individuals dedicated to the safe study, exploration, and conservation of caves. The first cave-diving information ever published in the United States was in a 1947 *NSS Bulletin*. In 1948, NSS divers were responsible for the first cave dives in the United States using scuba. Prior to 1973, cave diving within the NSS was on a purely local level. That year saw the creation of the NSS Cave Diving Section to provide a vehicle for information exchange. Today, with over 500 members, the Cave Diving Section promotes safe cave diving through semi-annual workshops; cavern- and cave-diving training programs; warning-sign installation; search, rescue, and recovery through the National Cave Rescue Commission; cave exploration and mapping; several texts and publications on cave diving; and the bi-monthly publication, *Underwater Speleology*.

Membership — The National Speleological Society welcomes the interest of anyone who has a sincere concern in the safe study, exploration, and conservation of caves, wet or dry. You may join the NSS either by writing to the NSS main office directly (National Speleological Society, Inc., Cave Avenue, Huntsville, AL 35810) or to the Cave Diving Section, using the form appearing on page 16.

As a sub-organization or *section* of the NSS, the Cave Diving Section is subject to the by-laws and ethics of the NSS. Membership in the Cave Diving Section is open to anyone who is a member in good standing of the NSS.

Subscriptions — If you do not wish to join the Cave Diving Section, but would like to keep current on cave-diving events, exploration and technology, you are invited to subscribe to *Underwater Speleology* for $15.00 per year.

— See the Membership/Subscription Application on page 16 —

Editorial Pages

Getting the Most From UNDERWATER SPELEOLOGY

How did you come across this copy of *Underwater Speleology?* Did you pick it up at the Spring Workshop? Did it come in the mail? Did you pick it up at one of the major cave-diving centers in Florida? These are important questions because they affect the NSS-CDS's ability to carry out its goals of preventing cave-diving accidents, protecting cave environments and preserving our right to explore them.

If you received this copy at the Spring Workshop, and don't regularly get *Underwater Speleo,* good. Use the form you will find on page 16 and join the CDS today. Not only will you reward yourself with all the benefits of Section membership, your financial support will help the Section meet its important goals.

Now, let's say you're already a CDS member and this copy, which just arrived in the mail, is a duplicate of the one you received at the Workshop. Isn't this a horrible waste of Section funds? Hardly. You see, by combining the normal Workshop program with this issue of *Underwater Speleo,* we saved a considerable amount of money. Enough so that, even if you roundfile this copy right now, we're still coming out ahead.

But why let this additional copy go to waste? Share it with cave or cavern-diving buddies and show them what they're missing. Then show them how, by using the form on page 16, they can continue to receive *Underwater Speleo* in the future. (By the way, if you are an NSS-CDS member and *didn't* go to the Spring Workshop — well, now you know what you missed.)

Okay, let's say you're a cave or cavern diver — or that you are interested in becoming one — and you received this copy from a friend or at one of north-Florida's many professional dive centers that have a large cave-diving clientele. You already have an idea of how important supporting the CDS is. So why not simply turn to page 16, complete the membership form, and become part of the solution?

Help Shape Future *Underwater Speleos*

If you've seen past issues of *Underwater Speleology,* you realize that the publication is undergoing a number of changes indicative of a healthy, growing organization. Of course, none of this would have been possible without the work of my predecessor, Valerie Grey.

Valerie single-handedly made this publication worth caring about. Equally important, she passed on a wealth of material with which to get the "new and improved" *Underwater Speleo* off the ground.

The questions is, *where do we go from here?* You've no doubt noticed the new design, the increased departmentalization and the additional emphasis on news and issues. On the other hand, we haven't had a good, solid scientific or "how-to" article in this or the previous issue, even though we have two such articles waiting to go.

The catch is, *we have absolutely no idea how many of you want scientific or "how-to" articles, or if we're speaking under or over the heads of readers.* This being the case, we've included our first-ever reader survey in this issue. You'll find it on page 14. Use it to tell us about yourself and the type of cave-diving information you need.

Reader surveys are invaluable from an editorial standpoint. By better knowing who our readership is, we can better target the magazine to meet your needs.

Also, by the time you read this, the CDS Board will most likely have voted to allow *Underwater Speleo* to accept advertising. For a publication of this type, having paid advertisers is generally a Good Thing. It pays for an expansion of the number of editorial pages appearing in each issue, while at the same time *reducing* the net cost of producing the magazine. If the advertising proposal comes to pass, the data we collect from our reader survey will help us sell space to prospective advertisers.

There is one other way in which you can help to shape future *Underwater Speleos.* That's to become a contributor. It doesn't matter that you may not be an articulate speaker or writer; we can always help you put good ideas into words.

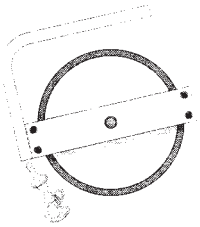
A basic set of contributor's guidelines appeared in the last issue. The most important point to bear in mind, however, is that there is an easy way to ensure that what you write for us gets used — rather than languishes in a file folder. It's this: *Call before you write.* Talk to us about the article or information you have in mind before sitting down to write it.

The fact is, the vast majority of unsolicited articles submitted to a publication such as this can't be used. Why?

- The articles cover the same subject matter as other articles previously submitted or used.
- The articles are not concise enough. (Space in a non-profit organization's publication is always at a premium — even if it is advertiser-supported.)
- The writers lack a basic understanding of some of the critical issues facing the readers.
- The articles simply fail to meet readers' needs.

It's a shame to invest the time and effort writing an article requires, only to have it not be used. Yet you can avoid each of the pitfalls listed here by simply calling and discussing the article you have in mind.

The number's (904) 454-4585. Use it. The more you share, the better *Underwater Speleo* gets. — *Harry Averill, Editor*



THE SAFETY LINE

In Praise of Exploration

by Wendy Short, Safety Program Coordinator, South

Man's nature is to reach out and explore. History books are full of examples.

Take the settling of the U.S. People gave up familiar comforts — even left their families — and faced real and imagined dangers journeying to the unknown. When these areas became populated, man pushed out to even less-hospitable regions.

Now we push beyond the limits of our planet's surface. And, as was true of Peary's quest for the Pole and countless other explorations, these excursions are not without risk. Yet, the pioneers of days past would not want today's explorers to stop because of hardship or risk.

Cave divers are fortunate in that we enjoy a privilege not shared by many. Even though the majority of underwater caves in the U.S. have been explored, we know that only a limited number of people have seen them. Nevertheless, very few of us have experienced the thrill of discovering virgin passage.

True explorers are a rare breed. They typically have knowledge, experience and abilities that eclipse those of ordinary cave divers. At times, it may appear as though these individuals exceed the limits of safety and common sense; however, we must remember that their skills are to our own what ours are to open-water divers. And, if they choose to accept additional risks, it is with a better understanding of the hazards they face than most of us are capable of achieving.

Explorers are vital. Without them, our knowledge and understanding of the systems we visit as recreational cave divers would be profoundly limited. We would have no maps and no detailed survey data to guide us. We would be handicapped by the absence of specialized equipment and procedures first developed by explorers to push depth and distance limitations. And, our lives would be less enriched, not having had opportunity to be exposed to wonders they share with us through seminars, photos, videos and written presentations.

Man continues to expand his horizons and seek out new frontiers. It is an innate desire. Babies instinctively reach beyond their grasp and teach themselves to crawl to explore new territory.

Exploration is our heritage. If we inhibited this instinct, our history books would be very different — and so would our future. ■

Letters & COMMENTARY

The Hallowed Hogarthians

The following is typical of several letters received by both the NACD Journal *and* Underwater Speleology *in response to a series of articles and letters by Dr. Milledge Murphy and others regarding the "Hogarthian" way of doing things.*

Regarding Milledge Murphy's article in the January/February *NACD Journal*, it appears Dr. Murphy is suffering from tunnel vision. I have a difficult time believing that, with as many cave dives as take place each year, the Hogarthian style of diving is "the only safe configuration." By saying that not only are they diving incorrectly but teaching improperly as well, Dr. Murphy slaps many Cave Diver Instructors (several of whom have more experience) in the face. This type of behavior can only lead to a split within the cave-diving community or, worse yet, to the state stepping in to regulate our sport.

Which second stage should go to an out-of-air diver is not the issue. The placement of the extra second stage is. If the extra second stage is mounted on the lower half of the chest, it may become lodged in cracks and crevices. If mounted higher or — as Dr. Murphy suggests — "throat mounted," the extra second stage is protected by the contour of our bodies. Hence, regardless of which second stage we chose to give to an out-of-air diver, it is the placement of the extra second stage, when not being used, that is the real issue.

Among the points Dr. Murphy uses to support his position is the statement, "The air-starved diver always goes for the hose in the mouth of the diver who has air." However, in the letter from Marc Eyring that Dr. Murphy uses to illustrate his position, this did not occur.

Dr. Murphy goes on to mention the Scubapro manifold. Apparently, he has not attempted to buy one recently. They are as rare as the number of Hogarthian divers I have seen in four years of cave diving. Is Dr. Murphy's insistence that this is the only acceptable manifold an attempt, on his part, to restrict cave diving solely to its present participants — or to the rich and resourceful? Or are we, as a group, to attempt to get Sherwood to make changes in the Genesis manifold?

I applaud Dr. Murpy's support of his style of diving. I can not, however, applaud his one-sided style of reporting. There is no system as flawless as he suggests.

I sincerely hope that each of us will investigate all the possibilities and not depend on one-sided opinions.

— Clifford (Munk) Peacock

***Editor's Note** — The "Hogarthian" method of diving takes its name*

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"I applaud Dr. Murpy's support of his style of diving. I can not, however, applaud his one-sided style of reporting. There is no system as flawless as he suggests"

If Cave Divers Don't Litter...

...then abandoned duct tape is a naturally occurring phenomena

If there is one thing cave divers enjoy more than exploring underwater passageways, it's reminding ourselves of how superior we are to open-water divers. After all, *they* are the ones who can't so much as look at a spring basin without causing clouds of silt to form. *They* are the ones who die in caves. And, if anyone is littering *our* dive sites, it most certainly must be one of *them*. Guess again.

Okay, so cave divers have a pretty good track record when it comes to "traditional" dive-site litter — you know, beer cans, candy-bar wrappers, etc. And, yes, we take great offense whenever we see fin tracks, scooter gouges and hand prints inside the cave environment. (Heaven forbid we should ever get our hands on a genuine toxic polluter — odds are this guy's remains will be put on permanent display, 4,000 feet back in whatever system he despoiled.)

Nevertheless, there is one form of environmental pollution to which cave divers routinely turn a blind eye. And, it's a type of pollution that is unique to cave diving. We're referring, of course, to the O-rings, tie-wrap clippings and abandoned duct tape that litter the ground at nearly every popular cave-diving site. You've probably not noticed it before, but look for it the next time you go — you'll see it. In fact, you'll probably notice that it's more abundant than you realized.

This particular type of litter is one we can't blame on open-water divers, campers, picnickers or anyone other than ourselves. It's a type of litter that only cave divers create — and it makes our condemnation of others hypocritical.

So, the next time you go cave diving, you *will* take a few moment to remove the evidence of our earlier indiscretions, won't you? Of course you will. And you won't be contributing to the problem in the future — right? Okay, now you can go back to acting rightfully superior.

We would like to express our thanks to NSS-CDS Training Manager Joe Prosser, who first called our attention to the problem. ■

Letters & COMMENTARY

...continued from page 3

from veteran cave explorer Bill Main. (Bill's middle name is Hogarth.) Bill is an exceptionally competent cave diver who has developed many unique ways of doing things. He is also, according to the people who know him, among the few well-known cave divers whose ego does not exceed his abilities.

Nevertheless, Bill has — without ever having sought such recognition — developed a small band of followers who seem to insist that Bill's way is the only *way of doing things. These individuals proclaim themselves "The Order of Hogarth."*

As the preceding letter testifies, the Hogarthians' vehemence in proclaiming their beliefs has offended many within the cave-diving community. Some of this offense stems from a fear among Bill's non-Hogarthian friends that antagonism toward the Hogarthians will be misdirected at him. Perhaps if the Hogarthians wish to imitate Bill so badly, they could begin by emulating his modesty.

In regard to another issue addressed in the preceding letter, there is no valid statistical evidence of which we are aware that supports any conclusions as to which second stage out-of-air divers prefer. Back when conventional buddy breathing was taught as the sole means of sharing air, the assumption that out-of-air divers would seek a donor's primary second stage may have had more validity.

Today, however, the majority of new divers are taught to seek a donor's alternate-air-source second stage first.

Prudent divers, while undoubtedly having a particular second stage they would prefer to donate, are nevertheless prepared to part with either second stage — at least until an out-of-air diver calms down enough to switch to whichever second stage has the longest hose. Potential confusion over which second stage to take can largely be avoided though use of the "S" drill at the start of every dive.

Acceptable Sources of Oxygen

Because I have been doing both "advanced" deep dives and cave dives for over three years, I long ago learned the value and built-in safety factor of breathing pure oxygen during decompression. Recently, I was able to purchase my own oxygen storage cylinder and the necessary adapters for decanting the stored oxygen into my pony bottle, for use during in-water decompression. Although the company that sold me my storage cylinder was aware that it would be used for diving, they nonetheless filled it with industrial-grade oxygen.

This concerned me — especially when the label read *Not For Human Consumption*. I was under the impression that only medical-grade O2 could be sold for breathing purposes. An experienced cave diver told me, however, that many of us use industrial-grade oxygen without difficulty. Yet another reliable source told me that medical-grade oxygen is more expensive than industrial-grade O2, due to the cost of additional filtering, etc. Is this correct?

— Frank Lavellee

A survey of commercial gas suppliers revealed that there is seldom a difference between the gas sold as industrial-grade oxygen and that sold as medical-grade. What differentiates the two is the container into which the gas is pumped.

Medical-grade O2 cylinders must be specially cleaned and prepared to ensure that nothing within the cylinder contaminates the gas. Industrial-grade gas cylinders, however, may contain contaminents.

Make certain that any cylinder used for O2 has received this special cleaning and preparation, and has been clearly marked that it contains oxygen.

In theory, if such a cylinder is filled directly from a common medical/industrial O2 supply at a gas company, there should be no danger in using it. Filling an O2 decompression or resuscitation bottle from an industrial-grade oxygen storage cylinder that has not been specially cleaned and prepared, however, is not recommended.

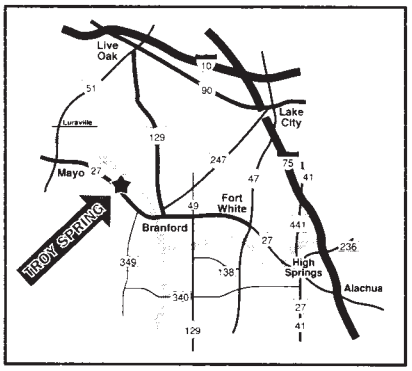
Additional comments from our readers? ■

Double Drowning Closes Troy

April 14, 1990 — The drowning of two Palatka, Florida, divers in Troy Spring, a popular Lafayette County open-water training site, has resulted in closure of the only right-of-way leading to the spring from public roads. Prior to their death, the two divers — who had no formal cave or cavern training — announced their intention to go "a little way" into an extremely tiny cave at the 80-foot level. Several people attempted to persuade them to remain in open water; however, they ignored these warnings and, as a consequence, died.

Earlier, the pair visited a local hardware store and purchased a spool of monofilament fishing line. They attempted to use this as a guideline during the dive.

Upon entering the cave, the strong current apparently caused the lead diver's regulator to free-flow. This air loss was further compounded by the diver's rapid breathing — a result of the effort expended entering the cave. Although this effort also caused the second diver to use air at an extremely high rate, his regulator apparently did not free flow. The air thus saved was of little value, however — unlike the lead diver, the second diver did not have an octopus with which to share it.



Fifty-five feet into the cave, the lead diver ran low on air and attempted to share air with his already-panicky buddy. Unfortunately, because the buddy lacked an octopus, they could only attempt to pass a single second stage back and forth. As this was taking place, the extremely heavy current forced the divers back toward the entrance. In the process, both became hopelessly entangled in their do-it-yourself guideline. Trapped, and unable to move, they drowned within sight of the surface.

Recovery specialists found the lead diver totally out of air. His buddy had 1,700 pounds left; however, this diver could not reach his second stage. So badly entangled were the divers that it took ten minutes to cut them free.

Two days later, the executor of the estate that controls the right-of-way to the spring closed it to the public. It is not expected to re-open — although Branford Mayor and NSS-CDS Instructor Gene Broome is working with the new owners in an attempt to get them to reconsider.

Information for this story was provided by Gene Broome, who coordinated the recovery effort. ■

Accident Analysis

Training Neither victim was trained or certified for cave or cavern diving. As a consequence, they lacked two critical skills — proper reel and guideline use, and proper air planning — which, in this instance, would most likely have saved their lives.

Guideline The victims used a notoriously poor substitute for a proper guideline and reel. Entanglement in this line was the direct cause of their death.

Air The lead diver failed to "call" the dive upon using the first third of his air (he most likely was unaware how rapidly his air supply was being depleted). Entanglement in the monofilament "guideline" occurred during the stressful events that took place shortly after the lead diver apparently ran out of air.

Depth Although 80 feet is still above the depth at which *serious* narcosis usually occurs, many divers are at least somewhat impaired at this depth. Additionally, the exertion resulting from an inexperienced diver's attempt to swim into a strong current can easily bring about the onset of narcosis at depths shallower than that at which it would otherwise occur.

Lights Both divers were equipped with one small light apiece. It is not know whether or not this was a contributing factor in this tragedy; however, lack of adequate lighting certainly did not improve the situation.

Troy Closing Has Implications for Cave and Cavern Divers

Although Troy Spring was never popular as a cave-diving site, the impact of its closing will nonetheless be felt by cave and cavern divers who live in or dive north-central Florida.

For several years, Troy was among the most popular open-water training sites in the southeastern United States — second only, perhaps, to Crystal River. Troy provided clear spring water, a wide range of depths and a long, wide run to the Suwannee River. And, unlike many other popular "open water" training sites in north-central Florida, Troy was actually bigger than the pools in which many visiting students were trained!

With the exception of a tiny cave at the bottom and a few shallow, overhanging ledges, there was no cavern area into which students or divers were likely to stray. Additionally, Troy was the only site in north-central Florida where instructors could find *open* water of sufficient depth to conduct Advanced course deep dives. (By the time one reaches the 60-foot level in Orange Grove Sink, there is no longer direct, vertical access to the surface.)

Perhaps as much as any other feature, instructors were attracted by the fact that access to Troy required neither an admission fee nor adherence to a significant number of state, county or private park rules. The late owner of the land surrounding Troy and the access road leading to it asked little more than that divers keep the grounds clean, respect the rights of those living adjacent to the property and that, when using the access road, they close the gate behind them so that the cows did not get out.

Upon her death, the owner's will stipulated that the public's right of access be maintained. The land itself was deeded to a boys' camp.

Following the Saturday, April 14, drownings, the executor of the estate decided that the property could no longer afford the risk of lawsuits or government intervention — especially considering that there was no income coming in to offset this risk. Thus, the access road was permanently closed.

With immanent conversion of the property to a boys' camp, it is not expected that public access to the spring will be re-established — despite efforts to have the new owners re-consider. In the meantime, Branford Dive Center is implementing pontoon boat service to and from the spring, from its base of operations in Branford.

The immediate impact of the closing on the cave-diving community is that much of the open-water traffic that previous-

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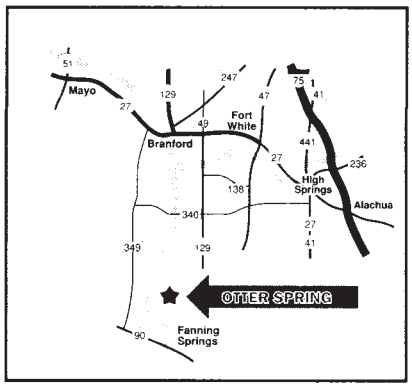
News

New Dive Center to Open at Otter Springs

Gene Broome, Mayor of Branford, Florida, and owner of Branford Dive Center, has announced the opening of a full-service dive center at the Otter Springs RV Resort, five miles north of Fanning Springs on the east bank of the Suwannee River.

Otter Springs Dive Center, as the new facility will be called, is scheduled for



opening June 1. It will feature: 5,000 p.s.i., certified-pure air from a large compressor and storage system; a full line of snorkeling and scuba equipment rentals; and classes ranging from introductory scuba experiences through Full Cave Diver certification. Like Otter Springs RV Resort itself, the dive center will be open seven days a week.

The 660-acre Otter Springs resort is already a widely-used family recreation facility, with deluxe camp sites, rental cabins, picnic areas, swimming, snorkeling, a country store, restaurant and large cypress clubhouse with a full-time recreation director. An olympic-size pool will be open early next year.

Otter has been open to Full Cave divers for some time. The spring basin contains a 36-foot-deep crevice, similar in many respects to Devil's Ear, Little Devil and Peacock I.

At the base of the east side of this crevice is an opening to a cave system that, surprisingly, is seldom visited by — or even known to — most cave divers. The system is characterized by its shallow depths, low flow and abundance of feathery, organic silt. Although not the best site for novices, the Otter system can nonetheless make an interesting and challenging dive for more experience Full Cave divers.

In the very near future, the management at Otter Springs plans to clean up other sinkholes and springs on the property, thus creating four additional badly-needed open-water training and dive sites. It is entirely possible that other caverns and caves may be discovered in the process.

Admission to Otter Springs is $10 for divers; instructors are admitted free with classes. A standard waiver and liability release must be executed by each diver upon entering. Minors must have their parent's signature on all forms. Only those with Full Cave Diver certification may enter the cave at Otter Spring.

According to Gene Broome, "We are very excited about the opening of Otter. In fact, we already have several students signed up for classes there. The resort is an extremely nice facility and will complement others in the area."

For more information the new Otter Springs Dive Center, contact Gene Broome at (904) 935-1141 or (800) 338-5720. ■

Special Thanks...

...to Promark, Inc., 1404 N. State Road 7, Margate, FL 33063. These folks were kind enough to donate the time and labor needed to construct the joint PADI/NSS-CDS/NACD warning signs now installed in many caves.

Troy Drowning Implications

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ly went to Troy will now be directed toward Orange Grove Sink, Peacock II, Royal Spring and Devil's Eye. While the increased traffic at Royal will have little effect on cave divers, parking at Orange Grove, Peacock and Devil's Eye will be harder to come by. The environmental impact of the increased traffic may also lead to additional rules and restrictions that must be followed at these sites.

Further, while students and divers at Troy had little opportunity to enter an overhead environment, the same cannot be said of the other springs to which they will now be taken. Granted, the rules now actively enforced at Peacock, Orange Grove and Devil's Eye are supposed to prevent anyone but certified Cave or Cavern Divers from entering overhead environments there. Additionally, as reported in the last issue of *Underwater Speleology*, training-agency standards prohibit anything but Cavern Diver training from taking place in natural overhead environments.

Nevertheless, if these are the only dive sites to which new divers are exposed, they are the ones to which these students are most likely to return when not under instructor supervision. And, despite the active enforcement of the rules, a handful of divers without formal Cave or Cavern Diver training will manage to sneak lights into the cavern zone and beyond. Any fatalities that might result from this could, conceivably, be a factor leading to the closure of additional sites.

With the closing of Troy, the litany of northern-Florida springs to which we divers no longer have access has had a major addition. We all will feel its impact. To lessen that impact, we must be willing to:

- Become more vocal when we see inadequately-trained divers about to take lights into caves or caverns.
- Report open-water instructors who do not adhere to standards when conducting training in our springs to their respective agencies.
- Recommend to the major training agencies that they encourage their instructor members to conduct training in more-realistic open-water environments.
- Increase our efforts to maintain good relations with landowners and local government agencies.

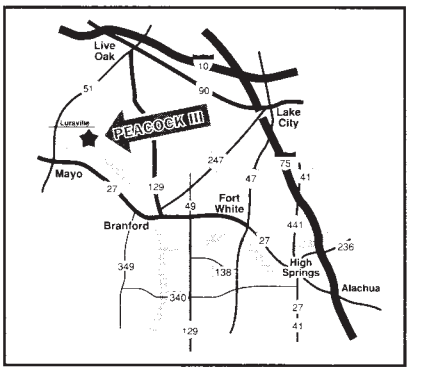
The cost of not doing so may be our right to dive our few remaining sites. ■

Peacock III Claims Life of Certified Cavern Diver

April 9, 1990 — A 53-year-old Atlanta-area man, whom apparently had made no overhead-environment dives since his Cavern Diver course in late 1988, died when he became separated from his buddies during a silt-out in Peacock III. He was the third overhead-environment fatality in Florida in 1990 and the fifth in the past two years involving a certified Cave or Cavern Diver.

The victim entered the water with a Cavern-Diver-course classmate, who had susequently become Cave-certified while in Mexico. Also accompanying the two was this second diver's ten-year-old son.

With the Cave-certified diver in the lead, the trio entered the Peacock III cavern zone, tying off their guideline in a ledge area at a depth of 25 feet. Shortly thereafter, a silt-out occured. Thinking the victim had already exited, the team leader untied the guideline and reeled out. Upon returning to clear, open water, it became apparent the victim had not exited and was still inside



the cave. The heavy silt, however, precluded a successful search from taking place until later.

Ultimately, the victim's body was recovered by Full Cave Instructor and *NACD Journal* Editor Steve Gerrard, who found it in the same general ledge area where the dive had taken place. It appeared that the victim had made efforts to locate the exit, but had not been successful by the time he ran out of air. ■

Accident Analysis

Training The victim was a certified Cavern Diver; however, his log book indicated that he had made *no* cavern dives between the fatal dive and the time he had been certified over 15 months earlier. This lack of recent overhead-environment experience was reflected in the victim's equipment. He wore a snorkel, a fairly heavy weightbelt and had wrist lanyards on his lights.

Additionally, the team leader — while himself a certified cave diver — allowed his ten-year-old son to accompany him and the victim into the cavern zone at Peacock III. At ten years of age, there is no way the son could have been a certified *Open Water* Diver through any of the major training agencies — much less a certified Cave or Cavern Diver.

Guideline The team leader used a guideline and reel; however, assuming, apparently, that the victim had exited ahead of him, he untied the guideline and reeled out of the cavern in a loss-of-visibility situation, leaving nothing for his missing buddy to search for. Additionally, the victim carried no back-up (safety) reel, and thus had no way of establishing a "home base" (the point at which he realized he was lost) that he could return to, nor of conducting a line search for the entrance.

Air There is no indication as to whether or not the victim had kept two-thirds of his air supply in reserve.

Depth The victim's body was recovered in 25 feet of water. The maximum depth in first several hundred feet of the Peacock III system in 65 feet. It is unlikely that depth played any factor in this accident — except for the fact that most exposure-suit compression takes place in the first 20 feet of descent. Such rapid suit compression easily leads to loss of buoyancy control among out-of-practice divers and, consequently, to silt-outs as well.

Lights The victim carried both primary and back-up lights — both of which were functional when the body was found. Nevertheless, the victim had turned off and clipped off both lights prior to running out of air. This suggests he was actively searching for signs of surface light at the time he expired. At any rate, lack of adequate lighting was most likely not a contributing factor in this accident.

Other Peacock III normally siphons during most of the year. Even when outflow is taking place, the floors, walls and ceiling are generally coated with light, feathery silt. Visibility is typically "fair-to-poor" during resurgences and "very poor" the rest of the time.

The Peacock III system is regarded as an "advanced" cave dive — certainly not one recommended for Cavern Divers in general, and particularly those with no recent overhead-environment experience, no matter how thorough their prior training.

Think It Can't Happen to Us? Think Again...

Cave-diving fatalities in the U.S. are roughly one-third of what they were a decade ago. A disturbing trend, however, has been the fact that five of the divers who perished in underwater caves over the past two years have been certified Cave or Cavern Divers.

We used to pride ourselves in saying, "Cave divers don't die in caves; open-water divers do." Then, within the space of a year, we lost well-known explorers Bill McFadden and Roberta Swicegood — plus two Basic Cave Divers who died during recreational cave dives.

It was almost inevitable that we would one day lose some of our more advanced explorers. Bill and Roberta both understood that they were pushing envelopes well beyond the limits of accident analysis and present-day training, and both accepted that risk. More disturbing, however, have been the other accidents involving certified Cave and Cavern Divers, including the most-recent fatality at Peacock III. These individuals were making *recreational* cave and cavern dives — dives that should have involved minimal risk and been made well within the rules of accident analysis.

In the first such incidents, a major contributing factor was that the victims exceeded the limits of their training. For example, a Cavern Diver died at a depth of 160 feet, well beyond sight of the exit; a Basic Cave Diver perished attempting to execute a complex dive plan while wearing doubles.

The accident at Peacock III, however, took place within the cavern zone — an area in which, theoretically, the victim had been trained to be safe. Careful analysis, however, reveals that in this instance as well, the victim may have exceeded the limits of his training and experience.

The Role of Experience in Establishing Limitations

Entry-level students are told to seek refresher training after periods of inactivity. This same recommendation is valid for cave and cavern diving.

Cave and cavern diving calls for techniques, procedures and a state of mind that is entirely different from those used in open-water. Experienced cave divers often report that, after as little as a week of open-water diving, it can take several cave dives to get "back in the grove."

A decade ago, those who sought out Cave and Cavern Diver training tended to do so with the intention of becoming very active diving overhead environments in Florida and elsewhere. This is no longer as true.

As Cave and Cavern Diver training have become more accessible, the range of motivations behind the people taking this training has become broader. We still attract individuals whose primary motivation is to become active cave divers. We also attract individuals who seek the opportunity to apply the skills of cave diving to other situations, such as wreck diving or search and recovery.

Yet, we now see another group among the ranks of Cave and Cavern course participants. These are the individuals who see cave and cavern diving as yet "one more thing to do" under water. There is nothing particularly heinous about this; indeed, given that the majority of these folks are likely to dive in caverns and caves anyway, we have simply made it possible for them to do so with knowledge and skills that can save their lives.

The problem with this new type of participant is that it is

...continued on page 8

Rescue/Recovery Team Area Coordinators

Rescue/Recovery Team members should immediately report any change of address or telephone to their Rescue/Recovery Team Area Coordinator.

United States
For areas outside those listed
Steve Ormeroid
629 West 4th St.
Marysville, OH 43040
(513) 642-7775 (day)
(513) 644-2559

Alabama
Joe Dabbs
1815 Inspiration Lane
Huntsville, AL 35801
(205) 534-8668 (day)
(205) 544-0623 (eve)

Arkansas
Missouri
Cliff Rooker
Rt. 1 Box CC
Henderson, AR 72544
(501) 488-5144

Florida — North (Area One)
Lenny Kolczynski
1000 Broward Rd., #1106
Jacksonville, FL 32218
(904) 765-1940 (day)
(904) 771-6207 (eve)

Florida — Northwest (Area Two)
G. E. O'Brien
5429 Hamilton Bridge Rd.
Milton, FL 32571
(904) 994-6082 (day)
(904) 994-4540 (eve)

Florida — Central (Area Three)
Joe S. Harrell
8162 Darts St.
Brooksville, FL 34613
(904) 596-4395 (day)
(813) 847-8102 (eve)

Florida — South (Area Four)
Caribbean
Joe Prosser
7400 N.W. 55th St.
Miami, FL 33166
(305) 966-0619 (day)
(305) 592-3146 (eve)

Georgia
John Crea
P.O. Box 1906
Bainbridge, GA 31717
(912) 246-9349 (day)
(912) 246-3500 (eve)

Texas
Jim Bowden
P.O. Box 164091
Austin, TX 78716
(512) 477-5043 (day)
(512) 441-3708 (eve)

To initiate a request for the NSS-CDS Rescue/Recovery Team, call the Jacksonville (Duval) Country Sheriff's office at (904) 633-4159. and ask for the National Crime Information Center (NCIC) operator.

WANTED: Map Requests

CDS Vice Chairman and Map Program Coordinator, Frank Howard, has asked Section members to forward their requests for "the three maps you'd most like to see added to the Section's inventory."

You can send your list directly to Frank at 334 Portico Court, Chesterfield, MO 63017.

It Can Happen to Us...

...continued from page 7

easy for him or her to fall into the role of the "once-a-year Cave or Cavern Diver." Even then, the potential for disaster is largely mitigated if the individual seeks out the opportunity to review and refresh his or her overhead-environment skills. However, when such a person simply "jumps right in," assuming that the judgement, skills and perception required for safe cave or cavern diving will return "just like riding a bike," we have the potential for disasters like that which occurred at Peacock III.

Had the victim of the Peacock III incident either been cavern diving more actively or sought out refresher training:

- He might have re-modified his equipment — and, in particular, his weights — to be better suited for avoiding silt-outs.
- He might have had better control over his buoyancy and body position, further minimizing the risk of silting.
- He might have remembered that a low-visibility siphon with an abundance of silt was a poor place for less-than-experienced overhead-environment divers to be.
- He might also have remembered additional options for dealing with lost-diver scenarios.

The bottom line is that when we cave or cavern dive actively, or when we participate in the types of discussions that are an integral part of overhead-environment training, we become more cognizant of our personal limitations and more likely to remain within them. However, if we choose to believe that it will somehow "all come back to us," we risk ending up like the Cavern Diver who was ill-prepared to handle what happened at Peacock.

Additional Lessons

The Peacock III incident offers three additional lessons, as well.

First, we must remember that the need for proper training applies not only to ourselves, but those who dive with us. When we take people with less training and/or experience than ourselves (like ten-year-old boys) into environments that are clearly beyond their capabilities, we risk not only these less-experienced individuals, but other team members as well.

In such situations, it becomes easy to focus considerable attention on the less-experienced diver and, in the process, lose track of other team members. Then, should a stressful situation — such as a silt-out — occur, it becomes all too easy to simply assume that the more-experienced divers in the group were capable of fending form themselves.

Second, the Peacock incident underscores the importance of tying off and abandoning the reel whenever conditions are anything less than ideal. Then, if we do accidentally leave a buddy behind, the buddy will at least have the opportunity to search for an find a guideline that will lead him or her to the exit.

Finally, what happened at Peacock III emphasizes the vital role that safety reels play in lost-diver scenarios. It is not simply enough that the lead diver in a team have a reel; *all* team members should carry their own back-up reels, either in their hand or clipped to their equipment. Doing so:

- Enables lost divers to establish a "home base" at the point at which they realize they are lost.
- Allows them to conduct line searches for the original guideline or exit and, if a search is unsuccessful, at least return to their starting point, rather than continuing to wander further into the system.
- Increases the likelihood that a search team will find them. (The team no longer has to locate the missing diver; it will be sufficient to find his or her safety-reel guideline and follow that to the missing diver.)

Since the Peacock III accident, a number of instructors have begun insisting that all Cavern Diver course participants purchase and carry a personal safety reel. (This has been a long-standing requirement for Intro to Cave and Full Cave courses.) Additionally, these instructors are putting increased emphasis on lost-diver procedures.

The loss of five certified Cave or Cavern divers over two years — particularly after going so long with a perfect safety record — is not something to be proud of. It can happen to us. It *does* happen to us. ■

Spring Workshop Program

Workshop Schedule

All activities take place at Branford High School unless otherwise indicated

Saturday

8:00-9:00 Registration
9:00-10:00 Geology and Cave Formation — Bill McDermott
10:00-11:00 Panel Discussion on Safety and Accident Analysis — Hosted by Five Active CDS Instructors
11:00-12:00 Accident Management on Site — Lynn Samuels
12:00-12:30 Cave Study Experiments *You* Can Help Perform — Bill Wilson
12:30-1:30 Lunch — Catered by Suwannee River Cove Restaurant
2:00-5:00 Mini Workshops — Choose the One You Want
- Basic Cave Photography
- Basic Video Techniques
- Cave Study Experiments
- Dive Rite Manufacturing Repair Clinic
- Intro to Mixed Gas
- Poseiden Consumer Clinic
- Side-mount Configurations

7:00 Board of Directors Meeting — Suwannee River Cove Restaurant

Sunday

9:00-5:00 Sherwood Repair Clinic
9:00-5:00 Poseiden Repair Clinic
9:00-5:00 Survey Workshop
6:00 Instructor Meeting — Suwannee River Cove Restaurant

Plus:
- Guided Dives (Announced at Workshop)
- Family Canoe Trip
- Indianapolis 500 Race (BYOC)*

**Bring Your Own Car*

General Information

Name Tags

Please wear your name tag at all times. Not only does this identify you as having paid the Workshop admission fee, it's the only way you'll be able to receive the luncheon being provided by Suwannee River Cove Restaurant on Saturday.

No Smoking

Smoking is not permitted in the High School at any time. If you must smoke, go outside. Sand pails are provided for disposal of butts. (Besides, what in heaven's name are you doing smoking when excellent respiratory health is so vital to safe cave diving?)

Places to Eat

Lunch is provided to Workshop participants on Saturday. For other times:

- Nell's Bar-B-Que, one short block north of the U.S. 27-129 intersection, offers a good selection of home-cooked meals.
- The Sub Shop, just around the corner from Nell's on U.S. 27, has specialty sandwiches to go.
- The convenience store at the Shell station on near the Sub Shop offers food to go and a sit-down dining area.

Also in the general Branford area:

- Suwannee River Cove Restaurant (see next page).
- The Goose's Nest, a family-style restaurant, just west of Fort White on U.S. 27.
- The Mayo Cafe, just east of May on U.S. 27.
- Jim Hollis' River Rendezvous, on Convict Springs Road, northeast of Mayo (follow the signs from U.S. 27).
- Spring Systems (deli sandwiches made by Melba or Jan).

Registration Area/Materials Sales

Free coffee and donuts are available adjacent to the registration area. Here you will also find booths offering maps, T-shirts, publications and other NSS-CDS materials. You can save money on most materials purchases by joining the CDS. An NSS-CDS membership application appears on page 16 and may be turned in, with your first year's dues, at the registration area.

Cartographic Salon

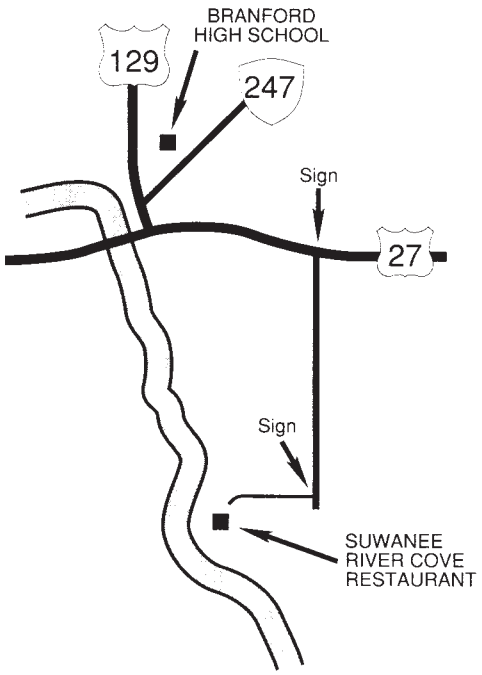
As has become traditional at NSS-CDS Workshops, new, unpublished and rare, historical cave maps will be on display in the halls of Branford High School. Feel free to look, but please do not touch. Also, be aware that *photographing or videoing these maps is strictly forbidden. Violators will be asked to leave.*

No Commando Dives, Please

Negotiations are presently under way to regain access to Yana/Green Sink and Troy Spring in Lafayette County, and to Bonnet Spring in the Peacock/Orange Grove State Recreation Area in Suwannee County. Jug Hole Spring in Ichetucknee State Park is closed as it usually is this time of year, to allow various fragile aquatic plants an opportunity to regenerate. *Please do not jeopardize our present or future access to these sites by engaging in "sneak" dives."*

For information and recommendations on legally-accessible dive sites and local diving conditions, check with Branford Dive Center, Ginnie Spring, Manatee Dive Shop or Spring Systems. ■

Suwannee River Cove Restaurant



Saturday's lunch at this year's NSS-CDS Spring Workshop is being catered by Suwannee River Cove Restaurant. Lunch will be served on the High School grounds, so you will not need to walk any distance nor give up a valuable parking space. There is no charge for lunch; you merely need to be wearing your Workshop name tag.

"The Cove" itself is the site of Saturday evening's Board of Director's meeting and Sunday evening's Instructor meeting. Whether you are attending these meetings or not, you'll find that The Cove makes an excellent choice for dinner on either evening.

Centrally located to the most frequently-visited cave-diving sites in north-central Florida, The Cove has long been a favorite of both visiting and local cave divers. The Cove specializes in steaks and seafood, and offers a complete menu to satisfy nearly every appetite.

A long-standing favorite among divers, however, is the all-you-can-eat buffet. For just $7.95, you can enjoy a selection that generally includes a salad bar, home-baked bread, barbecued chicken, mullet, catfish, deviled crabs, fresh boiled shrimp, vegetables, grits and hush puppies. This is a perfect way to end the day after having worked up an appetite diving one of the local springs.

The Cove is open 4:30 p.m.-10:00 p.m., Thursday-Saturday, and 12:00 noon-10:00 p.m., Sunday.

For more information, call (904) 935-1666.

Workshop Highlights

Saturday

Geology and Cave Formation — 9:00 a.m.-10:00 a.m.

Just where did our Florida Caves come from? This is the subject Bill McDermott addresses during the first presentation at this year's Spring Workshop. Bill is a doctoral candidate in Environmental Science at Old Dominion University; his field of research is the analysis of trace metals, bio assay and water quality. He has been dry caving since 1965, cave diving since 1967 and teaching scuba since 1986. Bill is also president of Custom Design and Construction, Inc., builders of environmental labs and custom homes.

Panel Discussion on Safety and Accident Analysis — 10:00 a.m.-11:00 a.m.

The five rules of Accident Analysis form the foundation of all modern Cave and Cavern Diver training. They are as valid today as they were years ago when first introduced by Sheck Exley — although our understanding of their significance has greatly deepened. Hear a panel of five active NSS-CDS Instructors discuss the role accident analysis plays in today's "real world" cave environment.

Accident Management on Site — 11:00 a.m.-12:00 noon

The thrust of Cave Diver emergency preparedness has traditionally been toward body recovery. The reality is that cave divers slip and fall, break bones and sprain joints, suffer decompression sickness and get cut and bleed just like everyone else. The catch is, while you may be prepared to deal with death, how are you on injuries?

Lynn Samuels is an accident-management specialist. She has worked extensively with Duke University (home of DAN) and NOAA. Her presentation will tell you the priorities and procedures every cave diver should be prepared to implement.

Cave Study Experiments *You* Can Help Perform — 12:00 p.m.-12:30 p.m.

Vital hydrological, geological, paleontological and biological experiments designed for the underwater cave environment are going unperformed, due to a lack of volunteer researchers. It's not that the

cave-diving community lacks willing individuals; many of us are simply unaware of the opportunities that exist for us to help.

Bill Wilson is a geologist and consultant who has worked with such organizations as Central Florida University, the Sinkhole Institute and Karst Environmental Services. In this presentation, Bill provides an overview of areas in which volunteer researchers are needed. In most instances, no prior research experience is required — just Cave Diver certification and a willingness to work and follow directions.

Follow this presentation, a mini-workshop will be held from 2:00 p.m.-5:00 p.m. during which you can get more information.

Mini Workshops — 2:00 p.m.-5:00 p.m.

On Saturday afternoon, following lunch, Workshop participants can choose to attend any one of seven different mini-workshops conducted by experts in their respective fields. The list of workshops includes:

- Basic Cave Photography
- Basic Video Techniques
- Cave Study Experiments
- Dive Rite Manufacturing Repair Clinic
- Intro to Mixed Gas
- Poseidon Consumer Clinic
- Side-mount Configurations

The names of mini-workshop presenters and additional information on each program's content will be posted and available for inspections during registration.

Board of Directors Meeting — 7:00 p.m.

A regular meeting of the NSS-CDS Board of Directors takes place Saturday evening at Suwannee River Cove Restaurant. All CDS members are welcome to attend.

Sunday

Sherwood Repair Clinic — 9:00 a.m.-5:00 p.m.
Poseidon Repair Clinic — 9:00 a.m.-5:00 p.m.

These full-fledged, manufacturer-sponsored and conducted repair seminars are designed to certify professional equipment technicians to service these respective makes of regulators and related equipment under the auspices of factory-authorized dealers. Eligibility requirements for enrollments and additional information will be posted and available during registration.

Survey Workshop — 9:00 a.m.-5:00 p.m.

All cave divers have, at several times during their training and explorations, relied heavily upon the maps and surveys prepared and conducted by others. One way in which each of us can repay this debt is by mastering the art of surveying ourselves. This way, not only can we better understand what prior surveyors have to tell us, we will have at our disposal the skills required to conduct or contribute to future surveys and map-making projects.

The NSS-CDS is fortunate to have, among its members, two of the world's leading underwater cave surveyors, John Burge and Frank Howard. John, a past CDS Board member, is author of the book, *Basic Underwater Cave Surveying*. Frank, who is currently Vice-Chairman of the CDS Board of Directors, oversees the Section's map inventory and coordinates Section-sponsored map-making projects.

The Survey Workshop that John and Frank regularly conduct as part of the Spring Workshop has gained a reputation as being the best of its kind. It is a valuable experience for any cave diver and a suggested pre-requisite for Instructor training and certification.

The cost of the Survey Workshop is modest — just enough for materials and certification. You may enroll at the registration area or, if space remains, on Sunday morning at the Workshop.

Special Activities

If you've already been to the Survey Workshop and have no need to participate in either of the regulator-repair seminars, then you'll probably want to take advantage of one of the many special activities scheduled for Sunday. They include:

Guided Dives — The first time you tackle a Rock Bluff, Otter Spring or other more-advanced cave dive, it helps to do so under the tutelage of an experienced cave diver who is intimately familiar with the intricacies of that system. This is why guided dive trips to such sites have become an integral part of the Workshop's Sunday activities. A list of times and descriptions of the guided dives is available, along with sign-up sheets for each one, in the registration area.

Family Canoe Trip — Yes, we know that many of you can only make the Workshop through the acquiescence of your spouse and offspring. Here is you chance to pay them back. A canoe trip along the Santa Fe or Suwannee Rivers is a treat for divers and non-divers, young and old alike. Anyone who loves nature has a marvelous time on these outings — plus you'd be amazed what you can learn about cave diving by studying the rivers into which our springs empty.

The time, location, cost and other vital information on this year's family canoe trip — along with sign-up sheets — is posted in the registration area.

Indianapolis 500 Race — And finally, we know what weekend it is and that, by coming to the Workshop, you've risked missing the world's single most-important auto race. Fear not.

If seeing the race is a must, CDS Board Chairman Mark Leonard can accommodate you. Mark is inviting die-hard race aficionados to join him at his house to see the race on his large-screen, satellite-fed TV. The only rules are:

- No smoking.
- No discussing business (i.e. cave diving) during the race.

If you feel compelled to participate, Mark says you must bring your own car. For more information, see Mark any time on Saturday.

Instructor Meeting — 7:00 p.m.

All active CDS Instructors — as well as those interested in becoming instructors — are invited to attend the Instructor meeting Sunday evening at Suwannee River Cove Restaurant. Expect a lively and informative discussion. ■

Recent Cave-Diving Explorations in Western Canada

by J.C. Pollack and K.D Sawatzky, M.D.

The small, Canadian cave-diving community made progress west of the Rocky Mountains this summer. As usual, the dives were cold and we tried to accomplish too much in too short a time.

The Tsulatan Resurgence

By the end of 1988, the Tsultan Resurgence cave system had been pushed, over the course of two dives, to a distance of 600 feet and a depth of 45 feet. This left an possible 2,500 feet connection between Tsultan and a terminal sump in one of two nearby, 1,000-foot-deep caves, the Glory Hole/ Treasure System and Arch Cave.

In 1989, Peter Norris and Tich Morris joined us to push the cave, past three restrictions, to a distance of 1,100-1,200 feet. The passage was consistently awkward. Dimensions were typically 2.5 feet high by 10-12 feet wide. Visibility might be 30 feet going in and three feet going out. When divers teamed up, the visibility through hundreds of feet of passage would drop to less than one foot during the return trip. This was seldom the team leader's idea of a good time, as he would be the one who had to follow on the way out. Consequently, trips to the far end soon became solo dives.

The final dive, by J.C. Pollack, ended at a depth of 90 feet, at the top of a drop-off leading to depths in excess of 100 feet. The reason for calling the dive at this point was not the presence of a restriction, but rather that:

- There are several obstacles between this point and the system's entrance.
- Dives to this point typically ran 75 minutes in 39°F water.

On future dives, we plan to use dive computers. Their multi-level capabilities will give us credit for the extensive time spent in shallower portions of the cave, and thus yield longer bottom times in the deeper section.

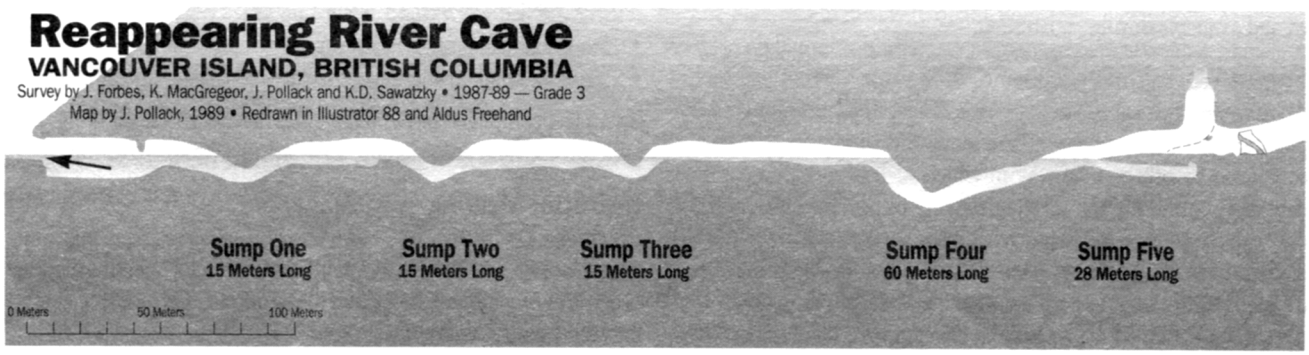
While we were away from home, influenza was working its way through members of our families. We, however, were camping and did not find out about this until later. Unknown to any of us, at least one team member carried the virus with him. This lead to an incident during a dive to retrieve Tich Norris' reel from the 1,000 foot mark.

The affected diver became nauseated at the maximum limit of penetration. He suffered a miserable return trip and vomited in an air bell during decompression. Unfortunately for his partner, it was a very small air bell...

Reappearing River

This massive river cave amazes divers on every visit. Its passageways are similar in size and appearance to the larger ones at Peacock. Unlike Peacock, however, the upper half of large sections of the cave are air-filled. It also lacks a silt floor. As the accompanying map indicates, its maximum penetration to date is approximately 3,300 feet (100 meters) from the entrance.

We began this year by repairing or replacing line near the entrance. (This was trashed by winter floods.) Next, we made a nine-hour push to explore Sump Eight.



Why nine hours? Although Reappearing River contains 1,500 feet of spacious sump and 900 feet of easily-traversed canal, there is also 900 feet consisting of dry breakdown, passageway through which one must pass at a near-crawl and a breakdown mountain to scale. Along the way, one swims 2,400 feet and takes along hiking boots for the rest.

The last known air-filled region — the Octahedron Room — was discovered by K.D Sawatzky in 1988. This room is a great rift, approximately 150 feet long and 70 feet wide. Sheer walls rise to a domed ceiling with heights of 180-200 feet.

Sump Eight begins as a massive pool under one wall, and eventually drops through a steeply-descending canyon. We stayed near the ceiling, with J.C. Pollack turning at a depth of 100 feet and K.D. Sawatzky at 160 feet. At the farthest point of penetration, one can see the canyon continue to depths of 200 feet.

Mystery Cave

This year a survey between Sumps Two and Three recorded 2,300 feet of dry passage originally discovered, but not mapped, in 1988. Mystery is a complex cave, with four sumps, numerous climbs, several parallel overflow passages, high-level breakdown rooms and wood debris from an undiscovered, upstream entrance.

Excursions into Mystery Cave make explorers nervous, as the entrance floods shut during heavy rains — which are common on northern Vancouver Island. Although we were successful in mapping most of the cave, poor weather, J.C. Pollack's trashed knees (poor wetsuit hygiene) and a broken Y-valve cancelled an exploration trip to Sump Four.

The Invermere Wells

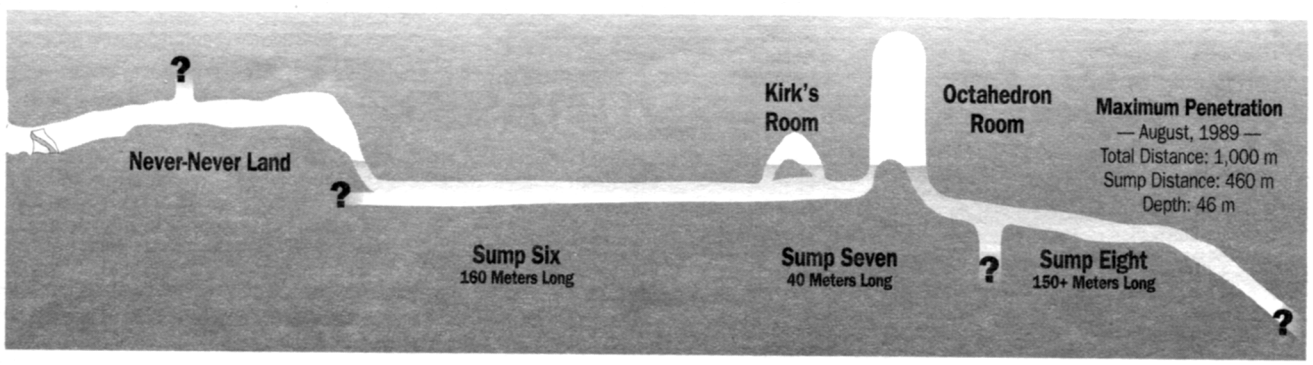
An unexpected find in 1989 was a new area in the Canadian Rockies, near Invermere. Here, two valleys contain dozens of large gypsum sinks at elevations of 4,000 feet.. The dimensions of these sinks are often staggering — up to 300 feet in diameter with drops of up to 150 feet to the water. No surface flow appears, however.

In August, we explored a smaller sink, Wyndermere Well. From a 150-foot-by-60-foot lake, one descends through an entrance funnel to a vertical rift at a depth of 60 feet. On the other side of this rift, one emerges at a depth of 100 feet to the ceiling of a large room or passage. K.D. Sawatzky reached a depth of 130 feet here without finding a floor. The visibility was only ten feet on this dive — presumably due to the supersaturated condition of the water.

If the water clears during the fall, spectacular dives may be possible. However, if the water remains murky, these dives would be too deep to have much fun.

The DCIEM tables' depth adjustment for a desaturated diver at this altitude is +20 feet. This is further complicated by the fact divers must ascend an additional 1,000 feet above sea level when traversing a pass to and from the dive site.

Exactly how deep these sinks go, or what they may lead to, is anyone's guess. ■



Underwater Speleology Reader Survey

Directions — This survey is designed to accomplish two goals. First, it will help us assess the backgrounds and desires of our readers, thus enabling us to better tailor the magazine to meet their needs. Second, it will assist us in creating a profile of the typical *Underwater Speleo* reader. This may be extremely valuable in attracting prospective advertisers. (Why not let *them* pay the magazine's production costs, instead of us?)

Important — This survey asks for confidential information, such as household income and spending patterns. Therefore, you need not give your name unless you choose to. In all honesty, *who* you are is of little consequence to the validity of this survey, so long as you answer all questions accurately. The information with which you supply us, however, can be valuable in helping us gain advertiser support to pay for expansion of the magazine and other Section activities.

General Diving Experience/Activity

1. How many years have you been a certified diver at the Open Water (Basic) level or above?
   - ☐ Not yet certified
   - ☐ Less than 1 year
   - ☐ 1-2 years
   - ☐ 3-5 years
   - ☐ 6-9 years
   - ☐ 10 years or more

2. What is your present level of certification, not counting Cave or Cavern Diver ratings?
   - ☐ Not yet certified
   - ☐ Basic or Open Water
   - ☐ Intermediate, Advanced or Rescue Diver
   - ☐ Master Diver, Divemaster or Assistant Instructor
   - ☐ Open Water Instructor or above

3. If you are actively involved in open-water (non-cave or cavern-related) diver training, how many students do you anticipate coming in contact with as a result of this activity during the next twelve months?
   - ☐ None
   - ☐ 1-5
   - ☐ 6-10
   - ☐ 11-25
   - ☐ 26-50
   - ☐ 51-100
   - ☐ More than 100

4. How many *total* scuba dives have you made to date (cave and cavern, plus open water)?
   - ☐ Not yet certified
   - ☐ 0-5
   - ☐ 6-10
   - ☐ 11-25
   - ☐ 26-50
   - ☐ 51-100
   - ☐ 101-500
   - ☐ 501-1,000
   - ☐ Over 1,000

5. How many *total* scuba dives do you make in a typical year (cave and cavern, plus open water)?
   - ☐ Not yet certified
   - ☐ 0-5
   - ☐ 6-10
   - ☐ 11-25
   - ☐ 26-50
   - ☐ 51-100
   - ☐ Over 100

6. Which of the following areas do you plan to visit during the next twelve months, during *non-cave or cavern-related* diving vacations (trips requiring at least one night's stay away from home)? (Circle the answer if you intend to go more than once.)
   - ☐ Australia
   - ☐ Bahamas
   - ☐ Belize
   - ☐ Bonaire
   - ☐ Cayman
   - ☐ Florida
   - ☐ Hawaii
   - ☐ Honduras
   - ☐ Jamaica
   - ☐ Mexico (Baja/Pacific Coast)
   - ☐ Mexico (Cozumel)
   - ☐ Mexico (Yucatan Peninsula)
   - ☐ South Pacific
   - ☐ Turks and Caicos
   - ☐ Virgin Islands (B.V.I.)
   - ☐ Virgin Islands (U.S.)
   - ☐ Other:

Cave/Cavern Diving Experience/Activity

7. How many years have you been a certified Cave or Cavern Diver?
   - ☐ Not yet certified
   - ☐ Less than 1 year
   - ☐ 1-2 years
   - ☐ 3-5 years
   - ☐ 6-9 years
   - ☐ 10 years or more

8. What is your present level of Cave or Cavern Diver certification?
   - ☐ Not yet certified
   - ☐ Cavern Diver
   - ☐ Basic/Intro to Cave
   - ☐ Full Cave
   - ☐ Cavern Instructor
   - ☐ Basic/Full Cave Instructor

9. If you are actively involved in *cave or cavern-related* diver training, how many students do you anticipate coming in contact with as a result of this activity during the next twelve months?
   - ☐ None
   - ☐ 1-5
   - ☐ 6-10
   - ☐ 11-25
   - ☐ 26-50
   - ☐ 51-100
   - ☐ More than 100

10. How many cave or cavern dives have you made to date?
    - ☐ Not yet certified
    - ☐ 0-5
    - ☐ 6-10
    - ☐ 11-25
    - ☐ 26-50
    - ☐ 51-100
    - ☐ 101-500
    - ☐ 501-1,000
    - ☐ Over 1,000

11. How many cave or cavern dives do you make in a typical year ?
    - ☐ Not yet certified
    - ☐ 0-5
    - ☐ 6-10
    - ☐ 11-25
    - ☐ 26-50
    - ☐ 51-100
    - ☐ Over 100

12. Which of the following areas do you plan to visit during the next twelve months, during *cave or cavern-related* diving vacations (trips requiring at least one night's stay away from home)? (Circle the answer if you intend to go more than once.)
    - ☐ Australia
    - ☐ Bahamas
    - ☐ Belize
    - ☐ Bonaire
    - ☐ Florida
    - ☐ Hawaii
    - ☐ Honduras
    - ☐ Mexico (Cozumel)
    - ☐ Mexico (Yucatan Peninsula)
    - ☐ South Pacific
    - ☐ Other:

13. What is the total number of days you plan to spend in north Florida cave or cavern diving during the next twelve months?
    - ☐ None
    - ☐ 1-5
    - ☐ 6-10
    - ☐ 11-25
    - ☐ More than 25

Disposable Income/Spending Habits

14. What is your present annual household income?
    - ☐ Less than $10,000
    - ☐ $10,000-$14,999
    - ☐ $15,000-$19,999
    - ☐ $20,000-$29,999
    - ☐ $30,000-$49,999
    - ☐ $50,000 or more

15. How much *total* do you anticipate spending on the purchase of scuba-related equipment during the next twelve months (including cavern/cave and photo/video equipment)?
    - ☐ None
    - ☐ Less than $250
    - ☐ $250-$499
    - ☐ $500-$999
    - ☐ $1,000-$1,999
    - ☐ $2,000 or more

16. How much do you anticipate spending on the purchase of cave or cavern-diving-related equipment during the next twelve months?
    - ☐ None
    - ☐ Less than $250
    - ☐ $250-$499
    - ☐ $500-$999
    - ☐ $1,000-$1,999
    - ☐ $2,000 or more

17. How much do you anticipate spending on the purchase of underwater photo or video equipment during the next twelve months?
    - ☐ None
    - ☐ Less than $250
    - ☐ $250-$499
    - ☐ $500-$999
    - ☐ $1,000-$1,999
    - ☐ $2,000 or more

18. How much *total* do you anticipate spending on dive travel during the next twelve months (including cave and cavern diving excursions)?
    - ☐ None
    - ☐ Less than $250
    - ☐ $250-$499
    - ☐ $500-$999
    - ☐ $1,000-$1,999
    - ☐ $2,000 or more

19. How much do you anticipate spending on cave or cavern-diving-related dive travel during the next twelve months?
    - ☐ None
    - ☐ Less than $250
    - ☐ $250-$499
    - ☐ $500-$999
    - ☐ $1,000-$1,999
    - ☐ $2,000 or more

Underwater Speleology

20. Rank the following *Underwater Speleology* subject-matter areas in order of their important to you as a reader ("1" = most important):
    - _____ News
    - _____ Commentary on cave-diving-related issues
    - _____ "How to" articles
    - _____ Equipment
    - _____ Geology
    - _____ Biology
    - _____ Other: _____

21. List additional suggestions you have for improving *Underwater Speleo* on a separate sheet of paper.

When finished, mail this survey to UNDERWATER SPELEOLOGY, Post Office Box 873, High Springs, FL 32643. Thank you.

NSS-CDS
Materials Order Form

— Send completed order forms to —

The National Speleological Society • Cave Diving Section
P.O. Box 950 • Branford, FL 32008-0950

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City: _____ State: ____ Zip: _____

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NSS member number and expiration date must be included to qualify for member discounts

Item Number	Size	Description (Please Print Clearly)	Qty	Cost, Each	Total

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Checks returned for insufficient funds must be covered promptly. Additionally, you must reimburse the Section for any bank NSF check charges it incurs (currently US$20). Two or more NSF checks from an individual or organization will result in our requiring cash or guaranteed funds on all future orders.

Refer to the map order page for NSS-CDS policy regarding cave map orders.

Sub-total	
Florida residents add 6% sales tax or include copy of resale certificate Foreign orders add 10% shipping	
If applying for NSS-CDS membership, enter total from other side	
Total	

Please allow six to eight weeks to process orders. Prices include shipping to US addresses via fourth-class mail.

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- **Full voting privileges and more!**

— Membership in the NSS-CDS is open to any interested individual —

NSS-CDS Membership Application and Subscription Form

NSS Policy on Conservation (Please Read and Sign at Bottom)

The National Speleological Society believes: that caves have unique scientific, recreational value; that these values are endangered by both carelessness and intentional vandalism; the these values, once gone, cannot be recovered; and that the responsibility for protecting caves must be assumed by those who study and enjoy them.

Accordingly, the intention of the Society is to work for the preservation of caves with a realistic policy supported by effective programs for: the encouragement of self-discipline among cavers; education and research concerning the causes and prevention of cave damage; and special projects, including cooperation with other groups similarly dedicated to the conservation of natural areas. Specifically:

All contents of a cave — formations, life and loose deposits — are significant for its enjoyment and interpretation. Therefore, caving parties should leave the cave as the find it. They should provide means for the removal of waste; limit marking to a few, small, removable signs as are needed for surveys; and, especially, exercise extreme care not to break or soil formations, disturb life forms or unnecessarily increase the number of paths through an area.

Scientific collection is professional, selective and minimal. The collecting of mineral or biological material for display purposes, including previously broken or dead specimens, is never justified, as it encourages others to collect and destroys the interest of the cave.

The Society encourages projects such as: establishing cave preserves; placing entrance gates where appropriate; opposing the sale of speleotherms; supporting effective protective measures; cleaning and restoring over-used caves; cooperating with private cave owners by providing knowledge about their caves and assisting them in protecting their cave and property from damage during cave visits; and encouraging commercial cave owners to make use of their property to aid the public in understanding caves and the importance of their conservation.

Where there is reason to believe that publication of cave locations will lead to vandalism before adequate protection can be established, the Society will oppose such publication.

It is the duty of every Society member to take personal responsibility for spreading a consciousness of the cave conservation problem to each potential user of caves. Without this, the beauty and value of our caves will no longer remain with us.

Check One: ☐ NSS-CDS (Annual) ☐ NSS-CDS (Lifetime) ☐ CDS Only (Annual) ☐ CDS Only (Lifetime) ☐ *U/W Speleo* Subscription Only

Please note: *NSS membership is a pre-requisite for CDS membership. If you <u>are not</u> a current member of the NSS, pay the "NSS-CDS" fees to join both. If you <u>are</u> a current NSS member, list your membership number and expiration date where indicated below and pay just the "CDS Only" fees to add on CDS section membership.*

	Name (please print clearly)	Date of Birth	Fee	Amount Paid
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Are You a Current NSS Member?

If so, please give us the following information:

NSS Number: ____________________

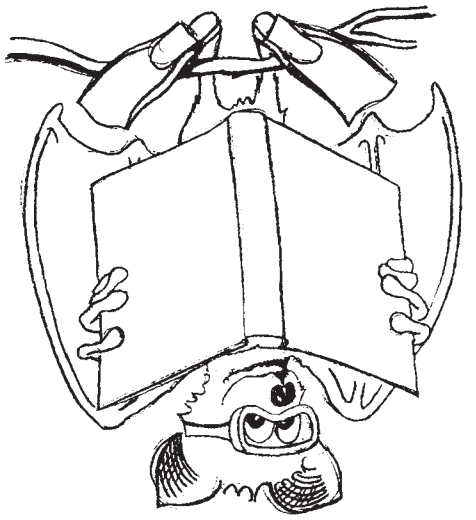
Expiration Date: ____________________

Is (or will) your first affiliation be with: ☐ The Cave Diving Section (CDS)? ☐ Another Grotto or Internal Organization?

I am familiar with the purpose of the NSS and the NSS-CDS and their policy on cave conservation and, in support thereof, I hereby apply for membership:

Signature: ____________________

Make checks or money orders payable in US funds to the NSS-CDS • P.O. Box 950 • Branford, FL 32008-0950 • USA



Everyone Enjoys a Good Cave Diving Book

NSS Cavern Diving Manual

by John Zumrick, Joe Prosser and H.V. Grey

The standard reference work on cavern diving. Covers most of the underlying principles behind safe cave diving as well. NSS-CDS, 1988. 5-1/2" x 8-1/2". 121 pages. Softcover.

Item Number.....40100
Non-Member.....$12.00
Member.....$10.00

Basic Cave Diving — a Blueprint for Survival

by Sheck Exley

Updated fifth edition of a classic. NSS-CDS, 1986. 5-1/2" x 8-1/2". 46 pages. Softcover.

Item Number.....40200
Non-Member.....$5.00
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NSS Student Cave Diver Workbook

by Mark Leonard and Lamar Hires

Brand-new student workbook for Full Cave Diver training. Contains Cavern, Intro to Cave and Full Cave course outlines and tests — plus numerous background articles, appendices and maps of the most popular system. Even if you are already a certified Full Cave Diver, this book is worth the modest price for the articles and maps alone. Comes with protractor for student mapping exercises. NSS-CDS, 1989. 8-1/2" x 11". 82 pages. Softcover, spiral bound.

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Hand Signals for Diving

by Claudette Finley, Jamie Stone and Carol Vilece

The original book on underwater communications. Still valuable today. NACD, 1977. 5-1/2" x 8-1/2". 38 pages. Softcover.

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Basic Underwater Cave Surveying

by John Burge

An incredible book — everything you could possibly want to know about surveying underwater caves. Sets the standard for all cave-survey procedures. NSS-CDS, 1987. 6" x 9". 134 pages. Softcover.

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Recovery Diver Operations Manual

by Henry Nicholson and Joe Prosser

Standard text for the Recovery Diver course. 8-1/2" x 11". 16 pages. Softcover.

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Deep Into Blue Holes

by Rob Palmer

A profusely illustrated (many photos in color) account of Bahamian blue-hole exploration by one of the world's leading cave divers. Unwin-Hyman Ltd., 1989. 7" x 10". 164 pages. Hardcover.

Item Number.....40700
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The Wakula Springs Project

Edited by William C. Stone

A complete account of this massive undertaking. Lots of photos, many in color. Covers all aspects of the expedition, including logistics, gas mixtures, biology, etc. U.S. Deep Cave Diving Team, 1989. 8-1/2" x 11". 210 pages. Hardcover.

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