THE FLORIDA SPELEOLOGIST

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T H E F L O R I D A S P E L E O L O G I S T

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"Ex Luce in Tenebras"

C O N T E N T S

THE FLORIDA SPELEOLOGIST is published (hopefully) at least four times a year by the Florida Speleological Society. The FSS is a Grotto of the National Speleological Society. Distribution is free to all members of the FSS and to all grottoes of the NSS. Individual subscriptions are $1.00 per year (at least four issues). Material for publication, letters of comment, or subscriptions should be addressed to the Editor, The Florida Speleologist, P. O. Box 12581, University Station, Gainesville, Florida.

O f f i c e r s

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WHAT'LL YOU HAVE...?

With this issue THE FLORIDA SPELEOLOGIST resumes publication after a lapse of considerable time. Although the actual date of appearance is in June, 1963, this issue is dated December, 1962. Much of the material was prepared by that date but publication has been held up for a number of reasons. The responsibility for the delays falls mostly on your editor and it is our heartfelt hope that the future will see a more reasonable schedule of publication. We would like to express our great appreciation to the many grottoes which continued to send us their newsletters during our period of inactivity.

We feel that THE FLORIDA SPELEOLOGIST can perform an important task by keeping the members of the FSS informed of what is happening and what is going to happen, by providing a means of recording the activities and accomplishments of the group, and by serving as a medium for discussion and the expression of opinions.

The interest which has been shown and the cooperation which has been received in putting out this issue has been gratifying. We hope that this attitude will continue and grow. Anyone who can contribute material -- articles, reports, drawings, maps, cartoons, fiction or whatever -- will be welcomed with open arms. But more important, we would like comments from FSSers. Let us know what you like or don't like about this issue and what you would like to see. Admittedly this issue has shortcomings; in future issues we will move closer to our goals of what we think THE FLORIDA SPELEOLOGIST should be. Help us set those goals by letting us have your opinions. We'll try to give you what you want. What'll you have . . . ?

NOTICE!! ADDRESS CHANGE NOTICE!!

With the building of the new University Station post office, the official address of the Florida Speleological Society has been changed slightly. The correct address is now:

Florida Speleological Society
Box 12581, University Station
Gainesville, Florida 32603

This address should be used for all correspondence sent to the FSS, to any of its officers, or to THE FLORIDA SPELEOLOGIST (including exchanges). Mail addressed to individuals must also bear the name of the FSS since the box is rented under this name.

CAVE DIVING IN FLORIDA

Jeff Colehour

Jeff has been an active diver for four years and has done extensive diving work in Florida. He is presently chairman of the Underwater Exploration Committee which is responsible for all cave diving activities of the FSS.

Florida has much to offer to the underwater speleologist. There are more first magnitude (flow greater than 65 million gallons per day) springs in Florida than any other state in the U.S., and most offer large and "endless" passages to be explored. Each of the twenty odd first magnitude springs could supply water to a city of 500,000 people. There are many more springs of lesser flow although not necessarily of lesser size. Sink holes with vertical drops of 200 feet or more can also be explored by the cave diver. The springs and sinks offer more than just the thrill of exploration for they appear to have acted as natural traps for Indian relics and fossil bones. In some places the floor of the spring cavern is literally covered with bones of ancient land mammals and it is probable that additional places of this nature exist that have not yet been discovered.

Florida's underwater caves can be classed into three main categories with each one having its own peculiar problems for the cave diver. The classifications are: 1) springs, 2) sinks, and 3) caves partially filled with water that require transportation of equipment through dry cave before water is reached.

Springs are probably the safest places to practice cave diving for several reasons. First, the water is almost always clear with visibilities up to 100 feet or more in some places. Secondly, the water current is flowing toward the entrance and thus leaving the cave is done with the help of the current and it can be done fairly quickly (compared to entering) should difficulties arise. This current is beneficial in other ways also. In many springs there is little or no silt in the stream path due to the sweeping action of the current and this helps to preserve the clarity of the water during the dive. One drawback of this current is that if silt is stirred up it is carried toward the entrance and visibility may be reduced as one is leaving the cave. It is generally not reduced below 5 to 10 feet and this is still satisfactory. The current direction is <u>not</u> satisfactory for determining which way is out; this is the job of the safety line. The entrance to these caves, being exposed to sunlight, is generally well lighted and is frequently visible for some distance inside.

The depth of most springs will not exceed 100 feet but there are exceptions which are known to be as deep as 300 feet. In many cases within the explorable distance from springs are sinkholes through which water going to the spring flows. It is often possible in these cases to swim from the spring to the sink or (not recommended without going the other way first) swim from sink to spring. Spring passageways are generally passable as far as air supply allows the diver to go and distances of 1000 feet and more are possible with a properly equipped and experienced team of divers.

Sinkholes offer another type of location to cave divers. These sinkholes are generally formed by the collapse of the roof of a solution cavity and in many cases do not "go" for any great distance. They are frequently quite deep, however, with many sinks exceeding 100 feet in depth and some going as deep as 300 feet. Decompression becomes necessary in many cases and this demands that the diver have full knowledge of the proper procedures to avoid decompression sickness. The U. S. Navy Diving Manual is the best source of information on this subject.

Sinkholes are generally stagnant and thus organic matter that falls into the water settles to the bottom and forms a layer of silt. The thickness of the layer varies but it is generally quite easy to stir up and will remain suspended for many hours. This is probably the main hazard of sinkhole diving. The problem can be minimized by staying at least 5 feet or more from the bottom. Should it be necessary to go to the bottom one should approach it in an inverted, head-down position. Silt also collects in irregularities in the walls and these should be avoided too, with the 5-foot rule still applicable. The water is usually clear before the dive with visibilities up to 50 feet. Since there is no current, silt stirred up in one place is not necessarily carried to another place and thus, should one notice that silt has accidentally been stirred up, one can proceed to another area of the cave without fear of it catching up. Sinks are exposed to sunlight and warm air in the summer and surface temperatures may reach 80°F or higher. This seems to be favorable condition for the growth of algae and the surface water is frequently murky. Sometimes this unclear layer will extend to 50 feet. It poses no problem except that light is reduced and at depths of 150 to 200 feet one may be in total darkness even though the entrance is straight above. At shallower depths the light from the entrance is usually visible and may even be visible from all accessible portions of the sink.

Diving in the submerged passages of caves partially filled with water offers the same hazards as sinkhole diving and a few more besides. The silt problem is the same and may be worse in that it is almost impossible to enter the water without stirring up some silt. With no sunlight to pierce the murky water the entrance to the submerged passage will probably not be visible to the diver even if several lights are trained on it from above.

With the use of a safety line this problem is not a great one, however. Once in the passage, silt should be avoided as in the sinkhole if the passage is large enough. If the passage is small and one must swim close to the floor one must be prepared for zero visibility. Actually, all cave divers, no matter what type of cave they are in, should be prepared to cope with zero visibility, but it is probably more likely to be encountered in partially filled caves than anywhere else. One problem that has been the cause of more than one fatal or near fatal accident is that as the diver swims down a passageway he generally keeps his eyes looking forward and sees only clear, inviting water, but when he turns around he may be appalled to find that he has stirred up so much silt, unknowingly, that the visibility on the way out is zero. The accidents mentioned have resulted from divers caught in the situation without a safety line.

This type of diving requires that equipment be transported from the entrance of the cave to the chosen diving site. This may require much effort and many hands depending on the difficulty of the cave.

The equipment a diver uses is almost as important as his knowledge and judgement. The breathing unit is the basic item on the equipment list. For Florida cave diving compressed air SCUBA-type units are the most practical and probably the safest. Most name brand regulators are quite dependable if properly maintained. The choice between a one-hose and two-hose regulator should be up to the diver. I feel that the one-hose unit may have an advantage in that there is one less hose to snag and the hose construction is somewhat stronger, but both types have been used successfully. As for the compressed air tanks, I feel that there is only one type of tank combination that is safe for serious spring or sink diving. This is the twin tank set-up in which the two tanks each have a valve with a simple bar connector for a manifold. Oddly enough, the size of the tanks is not too critical with this arrangement. The advantage here lies in the fact that by starting the dive with only one tank turned on there is a very positive reminder that half the air is gone when the first tank runs out. If the diver has been swimming deeper and deeper into the cave, he knows that if he turns around he should have enough air to leave comfortably. Commercial air reserve devices do not give warning until it is much too late to help. With this system even small tanks can be used with the only penalty being that one will not be able to go as far.

There is an additional advantage in that, if one does not have a pressure gauge at hand to check tank pressure before diving, by simply equalizing the pressure in the tanks before entering the water the same amount of air will be held in each tank and one will still be safe even if he starts out with nearly empty tanks. Another system that is probably more suitable for carrying into a cave is a single tank with a pressure gauge attached so

that it can be taken underwater with the tank. This is, in a sense, the ideal method of determining the quantity of air consumed. It has the disadvantage of requiring more high pressure fittings and hose but where light weight is necessary it probably will be superior to double tank systems. For short reconnaissance dives single tanks without pressure gauges can be used but preferably only by use of an underwater watch and a very conservative time allotment.

Another item of great importance is the light source used by the diver. It is essential that it be dependable and as bright as possible. The best cave diving lights that I know of are homemade, as is mine, and use rechargeable batteries with an option of sealed beam or bayonet base bulbs for the light unit itself. Since a dive rarely lasts longer than one hour this is usually a sufficient burning time for the light. With four amp-hour nickel-cadmium cells this allows the use of a 25-watt spotlight which is ample for cave diving. I have used the small 4.5-inch automotive spotlights to a depth of 250 feet and they seem to withstand the pressure quite well. Automobile headlights and other sealed beam units with fresnel and cylindrical lenses moulded into the main lens are not satisfactory from the strength standpoint as implosions have occurred at depths as shallow as 150 feet. The small automotive bayonet base bulbs are also suitable for cave diving and have the advantage of being cheaper to replace. I have tested these bulbs to pressures equivalent to a depth of 1000 feet and they seem to be amply strong. For the cells I have constructed an aluminum housing that is water- and pressure-tight. I would like to say, however, that the nickel-cadmium cells I have mentioned have been used unprotected in excess of 200 feet with no apparent damage. Whether or not the life of the cell will be shortened due to the high compressive loads on the plates I do not know. If the cells are left open to the water, of course, there is no problem with pressure but some of the highly mineralized cave water will enter the cell and could have adverse effects. The widely used Radar Lite is probably as dependable a unit as can be purchased. Its wattage (2.5-3) is somewhat low for cave diving, however.

As for extra lights, it is a foregone conclusion that there will be at least two divers together at one time. The chances of both lights failing simultaneously is very slight; however, extra lights are an advisable addition to the equipment list if one is to be prepared for all eventualities. As a general rule, if one member of a group has a light failure, the entire group should return to the surface.

The safety line used by the diver is simply a device to guide him out of the cave the same way he entered. This is an extremely important item and the tragic results of not using one have made headlines many times in Florida. The safety line itself poses somewhat of a problem to the diver. It is totally impractical to try to feed the line to the diver from the surface except for very

short distances because of the snagging problem. This requires that the diver carry a spool or reel with him. A desirable length for the safety line would be 800 to 1000 feet and thus, if the diver is to carry 1000 feet of line with him, it cannot be of large diameter. A small diameter white nylon line has worked quite well for me and it allows the use of an easy-to-handle 8-inch diameter reel. We simply reel the line out as we go in and take it back in on the way out. Larger diameter lines would be desirable but cost can also become a factor. If much diving is planned in a certain place a large and semipermanent line could be installed to speed operations.

Water temperatures in Florida caves usually run about 70°F and below and most people feel that a wet suit is a handy and almost necessary item, especially if long exposures are anticipated.

For those interested in locations of diving places in Florida, a publication of the Florida Geological Survey entitled Springs of Florida (Bulletin No. 31) by Ferguson, Lingham, Love and Vernon is a good guide. Although it is not written with the cave diver in mind one can frequently tell from their descriptions whether a spring would be suitable for diving.

MEETINGS OF THE FLORIDA SPELEOLOGICAL SOCIETY

The FSS meets every other Wednesday during the school year. Meetings are at 7:00 p.m. in Room 324 of the Florida Union on the University of Florida campus. The meeting dates scheduled for the 1963 Spring Trimester are:

Wednesday, May 15

Wednesday, May 29

Wednesday, June 12

Wednesday, June 26

Wednesday, July 10

Wednesday, July 24

The first meeting of the 1963 Fall Trimester is Wednesday, September 11. Keep this list handy so you won't miss a meeting.

Between meetings information on FSS activities may be found on the bulletin board at 1639 N. W. 1st Avenue or by writing to the Florida Speleological Society, P. O. Box 12581, University Station, Gainesville, Florida.

WE NEED YOUR HELP

Richard Dean Warren

Several FSSers are currently conducting studies on the relationship between the distribution of obligative cave animals and the limestone formations of the state. This work is a part of the Florida Cave Survey, which was organized for the purpose of assembling and correlating data on all phases of Florida speleology. The distributional data available as of January, 1961, was presented in Special Paper No. 1 of the FSS. Based on this scanty information, several hypotheses were also presented for consideration. Much more must be learned before any valid conclusions can be drawn.

Primary interest centers around those animals which are obligated, by reason of anatomical adaptation, to spend their entire lives in the total or near-total darkness of the cave environment. Most appear in the beam of a flashlight to be almost white. The eyes are usually much reduced or entirely absent. All forms thus far described from the state are aquatic. One amphipod, one isopod, two ostracods, six crayfish, one shrimp, and one salamander compose the list. The amphipod and the isopod are small, white "water bugs" less than one-half inch in length. They are usually seen crawling about on the bottom of a cave pool but will swim with some speed if disturbed. The ostracods are microscopic crustaceans which attach themselves to crayfish.

The animals described above may be caught in dip nets of varying mesh size. Small, fine-meshed aquarium nets are often sufficient for amphipods and isopods. Larger and sturdier nets are needed for crayfish and salamanders. Captured specimens may be preserved on the spot or brought back alive. The best preservative is 10 percent formalin for the cave salamander and 80 percent ethyl (grain) alcohol for the others. In a pinch use rubbing alcohol, which may be purchased at any drug store. In a real crisis, you may use whisky, which can be purchased along the highway just outside the boundary of any "dry" county. Living animals may be brought back if they are not allowed to become too warm. In the summer an ice chest is necessary if they are to be carried any distance. Temperatures above 75°F will kill many aquatic cave species.

All cavers can help the Survey by reporting the sighting or capture of any white or unusual looking beast swimming about in cave waters. Terrestrial cave forms such as blind beetles have been described from other states. Any insects crawling about on dry land within a Florida cave may be of value. Such animals can be preserved in the same solutions (continued on page 12)

FSS SEARCH & RESCUE UNIT

Alberta Etters

At first, what was planned was a first aid course; Lee Fisher, a Red Cross instructor, was enlisted to teach the course. He said he would like to adapt it to the special conditions existing in caves, in addition to normal circumstances. Therefore, he was taken caving at Warren's Cave to show him what he was getting into. Anyone who goes all through Warren's Cave and comes out still liking caves is either a masochist or a confirmed caver. Fortunately, Lee became a caver. We promptly acquired an additional paid member in the FSS and a good first aid instructor.

The course was taught two nights a week for two hours each night. We went through the standard and the advanced Red Cross courses with additional practice in actual cave situations. As our finale, we found, gave first aid to, fastened into a stretcher and removed from the Smoking Lounge at the rear of the "old section" of Warren's to the surface a volunteer "victim." Anyone familiar with Warren's can appreciate the difficulty of lowering a person in a stretcher down the 45-foot rear drop and bringing him back up the equally high front side and on out to the surface. It was quite a project, taking about two hours, but we learned a lot, saw points for improvement, and got practice in the cave in which we are most likely to have a genuine rescue.

As a matter of fact, earlier in the morning (very early) we were called out there by the Alachua County Sheriff's Department to assist several inexperienced cavers who had panicked in awkward positions and were unable to get themselves out of their predicament. (Their parting comment, to the effect that caving was not for them -- they would turn to some easy and safe sport like skindiving -- left me apprehensive as to their future.)

We expect to have the first aid course each trimester if enough people want to take it or review it. Each month we will have practice sessions involving rope work, first aid, rescue, or some similar activity.

Some consideration will have to be given to defining the duties and responsibilities of the Safety Committee, which we have always had, and those of the newly organized Search and Rescue Unit. Since Lee is a first aid instructor, he is the leader of this new unit.

Anyone who is considered a reasonably good caver can be on the search team. The rescue team consists of those who have had advanced first aid training. A listing of all members' whereabouts at all hours of the day is being compiled together with a list of phone numbers to be used in contacting people. This way we can have everyone assembled in very short order. Every member of the unit is encouraged to keep his gear in one place in his home so that he can grab it up and run.

Three types of first aid kits are being outfitted. There are kits for the search teams which contain items needed to control serious bleeding. The kit for the rescue team is the most complete one and is put into several knapsacks that can be carried easily into caves. Then there are "trip kits" which contain odds and ends for general trips, not particularly rescue work.

We are fortunate in having the cooperation of the Sheriff's Department which informs us any time there is a need for our rescue unit and makes available to us the equipment in their emergency rescue truck.

There are numerous advantages to having first aid training. In addition to helping neophyte cavers who get themselves into trouble, you can help yourself and fellow cavers if someone is hurt on a trip and you can assist people involved in any everyday emergency or accident.

As we were bringing our pretended "victim" out of Warren's, there were several people going in. When asked, we explained what it was all about. Said one, "Gee, it's nice to know that if I get hurt in there, there is someone who can get me out safely." We feel the same way!

THE OBLIGATIVE CAVERNICOLES OF FLORIDA

A few copies of Special Paper Number One, published by the Florida Speleological Society in January, 1961, are still available. A general discussion of the possible factors influencing distribution of troglobites in Florida is followed by an annotated checklist of the forms thus far described. (Several crustaceans and beetles which may prove to be new species are currently under study.) Price of this Special Paper is $0.50 postpaid.

WHERE CONFUSION REIGNS

Richard Dean Warren

On Saturday, November 17, a cave survey trip was made to Citrus County, 60 miles SSW of Gainesville, for the purpose of separating fact from fiction as well as adding new information to our cave files. Although many trips have been made to the area in the past decade, it remains a "sore thumb" for the Florida Cave Survey. Prior to this outing only five caves were adequately located and described in Citrus County. Groups tended to visit these caves repeatedly; as they are interesting, and there were often several neophytes along, boredom was slow to develop. A few individuals knew vaguely of some other caves in the area. Location and description were often hazy and in some instances there were grossly conflicting recollections. During the summer of 1961 several cavers from Orlando visited the area and submitted Field Report Forms to the Survey Files Chairman. Some reports were ruled out as being descriptions of known caves. Others were puzzling.

FSSers forming the November 17th survey crew were Dave Edwards, Alberta Etters, Lou Hippenmeier, Bob Smith, Bruce Smith, Brian Wakelyn, and Dick Warren. Armed with USGS topographic maps and the bits and pieces of accumulated notions, three caves were described and their locations plotted. A fourth, Saber-tooth cave, was known from published references but had not been visited for many years. A thorough appraisal of the cave brought about the deletion of a cave name from the file as being an inadvertent synonym for Saber-tooth Cave.

All major goals of this particular trip were reached (quite unusual). It showed that serious survey work can be combined successfully with enjoyable spelunking; since different caves are visited, the old standbys are not being eroded away by repeated visits. Much still remains to be done in Citrus County. An overnight camping trip is planned for this spring. The campsite will be in an attractive pine forest. Y'all come.

We Need Your Help (continued from page 9)

used for aquatic amphipods and isopods. Who knows what may crawl out from under a pile of breakdown in Florida?

NOTE: Since many true cave species are quite rare, it is important that no more specimens than necessary be collected for study. As a general rule, it is best to limit the initial collection from a particular cave to two or three specimens. If more are needed, this decision is best made by a biologist.

INDEX TO VOLUME II