

NSS NEWS

August, 1977



NATIONAL SPELEOLOGICAL SOCIETY

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Address material for publication—and correspondence regarding such material—to the appropriate departmental editor. If in doubt, send it directly to the Editor.

DEADLINE for receiving material is the sixth day of the month preceding the month of issue.

Material for publication must be *typed, double-spaced*. All kinds of illustrations are encouraged, especially when accompanying articles. Color transparencies are always returned after black-and-white prints are made by the Editor. Other material is returned upon request and when accompanied by a self-addressed, stamped envelope. Material of widespread interest is preferred. Line work on maps and drawings should be ink, but hand lettering will suffice, as all lettering will be typeset. Cave locations should be at least as precise as state and county.

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Sept. 2-5 Old Timer's Reunion, Camp Alpine Shores, 9 miles east of Elkins, W.Va. on Route 33. Contact Paul Stevens, 750 S. Dickerson No. 209, Arlington, VA 22204.

Oct. 3-7 Cave Management Symposium, Lewis & Clark Caverns, Big Sky, Montana.

Oct. 19-21 Society of Mining Engineers of AIME Fall Meeting and Exhibit. St. Louis Convention Center/St. Louis, Missouri.

On The Cover

A high contrast rendition of "A Hard Chimney," by Ohio's Ken Smith, is the subject of our cover this month. This print won an Honorable Mention in the 1975 Photo Salon.

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&
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Something To Worry About ?

Radon Levels In Caves

By Steve Knutson

It has recently come to the attention of the caving community that caves present a potential health hazard due to the varying concentrations of radon they contain. This article will try to assess the extent of this hazard to cavers, both casual and hardcore.

The gas radon is found in bedrock-enclosed spaces including mines and caves. It is radioactive and decays rapidly through three solid "daughter" products. Because these daughters are solid they tend to attach to lung tissue when inhaled. The energy of their radioactive decay is then imparted to this tissue. Studies of the health history of miners has shown that sufficient exposure to such radiation causes a higher than normal incidence of lung cancer.

With respect to a cumulative exposure (sum total exposure over a long period of time) it has been established that more than 120 "working level months" causes an increase in lung cancer incidence. A working level month is equivalent to 173 hours of exposure at a "working level" of 1. This working level scale is based on radiation energy imparted but the actual definition is not important here. Let us make a few assumptions and see what exposures cavers can accumulate. Our caver categories will be simplified but any caver, in similar fashion, should be able to project his potential accumulation. First, let us assume a cave "working level" of 1. Studies so far indicate that most caves will have a level below this so our estimated danger should be greater than that likely to be encountered. Next, we will assume a heavy caving weekend to involve 20 hours underground. A casual caver may exper-

ience one such weekend or less per month; a very active caver will do two or more per month. In table form we can present our cumulative exposures:

Cumulative Working Level Months	Weekends Caving Per Month			
	1	2	3	4
per 1 year	1.4	2.8	4.2	5.5
per 2 years	2.8	5.5	8.3	11.1
per 4 years	5.5	11.1	16.6	22.2
per 10 years	14	28	42	55
per 20 years	28	55	83	111

Such a table is very reassuring. The active life of a caver will not usually be 20 years and it will take an extraordinary career for a caver to accumulate 120 working level months of radon exposure.

Other studies, however, indicate that the incidence of lung cancer is greater in mines with a working level greater than 0.3, whether 120 WLM is accumulated or not. This seems to mean that 12 months at a working level of 10 is more dangerous than 10 months at a working level of 1. This is important since caves have been monitored with working levels up to 18!

What is it that makes some caves higher in radon than others? This complex matter is not resolved but some guidelines can be given. The radon concentration in a cave should be proportional to the following:

1) The amount of Radium-226 in the bedrock of the cave surface, or with which water in the cave has been associated.

2) The porosity and permeability of the rock. Radon is produced throughout bedrock but only that which can escape into the cave void can contribute to the health hazard.

3) Bedrock surface area in the cave. Obviously the bigger the cave the more radon but a cave with a lot of breakdown, gravel, or even perhaps cave silt should be higher in radon than a cave without such.

4) The amount of flowing water. Water aids the entry of radon into a void. Also, water which flows through entirely filled conduits will become highly charged with radon. When such water enters a cave void it will rapidly equilibrate with the cave air, potentially adding a large amount of radon.

5) A lack of ventilation. The less surface-subsurface air exchange in a cave the greater the potential radon concentration. A cave which is closed by high water or other reason, will be higher right after it has opened up than when it has exchanged air with the surface.

6) A drop in barometric pressure. When the atmospheric pressure drops, the rate of diffusion of the radon from the bedrock will increase. Radon concentrations should be greater under conditions of low atmospheric pressure.

One further important consideration is that cigarette smoking has been shown to be a promoter in the relationship between radon daughter exposure and the incidence of lung cancer. It appears that a smoking caver increases the effect of his radon exposure several times over—perhaps as much as 10 times.

There are several conclusions which can be drawn from the current state of radon health considerations.

1) Radon presents little hazard to cavers of ordinary activity and career. Accumulating 120 working level months would be difficult for even the most hardcore caver, assuming a cave working level of one or less.

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2) Some caves and caving areas will represent a hazard due to high working levels (several times greater than one). Prolonged projects in such caves may be dangerous. Two weekends caving per month for 4 years in a cave with a working level of 10 would provide 111 working level months—essentially the health hazard of 120 WLM. Such caves exist. They appear to combine the elements previously listed which promote radon concentration: high surface area, deposits of silt, flowing water, water entering from below-water-table conduits, and generally poor ventilation.

Radium-226 enriched bedrock may play a role but this has not been investigated. In general, the high working level caves seem to be those beneath sinkhole plains.

3) Very active cavers who smoke, and smoking cavers who explore in caves of high radon levels, are well advised to beware. There is not as yet such an operation as a lung transplant.

These conclusions are based on current standards and these in turn are based on available statistics. As more data accumulates the standards may change.

References

- 1) *Radiation Monitoring* USDI, Radiation Branch, Denver Technical Support Center, Denver, Colorado, July 1976.
- 2) *Radiation Study Done In NPS Caves*, Keith Yarborough, et.al., NSS News 34:8, p 146-148, Aug. 1976.
- 3) *The Approach to Radon Problems in Non-Uranium Mines in Sweden*, Jan Olof Snihs, National Institute of Radiation Protection, Stockholm, Sweden.

Educational Opportunities Available To Cavers

The following list is an update of educational opportunities in speleology. Since the list makes no attempt to be all-inclusive, feel free to notify me if you know of additions. Also, the frequencies of the course offerings may vary, so make sure you contact the proper people well in advance.

While going through my mail in updating the list, I ran across a few unanswered letters, so my apologies to those concerned, and I hope this list may be of aid to cavers concerned with educational opportunities.

COURSEWORK AVAILABLE

Alaska Methodist University—"May" semester course*, interdisciplinary. Anchorage, Alaska 99504.

Carleton University (in conjunction with Queens and York Universities) field course with emphasis in biospeleology. Department of Biology, Ottawa, Canada.

Lycoming College—"May" semester course*, interdisciplinary. Williamsport, Pennsylvania 17701.

Meramec Community College—evening course in speleology. Meramec, Missouri.

Old Dominion University—graduate level in cave biology. Contact Dr. John Holsinger, Department of Biology, Old Dominion Univ., Norfolk, Virginia.

McDonell Technical Institute—Interdisciplinary course taught on request. Contact Dr. C.O. Haller, Jr., DDS., Box 100, Old Fort, N.C. 28762.

National Outdoor Leadership School—summer Wilderness and Speleology course. NOLS, Box AA, Lander, Wyoming 82520.

Southeast Missouri State University—Interdisciplinary. Contact Dr. Ernest L. Kern, Department of Earth Sciences, SMSU, Cape Girardeau, Mo. 63701.

Southwest Missouri State University. Contact Dr. Kenneth Thompson, Department of Geology, SMSU, Springfield, Missouri.

State University of New York at Buffalo—Department of Geography offers two graduate-level courses in karst processes and speleogenesis. Contact Dr. Thomas E. Wolfe, Department of Geography, State University of New York at Buffalo, 424 Ridge Lea Rd., Buffalo, NY 14226.

State University College—karst geomorphology course. Contact Dr. Stephen J. Egemeir, Department of

Geological Sciences, State University College, New Paltz, NY 12651.

State University College—basic earth science course offered each semester. Contact Dr. A.N. Palmer, Department of Earth Sciences, State University College, Oneonta, NY 13820.

Western Washington State College—course emphasizing cave biology. Department of Biology, Bellingham, Washington 98225.

* A "May" semester course is an intensive one-month course given during that month.

Institutions with strong emphasis in speleology which may or may not offer courses in the field:

Central Missouri State College, Department of Biology, Warrensburg, Mo. 64093.

McMaster University, Geography Department, Hamilton, Ontario, Canada.

Ozark Underground Laboratories, 1025 South Roanoke, Springfield, Mo. 65807. (This is not an institution of higher learning but offers research facilities, lectures on caving, etc.) Contact Tom Aley.

University of Alberta, Department of Geography, Edmonton, Alberta, Canada, Contact Dr. M.C. Brown.

Institute of Speleology, Thomas Hunt Morgan School of Biological Sciences, University of Kentucky, Lexington, Kentucky 40506.

Materials Research Laboratory (Department of Geography), The Pennsylvania State University, University Park, Pennsylvania 16802.

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In the nine-month period of July 1976 through March 1977, a total of \$1,750.55 was donated to the NSS. The money was designated as follows:

Save the Caves	\$972.55
NSS Support Fund	273.00
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Lew Bicking Fund	25.00
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BOG	21.00

A large number of the donations were given in the memory of Lou Klein, who served the NSS in many capacities. Lou passed away last spring, and many of his friends remembered him by supporting NSS funds.

The new 'NSS Support' fund is appearing in our breakdown of contributions. The fund was initiated by a generous anonymous contributor who felt a support fund is important to the future of the NSS. Donations to this fund are added to the principle amount. The revenue produced by the principle is used as an operating fund where needed. Your donation today will be effective for the years to come. Please send your contributions to the NSS, Cave Ave., Huntsville, AL 35810.

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Societies and Grottos: Athens Speleological Society, Baltimore Grotto, Dogwood City Grotto, Met Grotto, Southern California Grotto.

150 Persons Attend Indiana Cave Capers

The 24th annual Indiana Cave Capers was held June 17, 18, and 19 at Lickford Valley Campground south of Corydon, Ind. A registration of 150 represented people throughout the area. Caves visited included Langdon's, Wallier, Devils Graveyard, and the Parker-Borden Pits. The banquet featured Richard Schreiber and his illustrated talk on St. Augustine, Mexico. After the banquet a special tour of Squire Boone Caverns was given, and additional Mexico cave slides were shown by Bill Steele.

AVAILABLE from WVaSS (West Virginia Speleological Survey) October, 1976

- Bulletin 1—Caves of Randolph County by Doug Medville, 1971. 218 pages, over 200 \$5.00 caves, 43 maps, 5 photos, three caves over 3 miles, topos with cave locations. (reprint)
- Bulletin 2—Development of Solution Features Cloverlick Valley, Pocahontas County by \$3.50 Eberhard Werner, 1972. 62 pages, 22 figures and plates. A discussion of the geology and geomorphology of the karst features in Cloverlick Valley. (reprint)
- Bulletin 3—Index of the Literature Pertaining to West Virginia Caves and Karst by \$3.50 Eberhard Werner, 1974. 155 pages. A very useful aid in locating information about caves and karst in West Virginia.
- Bulletin 4—Caves of Monroe County, West Virginia by John C. Hempel, 1975. 171 pages, \$6.50 210 caves, 70 maps (13 fold-out), 7 photos.
- Bulletin 5—Caves of North Central West Virginia by Ray and Mary Ellen Garton, 1976. \$5.00 116 pages, 111 caves, 36 maps (4 fold-out), 9 photos.
- Bulletin 6—Caves and Karst Hydrology in Northern Pocahontas County by Doug and \$6.00 Hazel Medville, 1976. 174 pages, 300+ caves, 60 maps (2 fold-out), 3 photos, topos with cave locations.
- Bulletin 7—The Invertebrate Cave Fauna of West Virginia by John R. Holsinger, Roger \$3.50 A. Baroody, David C. Culver, 1976. 86 pages, 7 figures and plates. An important work in this field.

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Caver Behavior - An Explanation

By Warren Hoemann

Red Watson noted recently in the *NSS News* (March, 1977, Vol. 35, No. 3, page 63) that cavers do not refer to themselves as "spelunkers." The avoidance of that term, except in the pejorative, falls in line with other idiosyncrasies of cavers.

Perhaps these idiosyncrasies are symptomatic of an underlying condition—indeed, cavers are themselves symptomatic of underlying conditions. Truly, there seems innate in cavers an embryonic urge (some would call it a congenital defect) which, upon exposure to limestone or concentrations of calcite greater than two parts per million, develops almost cancerously into an overwhelming drive, manifesting itself in such behavior as squirming through slimy holes, traipsing along precipitous ledges, and plummeting into black voids.

Scientists of every discipline have undertaken to explain these tendencies. X-rays of cavers' heads have shown nothing. Psychiatrists discovered cavers have active subconsciouses, but could go no deeper. The theory that spelunking was compensation for underdeveloped sinus cavities was quickly abandoned. Some credence was given by cavers themselves to the "subliminal repression" school of behavioral psychology until it was learned "subliminal" does not mean "below limestone."

My own research has yielded—or yielded to—an etymological explanation of the etiological exasperation...you know, the flustered "Why am I here?" muttered *sotto voce* after the eighth hour in mud-soaked crawlways...which plagues our kind, I refer specifically to the work of Dr. Alfred Klungher in establishing the study of motomorphology, the structural and causal relationship between words and actions. Dr. Klungher, professor of Onomastics for the Columbia School of Correspondence, best-selling author of "Sexual Fantasies and Tomato Can Labels," and holder of a poetic license from the F.C.C., posits that words are first formed in dynamic description of action, and, more importantly, forever after carry the impact of the prototypi-

cal action and cause that action to be repeated in the users of the word.


Pioneering efforts in this area were made by Hans Ahlf, a disciple of Dr. Klungher, who noted that ducks "quack," obviously a word of onomatopoeic origin, satisfying the first criterion of Dr. Klungher's theory. Hans next took a random sampling of ducks and determined that those which "quacked" also exhibited all the characteristics of ducks! Proof positive, or, as Hans put it in a slight malapropism, "Ergo sum kumquat." Dr. Klungher beamed, "When people say 'quack' they'll think of me!" And he was right.

Motomorphologists may be a bit too ambitious in declaring that a carpenter's dog barks "roof, roof," but I think they hit the nail on the head when it comes to cavers. We've all learned by now that our word "spelunk" comes from the Greek "spelunx," meaning "cave." But what lies behind "spelunx"? asked the motomorphologists. Examination of ancient manuscripts and studies in the field, including a three-day Melina Mecouri film festival in Athens, revealed that, in accord with theory, "spelunx" is onomatopoeic, just as much as "splash" or "bang."

Scrolls dating back to at least May 12, 494 B.C. were discovered amid pottery shards and roach clips in the paneled rec room of a Greek shepherd. These scrolls provided the answer. Admittedly, some scholars doubt the authenticity of the writings, probably because of the holes for ring binders, the ouzo stains, and the disturbing reference to "Mr. Coffee," but the contents are so significant, motomorphologically, that nettlesome questions of authorship must be set aside.

We now know that the Greek word "spelunx" was first used in 516 B.C. on a Friday (possibly on a three-day weekend) by a shepherd named Melvin from the obscure, but little known village of Chutzpah. Melvin and his partner (alas, unnamed) were tending their flocks on the Astraka Plateau when the partner wandered onto a gaping hole. Calling excitedly to Melvin, the partner posed on a ledge above the pit to have his picture taken. Belatedly, both realized the camera had not yet been invented.

Turning to climb down from his perch, the partner slipped and plunged headlong into the void. By reflex, Melvin counted the seconds and after an estimated 1,240' freefall, he heard the twin sounds of the partner and his shepherd's staff hitting bottom. As Melvin described it in a low, descending whistle, "s-s-s-s-s-s-s-splunx."

Thus the origin of the word "spelunx." And the explanation of caver behavior, especially in the avoidance of the term "spelunker," follows from Dr. Klungher's theory. If words cause repetition of the prototypical action, then cavers' unavoidable association with words of the "spelunx" family causes the extreme behavioral tendencies noted above. Only the subconscious avoidance of the word "spelunker," like an unarticulated taboo, has saved cavers from the fate of Melvin's partner. 

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Grassy Cove -Part II

By Charles Clark

(Editor's Note: Please see Part I, July NEWS, for background)

Recent activities have opened up a large, new and rather unique extension of Grassy Cove Saltpetre Cave. After the close of surveying in June 1976, efforts at digging for connections to the Gouffre and Banshee Hole continued through the summer. Both ended futilely. At the Southeastern Regional Business Meeting, February 5, 1977, Larry Mathews brought to the attention of the Smoky Mountain Grotto a very major passage omitted from the map, leaving the Waterfall Room. Larry claimed the passage was the largest passage in the cave.

On April 9, Charles Clark, Martha McGlasson, and Randy Kissling entered Grassy Cove to look into this Nashville extension. Larry's description took

them directly through an excavated keyhole and into the big passage below. It was indeed the largest passage in the cave, averaging 30 feet high by 60 feet wide. In a thousand feet the passage ended in a terminal breakdown. On this trip only one side passage was pushed to any great extent. The passage led into the Waterfall Room pit. No other side leads seemed very promising.

On April 23, the Smoky Mountain Grotto returned to the Nashville Extension. The group split into two survey teams and started mapping. Martha, Jeff Sims, Chris Kerr, and John Yust mapped the initial passage into the extension through a jungle of breakdown. Meanwhile, Randy, Bob Pratt, Jeri Kizer, and Gerald Moni took off lickety-split, mapping the "borehole." Surprisingly, Jeff's team mapped upwards of 600 ft. through all kinds of side passage (one of which was found to loop back into the Waterfall Room). It was no surprise, however, when Randy's team charted a thousand feet in the Nashville Extension. An "insignificant" crack provided the surprise that this crew turned up.

A small "passage" which was merely a crack extending down between breakdown in the main passage's floor and the wall of the passage was surveyed for 30 feet. As survey gear was being packed up, Jeri noticed a continuation

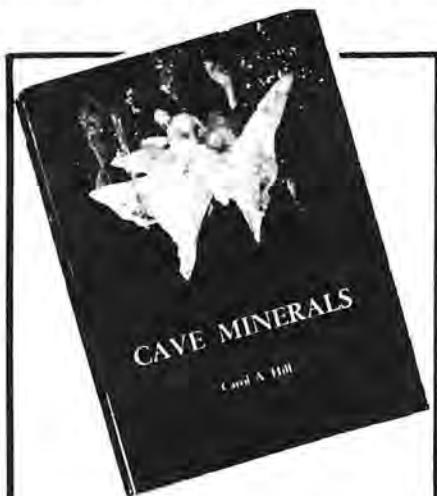
of the crack. Bob was the only one who didn't know that it would simply fizzle out into the floor of the passage, so he investigated. Many minutes later cries of "help" filtered up from below. Randy scrambled into the crack to assist the hapless Bob. Fortunately, all that was wrong was the usual malfunction of Bob's plastic justrite. Bob had more important news....

Below was a major stream canyon, way down, below 100 feet of chimneying. The canyon measured 80 feet high and 20 feet wide. The survey gear was unpacked again.

On this trip, 500 feet of the stream canyon was surveyed downstream (going northwest into the heart of the mountain) through breathtaking displays of helectites and draperies. This was some find indeed! A low, wet crawl was reached and a decision was made to return later with wet suits. A total of 2,200 feet had been mapped on this trip. The surveying had reestablished the cave's depth at 330 feet.

On May 8, a second two-team assault was made into the new, Grassy Cove extension. Jeff, Chris, and Charles mapped upstream in the stream canyon, while Randy, Bob, and Gerald continued downstream in their super passage. Everyone was clad in wet suits and was prepared for a good, hard push.

After cleaning up a couple side leads, Jeff's crew began mapping the upstream. It turned into real crap almost immediately. For 500 feet the passage turned knees into hamburger before it opened up into a series of high, parallel domepits. The falls in the domes were the source of the stream. If the passage continued, it was 60 feet above the



CAVE MINERALS

By Carol Hill

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floor of one of these domes. The trio about-faced and started after the other trio who were no doubt running through the mountain.

The stream crawl that had stopped Randy, Bob, and Gerald two weeks before proved embarrassingly easy...20 feet of hands and knees crawling. On the other side it was running passage again. Helectities were becoming helectite bushes—pure white! For 700 feet the passage continued and then a flowstone! Blocking the entire canyon except for a very, very low, wet crawl.

Once again Bob ventured in. It was a bit of a trick to keep his carbide light lit with only three inches of air space at times. But in a hundred feet it opened back up into the high and going canyon.

About this time, Jeff's survey team arrived at the beginning of the crawl. While Randy and Gerald fidgeted with lights, Charles responded to Bob's impatient cries and took the survey through to the other side. At last everyone was through and the rape of the canyon proceeded.

Helectite bushes became helectite forrests—dazzling white! Even Jeff took

a few minutes away from surveying to look at the formations. And the passage continued....

After 1,500 more feet a breakdown finally halted the survey. For an hour the six attacked the breakdown, searching for a way through. Eventually, Chris shifted some rocks and found a way on up and over the top of the breakdown. Twenty feet down the other side of this 70 ft. high mountain of rock and stone another plug was reached. The toil was given up for the day.

Grassy Cove now stands at 7.78 miles surveyed and is 350 feet deep. The stream canyon when plotted was found to pass right below the top of Brady Mountain and is an eighth of a mile beyond, underneath its western slopes. The fabled Mill Cave trunk passage cannot lie very far away! **AG**

Bat Conference Meets Next Year

The Fifth International Bat Research Conference, to be held in conjunction with the Ninth North American Bat Research Conference, will take place on the campus of the University of New Mexico at Albuquerque, New Mexico. The meeting dates will be Sunday, August 6, through Friday, August 11, 1978.

The Program Committee for North American participants is chaired by: Dr. Roy Horst; Biology Department; The State University College at Potsdam; Potsdam, New York, U.S.A.

That for non-North American participants is chaired by: Dr. Michael Bogan; National Fish and Wildlife Laboratory; National Museum of Natural History; Washington, D.C., 20560, U.S.A.

Titles of papers to be included in the Conference should be sent to the appropriate program chairman. Requests and inquiries concerning special symposia should be addressed to Dr. Bogan.

Dr. Don Wilson, National Fish and Wildlife Laboratory, Washington, is in charge of International Arrangements and will assist in any way necessary those participants from countries outside North America.

At a future date further details concerning registration, submission of titles, and the like, will be published in the Journal of Mammalogy.

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Vol. 9, No. 1 is now available. Among the articles are:

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- Sumidero Chicja, Chiapas—a through-trip at last!
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- Castleguard Cave re-visited
- Cave rescue—details of equipment for proposed store in Marlinton, W.Va.

plus articles on Bermuda and a new cave in the Rockies. Single issues \$1.50 each (sorry, it had to go up sometime!) or \$6.00 for a 4-issue subscription (plus 25¢ fee for U.S. cheques). The magazine is published twice yearly. Vol. 5, No. 2 and all subsequent back issues are still available. *Order from:*

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- *the Cumberland Caverns ghost
- *Inner Space Cavern, Texas
- *paleolithic cave sites in France
- *Endless Cave, New Mexico
- *drawings by Connie Pierce
- *Onesquethaw Cave, New York
- *pollution at Flint Ridge
- *McLean's Cave, California
- *the Crevice in Golondrina
- *history of mining lamps
- *cartoons by Timmons and Loving
- *J-4 Cave, Pennsylvania
- *sandstone caves of Wisconsin
- *batteries for electric lights
- *Stansberry-January Cave, Oklahoma
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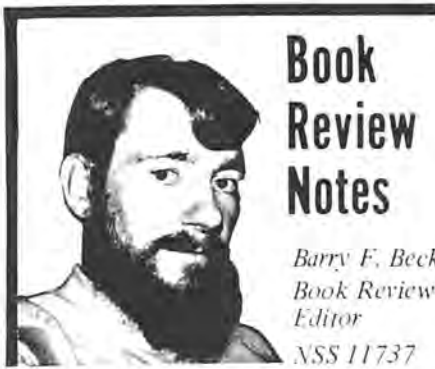
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Book Review Notes

Barry F. Beck
Book Review Editor
NSS 11737

BOOK REVIEWS should normally be shorter than 300 words and should be sent to the Review Editor.

I recently received a letter from Sergio F. Beck (a long-lost cousin?) in Brazil. He is a cave movie maker and needs to upgrade his movie lighting. He would like some ideas and advice from American cavers. If you are into cave movies, please write to him at: Centro Excursionista Universitario, Avenida Consolacao 2570 ap. 42 01416, S. Paulo, BRAZIL.

A NEW INTRODUCTORY TEXT AND SOME NEW PROCEEDINGS

A couple of months ago I reviewed one of the Pennsylvania Geological Survey's new publications on caves in

that state. I remember distinctly commenting that it was of strictly local interest. Well, here is the other end of the spectrum. "Geology and Biology of Pennsylvania Caves," edited by William B. White (General Geology Report 66), contains an expanded and updated version of White's "Speleogenesis" (*Netherworld News*, 1959), as the geology portion. Although it is directed at speleogenesis in Pennsylvania, Dr. White's summary is clear, concise, comprehensive, well written, and broadly applicable. It integrates landforms, cave forms, solution chemistry, and hydrology. It is written so that any person with a modest technical background will understand much of it; one with an introductory knowledge of chemistry and geology should benefit from most of it. It would be an ideal text for a short course in Speleology. White's portion of the book occupies the majority of the text, but the portion on fauna and bone caves is also good, only more limited in application. All in all, the comprehensive introductory coverage and the \$2.00 price (from The State Bookstore, P.O. Box 1365, Harrisburg, PA, 17125) make it a book that any caver with the slightest bit of interest in cave science should buy and read.

In contrast, the Proceedings of the joint U.S.-Yugoslavian Symposium on "Karst Hydrology and Water Resources," held in Dubrovnik, Yugoslavia, in 1975, were recently released, in English. The two volume set was

edited by Vujica Yevjevich and published by Water Resources Publications, Box 303, Fort Collins, Colorado, 80522, and is available for \$25.00. Overall, the papers may be categorized as practical. There is much emphasis on determining permeability and porosity, on water supplies, and on management. American representation was relatively small and almost none of the N.S.S. researchers attended; of 79 official delegates, only 9 were from the U.S. and only Jerry Vineyard, Harry LeGrand, John Thraikill, and Richard Parizek were familiar to me, personally. This set has absolutely no interest for the sport-type caver, even if he has some knowledge of speleological processes. However, for the practicing researcher who may become involved in the pragmatic aspects of karst hydrogeology, this should be relevant.

CONTROVERSY IN CAVE DIVING

A little controversy makes things interesting (as I have noted from elsewhere in the *News*), and this month we have a bit more than a "little" controversy. Dave Fisk's review of "The Cave Divers," by Robert Burgess, was so pointedly critical that I decided to give author Burgess a chance to reply. Dave Fisk is an expert on cave diving, being the current president of the National Association for Cave Diving, but because many of the argumentative points center around just this organization, I felt it only fair to hear both sides. You may evaluate the comments for yourself. You may also note how close they come to reflecting some of our own secretive actions.

THE CAVE DIVERS

Robert F. Burgess

Dodd, Mead, New York 1976. 239 pp., photos. \$9.95 hardcover at retail commercial outlets.

The Cave Divers by Robert Burgess is filled with vivid descriptions of early cave diving experiences around the world. While the discussion of early cave diving in England and Europe is much more flowery than previous accounts, it is pretty accurate and representative of early cave diving efforts. Burgess goes into quite a bit of detail (although again it has been somewhat exaggerated) on various archaeological excavations conducted by cave divers over the years in Central America and Florida. The first few chapters of the book are enjoyable reading and provide a pretty fair and accurate description of the history of cave diving.

Unfortunately, after beginning the book with a good history of the sport, Burgess elects to editorialize in his closing chapters. With the exception of the last chapter ("Introduction to Cave Diving") the second half of *The Cave Divers* is undoubtedly the most unrepresentative account of modern day cave diving I have ever read. While I do not doubt for a moment that the overly exagger-

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ated accounts of divers lost in underwater caves are based on some semblance of fact, the second-hand or speculative accounts offered by Burgess are most certainly out of order and belong in a work of fiction, not a book based on fact. This kind of writing, although common, is a very gross misrepresentation of modern cave diving and all serious cave divers. Burgess seems to have a vendetta against the National Association for Cave Diving (NACD) and often criticizes or condemns the organization for not circulating needed information on safe cave diving practices. He is also upset because NACD (in his opinion) does not identify dangerous caves, information which is supposedly secreted in NACD files. Surely, anyone active in the sport, or anyone willing to do a little research, would know of the annual safe cave diving seminars sponsored by NACD. Further, proceedings of each seminar are available, along with other publications, from the NACD headquarters. In addition NACD has posted warning signs (one is photographed on page 145 of the book) at most of the dangerous springs and caves in Florida, the state which records the most cave diving fatalities annually. Finally, NACD has the only active training program for cave diving instruction in the U.S. A little research, or a simple question or two directed to NACD should have proceeded the criticism offered by Burgess.

In his introduction, Burgess sets as his goal that *The Cave Divers* "seek out the truth and dispel some of the ignorance" (about cave diving). The book has not only failed to do this, but has followed a winding path in the opposite direction.

David W. Fisk
NSS 17149

Author's Reply

Thank you for the opportunity to answer David Fisk's "review" of *The Cave Divers*. It does such total injustice to the book that I wonder if Mr. Fisk has really read the book or whether as president of the National Association of Cave Divers, he is simply stating what his present position requires him to state, in which case I forgive him. I was pleased to see that at least the first half of the book, in Mr. Fisk's estimation, is "enjoyable reading." Apparently then, the bone of contention lies in the last half where a relatively small portion deals with what Mr. Fisk calls "the overly exaggerated accounts of divers lost in underwater caves." Mr. Fisk will be relieved to know that these "exaggerated accounts" were furnished by "friendly NACD officers who made the body recoveries and stated the supposed reasons for the loss of lives, and I will be pleased to name names for him. My primary reason for writing the book was to give untrained cave divers some awareness of what they were doing.* Too many divers were dying in caves and too little information was being released by NACD as to why this was happening. Non-NACD divers should have been told years ago that if they carried a ski rope into a cave as a safety-line, it could—and often did—cause their death. Non-NACD divers should have been told years ago why untrained cave-divers were dying beyond the bottleneck at Jenny Spring where as of 1975, before the passage was griddled shut, eighteen divers died; at least seven of them, in two separate instances, at the same bottleneck, because they were untrained, unequipped, and most importantly, uninformed of the danger existing at this particular spot. To me there is no excuse for an organization to maintain files of information of this kind for the exclusive use of its members while making it unavailable to the general diving community, many of whom will be needing the information perhaps even more than the trained diver.

Mr. Fisk's statement—"A little research, or a simple question or two directed to NACD should have proceeded the criticisms offered by Burgess"—is as knowledgeable about this subject as the rest of the "review." Apparently Mr. Fisk is so new to NACD that he is unaware of the multiple page letters I wrote first to past-president Tom Mount, then David Desautels (plus a phone conversation), and finally an open letter to NACD, all pleading for information regarding not only the major reasons why divers were dying in caves but for simple general information on their training program, if nothing more than their list of safety rules for cave diving. But on all three counts, NACD's response was a total zero. So much for going to the source. Later I learned

that NACD is made up of two opposing factions. So, to the second faction I give a salute of the snorkel in appreciation for the assistance they gave me in researching *The Cave Divers*. Those who have already read it know the value of the book. For those who have not, I can only ask that you take a look between its covers and judge for yourselves.

Robert F. Burgess

*Editor's Note: Mr. Burgess is a professional author who has written many adventure books. Whatever altruistic secondary motives he may have had, I suspect his primary motive was to sell books and make a living.

Cave Management Symposium Seeks 'How To,' Research Papers

The Third National Cave Management Symposium will be held at Big Sky, Montana from October 3 to October 7, 1977. The organizing committee felt that the '77 Symposium should emphasize some of the basic tools and methodology necessary for the implementation of many of the management ideas presented at past conferences. Papers are being solicited which fit the "how to" perspective in the tentative outline and the accompanying comments. In general, papers will be limited to a 15-20 minute presentation period, followed by a short question and answer session. Further discussion may be carried on during breaks and the evening hours.

Three copies of an abstract of the paper, not to exceed 300 words, should be sent to: Stephanie Gibert, Manager; Lewis & Clark Caverns; P.O. Box 1024; Three Forks, MT 59752; Phone: Caverns—406-287-3541, Home—285-3694.

Deadline for abstracts is August 15, 1977. The steering committee will review the abstracts and will mail out notification of acceptance or rejection of the paper by August 31st.

Two copies of the paper should be received by September 26, 1977, one week prior to the Symposium.

The Proceedings of the Third National Cave Management Symposium will be published as soon after the end of the session as possible. Black and white photographs and/or drawings illustrating the paper would be greatly appreciated and should be submitted along with the paper.

1977

CAVE MANAGEMENT SYMPOSIUM Tentative Outline

- I. Inventory
 - A. Cave Rescue

1. Broad Spectrum Inventory
2. Panel of Specialists
- B. User Inventory
 1. Commercial Caves
 2. Wild Caves
 - a. How to survey or gather information (new methods)
 - b. How to use the information in management planning

II. General Cave Management Considerations

- A. Specific Management Plans
 1. Big Horn-Horseshief (Montana-Wyoming)
 2. Buffalo River (Missouri-Arkansas)
- B. Resource Conflicts and Management Planning
 1. Overview
 2. Urban Pressures
 3. Mining
- C. People Conflicts
 1. General
 - a. Liability
 - b. Access Design
 - c. Cave Rescue
 - d. Cave Restoration
 2. Commercial Caves
 - a. Spelunking Tours
 - b. Problem Tourists
 - c. Interpretation/Guide Training
 - d. Lighting Problems

III. Special Cave Management Considerations

- A. Lava Tube Caves
- B. Ice Caves/Fragile Caves
- C. Glacier Caves
- D. Cave Management in Wilderness Areas
- E. Canadian Cave Management

IV. Current Research and Methodology

- A. Photomonitoring
- B. Radon
- C. Long-term Cave Research

NOTES and NEWS

NEWS Schedule Changes

The September issue of the *NSS NEWS* will be about two-to-three weeks late because of vacation scheduling, and the final date for receipt of material to the editor has been extended until August 25th. However, the October issue will be back on schedule, and material for that issue must be received in Las Cruces by September 10th.

'September Fest' Slated

Alabama's DeSoto Caverns is staging a "September Fest" Arts and Crafts Fair the weekend of September 24th and 25th. Live entertainment, music, square dance exhibitions, children's theater and 90 exhibits of crafts are scheduled. For more information, contact DeSoto Caverns, Route 1, Box 50-A, Childersburg, AL 35044.

Membership List Update

The Membership List will be printed as part 2 of the December *NSS NEWS*. Any additions or corrections to your listing must be made to the *NSS* Office in Huntsville, Alabama, prior to November 1st. Any corrections made after that date will not appear in the 1977 listing. **DO NOT** send corrections or additions to the Editor!!!

Another Underground Wedding

Joel M. Sneed (*NSS* 10137) of the Dogwood City Grotto, and Carole A. Bringardner (*NSS* 17190) of the Middle Mississippi Valley Grotto, announce their underground wedding to be performed within Sequoyah Caverns, Valley Head, Alabama, on Saturday, August 20, at 9 p.m. All cavers are welcome, and camping facilities are located nearby.

N.C.R.C. Expands

The National Cave Rescue Commission has recently expanded to include both Eastern and Western Canada. This cooperation with members of the Canadian Speleological Society now provides both information and input for both countries.

Prior to this time, Mr. Doug Carter of Toronto, Ontario was the representative to the Commission. Now, Doug will be an information point for the area of Eastern Canada. In the west, Mr. Paul

Griffiths, who is newly appointed to the Commission, will be assisting the Commission from the Rockies West. Both U.S. and Canadian cavers and others having questions regarding rescue should direct their inquiries to these men.

EASTERN CANADA: Doug Carter, 13 Delhi Avenue, Toronto, Ontario, Canada MSM 3B8.

WESTERN CANADA: Paul Griffiths, PO Box 733, Gold River, British Columbia, Canada, VPO 1G0.

Visit To Yugoslav Cave

The National Cave Rescue Commission has made arrangements with the Jamarska Zveza Slovenje to visit the Krizna Jama near Postjua, Yugoslavia. The date for the visit is slated for September 28, 1977, and it will be an

extensive photo trip into this internationally-famous river cave, now controlled by the Yugoslav government.

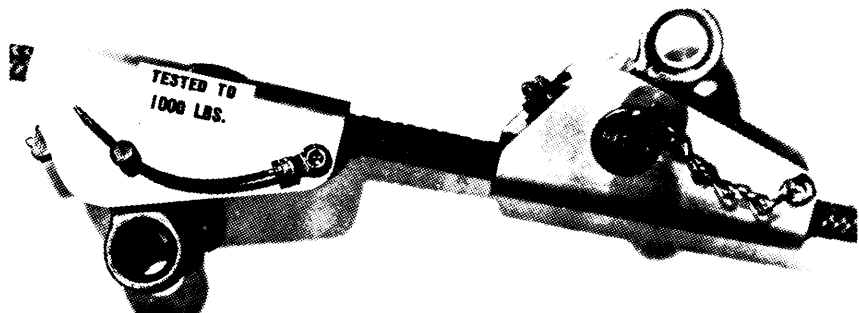
Contact Dan Smith, NCRS Coordinator, 834 Louise Drive, Petaluma, CA 94952, before August 20th if you are interested in attending.

Cave Plan Needs Your Help

Conservationists closely observing the situation at Mammoth Cave National Park, Kentucky, have concluded that after recent talks with the National Park Service (NPS) the time is now ripe for approval of the Master Plan for the Park. The NPS has taken action to remedy several problems, including obtaining water from outside the park and closing down some Job Corps buildings. These actions, coupled with the recent release of financial information

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about the concessionaire obtained by the National Parks and Conservation Association through a "Freedom of Information" suit (see July, 1977 *News*) suggest an improved attitude towards the Plan by both the NPS and the public. Support for approval of the Master Plan from NSS members can be a vital factor in encouraging the NPS to approve the Plan. Please write your own Senator or Representative encouraging approval of the Mammoth Cave National Park Master Plan. Send copies of your letter to the Cave Research Foundation, 445 W. South College St., Yellow Springs, OH 45387, and to the Superintendent, Mammoth Cave National Park, P.O. Box 68, Mammoth Cave, KY 42259.

Rob Stitt

Missing Columns

Both the Safety-Techniques and Region News and Notes columns are taking a well-deserved vacation this month. They will return in the September issue.

Cavers Cause Problems

Two incidents have occurred during the past two months which have hurt the NSS Commercial Cave Liaison Committee's efforts to create a better atmosphere for NSS cavers and the commercial caves.

First, a group of Tennessee cavers took the "wild" tour of Mammoth Cave and, according to Rangers, they 'bitched' and complained about everything from the equipment which was supplied to how easy the tour was.

The second incident occurred in an Indiana commercial cave during a special 'midnight' tour arranged for participants at a weekend gathering. All during the tour cavers 'tapped' on speleothems to hear the sound effects—which has been frowned upon by the

Society for years. The owners were quite upset.

Great strides have been made by the Society to improve our relations with commercial caves, but it takes only a few incidents such as those reported above to wipe out years of concerted efforts. Let's clean up our own Society and try to have respect for those who have gone to the work and efforts to prepare a cave for the public.

Bob Liebman

Sump Rescue Litter Designed

The National Cave Rescue Commission announces that Tom Cook, NCRC National Diving Officer, is completing a year-long project of developing a "Sump Rescue litter," designed to evacuate people, regardless of condition, through flooded passages or sumps. He is in the final stages of testing the litter, and a program was presented at the Alpena Convention.

When the litter has been fully tested, a slide show, with detailed instructions on building and utilizing this unique litter, will be available to the membership and others. Anyone interested in helping with this project is invited to contact the National Cave Rescue Commission, 834 Louise Drive, Petaluma, CA 94952.

Letters

Editor:

I would like to congratulate Gordon Mothes and his caving friends upon their establishment of the *second* non-commercial cave preserve in this country to be owned solely by cavers and open to the general caving public. Caver ownership is probably the only way the more significant caves on private land can be kept open to cavers.

The Butler Cave Conservation Society, Inc. was incorporated in 1970 for this very same purpose. Initially we leased the land on which the entrance to 17-mile-long Butler Cave is located; in 1975 we purchased the farm. Through the organized efforts of the BCCS, Inc., exploration, mapping, and some scientific studies have been facilitated.

In the future more cavers will be forced to purchase their favorite caves if they expect to see caving survive into the 21st century.

Nevin W. Davis
State College, PA 16801

Editor:

Richard C. Finch (*NSS News*, Vol. 35, No. 6, p. 131) is quite right in his comments about the term 'spelunker.' It is a term that I did hear used in the fifties. I think, however, that a word count in the *NSS News* would indicate that from the beginning the term 'caver' and the verb 'to cave' have been preferred. I have never heard an American caver seriously use 'pot-holer' or 'to pot-hole.'

What was not indicated in the *NSS News* is

that my note "To Cave" was reprinted from *Verbatim: The Language Quarterly* (Vol. 3, No. 2, p. 15). This journal is very widely read by word people, and my purpose in placing the note there is to get 'caver,' 'to cave,' and so on in the next unabridged dictionary. Had I taken more thought about it, I might have left out the local joke about the negative connotations of calling someone a spelunker.

However, I contend that those connotations are still there, although perhaps only across a broad spectrum of the Midwest. I learned not to call anyone a spelunker in the early fifties.

Now why should 'spelunker' and 'to spelunk' have negative connotations to an American caver? I believe that in the circles I traveled, there were at least five reasons:

1) 'Spelunker' is derived from a high-falutin Latin root, whereas 'cave' is derived from a lowfalutin Latin root. The term 'spelunker' apparently embarrasses many Americans.

2) 'Spelunker' as derived from 'speleologist' sometimes has the connotation of sportsman as opposed to scientist, and many cavers reject the implication. A caver can be either a

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scientist or a sportsman (or both at once), whereas anyone characterized as a spelunker is almost inevitably taken to be only a sportsman.

3) Most non-cavers refer to cavers as 'spelunkers.' Thus, 'caver' becomes an in-group term.

4) 'Spelunker' derives in English from the terms 'speleology' and 'speleologist' not commonly used in ordinary speech, whereas 'caver' derives from the commonly used term 'cave.'

5) Finally, the local joke. I think that there was some early suspicion that the term 'spelunker' was invented or at least used by Eastern cavers and establishment cavers of the NSS to go along with the National Speleology Society. No self-respecting, laconic, anti-establishmentarian caver could let this affectation go by without kicking it.

In *The Longest Cave* (Roger W. Brucker and Richard A. Watson, New York, Knopf, 1976, p. 202) Richard Zopf refers to Roger Brucker as a spelunker. In a context where Roger was falling asleep in the cave, Richard says that he "assumed that a spelunker of Roger's experience would have complete control of his faculties at all times." I believe that this is the only occurrence of the term

'spelunker' in the text of this long book and however Richard meant it, the use of the term 'spelunker' here comes across to many as ironic or slightly derisive. We hope the dictionary-makers read *The Longest Cave*.


I'd be interested in hearing any other ideas about the origin, use, and reception of 'spelunker' and 'caver.' Meanwhile, an autographed copy of *Maws* is being sent to Richard C. Finch for keeping the discussion open.

Greer Price has pointed out two items to me that I think help make my point. Paul Doerr, in *The Explorers Club Explorers Journal* (Vol. 50, No. 2, June, 1972, pp. 100-103) describes an NSS Diablo Grotto trip in "A New Cave is Found." In the article itself there is reference to a "caver," but no use of the word "speleology" or any of its derivatives. However, the editorial staff has headlined this article under "SPELEOLOGY," and their description of Doerr is as follows: "The author, who lives in Vallejo, California, is an avid outdoorsman, who spelunks, climbs mountains, sails, kayaks, dives, and flies. He has traveled widely." I submit that this use of "spelunks" is not Doerr's use, but that of an editor unfamiliar with caving. Non-cavers often

think that the words "spelunking" and "spelunk" are cute. (pp. 16-17, 24)

The second article is in *Scouting* (March/April, 1975), "Down to the Depths in Hardhats" by Bob Peterson. There is also a caving photo with the caption "Spelunking—the Safe Way." In the article itself are the sentences "They're members of a growing tribe of Scouts and Explorers who are caught up in the adventure of spelunking, caving or cave exploring. (Choose one—they're synonymous.)" However, in the article there are six uses of "caver" and five of "caving" (and several of "explorer" and "exploring"), but only one use of "speleologist." The use made of "speleologist" is significant. The sentence begins: "Serious speleologists care very much about such markings..." This would seem to support the view that "speleologist" is taken to indicate someone more serious than a spelunker. "Caver" is the bridge word between sportsman and "serious speleologist." The only occurrence of "spelunking" in the article is in the sentence saying it is synonymous with "caving or cave exploring." (Mike Dyas was along on this BSA cave trip, and is quoted a lot.)

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