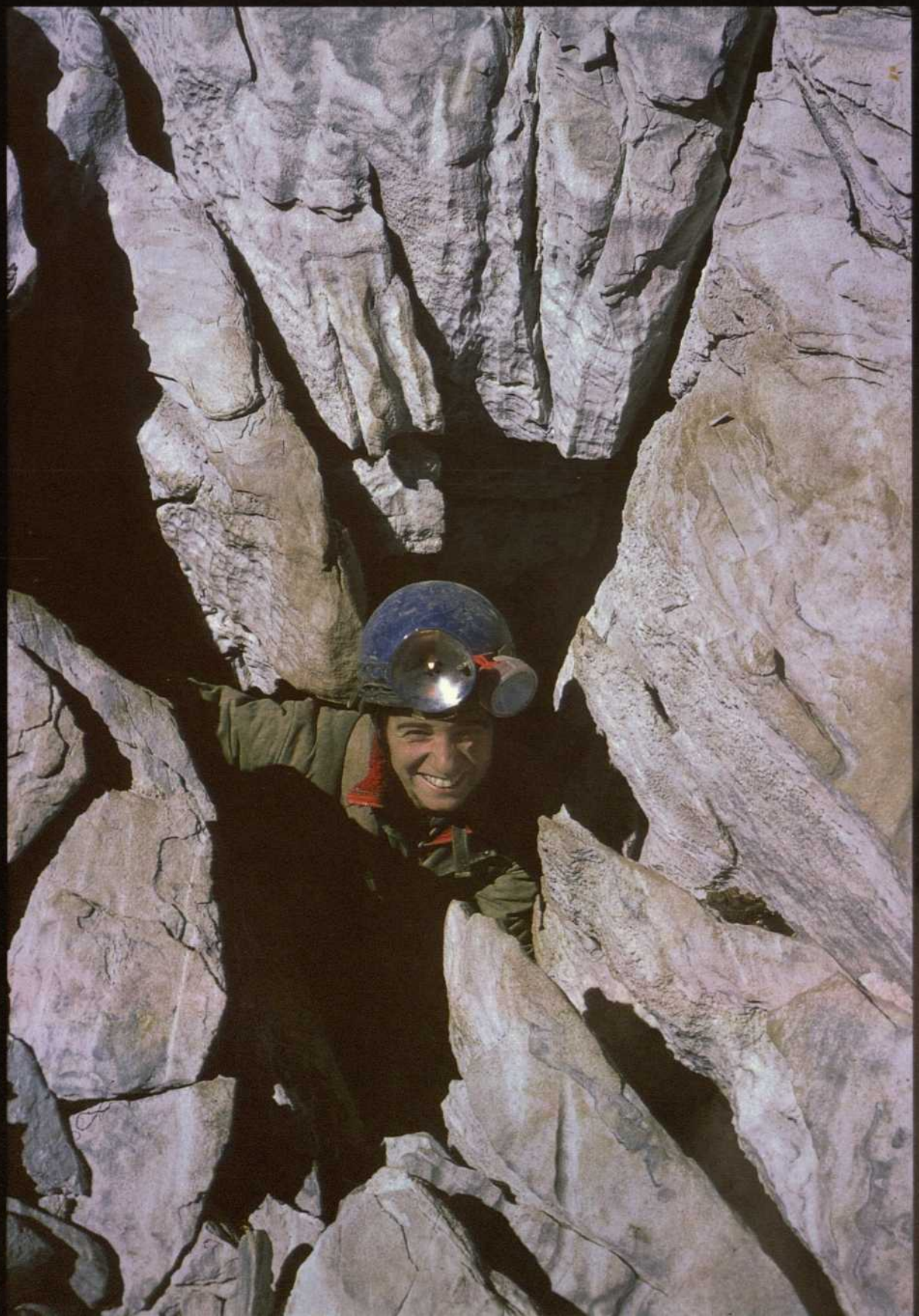
NSS NEWS

JULY 1999



CALENDAR

Send information on coming events to the *NSS News*, P.O. Box 879, Angels Camp, CA 95222 or by e-mail (preferred) to nssnews@caves.org

U.S.A.

July 3–5, 1999—8th Annual Black Hills Caver Classic Hot Springs, SD. Contact Steven Smith, 6512 W. Alder Ave., Littleton, CO 80128 (303)972-9495 or e-mail steve.smith@ihs.com

July 3–10, 1999—The National Cave Rescue Commission (NCRC) presents the 1999 Cave Rescue Operations and Management Seminar (levels 1-3) at the Tulelake Fairgrounds, Tulelake, California. For additional information, contact Marianne Russo at mrusso@csus.edu or (916) 663 - 2571; Roger Mortimer at mortimer@ucsfresno.edu or (209) 432 - 0503; or Lynn Fielding at lynn@wb6hqk.ampr.org or (310) 533 - 8627. You can also visit the web site at: http://www.altadena.net/ncrc-west/ncrc1999/

July 12–16, 1999—NSS Convention. Twin Falls County Fairgrounds, Filer, Idaho. Contact: David W. Kesner, PO Box 1334, Boise, ID 83701; (208) 939-0979; e-mail drdave@micron.net

July 30- Aug 1, 1999—Cincinnati Grotto will be having Karst-O-Rama at Great Saltpetre Preserve in Mt. Veron, Ky. For information contact Dennis Wortman at (513)851-2493 or e-mail at Denny1@prodigy.net

July 31–Aug 1, 1999—Iowa Grotto 50th Anniversary Celebration, Dubuque, IA. For details, please contact: Iowa Grotto, Box 228, Iowa City, IA 52244 or by e-mail: mlace@blue.weeg.uiowa.edu.

August 8-15; October 2-3, 1999—Restoration Field Camps at Mammoth Cave. Contact Norm Rogers, 3122 N Isabell Ave, Peoria, IL 61604 309-682-1570 or, nrogers1@juno.com Visit the Restoration Field Camp web site at: http://oldsci.eiu.edu/physics/len/mammoth/mcrp0.html

August 14–22, 1999—National Cave Rescue Commission - Eastern Region annual week long rescue seminar will be held at Camp Pioneer near Dailey W.Va. offering Level 1, 2, and 3 as well as Wilderness EMT. For more information contact John Massa 16409 Greenfarm Rd. Huntersville, NC 28078 or via e-mail at weeklong@milleorthoclinic.com

August 27–29, 1999—Introduction to Basic Cave Rescue Orientation Seminar. Presented by the Huntsville Cave Rescue Unit in Huntsville, AL. For more information contact: Ed Nicholas (256) 859-5550 eknsar@airnet.net

September 10–12, 1999—35th annual Wisconsin Speleological Society Hodag Hunt, Crawfor County Fairgrounds, Gays Mills, WI. Contact Gary R. Phelps, 226 High Ave., Oshkosh, WI 54901, (920) 233-1699 (evening)

September 18–19, 1999—ER-NCRC Orientation to Cave Rescue at Greene Hills Camp near Huntingdon, Pennsylvania. Two-day class includes classwork, hands-on equipment experience, and a student-organized mock rescue. Sign up for either a horizontal or semi vertical scenario. Includes a 300-page reference guide, meals, and camping. Cabins available. $40 fee, preregistration required. Hosted by Bat Conservation and Management, Attn: John Chenger, 905 Thornton Drive, Mechanicsburg, PA 17055 (717) 795-7527 or www.batmanagement.com

September 24–26, 1999—13th Annual Ozark Regional Cavers Gathering (ORC), McDonald County, Missouri. For more info contact Nick & Gail Campagna, RT. 2, Box 2770, Seymour, MO 65746, (417) 683-0100, e-mail: campagna@goin.missouri.org

October 2–9, 1999—AMSAR Technical Rescue Training Courses. American Search and Rescue Institute, Inc., 56925 Yucca Tr., Suite 142-S, Yucca Valley, CA 92284-3752 Automated info via fax: (800) 582-6727; by mail: (760) 228-0933. web: amsar@amsar.net

October 7-10, 1999—22nd Annual TAG Fall Cave-In, Sequoyah Caverns, Valley Head, AL. Hosted by the Dogwood City Grotto for NSS members and their guests. Sorry no doges or ATVs. For pre-registration, contact Edie Cowan (770) 939-0970, or e-mail mewnak@mindspring.com. Vendors contact Joe Abbott (770) 445-4220, e-mail joeabbott@mindspring.com

October 19–23, 1999—14th National Cave Management Symposium, Clarion Hotel, Chattanooga TN. For information contact Mark Wolinsky , 3201 Byers Drive, Raleigh NC 27607-6365, Tel: (919) 755-9945 or email ncms99@scci.org. Symposium schedule and information is available on the NSS web site at www.caves.org/ncms99. Registration: Jim Wilbanks (706) 462-2316. Papers and Sessions: Joe Douglas, 325 Richland Ave., Watertown, TN 37184, Tel: (615) 237-0326 or email jdouglas@vscc.cc.tn.us. Hotel reservations: (423) 756-5150. Specify NCMS99 for symposium rate.

October 23, 1999—The Southeastern Cave Conservancy is hosting the Fall NSS BOG Meeting in Chattanooga,Tennessee, at the Clarion Hotel adjacent to the Tennessee Aquarium. Friday and Saturday night festivities are planned. Contact Scott or Jaime Fee (205-854-PITS) scottfee@pipeline.com for more information.

November 5–7, 1999—International Technical Rescue Symposium, Fort Collins, CO. Co-sponsored by the National Cave Rescue Commission (NCRC) and other Search and Rescue Organizations. Those interested in presenting papers must respond by August 1, 1999. Contact Butch Feldhaus at (423) 238-7009 (before 10:00 p.m. EST) or at <bfeldhaus@csi.com>.

November 19–24, 1999—15th Annual Ennis Cave Speleo-Holiday, Stone County Arkansas. Contact Randy Rose at 253-839-2908 or email rrose77777@aol.com.

June 26–30, 2000—NSS Convention, Elkins, WV. For information contact Kelley L. Deem, 167 Blue Ridge Acres, Harpers Ferry, WV 25425 Home (304)725-9812 Fax (304)725-9813 e-mail: deem@mammoth-geo.com

INTERNATIONAL

September 12–18, 1999—9th International Symposium on Vulcanospeleology of the IUS, Catania, Italy. Contact: Giuseppe M. LICITRA, Centro Speleologico EtneoVia Cagliari, 15, 95127 CATANIA, Italy licitra@mail.asianet.it

September 17-27—Karst 2000: International Symposium and Field Seminar, Marmaris, Turkey. Info: Dr. Gultekin Gunay, UKAM, Hacettepe University Beytepe Campus, Ankara, Turkey 06532. Tel: +90 312235 2543, e-mail: karst@eti.cc.hun.edu.tr. fax: +90 312299 2136.

Further International events can be found on the UIS Speleo Calendar at: rubens.its.unimelb.edu.au/~pgm/uis/events.html

THE NEWS ART GALLERY

"Terminal Sump," by Lois Lyles, will be featured at the SpeleoArt exhibit in Filer

Deadline: The NSS News is mailed the last week of the month preceding the date of publication. Ads, articles and announcements should be sent to the NSS News, Box 879, Angels Camp, CA 95222 by the 20th of the previous month (e.g., July issue is mailed the last week in June; material should be submitted by May 20).

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Regular membership in the NSS is $30 per year. Subscriptions to the NSS News are $18 per year; individual copies are $1.50 each. Contact the Huntsville office for membership applications, subscriptions, orders, or for replacement of issues missing or damaged in the mail.

POSTMASTER:
Send address changes to National Speleological Society, 2813 Cave Ave., Huntsville, AL 35810-4431.

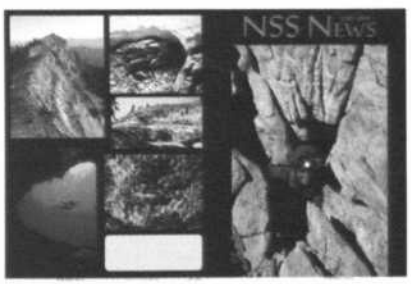
NSS News

JULY 1999 VOLUME 57 NUMBER 7

FEATURE ARTICLES

DEPARTMENTS

ABOUT THE COVER



Front Cover: Cynthia Ream emerges from a cave in the Marble Mountains Wilderness (photo by Steve Knutson).

Back cover, clockwise from top right:
1. Scouting for caves early in the season, Marble Mountains (Steve Knutson)
2. Karst above Super-sink, Marble Mountains (Dave Bunnell)
3. (Above label) Unusual blue mineralization in Jaw Dropper Cave, one of the featured caves at this year's NSS convention in Idaho (Dave Kesner)
4. Divers scootering into Florida's Wakulla Spring on the Woodville Karst Plain. Wakulla is considered a combination between the Everest of Cave Diving as well as the Mammoth Cave of water-filled caves. (Mike Wisenbaker)
5. Ridgeline of Marble Mountain (Dave Bunnell)

Unraveling the Mysteries of the Maze

text and photos by Michael Wisenbaker,© 1998

Entrenched in the sandhills of the Apalachicola National Forest, Big Dismal Sink drops some 75 feet before breaching the sparkling waters of the Floridan aquifer. The last 40 feet of the sink cut through sheer limestone walls mantled by a resplendent array of liverworts and ferns. Many years ago my school pals and I would converge at this cenote where we found relief from north Florida's sweltering summer sun by leaping from the sink's rim into its chilled 69 degree waters. We did not know nor care that this backwoods swimming hole would later prove to be a gateway into the longest underwater cave in the United States, with 17.5 miles surveyed to date.

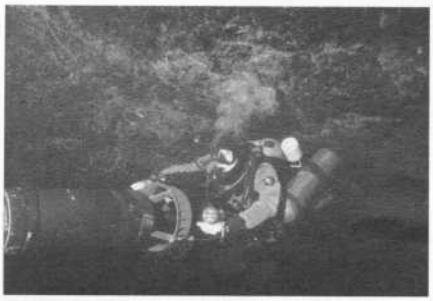
This marvelous maze and nearby conduits lie in a region referred to as the Woodville Karst Plain, which stretches more than 450 square miles from Tallahassee's south side into the Gulf of Mexico. The limestone, ranging in age from 38 to 23 million years old, usually rests anywhere from the surface to just 20 feet below ground. The sugar-white sands overlying the limestone were deposited as terraces and dunes during higher sea level stands of the Pleistocene. Springs, sinkholes, lost rivers and karst windows—depressions in the land where roofs of underground streams have collapsed and exposed sections of caves—afford the only surface evidence of hidden caves and voids that riddle the basement of the karst plain. Etched by the gradual corrosive effects of acidic water, the caves themselves formed during the past two million years as Ice Age ocean levels fluctuated with climatic oscillations.

Big Dismal Sink (really a karst window) is the gateway to the Leon Sinks Cave System. It also is the most difficult entrance since the rim of the sink is about 75 feet above the water, much of it a sheer drop.

Florida has been acclaimed for its springs ever since apocryphal tales of Spanish explorer Ponce de Leon's search for the "Fountain of Youth." Samuel Taylor Coleridge found inspiration for Kubla Kahn's sacred river Alph and "caverns measureless to man" not in Marco Polo's accounts of China, as one might suppose, but in William Bartram's descriptions of springs in Florida. The Woodville Karst Plain holds seven of the state's 27 first magnitude springs—those with a minimum flow of 64.7 million gallons of water per day. Wakulla Springs is by far the most famous such feature in the karst plain, although it pales in comparison to Spring Creek Springs in terms of water discharge. While Wakulla averages a mere 252 million gallons of water per day, Spring Creek Springs, a submarine spring in Oyster Bay, about 11 miles south of Wakulla, spews forth some 1,294 million gallons of water each day!

In the 1830s, visiting French naturalist Comte de Castelnau speculated that the water in Lake Jackson just north of Tallahassee, which periodically disappeared into sinkholes, resurged at Wakulla. Similarly, E.H. Sellards, the first person to head the Florida Geological Survey, predicted more than 80 years ago that the water swirling below ground at River sinks (part of the Leon Sinks Cave System) fed Wakulla. The ability to examine the caves feeding the springs, however, did not become possible until the advent of scuba in the late 1940s. Wakulla became a magnet for underwater cave exploration in the 1950s when several students from nearby Florida State University boldly penetrated a couple of hundred feet into its mammoth vent. Today it remains the ultimate challenge for the world's top cave divers.

In 1987 a visionary named Parker Turner came along and established the Woodville Karst Plain Project (WKPP) to systematically investigate the region's caves and associated karst features. He told all who would listen that the area south of Florida's capital city afforded late 20th century adventurers an opportunity to explore one of the earth's last uncharted regions. Turner said, "the map is the important thing, there has to be something worth dying for." Ironically, Turner died in the cave at Indian Springs in 1991 as a result of freak avalanche. He assembled a group of hard-core explorers

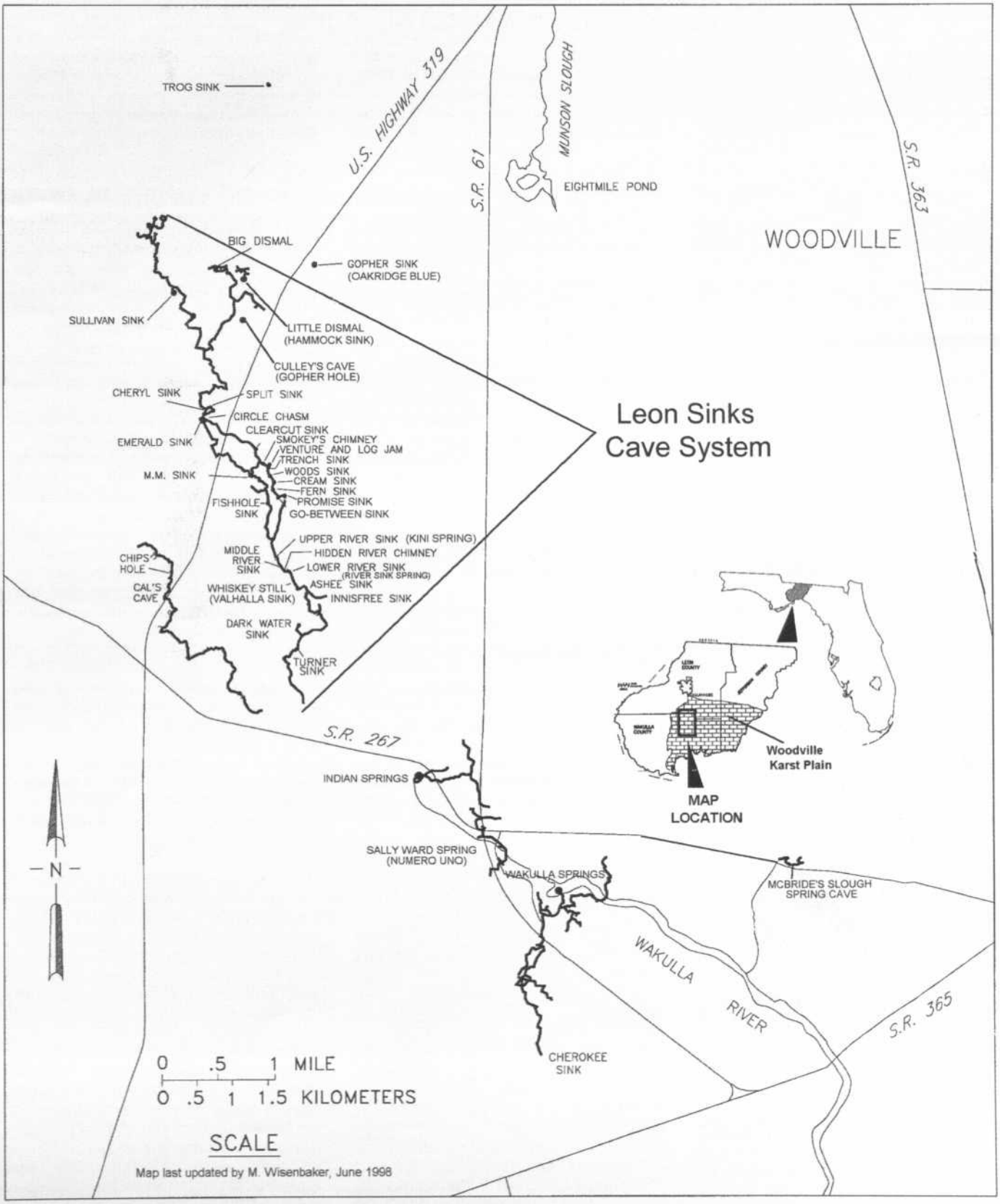


Brent Scarabin, one of the group's primary explorers, powers through the cave at Wakulla with a Gavin scooter. These scooters are custom designed to withstand extreme depths and run for long distances.

to probe this underworld and to provide researchers and government agencies with his findings. Thus the WKPP began diving these deep caves, perhaps the harshest and most hostile environment on the planet, in a systematic and consistent fashion. Currently, the group has 100 or so dedicated volunteers with diverse backgrounds and multiple talents. Members of the team include world class cave divers, engineers, scientists, students and others. Some come from as far away as Texas and New York to participate in the project. While focusing on caves in Florida's Big Bend, WKPP members have also explored 18 cave systems in Mexico and 25 in the Bahamas. Recently they also surveyed caves in Brazil and Turkey.

WKPP explorers routinely stage various breathing gases and scooters along their route in case they incur problems with their life support systems. Having adequate backups is critical, since the labyrinths are completely devoid of either light or air. The main exploration team recently switched from regular scuba to Halcyon rebreathers, thus giving them much more time to explore. They wear drysuits inflated with argon and don thinsulate undergarments that allow them to withstand the cool water for as long as 16 hours or more. Special valves made into the suits permit the divers to relieve themselves. Food and liquids are cached in waterproof tubes. The explorers employ only essential and highly streamlined gear that enables them to move through the water as easily as fish. If suitable cave diving gear is not available commercially, the team makes its own, such as the super scooters used to propel them through the caves, three times faster than they could swim.

In order to find their way back to where they started, cave divers install thin nylon guidelines carried on large reels, as Theseus


TROG SINK
U.S. HIGHWAY 319
S.R. 61
MUNSON SLOUGH
EIGHTMILE POND
S.R. 363
WOODVILLE
BIG DISMAL
GOPHER SINK
(OAKRIDGE BLUE)
SULLIVAN SINK
LITTLE DISMAL
(HAMMOCK SINK)
CULLEY'S CAVE
(GOPHER HOLE)
CHERYL SINK
SPLIT SINK
CIRCLE CHASM
CLEARCUT SINK
EMERALD SINK
SMOKEY'S CHIMNEY
VENTURE AND LOG JAM
TRENCH SINK
M.M. SINK
WOODS SINK
CREAM SINK
FERN SINK
FISHHOLE SINK
PROMISE SINK
GO-BETWEEN SINK
Leon Sinks
Cave System
UPPER RIVER SINK (KINI SPRING)
HIDDEN RIVER CHIMNEY
MIDDLE RIVER SINK
LOWER RIVER SINK
(RIVER SINK SPRING)
CHIPS HOLE
ASHEE SINK
CAL'S CAVE
WHISKEY STILL
(VALHALLA SINK)
INNISFREE SINK
DARK WATER SINK
TURNER SINK
S.R. 267
INDIAN SPRINGS
Woodville
Karst Plain
MAP
LOCATION
SALLY WARD SPRING
(NUMERO UNO)
WAKULLA SPRINGS
MCBRIDE'S SLOUGH
SPRING CAVE
WAKULLA
RIVER
S.R. 365
CHEROKEE
SINK
N
0 .5 1 MILE
0 .5 1 1.5 KILOMETERS
SCALE
Map last updated by M. Wisenbaker, June 1998

It takes massive amounts of gear and support to accomplish the lofty goals the WKPP team sets for itself. This set-up was done before the group makes an assault on one of the caves in Wakulla Springs.

unwound a ball of string to find his way out of the Labyrinth. The divers also use these permanent guidelines to map the tunnels. They tie knots in the lines at 10 feet intervals, before the dive, to measure distances. At each station where there is a change of direction, surveyors take azimuth readings with a compass and record depths with a wrist gauge. These data are recorded on a slate, taken back to the surface and plotted, resulting in what explorers refer to as stick maps. More detailed three dimensional maps are usually made of openings, more noteworthy features of caves, and of popular caverns. Although cave surveyors generally carry tapes for doing the latter, new technologies are in the works that will allow much of this to be done electronically. The survey data can then be put into computer programs capable of producing maps.

Using specialized gear and techniques for extreme cave diving, the team reaches ever farther and deeper into the bowels of the north Florida underground. Voids below the karst plain range from passages large enough for a nuclear submarine to minuscule fissures that only the smallest of creatures can pass through. As of summer 1998, the WKPP, and a few individual explorers before them, has linked 27 karst windows—including Big Dismal Sink—through more than 17.5 miles of twisting passages in the Leon Sinks Cave System. The maze represents the most extensive water-filled cave in the United States. Furthermore, the end of the line in this cave rests tantalizingly close to Wakulla Springs, in which divers have mapped more than eight miles of passage. On July 24, 1998, the team set a world's penetration record by traveling 18,000 feet from the entrance of Wakulla into one of its primary conduits. The main goal of the team is to link contiguous cave systems such as Indian Springs, Chip's Hole, Wakulla, and perhaps Spring Creek Springs to the longest cave.

People often question why anyone would want to face the perils of tracing these deep, dark passageways, some of which are like descending into a maelstrom. Each person probably has his or her own reasons for pursuing this activity. "Being involved with the WKPP is like seeking the Holy Grail. While the prize is a worthy goal, the reward is the journey," states long-time diver Jesse Armantrout. Current project director George Irvine, who has spent a fortune—not only of his own money but in time devoted to the project—quips that he "got on board to see what was around the next corner, and stayed on board to finish the job, because nobody else is better equipped in every sense to do this than me . . ." Parker Turner said "We do this because they will not let us be astronauts." Irvine: "I do it because it is better than being an astronaut. At least we can get to the moon every time we fly." Beyond that "we are about to get a swath (in public ownership) from Tallahassee to the Gulf of irreplaceable natural wonder, thanks to our work and the efforts of others," says Irvine.

Whatever their personal motivations, the WKPP is providing critical information about the origins and paths of the region's water. For example, water clarity at Wakulla Springs has diminished markedly as growth around Tallahassee has spread like an Ebola virus. This has resulted in increased runoff from paving large areas and filling wetlands that once served as nature's filters. In the 1950s visibility in the spring usually ranged from 300 to 200 feet. Now the team is lucky if the system stays clear for an entire season. The glass bottom boats that ferry tourists over the spring vent at Wakulla run for only a fraction of the time that they ran in the past.

Several years ago, turbid surface waters from heavy and frequent rains entered the sinks upstream and kept the spring black for almost 2.5 years. Irvine says, "What's happening to the springs is heart-breaking. The fact that there is so much water moving through there is bad, in terms of pollution, because things are carried a long way in a very short time. We're running a race to get as much information about this system as we can before it is destroyed."

Primary exploration team of Brent Scarabin (left), Jarrod Jablonski (center) and George Irvine (right) prepare for another probe. This trio has set many new aquatic cave records.

"The divers have already proved that water gushing from the spring originates from many tunnels," according to Scott Savery, park biologist at Wakulla. He goes on to note that the WKPP is playing a vital role in park planning by "seeking to find exactly where the brown runoff water is entering sinkholes ... The main reason people come to Wakulla is to see the magnificent artesian spring and river where many movies, such as *Tarzan* and the *Creature from the Black Lagoon*, were filmed."

The problem, though, goes beyond mere water clarity. High levels of nitrates, which arise from animal wastes, septic tanks and fertilizers, are becoming increasingly prevalent in Wakulla as well as other springs throughout the world. Many once cobalt-blue springs now appear green or brown. Jim Stevenson, a biologist with the Florida Department of Environmental Protection, remarks "some people say you can never pollute springs. There's too much water coming out. But this is real. We're seeing it. The springs are steadily going downhill." To make matters worse, Stevenson says "the reason we haven't dealt with this problem is that it's out of sight. How do you get the public excited about groundwater? It isn't saving the whales. It isn't the Everglades. You can't watch a sunset over it. But when you are looking at the springs and sinkholes, you are looking at groundwater." One way the divers are making the public aware is by bringing back video footage, photos, and maps of the caves. If the WKPP team succeeds, Wakulla Spring's crystalline blue waters may be again restored to their former grandeur.

So the WKPP team is providing a wealth of information to scientists and government officials. When asked, they take water samples, install flow meters, and collect geologic and sediment specimens. Frank Rupert, a geologist with the Florida Geological Survey, opines:

"Mapping the caves of the Woodville Karst Plain is vital to understanding the hydrogeology of this unique region. Studying maps compiled by the divers allows geologists to relate cave locations to local karst features, regional fracture systems, and bedding planes or formation contacts in the carbonate bedrock. The maps are useful clues in unraveling the mystery of how subaqueous caves form. In addition, such maps are vital in determining subterranean connections between sinks receiving surface runoff and pristine groundwater resources such as Wakulla Springs. The maps have

Brent Scarabin kits up using the Halcyon semi-closed circuit rebreathers. The WKPP switched to these units about three years ago to allow more time for exploration and with less cumbersome set-ups.

already been used by local officials to establish a blue-belt area along the conduit trend, within which potential polluting activities on the surface, such as gas stations, are restricted. The karst relationships revealed by the maps may also prove useful as a model for other unexplored karst and submerged cave areas in Florida and elsewhere. The end result is not simply an accumulation of hydrogeologic data; the most visible impact to the public will hopefully be a more informed citizenry and government, being made aware of the subsurface facts necessary for intelligent protection of their precious groundwater resources."

Another important reason for studying caves stems from the fact that these dark reaches provide habitat for a group of animals called troglobites that can only live within the stygian depths. The eminent French speleologist Norbert Casteret dubbed them "pariahs of creation." Most of these rare albino animals are small, inconspicuous invertebrates such as blind cave crayfish, amphipods and isopods that have evolved entirely within the subterranean realm. Although we know virtually nothing about the aquatic cave ecosystems in which they live, we do know that they have little tolerance to pollution and that the threat of extinction looms unless we can find and halt sources contaminating the Floridan aquifer.

The springs and sinks of the Woodville Karst Plain also serve as time capsules, providing insights into the lives of a magnificent array of creatures no longer with us. George Gaylord Simpson, an American paleontologist, said that the "present fauna of Florida are only a poor and colorless remnant of what it once supported." Animals that lived in the state until 10,000 years ago included monstrous bears, gargantuan cats, horses, peccaries, tapirs, llamas, bison, dire wolves and huge tortoises. Giant armadillos and sloths and a beaver that would dwarf its modern cousins joined in this parade of Goliaths. Some of these creatures met their fates in funnel-shaped sinkholes too steep for them to escape. I recently saw this happen at a sink where a large soft-shelled turtle found its way into a steep-sided doline from which it could not crawl out. With only cave crayfish and little redeye chubs to feed on, I expect that the sinkhole will serve as the critter's tomb and a feast for the tiny trolls living in the cave.

An almost complete mastodon settled near the edge of the basin of Wakulla Springs sometime in the distant past. The reconstructed skeleton of this ancient elephant now greets visitors to the Museum of Florida History in Tallahassee. Later, more mastodon remains were found in the spring, as well as giant armadillo, deer and 600 bone spear points made by Native Americans. Springs such as this may have been deep sinkholes during the last Ice age, since water tables were much lower when these animals flourished in the Deep South.

A few years ago, WKPP diver Steve Irving reported and gathered a sample of dugong bones about 1,200 feet back at a depth of 140 feet in the cave at Indian Springs, located between Wakulla and the Leon Sinks Cave System. This animal represents an Oligocene relative of the manatee that lived more than 33 million years ago, according to Daryl Domning, a visiting paleontologist at the Florida Museum of Natural History in Gainesville. The bones probably dissolved out of a matrix of Suwannee limestone in which the lower part of this cave is carved.

Animals were not the only things attracted to karst openings. Indians began trickling into Florida at least 12,000 years ago, some of whom settled at Wakulla and other springs and sinkholes found throughout the region. They were called Paleo-Indians and lived in the area for 2,000 years. Unfortunately, most remnants of their sites on land, as well as those of more recent Native Americans, have perished—leaving little tangible evidence of their cultures. On the other hand, the alkaline waters of springs and sinkholes preserve a whole range of organic material that can be radiocarbon dated and studied. Shallower portions of these sinks probably served as rock shelters during times of lower water tables. Some cave passages also contained dark nodules of chert embedded within the lighter colored limestones. Indians often fashioned tools from chert—a flint-like rock that often occurs near the contact of Suwannee (Oligocene age) and St. Marks limestones (Miocene age) in the region's sinkholes or outcrops. The earliest Floridians used these tools for hunting and butchering animals as well as for other purposes. As scientists meticulously unveil more bones and artifacts from the silty shrouds covering cave floors, many puzzles of our past will be solved.

These underwater caves are priceless treasures. Based on countless treks into the lengthy labyrinths by modern-day explorers

(concluded on page 214)

The Marble Valley Project

by Steve Knutson, Cynthia Ream, and Rich Sundquist

"The end of a passage is simply a state of mind"

Cynthia Ream

"Boreholes...are what separate the entrance from the leads"

Rich Sundquist

Steve Knutson

Forward

by Steve Knutson

In the early years we had all kinds of good leads to pursue. The small and nasty we came to designate "LFAG's" (el-fags), which stood for "left for another generation" (we conveniently assumed the next generation would be a tougher breed and relish these groadholes). Now we find that the next generation never showed up and we are left doing the LFAG's. But these are not just ugly holes yielding little. Read on...

Introduction

California is thought of by most of its inhabitants as consisting of two parts: centered on Los Angeles is "Southern California" and around San Francisco/Sacramento is "Northern California". This belies the fact that San Francisco/Sacramento is in the central part of a state elongated north to south. As you get further north of Sacramento you enter a forgotten area, the true northern portion of the state. This is an area of low population, and consists mostly of forbidding mountains and lava deserts. For this reason it is the home of folks who have "got away from it" and sought the isolation. Towns have names like Cecilville, Big Bar, Forks of Salmon, Willow Creek or Hyampom. It is also the home of the two greatest cave resource concentrations in the state, the lava caves of Lava Beds National Monument and the solution caves of Marble Valley.

As a young caver in the early 60s I had a vision that there would be a great limestone cave in the Northwest. I searched for it wherever there was the right geology: Hells Canyon, the Wallowa Mountains, the Klamath mountains, the North Cascades. The decade changed and I still had not found it. In 1973 Mike and Lynne Sims and I formed the Klamath Mountains Conservation Task Force (KMCTF), with the object of mapping the known caves there and looking for new ones. We would then steer the Forest Service in their management. On July 4, 1974 I hiked five miles to Marble Valley in the Marble Mountain Wilderness to find an alpine karst development of complexity unparalleled in this country. My dream was about to be fulfilled.

A couple weeks later Jim Nieland and I returned and found Streamway, the first sizable cave, and on a following trip that summer, Jim and Libby Nieland, Wayne Walent and I searched the south part of the valley and found what is now Bigfoot Cave. Jim Nieland was the first to find and enter the Discovery Entrance. To date, cavers of the KMCTF have mapped over 31 miles of marble cave in an area of only 1.5 square miles.

Subsequently we learned that cavers from Cave Research Associates, a speleological group from central California, had found the area in 1964 and entered Bigfoot a few times. They then abandoned it and kept their knowledge a strict secret, allowing us to discover it for the caving world ten years later.

The Physical Setting

The Marble Mountain Wilderness is located about 50 miles west of Yreka, California, and about the same distance from the Pacific coast to the west. It is also about the same distance from the Oregon Border to the north and therefore susceptible to the southern end of the storms coming off the Pacific Ocean that make the Northwest a rainy environment. Marble Valley thus sees a fairly long winter season with a snow pack of 10-12 feet. Most of the snow is gone by July 4 and, with good weather, the caves will be about as dry as they can get a month or so later. Still, storms can come all through the summer and it can snow in August. The caving season is usually called off with the coming of snow in October. The campsite, in the middle of the area, is at about 6000'.

Marble Valley is an east-facing, rounded, cirque, glaciated during the Pleistocene. The marble is spread across most of this in a deposit up to 400' thick and dipping at 15 to 20° to the southeast. Glaciers carved a swath through the deposit from west to east, resulting in northern and southern marble bodies. The southern is the largest and continues through a divide and another cirque to Rainy Lake about a mile to the west. It contains the Bigfoot System that begins at the top ridge of the valley and continues to the resurgence on Canyon Creek about 2.5 miles to the east. Caves are known along most of that distance and no cave is separated from another by more than 400 feet.

History

In Marble Valley we soon found the nature of the caves to be forbidding. Nearly every entrance involved rope work in pits which seemed inevitably to lead to stream passages flowing along the schist that is found beneath the marble beds. The caves are wet, cold and generally stark. Nearly every passage has airflow whose chilling effect on the 38° temperature brings the effective temperature down to freezing. Indeed, some of the caves contain year-round ice deposits. Early trips seemed invariably to end in the push of a low crawl, through flowing, near-freezing water, followed by retreat to the entrance and the freezing, weary ascent to the mountain valley surface. Wetsuits were quickly adopted and a trip to Marble Valley produced an experience unlike caving anywhere else on the West Coast. Ascending rope and struggling through crawlways in a near-freezing cave while wearing a full 1/4" wet suit is something you

have to experience to appreciate.

We also very quickly found what is still far and away the longest and deepest cave in the area. Jim Nieland found the initial entrance and, taken as we were by the wet nature of the caves, as well as having little literary imagination, we named it Big Stream Cave. Mike Sims soon came up with a news article from nearby Happy Camp that reputed the enigmatic wild man of the woods, Bigfoot, to live in caves in Marble Valley. When it became obvious that Big Stream was too important for such a mundane name, and of course it was then apparent that many of the caves there were big stream caves, we changed the name to Bigfoot.

In 1976 another cave, the very nasty and appropriately named Meatgrinder, was connected to Bigfoot by Dave Cowan and I and the resulting depth was a little greater than Neff's Canyon Cave, the long-standing deepest cave in the country. Bigfoot was the deepest cave in the US. For a time it was also the longest known cave in the far west.

Still, it was obvious that Bigfoot was not the only major cave in the area. A walk around the valley showed many obvious entrances and the upper part of the valley is bare of soil and is intensely karstified, with so many potential entrances that some are unchecked today. To date there are 22 caves over 1000 feet, 16 over 2000 feet, and 6 exceeding one mile in mapped length. Bigfoot itself is part of a hydrologic system of caves well over 20 miles in length.

As the initial era of easily entered leads and entrances came to an end, we came into one where even the equipment and conditions are different. Some 10 years ago this part of California began to experience droughts and the summer season expanded some years to include Memorial Day weekend. At the same time the development of specialized caving suits in Europe got to the US and we began the current style of wearing pile suits and/or multiple thermal underwear under nylon or PVC outer suits. The combination somehow makes the caves at least seem more hospitable.

An essential part of the latest era has involved digging or hammering leads open. This began for me when I went caving one time with Dan Clardy. At a too-small constriction I was ready to turn back when Dan pulled a hammer from his pack and started beating on the rock at the opening. This seemed like madness and I suggested we go. Dan said nothing and continued to pound. To my amazement the relentless hammering suddenly shattered the solid bedrock. Soon we were continuing down the passage.

We also found that a brief dig in the rocks or fill of the floor could uncover passage. At the head of the Discovery Creek passage there was a blowing hole that was the end of the initial push up that passage. It was about a foot in diameter, apparently in solid bedrock. Fifteen years after the initial push we decided to see what it would take, in whatever drastic means, to open this hole. Scott Linn, Mark Fritzke and I went in to have a look. To our surprise the bottom of it was not bedrock and it took us only 20 minutes, with our hands, to dig it open.

The Project

At the outset we realized the major importance of the resource and that this would be a long-term project. We talked it over and made a few decisions. First, this would not be a highly structured affair. For cavers who join it, by working with us, there is free dissemination of information on the caves. If someone discovers something, they have the right to pursue it, as long as they are reasonably expedient. No secrets. Map what you find. Do not scoop what you cannot map. This produced an informal, open environment where anyone can come and have a reasonable expectation to see virgin cave.

Then we decided that the caves would remain wilderness caves as much as possible—that meant that the mapping would not use marked stations. The result is more difficulty in tying the surveys together but, most important, cave that is unmarked except by footsteps; cave that even today you could get lost in. For the sake of the mapping we have modified this in recent years with the leaving of temporary flagging at junction stations where further mapping will take place.

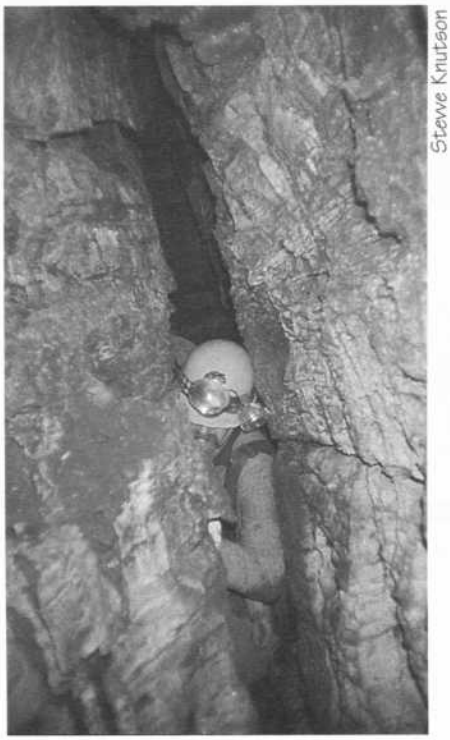
We also got permission from the Forest Service to leave an equipment cache in the log barn that remained in the valley from before it was a wilderness. This has developed under Rescue Chairman Bonnie Crystal into a decent rescue cache.

Extending The Bigfoot System

There are three main trends in Bigfoot. From the main part of the valley there are major passages going generally down-dip, collecting in a tributary fashion. These join an apparently older system of phreatic passages that runs from under the drainage divide in the Wooley Creek drainage to the southwest, and gradually loses elevation as it drops toward the resurgence on Canyon Creek to the northeast, collecting the dip passages as it goes. The ends of these were reached early on and have not changed much since.

At the lower end the karst drainage continues through a series of caves and collects drainage from another, smaller system. Major caves were discovered along this route. In descending order, they are: Trail Junction. Sinking Stream, Upstream and Dry Stream (we were hung up on "stream" names). Joining the drainage was a system including Corkscrew, Brokedown Palace, Urin Heaven, and Urin Hell.

Over the divide in Wooley Creek searches



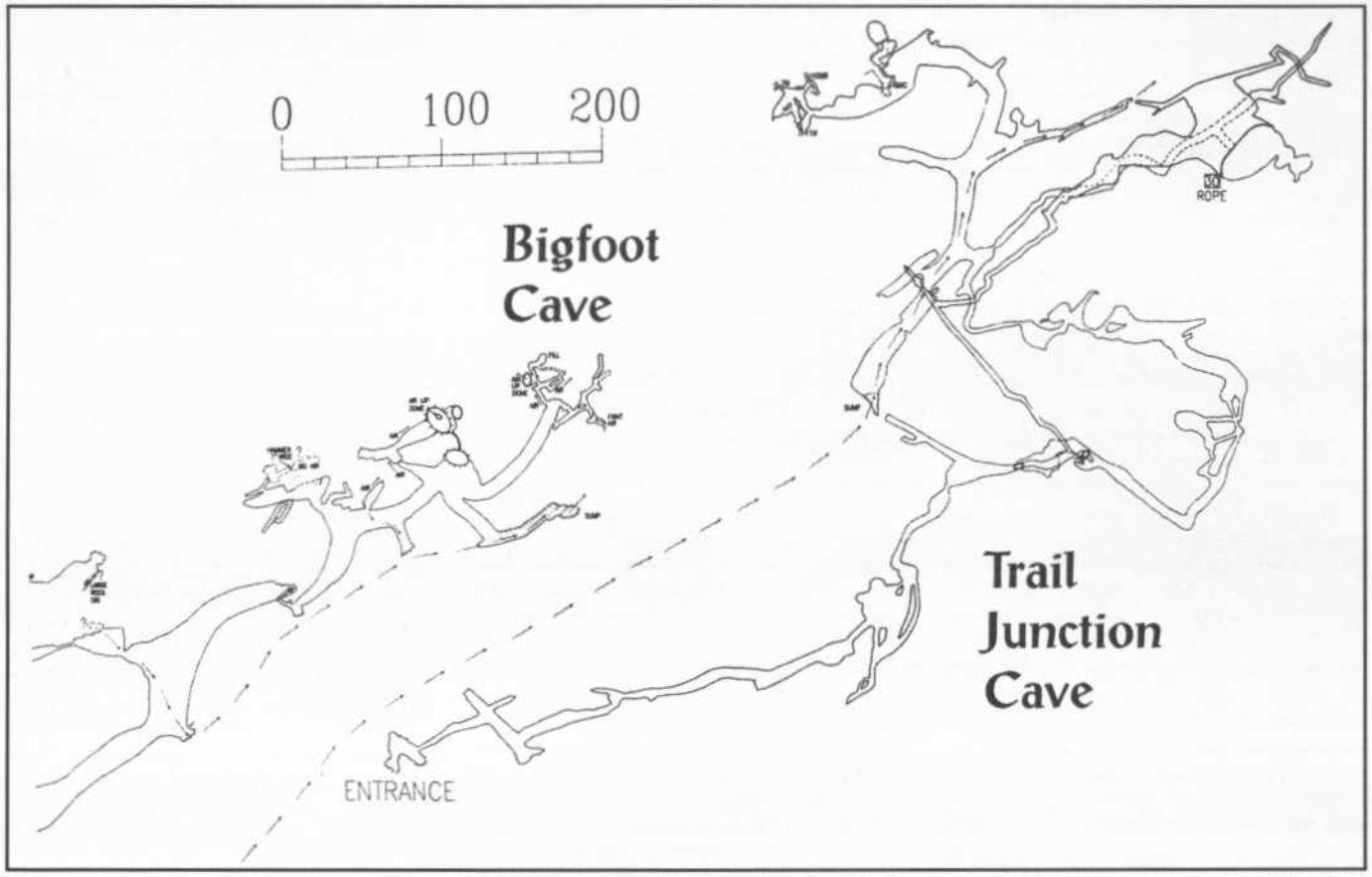
Steve Knutson

Vertical squeezes abound in the caves.

of the marble exposures revealed virtually no entrances. On the surface in the upper main part of Marble Valley, the story was quite different. There the karst features are intensely developed with sinks, pits and solution-opened joints everywhere. This wealth of potential entrances was examined right away, but we felt that caves found there would merely join Bigfoot, so we were not as serious about it as we might have been. Still, caves turned up, some by the work of Bob Richardson and his fellow cavers from Santa Cruz. Hanging Rocks, Hanging Ice and Monkey River were found and then, as predicted, connected to Bigfoot.

Rainy Cave, opening on the Rainy Valley cirque to the west, was found to extend under the valley rim and then go along the strike of the marble, not down-dip as everything else did. Two other caves, Half-dollar and Sunbeam, were found to run in echelon with the lower part of Rainy Cave, but developed stream passages and started to head down-karst. This smaller system is about 10,000 feet long.

When an explorer looks at a cave there are certain aspects that are particularly appealing. This includes the possibility of extending the ends, or limits. When there are outlying caves, beyond the ends, it is even more attractive—it might be called "connection fever." When cavers looked at the 150 foot proximity of Trail Junction Cave to the bottom end of Bigfoot, and the 500 foot gap between the upper end of the Monkey River Passage in Bigfoot and the Sunbeam/Half-dollar/Rainy System, some of them could not resist, as Cynthia and Steve



relate in the following sections.

Connection Fever

by Cynthia Ream

"I woke up, fuzzy headed, one early November Friday morning in 1996 to find a mysterious message on my answering machine from Rich Sundquist. He was saying something about feeling "wild and crazy." Hmmm. That's a nice way to start the day, with a message from a friend, hinting at adventure.

After a few cups of coffee to clear the cobwebs from my mind, I gave him a call to see what this foolishness was all about. I let him ramble on for a while, laughing as he suggested a trip to the Marble Mountains—this weekend! What madness! The Marbles season ends in mid-October, as the first flurries of snow begin. Had he checked on the weather forecast, the snow level? Besides, you don't plan a weekend caving trip on a Friday to a remote area, requiring an eight hour drive and a two and a half hour hike to get to. You need time to prepare, to pack, to get organized, to arrange time off from work, to psyche yourself up, and someone to ride with. I absent-mindedly started a list of gear I would need if I did go.

What brought on this insanity? He'd got SMAPS to work on his computer, and had been looking at the Bigfoot map. He'd been thinking about the way the lower end, the Little Toe, seems to lie just up-karst from Trail Junction cave, and pondering the leads we'd looked at in the last couple of months in both caves. "There's got to be a way to connect the two..." As I listened to Rich rant on, I began to smile, and then laugh. Aha! I recognized the impassioned ravings of connection fever!

I was all too familiar with this particular brand of connection fever. Thirteen years before, when I first began caving in the Marbles, one of the people I served my caving apprenticeship with was Mark Fritzke. At that time, his pet project was pushing the remaining leads in Trail Junction, with the idea of finding the elusive connection into Bigfoot. Many a morning I awakened to Mark at my tent door, launching into a hard sell: "This is it! I've figured out the answer. Today is the day we'll connect, for sure!" Being a new caver, and somewhat innocent, I fell for it every time. After a few years we both became discouraged, and that cave was largely unvisited for a decade.

In the summer of 1996 there had been three or four trips to the Little Toe, the lower end of Bigfoot, to push and map in the breakdown, the first trips to this area in several years. In October, Rich and I returned to Trail Junction, where I became very impressed with an area beyond a flowstone squeeze, which had only been visited once, 10 years before, by Mark and myself. It was much larger and more promising than I had recalled, looking a lot like the Little Toe passage.

Rich was proposing a two-team attempt at connection. He'd called three other cavers, and his idea was to send one crew into each cave with hand-held radios. At pre-determined times, we would attempt radio contact, as well as hammering on the walls. I told him I'd think about it.

I made a couple of phone calls, trying to find someone to ride with me. I was quickly discouraged—no, brought to my senses. This idea didn't make any sense. How about some advanced planning? I'd have to say no. Meanwhile, I began to gather helmet and lights.

When Rich called back, I said I wasn't going. Then he really

launched into the old hard sell: "You've got to come. It wouldn't be the same without you. You're the best..." "Oh, flattery will get you everywhere," I told him. I felt like a pushover—here I was saying no, while at the same time writing gear lists and gathering my equipment. Later, he told me he felt like a juggler trying to keep four plates spinning simultaneously. He'd call one caver, get him all fired up, and by the time he got to the next they'd be ready to back out. He'd get this one pumped up, then have to start on the next. It's a credit to his salesmanship that he was able to convince all four people he contacted to follow through on his scheme, even though we all backed out at least once.

Thus I found myself leaving work at midnight that night, crawling through dense fog, down I-5, headed towards adventure. Fueled on coffee and four hours sleep, I rolled in to Lover's Camp at noon. Rich, Martin Haye, and Scott Bernstein had arrived from central California after running out of gas not once, but twice along the way, and Mark Fritzke had driven over from Arcata, on the coast.

We tossed our gear together and blazed up the trail. It was a beautiful, sunny, crisp Autumn day, and we could see a dusting of snow on the mountaintops. Sure enough, when we got to Marble Valley, there were a couple of inches of snow on the ground.

After eating and putting on dry clothes to warm up, we made our plan, synchronized our watches, and the first crew headed out. Rich, Martin and I went into Bigfoot, while Mark and Scott would wait a couple of hours before entering Trail Junction. Since the creeks were running high, we decided to avoid the stream crawl down the 1000-foot-long Lurking Fear, still getting a little wet in the Hanging Rocks connection. We made good time to the Little Toe, about four hours from the entrance.

We missed the first 10:30 pm check-in time, but Rich ran ahead and made the 11:00 with no contact. Eleven-thirty came—nothing. Midnight—nada. Rich said he was confused and disappointed; he would have bet money that this idea would work. I told him I thought it was crazy to think that radios would work between two caves, that I never really thought it would work, and that he was just the Pollyanna of the caving world. Just then the radio sputtered to life, and we heard distant voices.

Mark and Scott had just reached stream level. When they reached the flowstone constriction that is a landmark in lower Trail Junction we could hear them quite well, though their reception from us was breaking up. They had gotten a late start, then got to the 40' drop to find a rat had chewed the rope at the rigging point, and it was at the bottom of the pit. Fortunately, Mark is an excellent climber, and was able to find a way to free-climb the pit, and trail the rope back up.

Steave Knutson

Squeezes such as this are typical of our leads these days.

Mark found a way to squeeze through some scary, unstable breakdown to get past the flowstone slot, which was too tight for him. He walked up to the far end of the continuation, a breakdown chamber, and we could hear him through the radio, clear as a bell. Yet we did not hear anything when they hammered on the wall. Since Scott could not fit beyond the squeeze, Mark wisely decided not to poke around in the virgin breakdown too much.

Next, Rich had Scott take the radio to the upper sump in TrailJunction, while he went down by the Bigfoot sump. Crystal clear contact was made there.

Meanwhile, Martin and I tried to keep warm and be useful by checking out the breakdown in the area. A couple leads I knew of proved to be nothing of note. The breakdown plug at the end seemed hopeless, with fairly large chunks wedged overhead. The ceiling has a steep slope, the same as that room Mark was in at the end of Trail Junction. However, the ceiling reaches down to solidly meet the floor, which is mud and cobbles with no intriguing holes.

I crawled back down the passage to a side lead. In this area, a band of marble had been hanging from a layer of schist, and was now all broken off in large blocks. It looked like a hopeless mess. I thought I heard sounds—very distant hammering, muffled voices. Was it Rich and Martin? Just then, a rock fell nearby; it was Martin, climbing down from a higher level. I mentioned the hammering to him, and he thought he had heard it too. For some reason, I guess because it was late and we were tired, I discounted this occurrence. Maybe we had just imagined it; after all, when you're alone in a cave you can see and hear all sorts of things. Yet, now, I believe the fact that we both said we heard the hammering is significant, and we should have tried to make radio contact from this point as well. Although it seems further away from the other cave, perhaps it's not.

Finally, at 4 or 5 a.m., we headed out, moving a little slow. Once again, the connection had alluded us. The only incident was on the pit climb to the surface. After doing the first pit, I decided to drop the tail of the rope going up the second, down the pit I had just done to get extra tension. This worked great, but when Rich went to get on rope, he found it had flipped around a big blade and was out of reach from the end of the ledge. He ended up free-climbing part way up the first pitch with a weak light, to retrieve it, the 70' pit directly beneath him.

We were all out by 9:30 am, Sunday, and waded through the snow, back to camp. We refueled with food and hot drinks, then each staked out a plot of bare ground between patches of snow for a nap in the welcome Autumn sun. We packed up and left around 2:30 pm, putting a final end to yet another caving season at 4:30 in the parking lot."

In recent years another story was unfolding at the upper end of the Monkey River Passage. The 500 foot space between that part of upper Bigfoot and the Rainy/Half-Dollar/Sunbeam system has become a fixation for Rich Sundquist. He refers to it as "The Gap."

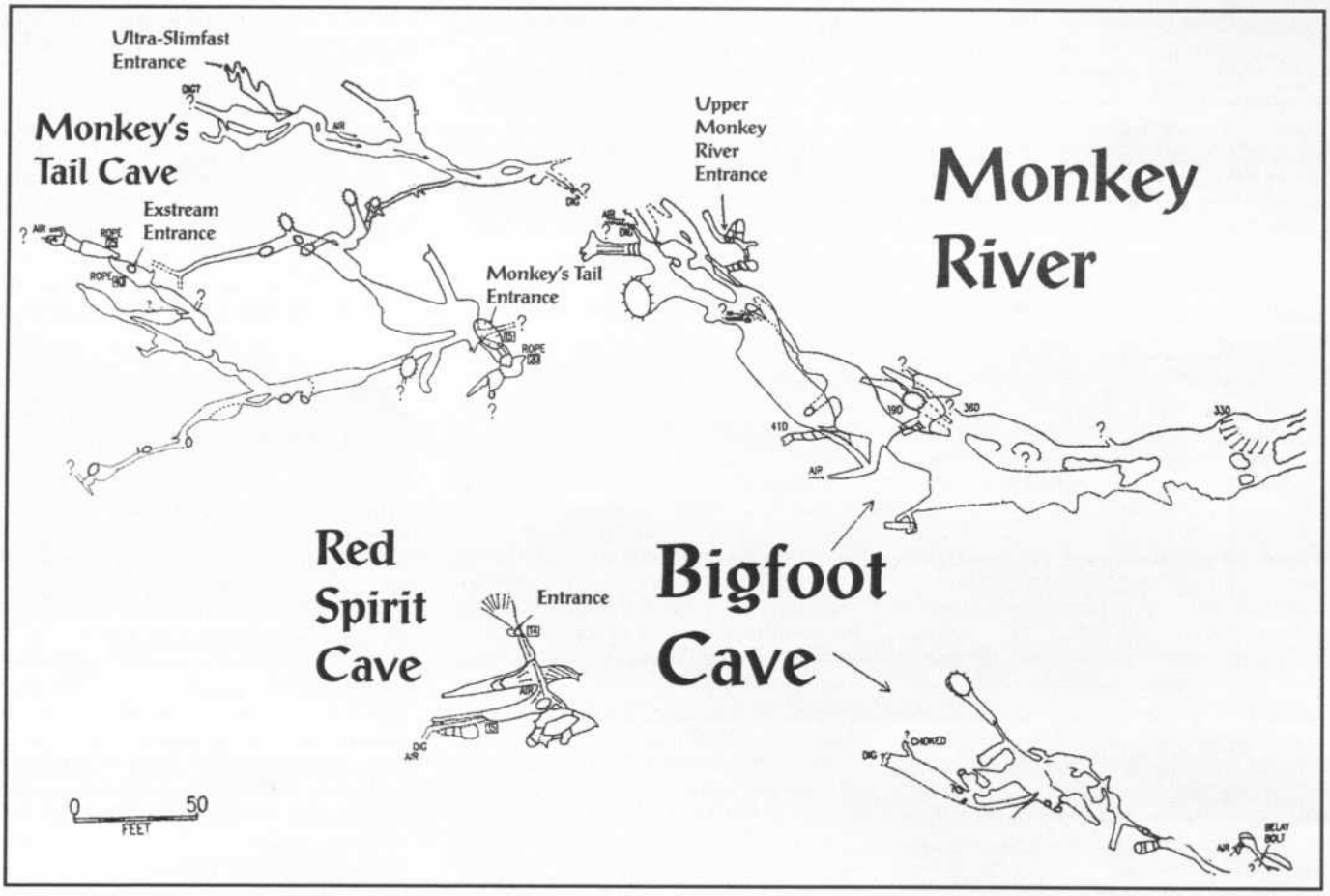
Bridging the Gap

by Rich Sundquist

"As a caver who cut his knees, I mean teeth, in small caves and digs of the Mother Lode country southeast of Sacramento, it was a relief to hook up with the Marble Valley Project back in 1988. Bigfoot Cave contains miles of large passage, and I was much impressed on my first trip to the Marbles when I heard one of the cavers describe himself as a "borehole caver." Now there was a description I had never even considered. On my first trip into Bigfoot we spent six hours touring down to the Terminal Room and back, and a good deal of the time we were walking in large passage. This was for me! I wanted to be a borehole caver too! It didn't take long, though, to discover that the borehole era was over. Boreholes now are the passages that separate the entrance from the leads...

It was a July fourth weekend in 1991 that Dave Cowan and I began poking in holes just up-karst from Bigfoot's Monkey River Passage. The marble above Bigfoot is highly karstified—deeply pitted and fissured, and we checked dozens of cracks and sinks. As the afternoon wore on, I walked to the brink of yet another sizable sink, this one about 20 feet deep, with vertical walls and a snow slope at its south end. I tossed a rock in and it banged on a stoney floor, stopping within sight. Just to be thorough, I decided to chimney down and take a better look. Once on the floor, the sink looked like many others—about 10 by 20 feet, with hollow cracks and spaces heading down between jumbled sharp rocks. I tossed small pebbles here and there, but none rattled more than ten feet. Finally I went to the south end of the sink and wedged my body between the vertical snow wall and the vertical rock wall of the sink. Giving a heave, I managed to topple several hundred pounds of ice and snow out of the way. There, exposed, was a ten-inch hole. It didn't look very promising but I tossed in a rock. It bounced along a little ways, then boomed from thirty or forty feet deeper! More rocks produced the same result, and it didn't sound like they were rattling down a tight crack...

After an hour or so of digging, I opened up a nasty little bit of passage with a knee-breaking turn, tight enough that I opted not to wear my harness through it. This led you



head-first to the pit I had heard, where I had to press my hands against opposite walls in order to swing my feet through. Then I was in position to put on my seat harness. Dave fed a rope through and I rappelled 30 feet down a ten-foot diameter pit. At the bottom a low stream crawl, about ten feet wide with only a trickle of water, came from up-karst. There was also a desperate-looking downstream drain, very tight and partly obstructed by rocks. I headed upstream and soon came to where the already low passage became a bit too low. I had passed at least four decent leads including one with strong airflow, so I left it for a future survey and exploration trip. Because this new cave was located just upstream from the Monkey River Passage, we named it the 'Monkey's Tail'. This name also had the benefit that Knutson hated it.

It was a year later before I returned to this particular cave, this time with Carl Reuter. Crawling upstream, sweeping cobbles aside in the supposedly too-low continuation, we squirmed and surveyed for about 150 feet, eventually stopping where it became eight inches tall and filled with rocks. A month later Cynthia Ream, Bill McGahey, and I dug in the lead with strong airflow. After an hour and a half we broke into a 10-inch high crawl, half-filled with frigid water. We splashed and crawled ahead for over 300 feet, including a 30-foot chunk of passage where we could actually stand up. Toward the end the passage split, both ways ending in digs with airflow.

In October 1992, Cynthia and I dug into the biggest section of the cave, 300 feet of walking passage with a skylight. I should say starlight, since we discovered it at 1 a.m.. The next morning, Knutson looked at the sketch, and realized that we had rediscovered Ex-Stream Cave—a cave that had been found in the 1980s, but whose location had never been fixed by surface traverse.

By the end of 1992, Monkey's Tail had been pushed for over 1100 feet, through six digs and the half-body immersion. This wasn't because we liked nasty passages. Monkey's Tail was located smack dab in The Gap and it had both airflow and waterflow.

Only 50 feet away from the Ex-Stream Entrance was a nearly vertical crack where rocks seemed to fall at least a hundred feet. It sounded promising, but it looked rather tight. One day, alone, I rigged a rope and rappelled the first 30 feet to where the crack narrowed to eight inches wide. I didn't seem to fit, and since no one knew where I was, I was reluctant to really force my way down.

A year later, in 1993, I returned with Knutson, but try as we might, neither one of us could come close to fitting. Another year passed, and I returned with Cynthia Ream. We brought a chisel and hammer, and after persistent chipping at the narrow bedrock below our feet and a few lucky breaks, we succeeded in squeezing down another six feet. Here, once again, we were forced to hammer on the narrow walls, but we were motivated by the sight of an enlarging pit down below. When we finally managed to cram our bodies down, we had to use a vertical squeeze technique, taking several feet of slack in the rope above the rappel device, squeezing down, and popping through to be caught by the rope. Once below the tight spot, the rest of the rappel was open, ending in a room on the schist contact. A stream crawl with airflow headed down-karst and quickly enlarged to walking dimensions; we suddenly had visions of glory—all the way to Bigfoot! But it was not to be. After 300 feet or so, the ceiling lowered and continued steeply downslope with air until the passage became too low. We could see ahead for another 30 feet, but it was only about six inches high and two feet wide. We named this cave the 'Ultra-Slim-Fast' because of the tight vertical entrance section. The squeeze haunted us the entire time we were surveying, and it proved to be extremely difficult to ascend, as it was too narrow to

even bend your legs.

On a subsequent Ultra-Slim-Fast trip we dug and squeezed our way upstream from the bottom of the rope for about 60 feet. For the entire distance this passage was less than a foot high, breezy, damp, and cold. Where we stopped, we could see up into a dome room, but the bedrock opening was only 5 inches wide, and we had no room to swing our hammer. Bummer.

In the wintertime, when the Marbles are snowed-in, I often while away the dark days fantasizing passages and connections between caves in Marble Valley. During the winter of 1996-97, as I was looking at the updated karst map, I noticed that the stream passages in Monkey's Tail and Ultra-Slim-Fast were very close to each other—the data indicated a separation of only six feet horizontally and three feet vertically. In addition, the point of closest approach was a good dig lead in Monkey's Tail, although I did not know of a corresponding lead in the Ultra-Slim-Fast. That winter I also ran into a *California Caver* article from 1989 which described the exploration of Ex-Stream Cave by Peter Bosted and Dan Clardy. This article also mentioned that they had discovered a deep fissure cave only 50 feet away, and Peter described how Dan had free-climbed all the way to base level! I was astounded. The Ultra-Slim-Fast is ungodly tight even after we enlarged it. The thought of popping through the lower squeeze without a rope leaves me amazed, but Dan had done it back in 1989.

In July 1997, based on the proximity of the surveys, we decided to attempt the connection between Monkey's Tail and the Ultra-Slim-Fast. Two cavers entered each cave at the same time—Dave Eck and Charlie Hotz were to dig from the Ultra-Slim-Fast side, while Dick Everest and I planned to dig from the Monkey's Tail. We assumed we would be able to make an audible connection and then dig through. Dick and I shouted and pounded on the wall, but we never made contact with the Ultra-Slim-Fast team. It turned out that Charlie and Dave were unable to fit down the tight entrance slot. It also became apparent that there was a significant survey error, because Dick and I dug at least six feet, and we could see down a tight dirt slope for another ten feet with no Ultra-Slim-Fast in sight.

A few days later we attempted the connection again. This time Mark Fritzke and I entered the Ultra-Slim-Fast while Dick Everest was to lead Mark Harder to the Monkey's Tail dig. Fritzke easily fit through the tight rappel, but when I attempted the slack-rope push-down move, my pelvis totally locked-up between the bedrock walls. I was pinned in a bad spot. I struggled for about five minutes and eventually managed to work free, moving laterally in the crack about a foot to where the undulations in the walls better fit my bone structure. Meanwhile, in the Monkey's Tail, Mark Harder failed to negotiate the knee-breaker in the entrance crawl. After working at it for a half hour or so, Mark was forced to give up. Dick soloed the cave, and what a sound for sore ears when Fritzke and I, digging in the Ultra-Slim-Fast, heard Dicks friendly voice arrive at the far end of our lead. We could just make out the dim glow of his headlamp. It took several hours and 36 feet of digging, but we eventually scraped and pushed through to the Monkey's Tail. We never would have made it without Dick's incredible head-down solo digging effort at the far end of the passage. Just when it got to where we couldn't move, Dick was able to remove many armloads of dirt and rocks, backing two body lengths up a steep slope with each load. We were of course motivated by the knowledge that, if we could get through, we wouldn't have to ascend the Ultra-Slim-Fast entrance slot.

This connection created the jokingly-referred-to 'Sistema Ultra-Monkey' and resulted in a cave with a half mile of surveyed passage, almost all of it nasty. It crosses about a third of The Gap, and it is within 100 feet of the Monkey River Passage of Bigfoot.

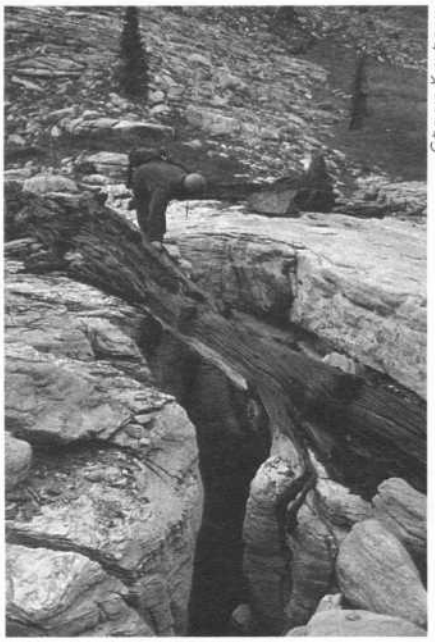
In 1998, we attempted to connect Ultra-Monkey to Bigfoot. Dan Clardy and I entered the Monkey's Tail Entrance while Steve Knutson and Mark Harder entered Bigfoot's Upper Monkey River Entrance. Dan had a hard time fitting through the connection dig to the Ultra-Slim-Fast, so I squeezed ahead for the last 100 feet in the hopes of making contact with the Bigfoot group. I was able to hear hammering from the Bigfoot team, but it sounded distant. After exiting the Ultra-Monkey, we decided to bop into Bigfoot to have a look at the lead. It definitely looked like it could be the downstream end of the Ultra-SlimFast lead, and it had great airflow. We dug it open and Cynthia was able to squeeze ahead for about 25 feet to where it got too small for even her. I still believe a connection will be made here, but it may require a voice and light connection, then a lot of digging."

Breakthrough in the Illusion

by Steve Knutson

Over the years, as the complexity of the project ballooned, I sought ways to keep the work going. There arose two main problems. One was the multiplicity of karst features and potential entrances on the Upper Karst. How could a caver know if a hole had been checked already, or whether it was the entrance to a known cave he/she was trying to enter, on a karst surface that looks the same over a large area?

At first we tended to build rock cairns. But someone else can take down the cairn or add



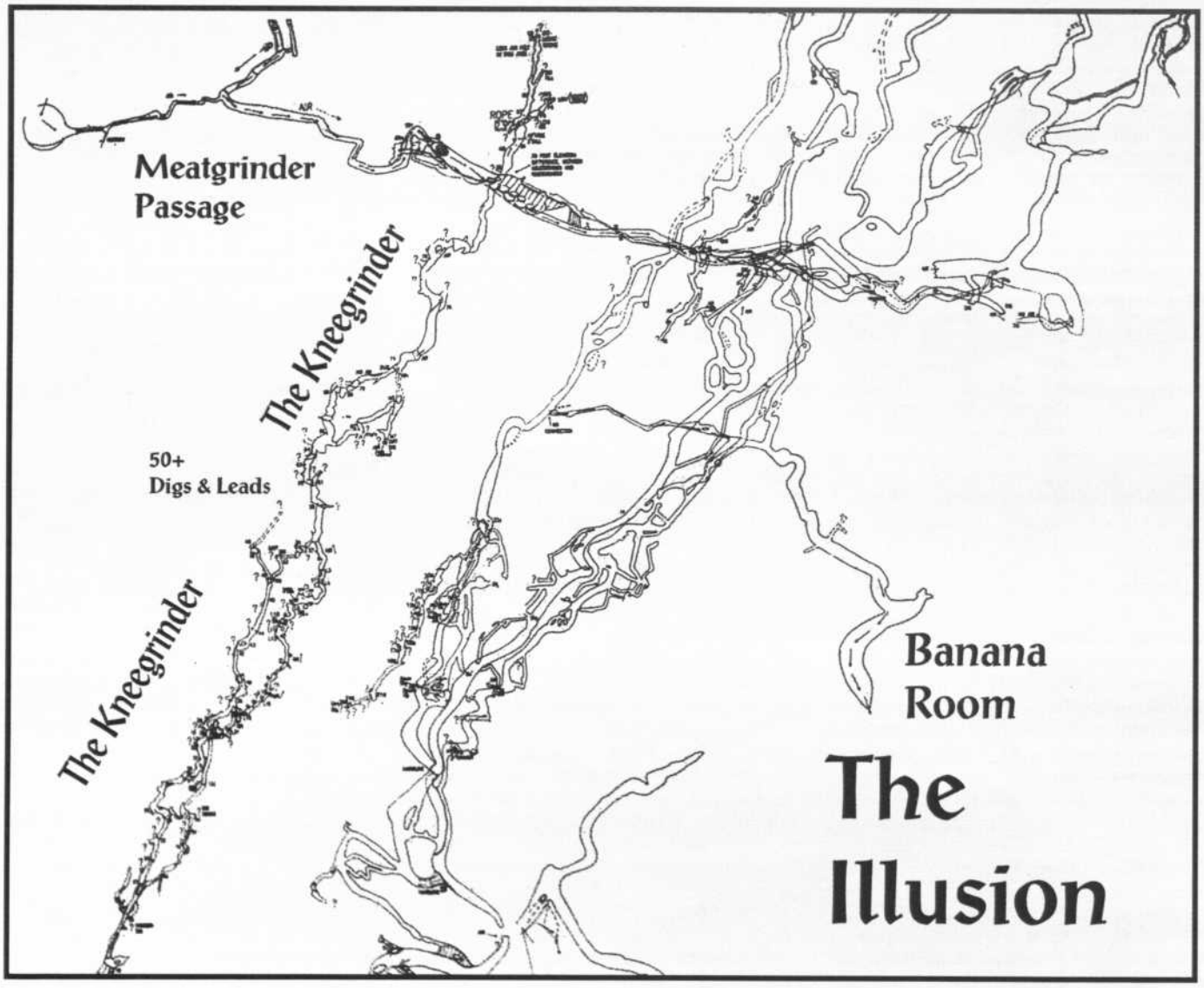
Steve Knutson

Pit entrance on the karst

to it before you can return. And an unknown cairn found—does it mean this hole needs to be checked or dug, or that it has already been done? Then there were the dead tree landmarks. "I found a good-looking pit, has it been done?" "Where is it?" "Oh, about 30 feet from a prominent dead tree." Well, there are a couple of hundred dead trees on the upper karst.

I decided we needed visible reference points and evolved what is now in place, a series of trees marked with temporary plates with a number, fairly visible from a distance. I then made maps that showed these and included line plots of the caves. There are also symbols for pits already checked. With this map and a compass someone can find their way around this fascinating surface and know what is known and what is not, and new entrances can be checked. On only his second trip to Marble Valley, John Bair found Spartan Frog Cave. There is much left to be done.

The other problem, as time went by and the original cavers retired, is that there were fewer and fewer trip leaders for Bigfoot. Worse, as the cave became more complex, there wasn't time every year to draw the new outlying caves and also update Bigfoot. The Bigfoot map got more and more out-of-date and it became hard to remember what leads had been pushed and mapped. About three years ago I started taking cavers on familiarization trips into the cave, touring around and flagging leads for them to do. On one of these tours I took Rich Sundquist, Cynthia Ream, Roger Jones and Ben Barrett out into the Illusion to visit the Wounded Knee. One lead was a passage only entered by Dave Cowan and Bruce Hagen fifteen years before.



The Kneegrinder

by Cynthia Ream

"In the early years of my caving career, I was privileged to make the acquaintance of some excellent cavers. They were not just cavers, but true explorers, who recognized that potential in me —an overpowering sense of curiosity, the ability to look for possibilities even when told there are none, and the stubbornness and stamina to pursue that possibility until it yields its secrets, or becomes an impossibility.

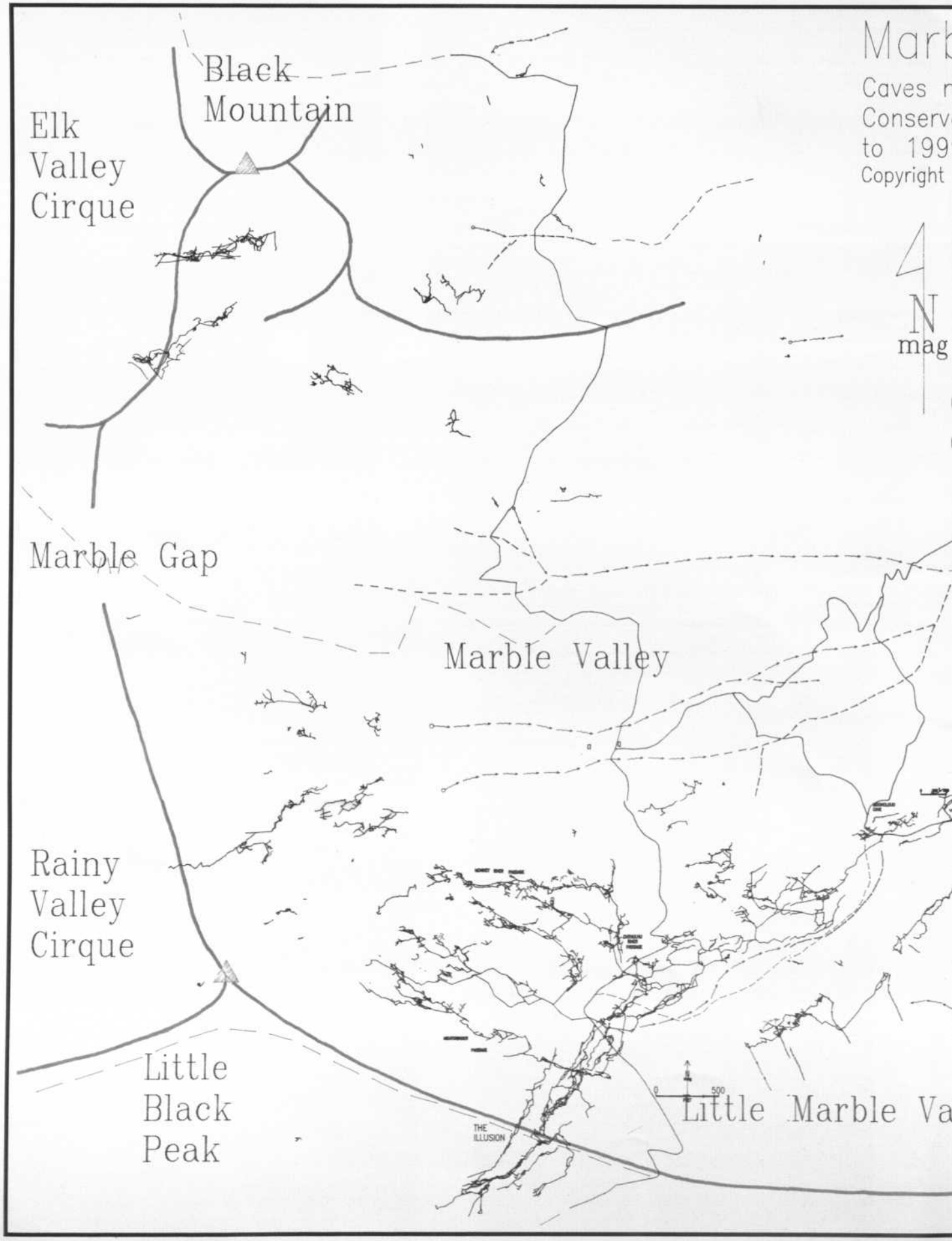
I did not consider myself strong, athletic, or hardcore, yet did recognize that compelling sense of curiosity. I did not imagine I would ever find myself hanging from a rope, crawling through an icy stream, or stripping down to squeeze through a too-tight hole, yet the desire to see what lay ahead was always greater than my fears.

These cavers were good enough to share their experience with me, to teach me about equipment and technique, to wait for me as I struggled to keep up, to teach me a little geological theory, and to show me what it takes to be an explorer. To find something no one has seen before you either have to be very lucky, to make a good, educated guess, or to smile politely while listening to someone tell you a passage doesn't go, and then go ahead and see for yourself. So often the end of a passage is simply a state of mind. You also need to be willing to endure long periods of boredom and discomfort to experience those all too brief moments of success. This is a tale of one of those successes.

Most of my cave exploring has been done in the Marble Mountain Wilderness. This is an area rich in potential for new passage.

Color photos, clockwise from upper right:

The 65-foot second drop in Bigfoot's Discovery Entrance (Dave Bunnell)
Ice formation in one of the Marble Valley caves (Steve Knutson)
Canyon passage in blue marble, Drystream Cave (Dave Bunnell)
Black-footed ferret skeleton in flowstone in one of the Marble Valley Caves (Dave Bunnell)
Flowstone cascade in one of the Marble Valley Caves (Dave Bunnell)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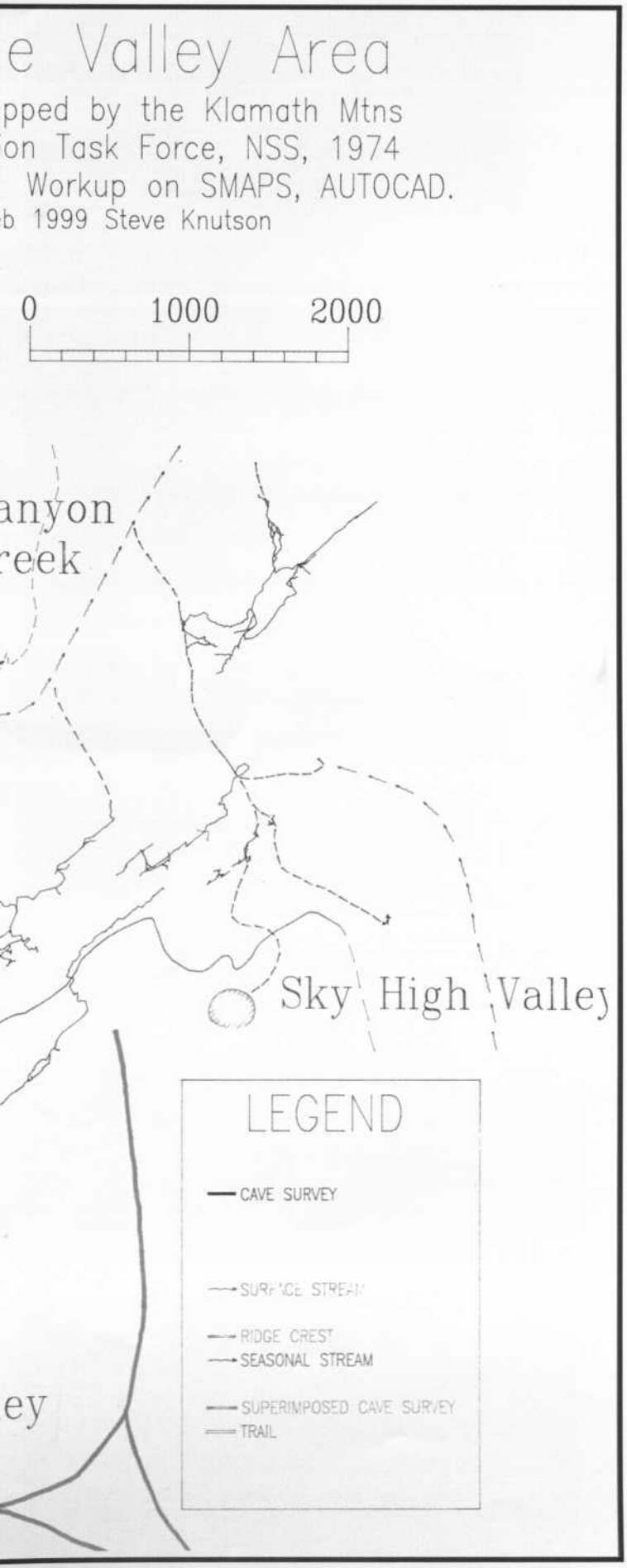


For a woman living in a state covered with lava, who wants to explore virgin limestone caves, this is the place to be.

Thus, I found myself one July morning of 1997, sitting around the camp in Marble Valley, trying to hatch a plan for the day's activities. Somewhat casual in our approach, we never seem to be able to plan our trips too far in advance. We all have our own private lists of leads, but the final decision is reached over breakfast, amidst much gesticulating over cave maps, telling of tall tales, and high pressure salesmanship.

This particular day, the proposal that was gaining the most attention was from Steve Knutson. He was advocating a trip out to the infamous Wounded Knee to check out a lead passed on to him by Dave Cowan. Dave and Bruce Hagen had been mapping in this remote section of Bigfoot Cave about 15 years previously, and when Dave was preparing to move to West Virginia several years later, he decided to tell Steve about the "good lead" they had left undone.

"Rich Sundquist was quickly gaining enthusiasm for this lead, but I was resistant. The catch was that Steve was not feeling well that day, and he was strongly encouraging us to "route find" our way to it. Having been to the Wounded Knee myself a couple times, about 10 years previously, with Steve leading the way, I knew how remote and maze-like this section of cave was. Rich had never been there.

We'd have to negotiate our way through the Illusion of Original Goodness, which is pretty straightforward except for a couple of all-important key places to climb up to new levels, then find our way through the Wounded Knee—an endless series of tubular crawlways, intersecting like Swiss cheese, and all looking remarkably similar. I wasn't worried about not finding the lead; I was worried about getting totally lost!

After much discussion, the plans were laid. Steve would forget about being sick for a few hours and take Rich and I to the lead, then leave us to explore, heading out with Roger Jones and Ben Barrett. On the way in we flagged important junctions to aid us in finding our way back.

Amazingly, after not having been there himself for about ten years, Steve led us directly through the labyrinth to the lost Cowan passage. He pointed up a belly crawl, commanded us to "Go forth and explore," and turned around and left. We slithered on, and were amazed to hit a junction with walking passage, having done nothing but crawl for the past hour or two. Just as suprising was a small stream running under the floor. This area of the cave, passing under the ridge into the next valley, is notably high and dry. We turned left, heading south into the Wooley Creek drainage, with visions of discovering a new entrance to the cave —a way to avoid the four-hour trip back to the Discovery Entrance.

The passage shortly ended in a crawl that was too small, with a couple of holes in the floor. I began to work on enlarging the crawl, and Rich started to hammer on the holes. I managed to squeeze through the crawlway, and found myself popping headfirst into the top of a 25 foot pit. I didn't feel safe bridging over this so I went to see how Rich was doing. He had enlarged one hole enough that I could fit through it, so I slid down about five feet to a passage directly below. I was then able to walk to the pit, and from an upright position I safely climbed down. A quick look around found a small crawlway leading along the same trend, so I went back to report to Rich.

He tried to squeeze through the hole, but it was not yielding to him easily. He was becoming chilled from lack of movement, so we decided I would check it out. It would be pointless to devote a lot more time to digging, if it wasn't going anywhere. There was water running along the floor, and I could hear falling water ahead. After a few twists and turns things began to open up, and I was able to stand, then walk to the bottom of a very tall dome. This is where the water was coming from. The passage continued along the same trend, very tall, but was now pinched to six inches or less

SALON GALLERY

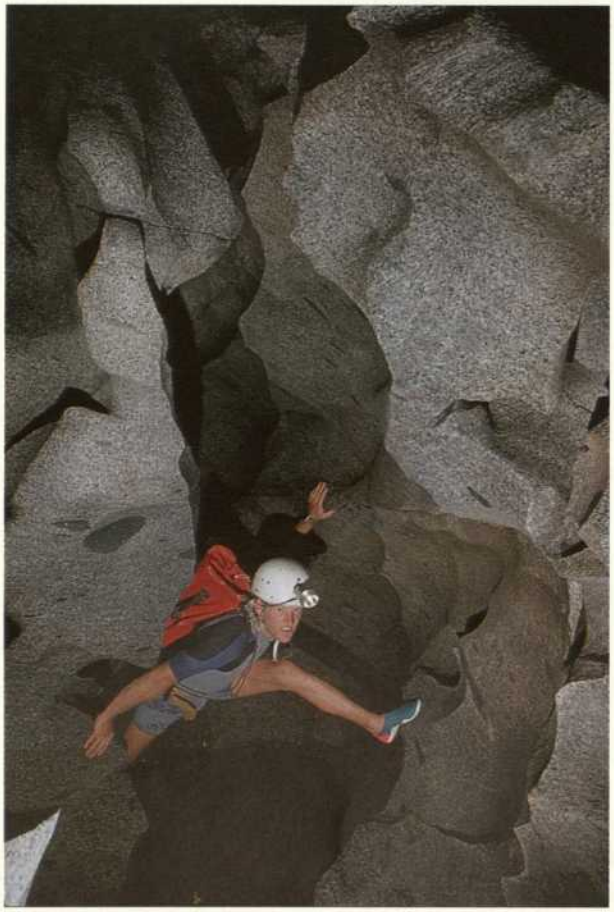
This month we present more photos from the 1998 NSS Photo Salon, including the last three of the Honorable Mentions, listed first. The photos, clockwise from upper right:

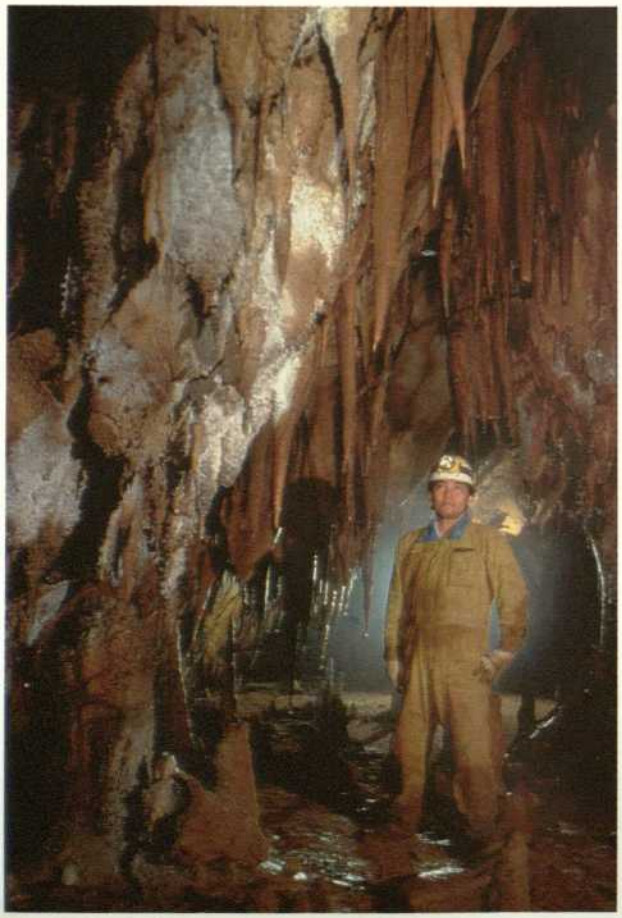
Stretch! by Dave Bunnell

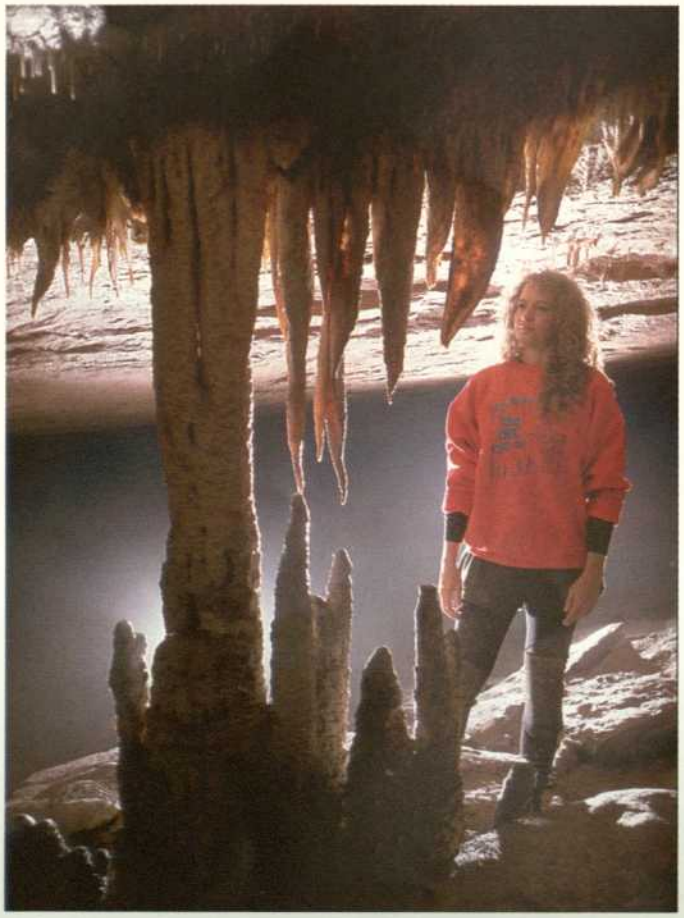
It Came Upon a Midnight Mist, by John Van Swearingen

Cinnamon Stick by Ken Davis

Just Another Lava Tube by Doug & Hazel Medville







in width.

We left this area, estimating about 100 feet of new cave, and headed into the other end of the T-junction. Again, the main trend ended in a crawlway, which I began squeezing through. I managed to get my head around a bend, and was again looking down into virgin cave. There was a small room 10 feet below me, but how to get down?

Meanwhile, Rich had crawled off to the right, and found another dig. I thought that if that opened up, it would lead to the small room I was looking into. I crawled over to where he was, and before too long he had it open to where he thought I could fit. It was tight, but by moving some dirt and mud as I went, I managed to work my way down a small incline to where the passage leveled out. Here it picked up the small stream that started back at the domes, and was rather slimy. I crawled on ahead, and things seemed to open up. When I got to a spot I could actually stand, I took it as a good sign and went back for Rich.

It was much easier to dig from below, and we soon had the crawlway big enough for Rich too. We excitedly began to push on ahead. It was getting very late, and we agreed we'd scoop a little, just enough to see if we really had a going passage. After about 60 feet, having passed a few possible leads, we found ourselves standing at an intersection with two continuing tubes. We looked at each other and grinned. We both had the feeling that this was going to be something good!

I was not at the September Speleocamp, and Rich was kind enough to wait until October to return to the new section of the Wounded Knee. We entered the cave knowing it would be a very long trip. We found our way out to the lead without too much trouble and began mapping what we considered the main trend, leaving flagging with station numbers at every major junction. It was mostly all hands and knees, except for a couple of intriguing pits.

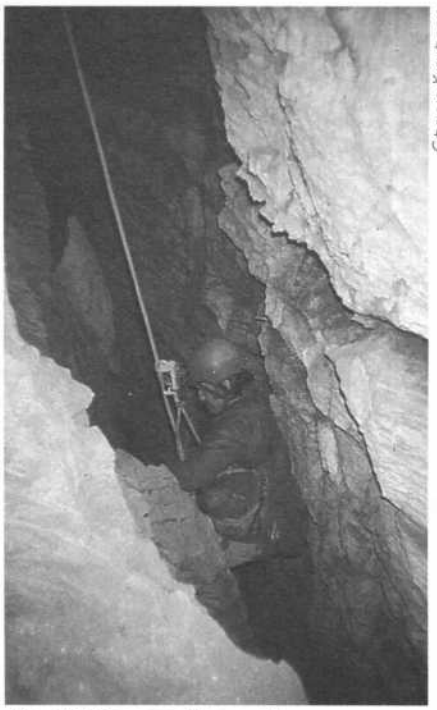
As the passage unfolded we savored the thrill of visiting virgin cave, enhanced by the practice of mapping-as-you-go. Yet as we proceeded, a greater feeling came on us, that this was a major breakthrough, something that happens only occasionally in a caving career. This passage was not ending and there were numerous good side-leads. We began to hope we could map 1000 feet of virgin cave in one trip, a rarity in the Marble Mountains in this era of exploration. We continued for hours. Finally we reached a point where the passage just pinched down to almost nothing. I squeezed into a flat-out crawl that went to the right, and Rich went back to a lead we had passed to see if it would join the tube I was in. I heard him scampering around below me, but we never connected.

When we joined up again in the main passage, I realized I was getting really tired, and thought we should leave. We had mapped 800 feet, using 50 survey stations, almost all in crawlway, and were leaving about 40 unchecked leads behind. It took a long time to get out, and was broad daylight when we got to the surface. Perfect timing: the folks in camp were just starting to gather gear in case they had to come in and look for us, but were not too worried yet.

"With Steve entering our data into his computer, we were able to have a printout map of our new find to dream about over the winter months. The map showed our passage diverges from the main trend of the Illusion, heading straight back towards the Meatgrinder. The Meatgrinder is a base-level passage on the schist contact while we were in old phreatic stuff on a significantly higher level. Thus neither our main trend nor our side leads were heading for any known cave! This was really exciting—a whole new area! When July finally arrived we were more than ready to push on.

My first day in camp, Steve, Midori Sundquist and I suited up and made good time to the new area, which I was now dubbing the Kneegrinder, because of its location between the Wounded Knee and the Meatgrinder passages, and because of the lingering memory of how my knees felt after that first mapping trip with only one, thin pair of kneepads on. This trip I brought two pairs.

My idea was to start at our breakthrough and knock off leads as we came to them. As we went, most of these turned out to not be too grand. Even the ones that had looked good weren't panning out. However, when we got to the second pit, Steve climbed down



Steve Knutson

Jim Wolff ascending a pit

and found that there was passage at the bottom. We mapped and pushed this until we finally got cold and tired. It was time to leave, even though the cave kept going. We mapped 550' that day. The last passage seemed to parallel the one above it, also heading toward the Meatgrinder.

Towards the end of the week, my knees and I were rested enough to feel up to a return trip, this time with Rich Sundquist. We brought a rope and vertical gear for the other pit. When we got to the Kneegrinder, Rich's idea was to head to the end of our original survey and start mapping in the lead he had checked out. He had scooped about 100' of passage, and it was going. We dropped the rope off at the pit, and continued on. "It turned out this was the true continuation of the trend we had been following. We had been sidetracked at the end of our first survey into a little overflow area. We surveyed on in the now-familiar hands and knees crawl, with many side-leads. One of these was a bigger passage that crossed our trend. We continued on following the strongest airflow. We passed other good side leads and came to another pit! This one was pretty muddy with 30 feet of depth to start with; after that we couldn't be sure. It seemed like it must go somewhere. We skirted it and pressed on.

A little way on, we lost the good airflow, and the passage started a slight uphill trend, getting progressively smaller. Soon it pinched off in an ugly mud and schist collapse. We had mapped about 600 feet of new cave, still heading in the same direction, and now figured we had passed over the Meatgrinder.

Dave Bunnell

Easy caving in Drystream Cave

Dave Bunnell

The River of Towers in Bigfoot Cave

We were slightly disappointed, as we were hoping to come upon an easier way out. We left numerous new leads.

On this trip, I had decided to see how long each leg took. It had been 5 hours in from the entrance to the lead, 6 hours of mapping and exploring, then 6 hours out of the cave. It took us 1 1/2 hours to pass through the Kneegrinder, and another 1 1/2 hours to get out of the Wounded Knee—3 hours of crawling! One Way!!! We needed to find a better way.

A couple of days later, Midori and I planned a trip to the upper level of the Illusion, where it parallels the Kneegrinder just north of the Doughnut. On the map it appears closest to the Kneegrinder, and had a few leads going off in the right direction. We'd never been there before, and were excited by the possibility of finding a shortcut into the new section.

We found our way with no problem, until we came to a 20-foot pit. Apparently one had to step onto a slimy, sloping, narrow ledge, holding onto rotten, crumbly walls, and lunge around a corner to another high passage, trending 90 degrees from the one we were in. Neither of us felt comfortable doing this without a belay. We spent the trip checking out leads in another, lower section of the Illusion. One climbing lead looked good but we left it for another trip.

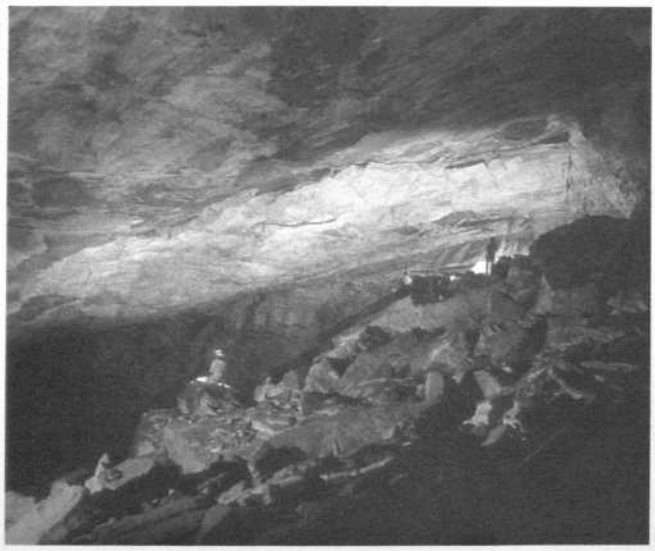
At the September camp, Rich and I were anxious to get back to the Kneegrinder. This time we went loaded for bear. We crawled along, flopping and dragging another rope and packs heavily laden with full vertical gear, mapping gear, a hammer and a pry bar. Our objective was to do the pit near the end of our last survey. Steve had plotted the most recent data, and that pit was nearly over the Meatgrinder.

We noted good airflow coming out of several of the down-trending leads, which was very encouraging. We made good time to the pit. Rich rigged it and went down—all of 25 feet. At the bottom was a brief horizontal continuation ending in yet another dig. Discouraged by the horizontal direction and distinct lack of airflow, we agreed to return to one of the leads that was really blowing. This trip our goal was to find an easier way into this place.

We went back to one of the better leads, and were suprised to note the airflow had markedly decreased. My watch confirmed my theory—the sun had set. Once it cools off outside, the air quits moving so much. Maybe this is why we've never felt much air movement in the back of this passage —we had never made it there before sundown.

We checked out five of our best leads heading in the direction of the Illusion upper level, but kept hitting ones that would require digging. One led to a going passage which we decided to map, realizing we weren't going to find a shortcut connection that day. It was small, and downright miserable in spots, and we called the survey off at a four-way junction. As Rich finished the sketch, I poked my head up one of the leads and discovered a piece of flagging. After a few minutes I figured out we were at the end of the survey I did with Steve and Midori. We turned back at 4:30 am, and were back on the surface by 10:30 am.

Elizabeth Bunnell



Portion of the Big Room in Bigfoot Cave

Rich suggested we continue the spirit of the trip by crawling back to camp over the karst, flopping our packs in front of us. We'd just finished a 21-hour trip with 16 hours spent on our knees, 420 feet mapped, but no connection to show for it. We felt whipped and defeated. I told Rich I thought there was easily a mile of passage out there, and he replied, "Yeah, a mile of HELL!" Who knows when we'll want to go back? There's got to be an easier way into that part of the cave. Now, if it will just reveal itself to us.

Later that day, after a little rest and a lot of food, Rich, Mark Fritzke, Bill Kenney and I hiked over to the Wooley Creek Valley to look for any possible way into the cave from that side of the ridge. There aren't many exposed features over there, and we didn't really find much that was new.

Towards the end of the week Rich, Mark and I took a trip out to the lower Meatgrinder Passage to look for the shortcut from the bottom up. We checked out the climbing lead Midori and I had found, and were pleased when it continued as we envisioned, following a fault as an upper level above the Meatgrinder stream. Would this give access to the Kneegrinder? We mapped about 500 feet along this, but found no possibilities for a shortcut.

The next day Rich and I took a handline to the Upper Illusion, and rigged the step-around maneuver that had stopped Midori and I. We were running out of steam at the end of a long week, and just wanted to familiarize ourselves with the passage and see how promising the leads were. A few looked pretty good, and I was enthused to come back.

On the first day of the October camp I recruited Regan Berry and Lynn Van Erden for a trip to push and map the Upper Illusion, with promises of an easy trip, and their choice of exit time. To get to this part of the cave there is almost no crawling, and it's relatively warm and dry. There had only been one mapping effort in this passage, so the potential of finding something new was good.

We mapped the first lead we came to, which was obviously not virgin. It ended up connecting into a previous survey, and though we surveyed about 250 feet, only 75 feet was new. Still, we noted 12 leads not shown on the current computer map copy that we had with us. One was a intriguing, easy, dirt dig which Lynn found, that seemed to open up beyond.

Towards the end of the week, Mark Fritzke and I returned to mop up those leads. One by one we pushed up these solid rock, body-

sized tubes, and were stopped by constrictions that offered only endless hammering potential. There was air movement, but nothing was opening up for us.

I saved the best for last, and showed Lynn's dig to Mark. He managed to get this open with his bare hands, and soon I was watching his boots disappearing into virgin territory. A quick look ahead confirmed that this kept going, so I went for survey gear and we were off!

I was very excited. There's nothing so thrilling to me as to be in a place no one has been before, not knowing where it might lead, and to get to find my way along. That's true exploration. We mapped close to 200 feet in there, all crawlway, with 20 side leads left for a future trip. We could see that the bearings were not directly toward the Kneegrinder, but that it was at least trending away from the Illusion, and does have several leads going in the right direction. The passage looks very similar to the Kneegrinder, and according to Steve's map update, we're only about 70feet from it horizontally, with about 10 feet difference vertically.

The breakthrough into the Kneegrinder has been the biggest in recent Bigfoot history. This was brought about by the passing on of an old lead, the hard work and desire to explore of dozens of cave surveyors, and Steve Knutson's dedication to keeping the project vital and productive, and the all-important maps current and useable. Caving is a true team effort, and the credit for this discovery goes to all who have contributed, directly and indirectly over the years."

The Bigfoot Map

by Steve Knutson

Despite the Kneegrinder breakthrough, the familiarization trips didn't produce the kind of activity we needed so I finally resolved to make a computer-based map of the cave. I had started making such maps about six years ago. They have the advantage of being easier to do and, most important, easier to update or correct. Still, with a large cave this was a daunting objective.

In the winter of 1997-98 I got out all the old survey notes and began drawing the cave. Since this map was intended to show cavers what was known in the way of leads and digs, I included only details I felt were necessary to lead a new, but experienced caver through the cave. But I did include every lead and dig that was in the original notes, along with whatever comment had been made—air flow, type of dig, etc. To my surprise there were many references to leads that, for simplicity's sake, I had left off the old hand-drawn maps and had forgotten. There are leads and dig sites all over the cave, at least 280 in all. In three months of working part of every day on it, the job was done.

Dave Bunnell

Looking south from Black Mountain toward the Marble Valley karst

Tom Kline and Garry Petrie produced plots of it, including detailed close-ups of sites with leads and/or digs, so that copies of lead/dig areas could be carried on trips into the cave. Thus cavers can orient themselves and know exactly what is known, what has already been mapped, and what has not. The map was used throughout the 1998 season, and proved to be a success. It was possible to keep it updated and it led to a lot of activity. Virgin passage was even revealed only a few hundred feet from the Discovery Entrance.

For those interested in the exact method I use, I enter the survey data into SMAPS 5.2, still the best data handler and great for large projects. To date there is a total of 57.5 miles of combined surface and cave traverse with 9975 survey shots, all ultimately linked together in one directory. To get a line plot of all or part of this to Autocad, I export a .SEF format to Garry Petrie's WINKARST program (great for graphics and other things) and then use the export function to get a .DXF format. This is imported to Autocad and saved as a .DWG file. In Autocad I draw the walls around the line plot using a mouse and sketching the way I want it to appear on the glass of the monitor with a Sanford "EXPO2" dry-erase pen. I should note that this doesn't work with some recent monitors which have an anti-static coating that doesn't accept the pen marks. With one of these I taped a piece of plexiglass over the monitor screen. Features within the passage are inserted as a complete entity called a "block". The advantage of Autocad is that it is a two-handed program with the right hand moving the mouse and the left hand executing commands with a single key stroke. It is very stress-free compared to maps inked by hand.

The Future

This is a cave project area that is into a mature stage, with easy and obvious leads and entrances already checked. But as the account of the Kneegrinder shows, a simple, quick dig can still yield quite a discovery. The Rainy/Half-Dollar/Sunbeam system also shows that caves can be found very close to existing caves but still be separate. Indeed, in this valley of intensively developed karst and caves, there are obvious blank areas on the caves map, where undiscovered cave most certainly exists. Among the myriad caves there are many close to one another, to feed the fire of connection fever. And the melting of ice deposits in the recent drought years has resulted in entry to caves formerly blocked by ice and the need to recheck the multitude of holes on the upper karst.

With all that there is and that we eventually expect to be found in the south part of the valley, it is the north part that may have the greatest future potential. In the extensive marble under Black Mountain we have found a number of caves, the highest and biggest being Apogee, about 8000 feet in length. Nearly every cave there ends in a blockage with strong airflow. Yet there are few surface openings with any airflow known in the Black Mountain karst. Is there a big cave system under Black Mountain, still to be discovered?

We would like to thank Pigeon Mountain Industries for donations of rope, the Sara Corie United States Cave Exploration Fund for donations to buy rescue gear and the Scott River District of the Klamath National Forest, United States Forest Service, for their continued support through the years and funding that helped purchase rescue and computer equipment.

Steve Knutson

Cavers pull a rock out of a surface hole, revealing blackness beyond.

SOCIETY NEWS

NSS Internet Services

The NSS now offers the following Internet Services:

* 3 megs of web space for members @ $5.00/year; URL: http://www.caves.org/member//

* 5 megs of web space for I/Os @ $12.00/year URL: http://www.caves.org///

* POP e-mail accounts for members or I/O's for $10.00/year. These accounts can also be setup as forward only; your e-mail address will be both your nssnumber@caves.org and firstinitallastname@caves.org.

If you would like to set up a member service, please e-mail joshua@caves.org with your name and NSS # for billing purposes. You will automatically be sent a bill by the NSS office.

Note that if you are setting up a grotto,section,survey,project,etc. website (and not a personal website) you will have to use the "I/O" status for billing.

New A-V Library Policy

The NSS offers the Audio-Visual Library as a benefit of membership in the Society. The library has many interesting, educational, and entertaining slide shows and videos available for checkout by NSS members and the Audio-Visual Committee works hard to develop new shows and maintain the current shows in the inventory. It takes money to keep the library and its shows current and the NSS has an Audio-Visual Library Restricted Fund to help pay the cost of maintenance and upkeep of the many shows. Unfortunately, we've had to spend a good amount of money from the fund to pay for normal upgrades to shows, replace worn equipment, and replace missing shows. Although the restricted fund is available to cover these costs, there was no easy way of raising money for the restricted fund. In January 1999, a new policy went into effect that charged members a rental fee for use of the shows. While this has helped bring income into the restricted fund, it is not the ideal way to do this. The Board of Governors and Audio-Visual Committee have discussed this situation in detail and have decided to do away with the rental fee policy and institute a deposit program.

Effective August 1, 1999, the Audio-Visual Library will require a deposit to check out shows. With this change, the library will convert back to the original policy of paying only for the shipping of shows. There will be no additional cost to the member unless they fail to return the show. Those who do not return a show within 30 days after the return due date will forfeit their deposit. The deposits and shipping costs are:

Type	Deposit	Shipping	Total
Slide Show	$100.00	$6.00	$106.00
Video Show	$ 20.00	$5.00	$ 5.00

The reason for the deposit amounts is that it costs the Audio-Visual committee approximately $160 to replace an 80-slide show and tray, and approximately $20 for a video.

Shows may be checked out using a credit card or by check. If paying by check, two checks will need to be sent to the NSS Office—one for the shipping cost and one for the deposit. When the show is returned, the check for the deposit will be returned to the member or destroyed at the member's request. If paid by credit card, the deposit will not be processed. Members checking out shows will have a grace period of 30 days after the shows return due date before they forfeit their deposit. The NSS Office will also send a friendly reminder to the borrower if the show isn't returned by the due date.

The deposit program is a better service to the membership as it returns the library to its original process of only charging members the cost of shipping. There is absolutely no additional cost to the member unless the show isn't returned within 30 days of the return due date.

While a deposit program isn't the most ideal way of ensuring we have funds for the Audio-Visual Library Restricted Fund, it is better than the current rental fee policy and it will also ensure we have funds available to maintain the library. It's our aim to ensure we have quality shows available for our members and this policy will ensure we have the funds to keep our library current and the shows you check out the very best they can be.

Mike Hood
NSS Operations Vice President

Update on 1999 National Cave and Karst Management Symposium

Final arrangements for the 14th National Cave and Karst Management Symposium are being concluded, and some of the Symposium deadlines have changed. The deadline for submission of abstracts has been extended to September 13, with all authors notified of acceptance by September 20. Final publication-ready copies of papers will be due by December 1, and the symposium Proceedings will be distributed in January 2000. For information on submitting a paper or talk, contact Joe Douglas at 615-237-0326 or email jdouglas@vscc.cc.tn.us.

The pre-registration period has also been extended to August 31. Registration is US $125 if postmarked by that date, or $150 after. Registration forms are available on the symposium web site at www.caves.org/ncms99 or by calling Jim Wilbanks at 706-462-2316, or email jimgail@bigfoot.com. Requests or registrations by fax may be sent to 770-682-5536.

The symposium will be held October 19-22 in Chattanooga, TN. A full description was published in the April *NSS News*. The symposium web site also has a description of the symposium, all field trips, and the schedule of talks and events. For additional information on the symposium, please contact Mark Wolinsky at 919-755-9945, Geary Schindel at 210-222-2204, or email us at ncms99@scci.org.

Mysteries of the Maze

(continued from page 199)

probing one of the earth's last frontiers, we now know that they play a crucial role in supplying fresh water to the region. The models being developed due to the work of the WKPP also should benefit people living in karstlands throughout the world, since carbonate terrains of this nature present a greater range of potential environmental problems than any other landform. These water-filled cavities also provide natural laboratories and museums for scientific studies ranging from archaeology to zoology. Thus, the maze coursing beneath the Woodville Karst Plain holds many more mysteries waiting to be unraveled.

Dale Pate

NSS# 12704, FE

What would be the coolest job a caver could have: geologist, commercial cave tour guide, biologist? How about if you were the Natural Resource Specialist, or in simpler terms Cave Specialist, for Carlsbad Caverns National Park, and oversee everything that went on at Carlsbad and Lechuguilla caves? Well, that's exactly what Dale Pate does. Dale was made a Fellow of the NSS in 1989 and is the current editor of two caving publications put out by the National Park Service. One is called Canyons and Caves that focuses on issues within the resource management office at the park. The other is called Inside Earth and its goal is to be a forum for information and idea exchanges between National Parks Units that contain caves. Inside Earth can be found on-line at http://www.nature.nps.gov/grd/geology/index.htm.

When did you start caving?

"I grew up in south Texas around the Corpus Christi area and started caving with some friends in the summer of 1970 after I graduated from high school. That fall I started college at Southwest Texas State University and joined a caving club at the school. After doing recreational caving for a few years I wanted to get more project oriented. Starting around 1977 I spent a great deal of time in Mexico, mapping and exploring Sistema Purificacion, the longest cave system in Mexico."

How did you get the job as specialist for Carlsbad Caverns National Park?

"I started at Carlsbad in July, 1991. Like everything, being at the right place at the right time helps. Up to that point I had been working with the USGS for 15 years. Although not a prerequisite, already working in the Department of Interior was helpful in that I knew the politics of working within government circles."

What exactly does a cave specialist do?

"I am the major focal point for the voice of the cave. We're called the "Cave Managers" but the caves do quite well without us. We really are the "People Managers" that oversee who is going into the caves and the impact these people will have on the caves, including off-trail areas and caves in the backcountry. Any survey, restoration, exploration, or research proposals must be approved through my office first. Other aspects of the job include everything from keeping coins out of the pools along trails, all the way to working at fairly high level politics such as meeting with BLM over issues of oil and gas drilling outside the boundaries of the park. Our main job is to protect the caves and to educate people about the caves, from employees on up to government officials, and of course, visitors to the park."

What are some of the more enjoyable parts of your job?

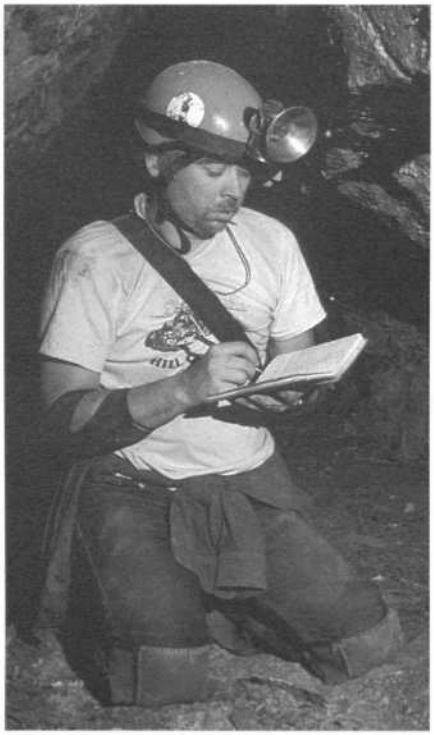
"Being able to work in the caves within the park is incredible, but beyond that, working with people and groups of people that I would normally not have had the chance to is really exciting. For example, I had the pleasure to work with Nevada Barr who wrote the mystery novel *Blind Descent*, which was set in Lechuguilla Cave. She came here for a week and we worked with her and taught her about caves and conservation. I think she did a great job of representing that in her book and she was a lot of fun to work with. Another time a group from Disney Studio, including the artists and producers, came out to the Park for three days. This was the same crew that did the Hunchback of Notre Dame movie. They are now working on a new animated feature about Atlantis. In the movie, the people of Atlantis will live in air-filled caves under the water, so they came here to learn about and to look at caves. These are the types of things I never would have thought part of this job. Hopefully, these people walk away with a greater understanding of caves and their fragility and they will portray this in the books and movies they produce."

Working in and around caves all day as a job, do you still enjoy personal caving?

"My job keeps me in the office quite a bit, but when I get home I do value my away-from-cave time. I've tried to be fairly strict on keeping my cave business at the office. I do help with mapping of caves on BLM property. And, I recently was doing some caving in Hawaiian lava tubes, but it does, at times, feel good to get away from caves and cavers—no offense."

What are some of the things going on at Carlsbad Cavern now?

"Several years ago we started a re-survey of major parts of the cave. The folks that began that work in the 1960s did a great job, but we felt several areas of the cave needed to be brought up to the higher survey standards that are being used today. Many of the survey teams are coming back with surveys of virgin passage. The official length of Carlsbad Caverns is 30.9 miles. The re-survey length is over 27 miles so far. Over the next couple of years we feel sure we'll go beyond the original length. To be able to manage something properly you need to know what you have and what's there. This new data will help us to do just that and learn more about the cave at the same time. Restoration above and below ground is always a major focus for the Park. Above ground we are looking at structures that have potential to degrade the cave system below. These include the Maintenance Yard, Bat Flight Parking Lot, and aging sewer lines. Below ground, impact from 100 years of people has taken its toll. The original floors in much of the cave have been destroyed, flowstones have been trampled over, and structures built to allow access to areas have corroded or deteriorated into the cave. We work with numerous groups and individuals who volunteer thousands of hours each year to help us restore the impacted portions of the cave and conserve the areas we have left. We cannot express our appreciation enough to these volunteers for the work they have done."



Dig It?

A couple of months ago one of my caving buddies called me on the phone. He was breathless with excitement and dying to share the news he had:

"John, you've got to listen to this. This time we've really done it!" (By 'we' he meant himself and several of his fellow grotto members. They formed a loose group of cavers who loved to spend their weekends ridgewalking and poking for new caves. My kind of people.)

"Okay," I began, a knowing smile forming on my face. "What did you do?"

"We finally found a big cave!" He'd been on a bunch of trips where small, cubby-hole caves had been found, but so far nothing over a hundred feet. So he'd tasted gold but hadn't yet held it.

"Coooool," I said, letting the 'oo's slide out. "Where is it?" I asked next; then quickly added, "You don't have to tell me if you don't want to. I'll understand." I had a feeling that he was going to tell me anyway, but it's always best to be polite. No one likes to have their booty scooped.

But he told me and before long I had my caving books out and I was thumbing through what I knew about the region, passing on to him what I thought might help him to find further caves in the area.

Eventually the topic of conversation turned to the newfound cave itself. I learned that my friend had been a bit premature in his announcement. He hadn't found a cave per se; what he had found was a stream sinking into a boulder filled sinkhole.

I listened thoughtfully while he explained the situation. The stream sank in between some serious rocks. They had removed the loose, gravelly stuff and excavated a waist deep hole. But the stream was reluctant to give up its secrets easily and now it poured into a crack no wider than a fist. My friend, who has only been caving for a couple of years now sought my advice (such as it is) for what to do next.

I've been involved in a number of cave digs, mostly on a small scale, and read about dozens more. I'm not Mister Cave Digger, but I'm not a neophyte either. So I started asking him some questions.

"Are there any other sinkholes nearby?" I asked. Maybe an easier way could be found in.

"No. It's all farmland. Any other holes would have been filled in." That sounded reasonable to me. The only reason this hole wasn't filled was because of the stream.

"Do you know where the resurgence might be?" I asked. Maybe they could work their way upstream.

"I don't know. The nearest springs are a couple of miles away."

"Well, what about..." I began, but my friend interrupted me.

"Listen, John. I want to get into THIS hole. How do I do that?"

"Okay, okay." I hesitated. I thought back to what I knew about digging. The basic stuff. Stuff applicable to almost every situation. I am of the opinion that although every dig situation is unique, there are a few rules that you can follow to make to chances a little better.

I began to list some general rules of thumb. "Make sure you always have a good ceiling. Always dig the passage to a comfortable size. Watch the morale of your diggers. Happy diggers dig more than disgruntled ones. Set yourself reasonable goals for each trip and stick to them. Keep good landowner relations."

"John", he said (by now a little frustrated). "I know all that. What I want to know are the secrets. The tricks of the trade."

Now I was the one who was confused. "Secrets?" I repeated. "Hard work and patience."

"You're serious? You don't have any secrets?"

"Sorry, man. But that's all there is. You just have to go in there and get the job done."

We talked awhile more, but it was clear that my friend was disappointed. Caves are dug into and passages are extended all the time. With all the caves opened in the last two decades, sometimes it does seem like there is some mystical formula being used.

We can only wish that were the case. But the science of passage extension is, like many aspects of speleolgy, imperfectly understood. Though we sometimes can definitely say a certain passage will go, more often we merely make an educated guess. Then we go out and test our guess.

And that, I think, is science in a nutshell. To make a guess, test it out, and then reevaluate your guess based on the new information? By constantly doing this we hope to improve our guess work to the (eventual) point where we can expect that we will be right almost every time. It is unlikely we will ever reach the point where we are right every time. We hope to "reduce the error bars," as Carl Sagan put it a little each time.

So how can we, as average cavers, hope to do this? We can begin by gathering facts. Gather up as much info as you can about the area you are interested in. While it is possible to get lucky by digging in a random fashion- you are much more likely to strike pay dirt if you are an informed digger. Study the information you have. Turn it over in your head a few hundred times. Sometimes revelations strike you the first time you look at something; sometimes they strike on the five hundredth time. Make up a theory about where you think you ought to dig, then bounce it off your fellow cavers. Let them try to shoot holes in your theory. Be prepared to defend your ideas, but if someone brings up a good point, don't dismiss it simply because you don't like it—try to incorporate it to strengthen your idea. Then, only when you think you have a sound plan should you put shovel to dirt. Have a plan about how much time and investment you are willing to put into a project. Be firm with your plan, but at the same time remain flexible to unforeseen circumstances. And, win or lose, leave some written record of your attempt, from the planning stage through the digging. This way, future generations of cavers won't have to start from square one, but can build upon your shoulders. This way, even if you personally don't find something new, at least you will have knocked off some of the possibilities for those that come after you. It's like the infinite monkeys and the Shakespearean play—given enough cavers with enough shovels someone will break into that new passage. With a little luck and lots of work, that person could be you.

Postscript: There are lots of people and publications that are more devoted to digging than I. Off the top of my head I can think of a few. The Cave Digging Section of the NSS, which publishes the *Digger's Gazette,* is always a good place to start any search. I'd also recommend thumbing through past issues of the *Speleodigest*, especially the 'techniques' section. *Caving Practice and Equipment* by the British Caving Research Association also has a good chapter on the basics of cave digging.

Rope Climbing Indoors

Why climb indoors? Other than the rope climbing contest, this may be the best way to "fine tune" your rope climbing rig. Also, if you are willing to climb beyond 10 minutes, you should begin receiving aerobic benefits. I feel this is still a good way to teach beginning rope climbing.

We are no longer heroes in the eyes of most landowners and cave owners. Doing our training climbs indoors takes the heat off their caves and may cut down on pit traffic.

Setup Procedures

The height of the ceiling in your room, to make it practical, should be at least 15 feet or more. Twenty feet or more is better, as it allows the climber room for someone to hold the rope. We have only 17 feet, but our climbing rigs are "finely tuned" so we can still do aerobic climbs without someone holding the rope below us. However, we cannot do any "speedwork" on the rope unless we have a third person to hold the rope below us.

You will need a long rope. Miriam and I have some long ropes marked off. We "flat chain" the distance, adding two extra feet each hundred feet. This is to allow for rope contraction. Remember, you may lose one foot per hundred due to contraction on a new rope when you take it off the spool.

When marking your rope for climbing, be sure to allow 20-25 feet **before** you put the starting mark. After the last climbing mark, **you should allow enough rope to be able to lower the climber down safely to the ground.**

Some of these ropes have to be used in the field. If the rope gets wet, you may lose yet another foot per hundred. Hence the allowance of two extra feet. It can be aggravating to think that you have done a thousand foot climb, but when the rope measurement is checked, you find you are 10-20 feet short!

We use a top quality ball bearing pulley to run the rope through and this pulley is attached to a **strong, padded** ceiling beam. Extra back-up nylon slings are always used and a large top quality French screw link is used to attach the pulley to the slings. A large, long rack is used to belay the rope. Extra slings are used to attach this rack to its floor position.

You need a solid anchor point. If there isn't any, you may have to put in two bolts, at least, to use for an anchor. But to place bolts, you would need a concrete floor. In our case, we're fortunate to have steel bars over the windows on which to use for our rack belay. Also, there is an edge of concrete around the area if bolts are needed.

The floor position should be firmly grounded and strong for attaching the rack for belaying the climber. You should always periodically check the pulley set-up and the floor position for any signs of developing weakness and/or danger signs.

I feel that extra safety precautions are a must for this type of activity. Miriam and I also use drop cloths to pile the rope on and have a fan for hot weather. The climbing ropes are kept in new plastic garbage cans with wheels on them. These are easy to roll around.

When you are finished climbing, just drop the top end of the rope into the trash can, straight down from the pulley. With the rope fed in this way, the starting end will be on top of the pile. It's a good idea to mark this end in red.

This activity can be very enjoyable. Keep a record book with times and the length of all your climbs. Also, make notes concerning how you felt; name of your climbing system; the weather; if you tried something different, etc. You may wish to make notes concerning what you ate and how it helped you or hurt your climb. All this information is helpful when you review it as you continue your schedule of rope climbing.

While doing a long aerobic climb, you have the option of having split times called out, just as if you were on a long run.

While it is tempting to pile up footage, try to develop smoothness and economy of movement. Try to learn something! Learn pacing, as stated in a prior article. Climb aerobically. Warm up and warm down.

If you are a contest climber, there is a time for speed work, but most of the time you may enjoy doing "base aerobic" climbing.

Be versatile. Miriam and I try to stay in practice with different systems. Using a rope walker system can pile up footage, but you may soon get bored. So practice with 3-knots, the frog system, and also hand-held jumar-type systems. This activity should help you decide which system(s) are optimal for you.

Your field climbing will definitely be enhanced! One example is that this past December a group of us went to Sotano de las Golondrinas. The group had done vertical caving in the U.S.A., training for it.

However, about a week before leaving for Mexico, we had a final "tune-up", pulley-climbing day. Many of these folks made their longest rope climb ever on that day. Some folks climbed a thousand and fifty feet. Naturally this gave them confidence to make the long ascent out of Golondrinas.

In conclusion, remember this can be an enjoyable activity. Also, remember to still do vertical work in the field. You should stay skilled in rigging, descending and negotiating lips of pits.

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2. Smith-Padgett, Editors. *On Rope*, New Revised Edition. Published by the NSS.

THE CASE OF THE SPELUNKEAN EXPLORERS: NINE NEW OPINIONS.

Peter Suber. Routledge, London and New York; 1998. 23 by 15.5 cm, 111 pp. Softbound ISBN 0-415-18546-7, $17.99; hardbound, ISBN 0-415-18545-9, $60.00.

A group of spelunkers is trapped by a cave-in. During the struggle to dig them out, they are reliably informed by radio that they will die of starvation before the digging can be completed, so they chose one of their number by lot to be killed and eaten. When the rescue has been completed, at enormous cost including the deaths of ten rescuers in further cave-ins, the group's action is discovered and the survivors are arrested, tried, and convicted of murder, for which hanging is the mandatory penalty. They appeal their conviction to the Supreme Court of Newgarth. This famous fictitious case first appeared in the Harvard Law Review (vol 62, pp 616-645) in 1949, when Lon Fuller wrote five imaginary opinions of justices on the court that illustrate various philosophies of law and jurisprudence. At least two additional sets of opinions have been published in other law reviews since, and now this new book reprints the original article and gives nine new opinions meant to illustrate developments in legal viewpoints in the ensuing fifty years. For those interested in the sort of questions debated, this is a good, painless introduction, although the justices are a bit long-winded. I'll let you read the book to find out how the courts ruled. As far as caving is concerned, this is an interesting curiosity and an expensive little book.

Bill Mixon

NATURE'S UNDERGROUND WONDERLAND: KARTCHNER CAVERNS

Sam Negri, with photographs by K. L. Day and others. Arizona Highways, Phoenix; 1998. 8.25 by 10.75 inches, 32 pp, softbound. ISBN 0-916179-65-6. $4.95.

One does not normally expect a lot of a show-cave booklet, but this one is especially disappointing. Perhaps that is partly because the cave itself, to judge from the book, is somewhat disappointing, after all the hype about the expensive fussiness of its development and its being, allegedly, one of the ten most mineralogically significant caves in the world. In fact, while the cave is indeed nicely decorated with living formations, they seem to be almost all pretty ordinary dripstone. We're not talking Caverns of Sonora here. The bulk of the book is, of course, color photographs. Many of them are nice, but many are not printed very crisply, and one, given a page and a half, is mostly unsharp. Somebody appears to have taken great liberties with Photoshop in trying to make the formations in the Strawberry Room suitably, to him, pink. The first part of the text is devoted to the discovery of the cave and its preservation for fourteen years, by secrecy and occasional shenanigans, until it was bought by the state of Arizona in 1988. The second part, covering the genesis of the cave and its speleothems, is poorly written and could have used a good going over by somebody who knows, for example, that soda straws aren't two inches in diameter. If you want to practice being a fussy reviewer, look for the words "verticle shaft" in the book.

Bill Mixon

THE BAT. WINGS IN THE NIGHT SKY

M. Brock Fenton. Firefly Books, Buffalo, New York; 1998. 10 by 8.25 inches, 144 pp, softbound. ISBN 1-55209-253-4. $19.95.

Yet another popular book on bats and, in fact, the third by Brock Fenton. The text, which is in large print widely spaced, can be read in an hour. It looks like it was thrown together and appears aimed at about the eighth-grade level. There are color photographs on most pages. Some of the photos, such as a group shot of a bat-research team posing on the beach at Akumal and a picture of a bat house that has never been occupied in seven years, seem pretty pointless. A diverse selection of bats is, however, illustrated by nice portraits.

Bill Mixon

EMERGENCE

Marian McConnell, Cave Books, St. Louis. Publication date: August 15, 1999. 17 full-page pen and ink drawings, plus cover illustration (all by author). 173 pp, Softbound ISBN: 0-939748-48-7 List price: $10.95 Hardback ISBN: 0-939748-49-5 List price: $19.95 Available from all cave booksellers.

The basic story line of Emergence is a group of female cavers go into a multi-level Virginia cave for an overnight trip. They are well prepared even though there are three novice cavers with them. After the group drops the 100' pit, some "T-shirt" cavers enter the cave and cause trouble. Because of their actions, the women are now trapped down below, the only possible way out being a 30' sump of unknown proportions. The story takes the women on an amazing adventure that tests their abilities and fears.

Emergence is not a book just for cavers. I had to remind myself that near the beginning when the trip leader characters were explaining simple caving techniques to the novice characters. I slowed down a bit in the first chapter because of this; it all seemed too simplistic.

But this is not a book that will be read and enjoyed just by cavers. It is a book full of adventure that will be devoured by any reader who enjoys a well-told tale. For it is that: a good balance of excitement, characterization, scene-setting, a believable story line, a well-woven tapestry with all the different threads coming together to form a story that you'll want to read again.

The simplicity comes in handy later in the story, during the rescue. Never having been on an actual, well-organized, large-scale cave rescue myself, the simple way each component, from the Incident Commander to the Initial Response teams to the Logistics team on the surface, is introduced made me fully understand what is involved. I came away feeling as though I had "been there, done that."

If ever I were in trouble underground, I would want a levelheaded, competent caver like main character Danielle on my trip. Even though this was her first time leading an overnight trip, with novices, she met every challenge with clear logic. She was well trained, and though she questioned herself and her ability, in the end she proved far more capable that she ever would have thought. The lives of seven people were depending on her judgment and though she made some extremely difficult decisions, she emerged in the end a stronger, more confident person.

The book is well illustrated with numerous pen-and-ink drawings done by the author. I think they enhance the story quite nicely.

Both my 11-year-old daughter and I thoroughly enjoyed reading Emergence. It was simply fantastic.

Meredith Hall Johnson
NSS # 21477

NSS Convention '99 - Filer, Idaho

by John Lyon

Time is Running Out

Convention '99 is only a week or so away and it is hoped that your bags are packed, your lists are finalized, because the "Great Potato" beckons. Idaho calls; the Saw Tooth Mountains call; Craters of the Moon call; the Shoshone lava fields call; Shoshone Indian Ice Cave calls; Idaho's Mammoth Cave calls; Tee Cave calls; Maze Cave calls; Pot-O-Gold Cave calls; Shoshone Pit calls; Chalk Cave calls; the Johnson's (three caves in one) call, Hole-To-Hell Cave calls, etc. The list may be endless but a caver's curiosity knows no bounds.

Don't exclude yourself from caving the "Great Potato" by forgetting your caving gear, vertical gear, caving clothes, and sun screen —be prepared for any contingency:

(1) Tough foot-wear is essential as Mother Nature forgot to trim her toenails. In other words, lava floors can slice shoe leather and rubber soles into shreds.

(2) The other thing she forgot was providing lava tubes with reflective material. All she managed was light-absorbing surfaces comparable to sponges. Bring bright lights.

(3) It goes without saying that knee and elbow pads are more than a luxury. They are a necessity.

(4) Sun screen and insect repellent are two necessities, as well. With these cautions in mind, have a great week of caving.

Other Appealing Subjects

Caving isn't the only reason for a convention. It is also a time to hone your caving interests in intellectual matters, as well. Consider attending some of the special meetings such as Vulcanspeleology, Conservation & Restoration, Cave Rescue, Paleontology, Geology & Geography, Survey & Cartography, Karst Hydrology, Newsletters, Underground Lighting, and Cave Research.

Also, don't overlook the Speleolympics, the Vertical Contest, the Howdy Party, the Awards Ceremony, the Photo Salon, the Auction, the Campground Party, the 3D Slide Show, the Open Projector Slide Show, and the Great Debate, etc. These are all great reasons to savor Convention '99.

A Cave For All Seasons

From the Convention site there are wild caves, commercial caves, undiscovered caves, protected caves, vertical caves, muddy caves, ice caves, trashed caves, gated caves, bat caves, and kids' caves.

Suggestion

When you cruise through Twin Falls, Idaho, on your way to little Filer, stop at the Information Center and pick up pamphlets, booklets, and maps. These will prove to be of invaluable help in planning your activities and not getting lost. Do the same when you reach the Convention Headquarters in Filer.

Emergencies

Convention Hot Line number: **(208) 866-4900**

Twin Falls Chamber of Commerce: **(208) 733-3974**

Fire & Police: **911**

First-aid

There will be a first-aid tent that will be staffed 24 hours a day for the entire Convention. Also, just four miles down the main highway is the Twin Falls Regional Medical Center with a fully staffed trauma center.

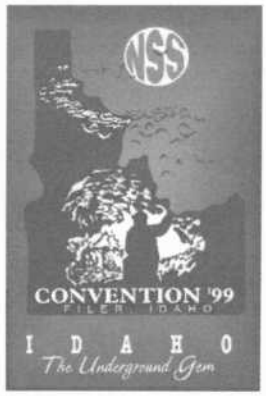
Tidbits

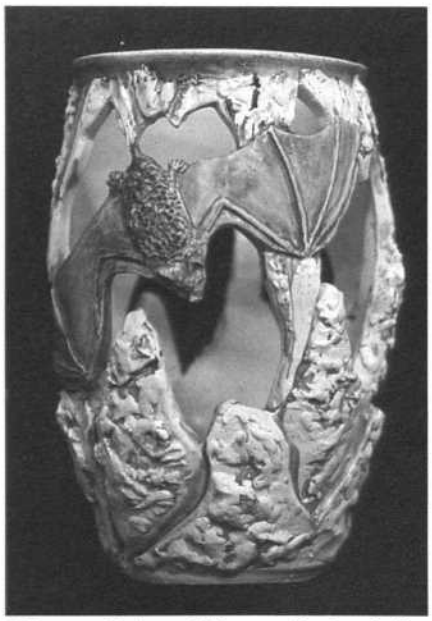
Practice your rock climbing skills in "City of Rocks," a National Park southeast of Filer.

Many tribes of American Indians converged at Idaho's natural hot water springs for untold centuries, calling them the healing waters. Soda Springs is 175 miles east of Twin Falls. Lava Hot Springs is 142 miles east of Twin Falls. Zims Hot Springs (near McCall) is 236 miles northwest of Twin Falls. Givens Hot Springs (near Marsing) is 146 miles northwest of Twin Falls. In a more local area, there are a couple commercial hot springs nearby, one (or more) towards Thousand Springs, west of Twin Falls, and Natsopah, to the south.

Idaho's sate gem is the Star Garnet (not the potato).

Salt Lake City will host the 2002 Winter Olympics. What makes the snow in the Wasatch Mountains so special that it can attract the Olympics? Locals call it the "lake effect" which interpreted means that moisture extracted from the Great Salt Lake by wind action dumps on the mountains in the form of quality snow, just a few miles east, for some of the greatest snow on earth.





This candle jar will be on display in the SpeleoArt exhibit

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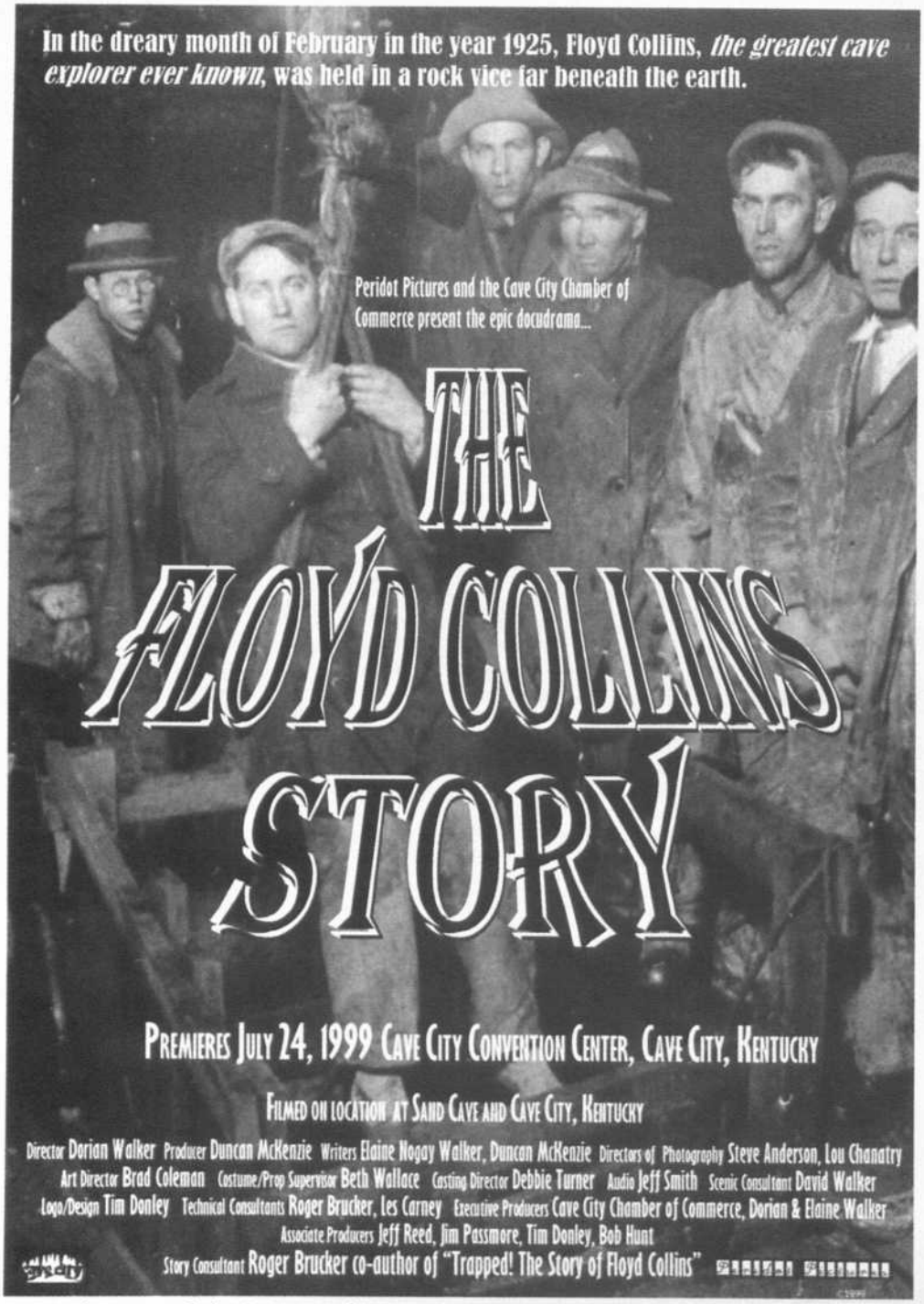

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DOWN THROUGH THE DECADES

by Peri Frantz

This month marks the 10th anniversary of my taking on this column, then titled "40/25 Years Ago". It's been a great experience, giving me a wonderful excuse to wallow in old issues of the *NSS News*. I've also enjoyed the feedback, which for the most part has been positive. Even the negative feedback has been valuable. Now, as I move into my second decade, I'll try to avoid repeating myself.

Exploration: In the July 1949 *N.S.S. News*, Betty Yoe reported that the Cleveland Grotto "made a trip to Carter Cave State Park, Olive Hill, Ky., over Decoration Day weekend ... . **X Cave** and **Saltpeter Cave** are commercialized ... (but) **Bat Cave** is not shown to the public. ... Bat Cave is reached by following the stream ... under a very huge, beautiful natural bridge ... . On our first trip ... we kept to the stream level and followed it through the main passage, which averaged 30 ft. in width and possibly twice that high ... . Heavy rains in the wet season completely fill this passage with water, as planks, logs, etc. were wedged in the crevices in the ceiling. ... We later returned to Bat cave to explore the upper level ... (which) is as wide as the main passage, but the ceiling is considerably lower and has some formation. The back end ... contained a lot of rimstone formation. Since the ceiling at this point was about 2 1/2 ft. above the floor, we cussed the roughness of the rimstone on the knees, rather than admired its beauty. ... Many more bats were observed in this portion of the cave than in the lower passage. They were not clustered, as most of them had migrated in this time of year, and those that we saw were hanging singly."

In the July 1959 *NSS News*, Roy Davis refuted the claim, made by a guide at nearby **Ruby Falls** that "It's the only underground waterfall in the world!" "**Mystery Falls** was first discovered by a local resident ... who crawled into a spring just above the Tennessee River, and explored some 500 ft. of meandering stream passage – into a colossal dome-room, the upper limits of which were out of sight due to the ... veil of spray that rose from a tremendous waterfall ... ." The community of St. Elmo exploited the cave as a water supply, digging horizontal and vertical shafts to the top of the falls, and constructing a dam and sluice to divert the water. Later, rising water from Hales Bar Reservoir blocked the lower entrance. In June 1959, the Chattanooga Grotto made an assault on the cave. "A cable ladder was rigged ... My descent into that echoing cavity was an experience I will never forget – exhilerating beyond words – yet frightening and terrible. ... Bill Cuddington, Don Black and Herb Dobson proceded me. ... Lowering the gasoline lantern to them ... did nothing to boost my courage – as it spun dizzily, and grew smaller and smaller ... Stepping of into space, the rope began to smoothly travel around the sheve ... The symmetry of the well was unbelievable. Not fluted or irregular ... the walls were ... smooth, unbroken, and completely circular ... A great drapery hung in majestic folds ... As I neared the bottom the fellows tugged on my line, and hauled me across the sizable ... lake in the center of the room."

"Crammed into a square just a little over a quarter of a mile on a side is Oklahoma's biggest, longest and toughest cave system, **Duncan Field**. ... These master cave passages are connected by sometimes agonizingly small bedding plane passages or twisting, formation-choked and nearly impossible stream crawls. ... Tulsa Grotto members learned of the cave in November, 1967 ... (from) a farmer who told of a cave 'so big you could drive a herd of oxen through it.' ... The first TG party found a complex of passages notable for spectacular fluting ... When tape and compass showed it to be only 2,000 feet, TG members were disappointed. Still, it was a great cave, so in December, a full–fledged party ... went to give the cave a complete study. ... a group lead by John Phillips went nosing about in the 800-Foot Room. Phillips approached a chimney ... and said he thought there was a hole at the top. In not too many minutes, Clayton Russell was dashing through the cave with a message for all concerned: 'A big passage that goes and goes .... deep pits ...bunches of leads ...'." Exploration continued over the next few years, finding new entrances and connecting some of them. By the time Joe Loony's article appeared in the July 1969 *NSS News*, the system consisted of "three major caves – including the 18,000-foot Duncan Field Cave, the approximately mile-long Sam's Pit Cave and the 1,300 –foot Third Cave."

"Huautla 1979 – The Almost Triple Connection" in the July 1979 *NSS News* is Bill Stone's "story of success and frustration as **San Augustin** grows longer by kilometers, but not a meter deeper." "Working two teams from where the breakdown opened into the trunk, we surveyed slightly over a kilometer on our first push. This netted a rather unexpected connection. The north trending passage ... shot up a 35-degree boulder slope ... to where an intersecting fault abruptly closed it off. ... A steep climb brought us to a balcony overlooking a large shaft. ... The passage below ... was later found ... (to be) a short distance above the 648-meter lake in the main passage. Thus a rapid route to the lower levels had been discovered. During the next four days ... a notable connection ... (was) made between a narrow downstream canyon and the large upstream Metro complex. This connection closed a three-kilometer long loop ... we began rechecking some fissures leading northward of Route '68, toward **La Grieta** ... A small hole near the ceiling afforded enough space to stick one's head through for a yell. Quite to our surprise a long echo reverberated in the distance ... The following morning (Hal) Lloyd and I went to the surface for an explosives kit... and we were soon running down a 20-meter by 20-meter borehole. ... To our surprise we found the furthest point of penetration to be only 10 meters from La Grieta and 30 meters from **Agua de Carrizo**, all of which appear to enter the same breakdown complex. A triple connection was at hand! ... (but with) provision ... stretched four days longer than intended the entire group exited the cave." A week later, Stone lead a smaller group back "for a final nine-day stay," to no avail. Although another unexpected loop was found, the hoped for triple connection remained elusive.

"In 1984, while visiting relatives in Tennessee, they told me of their water supply, a pumphouse at the base of a large hill. Behind the pumphouse was a cave with an underground lake. This was too good to pass up. Raising the plywood door ... I entered the cave by wading in 10 in of water. ... After wading through 100 feet of low passage, I was able to stand in a larger passage with the stream flowing along one side. ... Alone and with limited light, I called it quits for the day." It was two years before Hubert Crowell could return to **Philpotts' Pumphouse Cave**. His story appeared in the *July 1989 NSS News*. "The first mapping party ... followed the stream around several turns ... coming out of the water near a T-junction. We followed the main stream ... until blocked by breakdown ... At this point there were no footprints or signs that anyone had been this far in. ... We exited the cave after six hours, having mapped 2380 ft, ... with many leads to be checked." Four more trips over the next 2 years yielded 7698 feet of cave, with more left for future explorations.

Missing issues?
Change of address?

Please contact the NSS office in Hunstville, not the editor.

NEWS AND NOTES

Docu-Drama of Floyd Collins Story Under Production

After nearly two years of planning, production has begun on a forty-five minute documentary on the life, entrapment and death of Floyd Collins. Sponsored by the Cave City, Kentucky Chamber of Commerce, the video will utilize interviews with historians, archival materials and dramatic reenactments of the story.

The Chamber selected Peridot Pictures Corporation of Bowling Green, Kentucky to produce the video. While Bowling Green might not be known as a film-making mecca, Peridot has produced works for A&E, Court TV and Home and Garden TV — all from its south-central Kentucky location. In 1993, Peridot's owners, Dorian and Elaine Walker, left Los Angeles and jobs at ABC and Walt Disney Productions to provide a better lifestyle for their two young sons. According to Jeff Reed, chairman of the film project, Peridot was selected "because of the high quality of their work, their commitment to historical accuracy, and their use of local resources." "Peridot is no small-town outfit," said Reed. "They have garnered major awards for their work, including two Emmy nominations and awards from the American Film and Video Festival, to name a few."

To ensure historic accuracy, the Chamber enlisted the help of Roger Brucker, co-author of *Trapped! The Story of Floyd Collins*. According to Reed, "Roger has been involved in this thing every step of the way." When it comes to Roger, he is not only *the* expert on the subject but he is also a very gracious man, freely giving of his time and other resources." Brucker will be seen on film as one of the experts commenting on the story. For realism, the exterior cave scenes were shot at **Sand Cave** with the permission and assistance of the National Park Service. Perhaps the most significant thing historically, however, is the recent discovery of never-before-published photographs and newsreel footage of the rescue. "Thanks to collector Dr. Tim Donley, the video will incorporate several photographs taken by Wade Highbaugh that everyone thought were destroyed in a fire," said Reed. Donley also tracked down six minutes of newsreel footage in the Dr. William Halliday collection showing many aspects of the rescue attempt and Collins' first funeral.

The video is also unique in that it is a docu-drama, incorporating live-action reenactments of part of the story. For example, "Carnival Sunday," complete with Model-T cars, a hamburger stand, and Parson Jim's sermon, will come to life on screen. Also, inside-the-cave conversations between Collins, "Skeets" Miller, Johnnie Gerald and others will appear in the finished project. "The reenactments have enabled us to get the community involved in the project without sacrificing quality," said Reed. "After all, many of the folks from Cave City had ancestors who were involved in the Collins story. In fact, many of Collins relatives are featured in the video."

The video will be shown at the Cave City Convention Center on Saturday, July 24, 1999 at 7:30 p.m. After that, a videotape will be available for purchase from the Chamber of Commerce. Those interested in attending the premiere should call (800) 346-8908 for ticket information. Videos may be purchased after July 24 by sending a check or money order for $19.95 plus $3.00 shipping and handling to "Floyd Collins Video", Post Office Box 460, Cave City, Kentucky 42127. Kentucky residents should add 6% sales tax to their order.

Jeffrey Reed

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WANTED: Old electric trains, toy trains. Any age, any condition. Will trade caving gear or cash. Bob Liebman, P.O. Box 441, Lewisburg, WV 24901 (304)772-5049. 1

LAVENDER CAVERS—Our membership is growing!! Organization for gay, lesbian, and bisexual cavers and their friends. For more info, send a SASE to: Lavender Cavers, P.O. Box 126, Armbrust, PA 15626-0126 11

We Need Your Help! Grottoes, Sections, Members, Businesses: The Tytoona Cave Preserve Management Committee is seeking donations to help replenish the NSS Cave Fund. The goal is to raise $12,000 in contributions. Tytoona Cave in Blair County, PA was purchased by the NSS in December 1997. Tytoona is one of Pennsylvania's most unique caves besides being a natural and historic landmark. Please send your tax-deductible assistance to the Tytoona Cave Preserve Fund c/o Mike Cullinan, 23308 Brookwood Circle, Carrollton, Virginia 23314. Make checks out to the National Speleological Society and note on it that it is for the Tytoona Cave Preserve Fund.

USGS TOPO MAPS—$3.75 each. Shipping $3.00, free on orders above $100.00. Gregg Clemmer, 14513 Brookmead Drive, Germantown, MD 20874 (301) 963-0141 yorkst@aol.com 2/00

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The B&C Wunderwear Blunderbuss will be meandering its way across prairies, rivers, and mountains – to the Far West this July for the 99 convention in Filer, Idaho. We don' t know if you Western cavers know a good thing when you see it- but you'll see many a good thing when we get there. Better be saving your pennies, and nickels and dimes and quarters because we'll be showing you the prettiest goods you've ever seen. They are not only pretty, they are the downright most useful goods you'll ever get your hands on with extra pockets anywhere you look, and durable to boot. And our wunderalls, wunderpants, SHORTS, bibbs and jackets in a variety of colors and fabrics will knock your socks off with all the built-in gussets, and articulation that allow you to put your foot in your ear anytime you take a mind to do so. And, in addition, we'll be bringing along a supply of our new *simple suit. Made of 500D ripstop Cordura at a low introductory price.* We'll have the sewing machines and seamsters to do your mending or retrofitting-for a price, of course, and our tape measures for measuring. We won't take the time to endlessly list all our great products but the Blunderbuss will be packed from floor to ceiling. And to let you know ahead of time, we're not cheap...but we're GOOD! (If you have any doubts about it, call your caving cousins back East and they'll tell you). See you all there, you hear! (For an early preview, or a jump on the crowd, or a special order to be delivered at convention, drop us a line at B&CWunderwear, 2368 Antioch Pike, Antioch, TN, 37013, or call (615)315-9777 for our catalog. If the cats don't fly and the dogs don't meow we'll be making a web presence soon).

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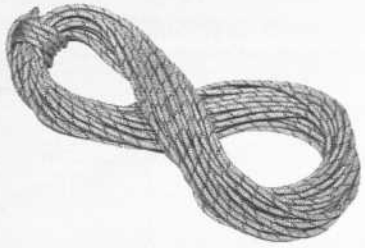

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