PHOLEOS

WITTENBERG UNIVERSITY

SPELEOLOGICAL SOCIETY

Volume 6(1) 1986

THE WITTENBERG UNIVERSITY SPELEOLOGICAL SOCIETY

The Wittenberg University Speleological Society is a chartered internal organization of the National Speleological Society, Inc. The Grotto received its charter in April 1980 and is dedicated to the advancement of speleology, to cave conservation and preservation, and to the safety of all persons entering the spelean domain.

THE WITTENBERG UNIVERSITY SPELEOLOGICAL SOCIETY NEWSLETTER

Volume 6, Number 1 January, 1986

GROTTO ADDRESS

c/o H.H. Hobbs III
Department of Biology
P.O. Box 720

Wittenberg University
Springfield, Ohio 45501
(513) 327-6484

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EXCHANGES
Exchanges with other grottos and caving groups are encouraged. Please mail to Grotto address.

MEETINGS

Wedensday evening, 7:00 p.m., Room 206, Science Building, Wittenberg University Springfield, Ohio.

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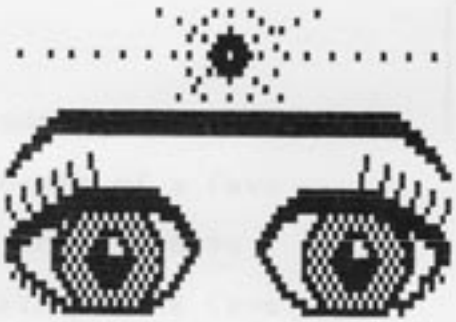
EDITOR
Willaim O.H. Freund III
1109 Tower Hall
Springfield, Ohio 45504

FRONT COVER: Freeland's Cave
Adams County, Ohio
Photo by H.H. Hobbs.

Editor's Note
By William Freund

After many unkept promises and a good deal of pain and frustration we present Freeland's Cave. Having been on the second to the last survey crew I can attest to the pain and suffering which has long been associated with this cave. The constantly changing nature of the cave makes it one of the most challenging in the state. As one enters the cave the cave is higher than it is wide and the rock is very jagged and sharp. We have nicknamed this section the "meat grinder". The cave then opens into the "Big Room" beyond which the cave becomes wider than it is high. Having been beaten and abused getting to the "Big Room" one now must submerge 1/2 to 2/3 of his body in the "bath tubs" which follow and then slither through a tight mud tube. By the time you reach "New Discovery" you are on your belly in three to six inches of water in a passage no more than a half meter high, and we call this fun?

Now that Freeland's is complete the club now has the time to work on those projects which have been put on the back burner. In particular steps are being taken to expedite the passage of Ohio's first cave protection bill. In recent communiques with Senator Lee I. Fisher's office we have been informed that the bill will reach the Ohio legislature sometime in the next few months. In addition to Senator Fisher we have received indications of support from State representative David Hartly. This bill has been created to aid in the preservation of Ohio's caves. In our trompings about the state we have found great need for legislation which will give local authorities a tool to reduce pollution and vandalism.



Geepers Creepers where did you get those peepers...

DEATH OF A CAVE
by Marcus Pender

When I was first told that a local gas line had leaked 1500 gallons of gas into Pless Cave, Lawrence County, Indiana I figured there would be a lot of damage. However, I was not prepared for the devastation that met my eyes nor the nauseating effects of the thick fog of gasoline that I smelled a hundred feet away. Not only was the cave void of the sensitive community that it had supported, but even the area outside the cave was dead. Naturally, the stream was lifeless, what once was green lush vegetation was now a dark oil covered brown. What made the biggest impact on me was the fact that even the birds, whose voices used to fill the air, had been freightened away by man's lack of foresight. I had gone to Pless to evaluate the damage, I was prepared to see lifeless bodies, polluted water, and a permanently damaged cave, but I hadn't counted on the eerie stillness, the sense of death and destruction that permeated the air.

The disaster in Pless Cave is only one example of the unintended havoc man wreaks on Nature. Eager to learn the details behind the destruction I had just viewed, I started questioning the local inhabitants of Lawrence County. It seems that the gas tanks of a newly opened gasoline station were leaking underground into the caves. It was first noticed by a couple of cavers who smelled gas in a back room of the cave and reported the smell to the cave owners. Above ground, the owner of the gas station was questioning his slow but steady loss of fuel but didn't pursue it; he assumed that one of his employees was profitting privately. Proper authorities were finally notified by the cave owners; who were repelled by the smell of gasoline emanating from the cave when they went to the entrance to have a family cook-out. Investigations resulted in the discovery of the leaking line. The station owner lost an

Pless Cave with gasoline haze eminating from entrance.
(Photo M. Pender, 1986)

undermined amount of capitol, the cave, however, lost all life forms and doesn't have a chance to recover.

My reasons for putting this experience on paper aren't personal, (the sight and smell of that dead decaying cave will always be fresh in my mind), I want others to to be aware of how tragic our actions, no matter how minor, may be. A cave is a delicate ecosystem, that is why carbide, litter and irresponsible persons don't belong there. Our respect for and conservation of caves is a must. We must all be responsible cavers, cavers who abide by the existing cave laws and cavers who push for increased protection of these diminishing natural resources.

Tinker's Cave
by Ernie Payne

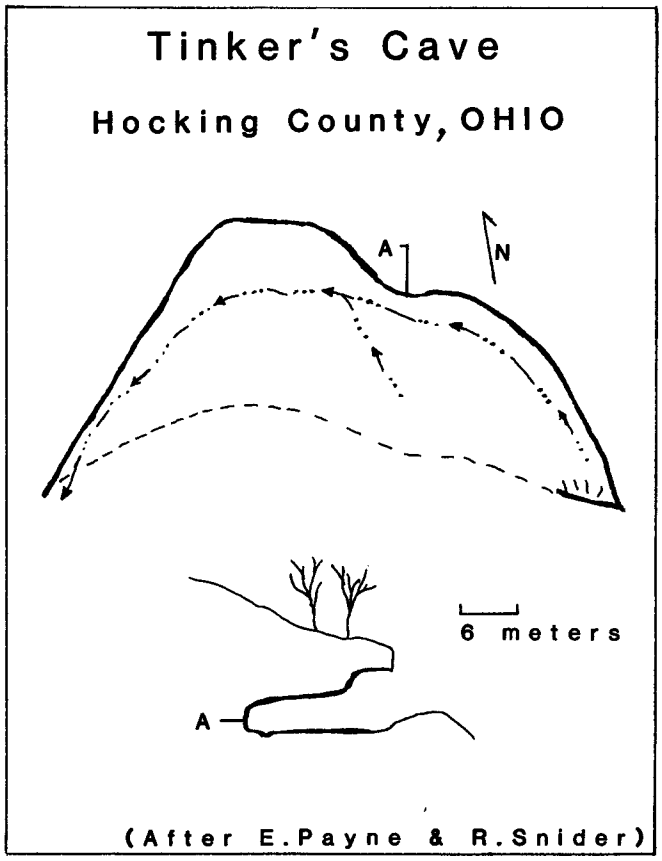
After seeing "Tinker's Cave" printed on a generation-old tourist map of Hocking County, Ohio, and knowing that location was close to my in-laws, I suggested to my brother- in-law Roger Snider of Bremen, Ohio, that we go see what we might find. So while visiting in Ohio following a week at the NSS Convention, Roger, his son Danny, and I began the short drive toward the cave as best we could tell from the simple map.

On the way, Roger remembered going to a place some 15 years ago that might be the same place as shown on the map. Sure enough, Roger drove right to the same place. We walked a short distance down hill and could easily see a large sandstone shelter cave.

After the initial excitement of our "find", we made our survey with compass and tape. The semicircular dripline was over 175 feet long. The height of the overhang near the center of the dripline was right at 20 feet. Slightly left of center, we measured 58 feet from the dripline to the rear and the ceiling at the same elevation. The floor was rather smooth and gently sloped downward toward the west. A very shallow dry water channel could be seen running from the eastern end of the cave to the western end and out from under the overhang ceiling. The cave faced toward the south. The cave is located in northeastern Hocking County about two miles south of New Straitsville, the "Wet Capital (moonshine) of the World".

Later in the week, I found a reference to this cave by another name in old history of Hocking County in the public library in Logan. On page 932 of Volume One of Historical Collections of Ohio in Two Volumes, by Henry Howe, L.L.d., 1900, is an item given by a Colonel Charles Whittlesey in 1886 about things he remembered on geological surveys of Ohio about 45 years earlier.

In the north part of Hocking county (the name of the township I don't recollect, only that it was on the south side of S.W. 1/4 of section 24) is a cave called Thieves' Cave, where the horse-thieves gathered their horses--more properly a rock shelter, shelving towards the rear. It was in the form of an ellipse, about 130 feet long and thirty feet to the rear. In the beginning of the century horses were brought here. Here the horse-thieves lived and hunted. As late as 1872 horse-manure was found by me while exploring it geologically.



After the name of the leader of the outlaws, Thieves' Cave is now called Tinker's Cave -- it is still known locally as Tinker's Cave, it is interesting that the cave seems to have grown in size over the years.

Reprinted from Petroglyph, 21(1):3-4

A DESCRIPTION OF ONE OF OHIO'S MOST SIGNIFICANT CAVES

by

H. H. Hobbs III

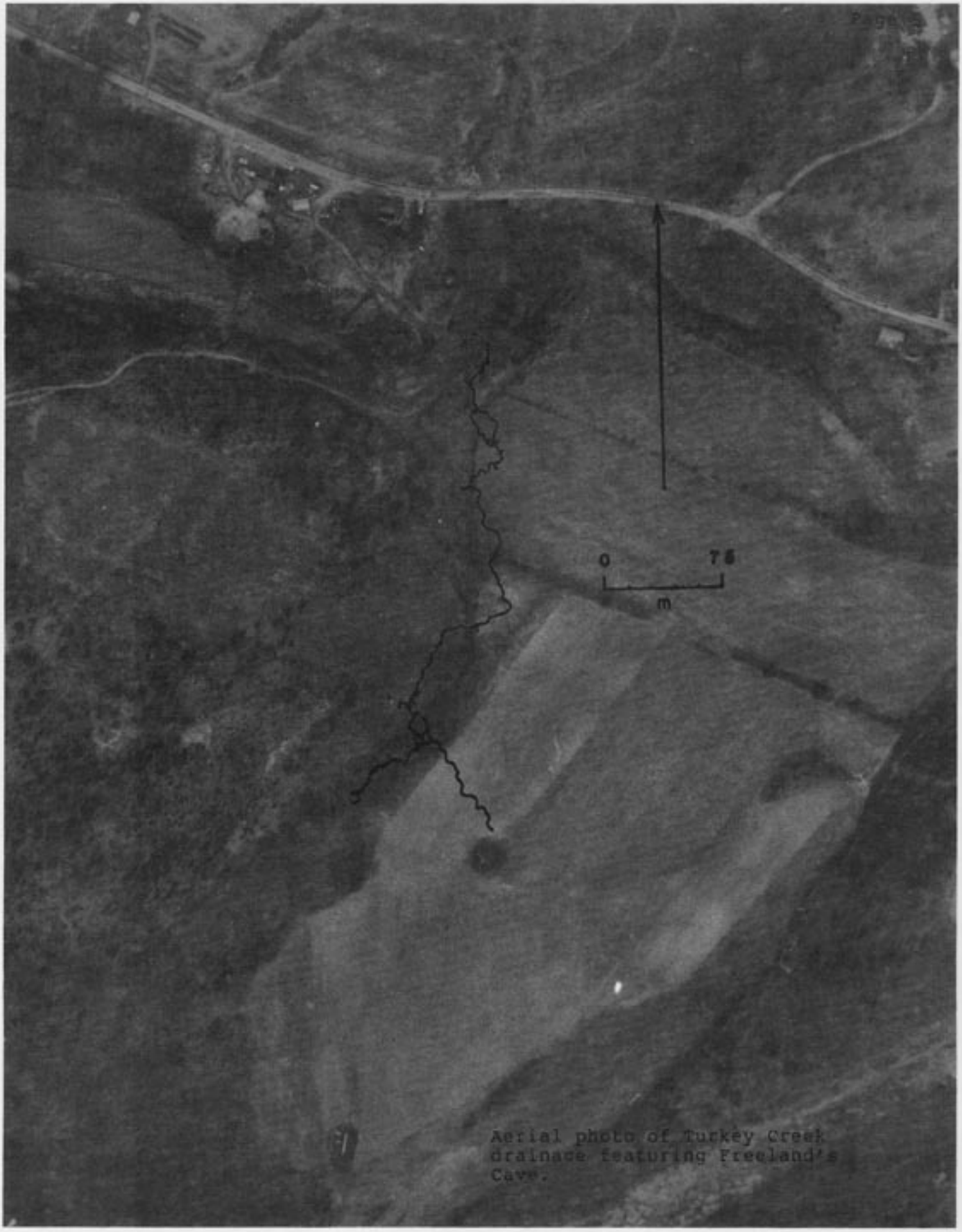
Freeland's (=Freeman's, Freeland Hollow) Cave is located on the south side of Turkey Creek, approximately 6.5 km (4 miles) west of the Adams-Scioto county line in Meigs Township, Adams County, Ohio. This is one of Ohio's most significant solution caves due to its length (708m THC - 2323ft - Grade 5D survey), its diverse aquatic and terrestrial fauna (type-locality for Pseudanophthalmus ohioensis Krekeler), its wet, sinuous, torturous passages, its pitted bedrock, and in places, well decorated avenues. The passages are joint-controlled and are developed in thick-bedded Niagaran bedrock (Peebles formation).

Freeland's Cave has two distinct levels with a short intermediate conduit connecting the two near the main entrance (elevation 213m). There are two entrances, with the larger, more impressive one leading into the main cave (see map). The north entrance slopes up steeply from Turkey Creek and a hands-and-knees crawl meanders in a southwesterly direction for approximately 31m where the dusty tunnel intersects the main passage. The large, picturesque, main entrance (4m high x 8m wide) is situated between meanders of Turkey Creek in a dolomite bluff south of Peach Mountain and serves as an outlet for the stream which flows slowly over bedrock and gravel through the entire lower level of the cave. The bedrock is differentially weathered and pocketed; this is well demonstrated in the front section of the cave. Leading in from the entrance is a dry upper level which parallels and overlooks the lower stream level (see map). Nine meters into the cave the upper level swings to the southeast and almost immediately loops back, crossing over the lower passage. In this dry, dusty crawl, a hole opens in the floor directly over the stream ("window" on map). A very short intermediate level leads back toward the entrance as a tight crawl and intersects the stream passage 15m from the entrance. By climbing up through an opening in the ceiling of the stream passage ("hole" on map), the dry upper level also can be reached; it continues in a southerly direction as a tortuous, sinuous, and well decorated (in places) tube for approximately 40m. It eventually turns back to the southeast and, through two parallel passages, the main stream level is intersected, some 50m into the cave. In this area of the cave several dead-end pockets lead off of the east side of the main passage.

Turkey Creek Entrance of Freeland's Cave.
(Photo H.H. Hobbs, 1985)

The front section of the stream level is best described as somewhat difficult to traverse, as every pitted and sharp protrusion catches one's clothing. This part is generally one to two meters high and about one meter wide. Approximately 115m into the cave a 3m dome and expanded cross-joint are encountered, where the fracture has simply widened and some speleothem development is apparent ("The Joint" - see map). Here, during precipitation events, much drip water enters the cave.

From this point the cave changes character, being wider than high. One is continually forced into the stream and on to hands and knees. In places, particularly at the corners of meanders, pools up to 0.7m deep are found. Along the passage are occasional dead-end side leads, most developing on the east side (left as one goes upstream); one of these passages does make a complete loop but is very tight and some of them are choked with breakdown (possibly corresponding to surface sinkholes noted in the environs - during heavy rains, much water enters the streasm via these side constrictions). Approximately 200m into the cave an impressive 4m high dome provides standing room. In this region of the cave, gypsum blisters are found along the ceiling as are small soda straws. Other smaller domes are located both up- and downstream from this point. A second 4m high region (the "High Room" - Simpson 1969:92,93) is encountered just downstream from the "Big Room" (op. cit) 275m into the cave. The Big Room, approximately 290m from the entrance, is a welcome "wide spot in the road" (a register is located here) and a number of small passages lead out of it, most ending within a few meters (e.g., Sue's Crawl). An upper level trends in a westerly direction for approximately 12m before the passage constricts and, although it continues, progress is halted by the narrow, low crawl. Through a small opening in the floor voice and light connection is made with the stream passage.



Aerial photo of Turkey Creek drainage featuring Freeland's Cave.

The main cave again changes character and a low stream passage leads from the Big Room to the first of four low, wet crawlways ("siphons," "sumps," "bathtubs," etc. - tub on map). This 10m long section is approximately 0.4m high and a paralleling slightly higher level can be viewed from this stream crawl. One leaves this low passage by squeezing up through a small hole in breakdown and emerging into a small "Breakdown Room." This is a collapse area (a surface survey demonstrated that a prominent sinkhole lies above this) with much mud and loose rock; one should take care negotiating this section of the cave. A small crawlway leads out of this area in a northeasterly direction and parallels the first bathtub passage for approximately 10m (referred to above).

The main cave continues as a hands-and-knees crawl through the small stream. Ten meters upstream from the Breakdown Room and 310m from the entrance, the cave is intersected by two passages. The west tunnel is muddy, tight, and becomes too small for further penetration after 5m, although digging efforts continue to enlarge it. The passage intersecting from the east is a sloppy belly crawl up a mud slope. For several years this passage was believed to be merely a loop, connecting back with the main stream level several meters upstream. On 14 December 1983 Donna D'Angelo, Mike Yaggi, Bill Simpson, and I entered the cave to "finish up a few loose ends." After mapping a crawlway off the Big Room, we slithered through the first bathtub and Donna (her first trip to the cave) agreed to lead point to complete the "the loop" survey. She headed east into the crawlway, established a point, and then moved south into "The Tube." She

Hole in bottom of elongated sinkhole overlying the Breakdown Room. (Photo H.H. Hobbs, 1985).

Inner passage featuring small stalactites.(Photo H.H. Hobbs, 1985)

squeezed through the body-sized tunnel for approximately 8m and then asked, "Which way should I go?" Much to our surprise the passage not only looped back to the main cave but it lead to a 100m long southeastern extension, dubbed the "New Discovery" section of the cave. From The Tube, the low stream crawlway trends east, intersecting the main portion of New Discovery within 10m; here a faint "C.P. Dome 77" is observed, written, apparently with a carbide lamp, on the west wall (a register is located here). To the north of this intersection an upper level crawlway extends for 25m with a window connecting back to the crawlway leading into The Tube (see map). To the southeast of "C.P. Dome 77" a narrow stream passage averages 1.5 to 2m high for approximately 35m. Unusual clusters of tabular gypsum rosettes line the wall in this section of the cave (see Hill 1976:77). X-ray powder diffraction scans made by T. Madigan of the University of Toledo confirmed these clusters to be gypsum. It is not known why tabular rather than fiberous crystals grow but the rosettes formed in clay at wall bedrock contacts. At the end of this 35m "canyon" the ceiling drops abruptly and the passage height averages less than 0.5m for 20m ("Alky Crawl") where the stream crawlway becomes too low to continue. This is particularly frustrating since this point is only 5m north of the large surface sinkhole. A dig is scheduled but much water flows through this low tube and late summer and early fall are the only reasonable times this work can be attempted.

Returning to the main cave, the stream passage trends to the southwest but becomes narrower and the going slower; a piece of bedrock (possibly a remnant of a rimstone dam) partially blocks the passage at one point ("Bridge" on map). The stream here is only a trickle during late summer and fall and allochthonous material decomposes in the shallow pools, hence the name "Methane Alley" is applied to this section of the cave (see map). Another bathtub (see map) is encountered 40m from the Breakdown Room but by skirting up to the right-hand side of the passage (north here) one can stay out of the water and work through an opening in breakdown. The cave continues as a low (less than a meter high) crawlway and one is forced to remain in the water. A third bathtub is reached 20m upstream from the second and a fourth very low one (only 0.2m of air space) must be negotiated just upstream from the third (this passage becomes flooded during periods of heavy precipitation). Although small, the passage has enlarged somewhat at this point. Approximately four meters from the fourth bathtub and some 375m from the main entrance, the passage bifurcates, with the stream emerging from the right hand passage (too low to continue) and a tight, tortuous crawl leading to the south (left). Approximately 12m of this passage have been enlarged by the digging efforts of several members of WUSS and the passage, although small, continues with a strong air flow. Considerable effort is required to reach this part of the cave and conditions are far less than optimal for excavation, yet work continues with the anticpation of additional cave or the possibility of making a connection to one of the impressive sinkholes on the surface to produce a "back door" to the cave. One sinkhole, in particular, recieves considerable surface runoff and in the spring of 1982 several kilograms of computer chips were dumped into the disappearing stream but no positive test was made. Dye tests are planned in the near future to establish the source of cave streams (main and New Discovery stream) and to trace the disappearing surface rivulet. Considerable work remains on the surface in the environs of Freeland's Cave.

Two registers were placed in the cave on 7 December 1984, one in the Big Room and the other in "C. P. Dome 77." Most of the traffic has been from the Wittenberg University group; however, following the National Speleological Society Annual Convention last summer in Kentucky, three cavers from Pennsylvania and New Jersey visited Freeland's Cave; as of 18 December 1985, 39 names have appeared on the register in The Big Room.

The following cavernicloes have been observed in Freeland's Cave:

Sinella cavernarum (Packard) - springtail (troglophile)
Pseudanophthalmus ohioensis Kreckler - beetle (troglobite)
Heleomyza brachypterna (Loew) - fly (trogloxene)
Amoebaleria defessa (Osten-Sacken) - fly (trogloxene)
Pardosa sp. - spider (trogloxene?)
Hesperochernes sp. - pseudoscorpion (troglophile)
an unidentified aquatic isopod (troglobite) and amphipod (troglobite?)
Cambarus (Cambarus) bartonii Fabricius) - crayfish (troglophile)
Eurycea longicauda Green - salamander (trogloxene)
Pipistrellus subflavus (Cuvier)- solitary bat (trogloxene)
Peromyscus sp. - mouse (trogloxene)

Although this list indicates relatively high species richness for Ohio caves, it represents only scattered sampling; further effort is required in order to catalogue adequately the fauna within the cave.

Water levels fluctuate widely between little more than a trickle to several cfs. A grant was recently received from the Ohio Department of Natural Resources to support longterm data-gathering studies of Ohio caves. Results from proposed studies will be published in future issues of Pholeos. Although cave environments are more stable and predictable than surface situations, very few time-series data exist not only for Ohio caves, but on a global scale.

Gypsum blisters are a common site in Freeland's. (Photo H.H. Hobbs, 1985)

Acknowledgments

I would like to thank the following people for their assistance in mapping, checking wet miserable leads, walking the surface around the cave, completing a surface survey, and for virtually all aspects of this study: H. Armstrong, J. Bush, S. Campbell, J. Carter, D. D'Angelo, C. Engle, M. Flynn, C. Freund, T. Hilgartner, H. Hobbs IV, T. Keller, J. Kreitzberg, J. Lukens, T. Madigan, M. Pender, J. Petot, N. Pfeffer, S. Rose, T. Sample, C. Stewart, L. Tarulli, M. Yaggi, T. Yates, and J. Zarawski. The efforts of W. Simpson and V. Fazio are particularly appreciated, especially with regard to the hours spent digging in the far reaches of the cave. The following individuals are thanked for making identification of various organisms found in the cave: Kenneth Christiansen (Grinnell College), William J. Gertsch (American Museum of Natural History), and William B. Muchmore (University Of Rochester). This work was supported in part by grants received from the Division of Natural Areas and Preserves of the Ohio Department of Natural Resources and the Wittenberg University Faculty Research Fund Board.

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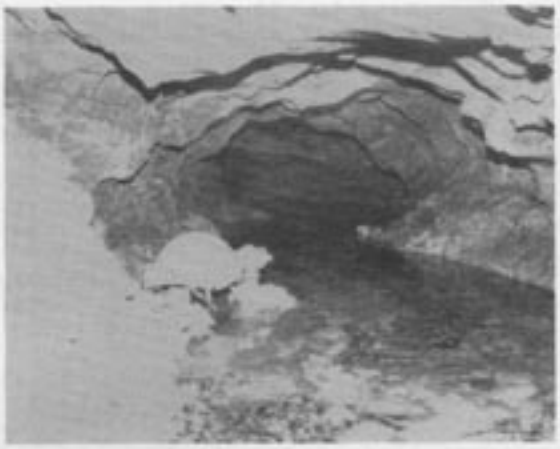
E : entrance S : sink



View from Big Room of passage trending south into the first "tub."

Sinkhole at south end of cave
There appears to be a
connection to "New Discovery"
(Photo H.H. Hobbs, 1985)

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PILLAR CAVE
by Terrence Madigan

The entrance to Pillar Cave in Carter Cave State Resort Park, Carter County, Kentucky, is on the south face of a 10m high cliff overlooking Smoky Valley Lake. A 2m climb up the cliff brings one to the 2.4m high entrance. This short cave (23m THC) is developed in a slightly friable sandy limestone and the passage probably continues but is blocked by a large flowstone deposit. The major features in the cave are the two pillars which give the cave its name and stalactites that hang from a fracture which extends the length of the cave. On the south wall, approximately 11m from the entrance, is a mass of flowstone with small rimstone dams. The cross section of the cave changes from an oval shape at the entrance to an inverted keyhole near the back. Many terrestrial invertebrates were observed on 31 March 1984, including Meta menardi flies, crickets, as well as fungi and algae.

The Kentucky Connection: A Review of The Grand Kentucky Junction
by Terrence Madigan

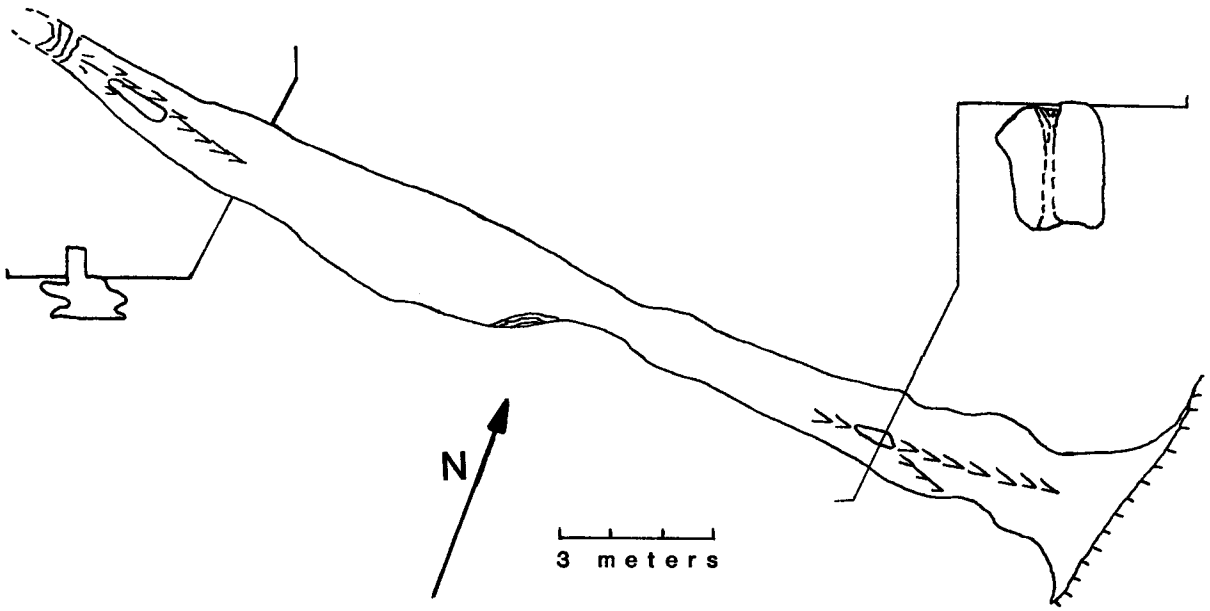
The Grand Kentucky Junction. 1984. Patricia P. Crowther, Cleveland F. Pinnix, Richard B. Zopf, Thomas A. Brucker, P. Gary Eller, Stephen G. Wells, John P. Wilcox, Cave Research Foundation, Cave Books, St. Louis, 96pp.

This book is a collection of stories, each written by a member of the survey crew that discovered and surveyed the junction between Mammoth and Flint Ridge Cave Systems. Each person has recalled the events he or she was present for leading up to the first "portal to portal" trip through the cave system.

After completing the book, one has the feeling that he was present in the cave for the three trips through to the A- Survey off of Q-87 that culminated in the connection. This limited edition book, a bio-history book, is well worth reading, especially if you have surveyed any cave before, as it gives a flavor of exactly how taxing a survey party into the world's largest cave system is.

Pillar Cave

Carter County, Kentucky



Fern Cliff, Springfield, Ohio
Winter, (From Howe, 1888).

Guide to Neighborhood Caves : A Walking Tour of Buck Creek Gorge

By Warren Luther

Introduction

Where the mantling of glacial till is thin in Springfield, Ohio, Buck Creek has cut a shallow gorge through bedrock, affording the settlers with ample potable water from springs, as well as the waterpower necessary for running grain mills and machine shops. Some of this gorge has been preserved for us to enjoy in a well-manicured "natural" state, and its interesting features are all easily accessible. The resistant carbonate rock strata responsible for the springs, and for the swift fall of tributary streams into Buck Creek, are the Cedarville and Springfield dolomites of Silurian age (the so-called "Niagara" group of rocks), both of which are exposed in the gorge. This little walking tour is designed to acquaint the reader with the diminutive caves and incipient karst features near the campus of Wittenberg University. Take it with you, and a flashlight for poking into the caves, to the corner of North Fountain and Ferncliff Place - and begin.

Part I: From Fountain Avenue to Wittenberg Avenue

Stop 1. Turn right, that is, west, and enter Cliff Park. This is the first exposure of bedrock, any former ones upstream from here have been covered by an expanding city. The clean bluff on your right shows both rock formations to good advantage; the upper, more massive Cedarville dolomite lying rather conformably over the conspicuously-bedded Springfield dolomite. You are standing in an old quarry; vertical drill marks can be seen all along the cliff face here. Notice also the natural cracks which are joints expanded by solution of the dolomite. Cross the road and proceed to the Springfield Art Center.

Stop 2. The building is nestled against a large block of dolomite; observe, at its western edge, a crack which passes through both formations. In the Cedarville the joint follows no definite line of least resistance, whereas in the Springfield it takes the obvious path. Cave patterns in rock strata as dissimilar as these often reflect the joint and bedding plane structures of the parent rock. Some caves are rectangular mazes, others are winding, sinuous tubes or canyons, and some are nearly amorphic. Across the river you will notice a storm sewer pipe emptying its polluted contents; this is what remains of the Mill Run which, 150 years ago, tumbled down rapids in a bedrock ravine. Now, even the creek is gone, not to mention the ravine. Return to the road and pass through the cut which once carried the Wittenberg Avenue Bridge.

Part II: From Wittenberg Avenue to North Plum Street

Stop 3. Beyond the cut, look south across Buck Creek, where, on the natural cliff face you see the entrances to two fracture caves. These are joints expanded both by solution gravity ; the large block of dolomite outlined by the caves appears to be separating from the cliff - like a loose tooth. These two Buck Creek Caves have been described in Pholeos, 3(2), 1983, and are accessible from the DTI railroad tracks in Snyder. If you wish to visit them, do so with caution. Now, proceed over to the concrete "pavilion" to your right and continue west along the bluff.

Stop 4. You will pass an enormous tilted block of dolomite which has been split through the middle. Look up the cleft and see a curious little "natural bridge" where a chockstone precariously spans the cleft. From this point downstream to the outcrop's eventual disappearance are several "Rock City" structures. These features formed where undermining has occurred in the less resistant stratum beneath the Cedarville dolomite, allowing large blocks loosened

by weathering along joints to detach from the bluff, tilt in various directions, and (in places with a steeper slope) creep slowly down hill. "Rock Cities" are especially common features wherever sandstone, conglomerates, or other non- carbonate rock crops-out; caves abound in them, as well as springs beneath the resistant rock. This ground water appears to be the prime cause for these often spectacular structures, weakening the underlying strata by solution and erosion. Also note the pitted nature of the dolomite. These pits and cavities result, in part, from fossils removed by solution long before the rock was exposed to surface weathering. Rock like this is often too readily soluble for cave development, at least in Ohio. Where freshly exposed in quarries, it disintegrates - crumbles to the touch. Continue along the base of the rocks to the first spring.

Stop 5. This is one of two still active springs issuing from crevices in the Springfield dolomite. Two others, now filled with trash and soil, exist across Buck Creek on both sides of Plum Street bridge. Notice the hole from which the water flows ; could there be a network of small water filled passages behind the cliff. Continue on to the second spring, observe the same, and especially how the massive Cedarville dolomite overhangs the recessed Springfield; this will topple some day. Walk up behind the large boulder on the left.

Stop 6. You are now in a little "Rock City" where you will notice differential weathering on both sides of the passage; some rock faces are smooth, some pitted. You will see evidence that the opposite wall once met, and evidence also that some of the intervening material is missing. As you begin to descend, look to the right for solution along joints, and, beneath the bit of masonry at the top of the cliff, what might be a fault instead of a widened joint. Also note, while looking up, a tiny notch, where a surface rill took the path of least resistance - the joint of fault itself. You will see more of this later, in the cemetery. Continue about 30 feet below the large masonry for another example of this. Walk on through the playground where the ledges become lower. It is probable two defunct streams met here before civilization re-channeled them into storm sewers - one coming out of "Alma Mater Hollow," the other occupying the cut where Plum Street now ascends the hill.

Part III: From North Plum Street into Ferncliff Cemetery

Cross Plum Street and enter Ferncliff Cemetery; just to the right of the gate is the way out - in case you get locked in here after 5 o'clock. Walk along the road and count off about 25 paces past the "Speed Limit" sign, and approach the cliff face.

Stop 7. A joint fracture, possibly a cave entrance, which has been purposely sealed with masonry, is an enigma for future investigation. From here, walk behind the large block of dolomite resting against a tree (or the other way around).

Stop 8. As you enter this passage you will see a joint fracture cave on the right about 15 feet long which ascends and narrows; its length will be determined by measuring its angle of ascent and calculating the height of the cliff, making the cave floor, the hypotenuse of a right triangle. This simple method will spare you the inconvenience of squeezing in there to see where it goes. If you do, you will notice calcium carbonate deposits on the wall made by surface water or lateral seeping. Walk on through the complex of boulders. On the cliff face directly opposite the last block is another solution-enlarged fracture cave; this one ascends only slightly, becoming, as do most such fractures, narrower and lower. Your flashlight beam might reveal 30 feet of passage - yet, who knows what's back in there? Suppose it meets another fracture along a second set of joints? And yet another? That is the nature of fracture caves, when the conditions are right which is not the case here. Continue walking to the conspicuous entrance of Ferncliff Cave.

Stop 9. Ferncliff Cave, described in Pholeos, 3(2), 1983, is the only enterable "true" cave known in the Buck Creek gorge - "true" meaning that it appears to be the result of ground water solution along a weak zone in the Cedarville dolomite, rather than a fracture which has been attacked by surface waters. Its origin is certainly problematical. It might have been formed when Buck Creek flowed at a higher level, higher perhaps than the present cave floor, forcing water laterally under pressure into the cave; the shape and orientation of the two side passages suggest this. Or it may have been formed independently of the present erosion cycle (before Buck Creek existed) and the creek has cut into the cave, presumably destroying most of it. You will see evidence also that the cave once carried water from its interior out the entrance; notice the notch in the floor, and the mounds of flowstone at the rear, which have effectively sealed any continuation - if any one existed. In any case it is the stuff of Ph. D. dissertations.

After examining Ferncliff Cave and the stumps of its plundered stalactites, go through the low, angular passage to the left of the entrance (through a partly-separated block of dolomite), emerge on the far side, and proceed to the falls.

Stop 10. Henry Howe, in his Historical Collections of Ohio (2nd edition, ca. 1888), waxed poetic over over the beauties of "Fern Cliff Falls," concluding that "I know of no other spot near a city so gem-like and exquisite." (The illustration reproduced here is taken from this book.) The recess behind the falls is a weak zone in the Cedarville dolomite where the beds are thin and lenticular, and in the plunge basin is the last of the Springfield dolomite you will see on this walk. Notice that water drips from the ceiling to the right; sooner or later this may become a natural bridge - if it does not collapse first. The dark fracture to the left is the lower entrance to White Sheet Pit, which you will see later. Continue walking along the road, and notice a solution tube in the cliff. Shortly you will arrive at a cleft passage with stone steps.

Stop 11. Notice the profusion of solution tubes here, confined to several distinct horizons in the Cedarville dolomite. Now, ascend the steps to the large tree about halfway up, turn around, drop to your haunches, and look back: a solution tube of uniform dimensions (a real cave passage) goes clean through the rock. A question for future research: why are all these tubes and large cavities, which are bedding plane cave passages, clustered here and nowhere else? Does it have anything to do with the proximity of a sizable tributary stream? (Remember that Ferncliff Cave and the waterfall are nearby.) For some reason the cave-forming process has been at work in this one area, though on a small scale. Continue up the steps and return to the top of the waterfall.

Stop 12. Hike up the small creek. See anything peculiar? This little watercourse has cut a notch into a straight joint, and it continues straight until your progress is barred by the storm sewer exit. As you return to the falls, watch for joints exposed in the stream bed. Your first impression might be that this is an artificial spillway, a mill-race, perhaps, but it is natural. It shows the tendency of joint fractures to determine drainage patterns and dircetions, both above ground and, as you have seen in the caves you have explored, below ground. Also notice how this side creek has been left "hanging" above the fuller, swifter master stream. Such features are common in regions with resistant bedrock which have also received glacial melt-waters in great volume.

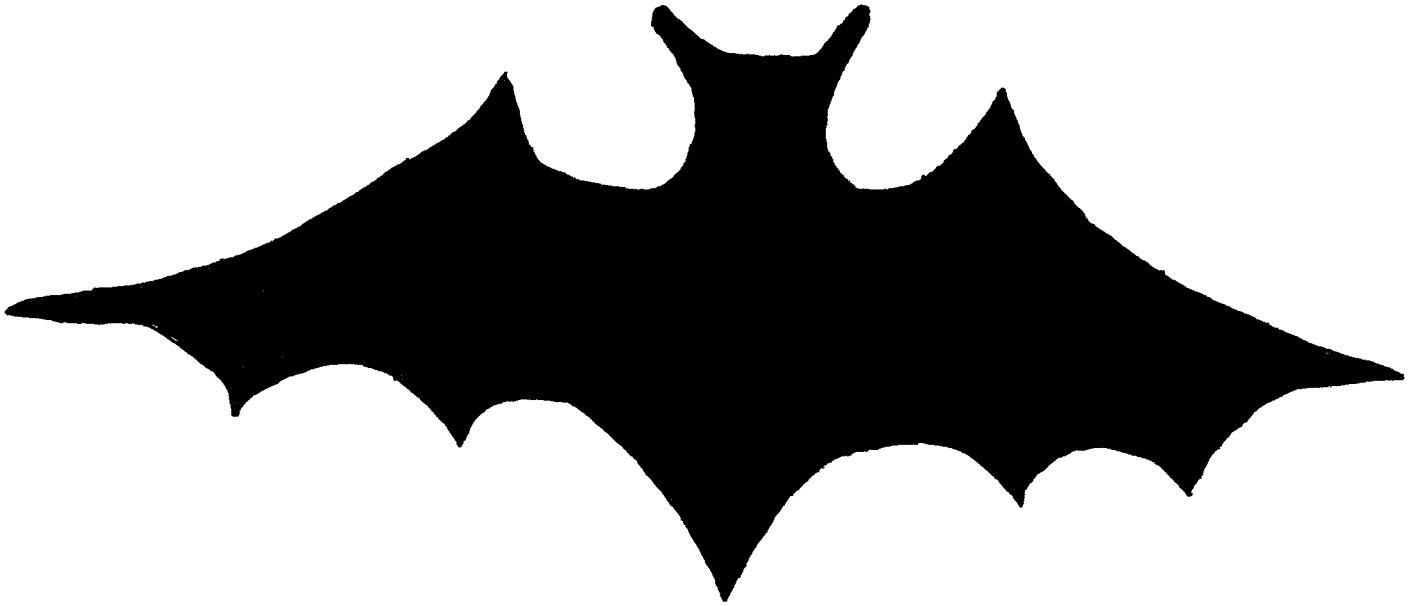
Stop 13. Again at the top of the falls, turn on your flashlights and chimney down the hole to the right; this is White Sheet Pit - simply a crack where a large section of the cliff is separating. When the Ohio Cave Survey first investigated this in October, 1957 (and it was indeed a dark and dreary afternoon around Halloween), the light beams illuminated a white sheet lying at the bottom - a suspicious circumstance for a cave in a cemetery, not even considering the time of year. After you have negotiated this torturing bit of cave-work, emerge at the base of the falls, continue walking down the road past the steps you ascended earlier, and stop at the large (and only) bald cypress tree.

Stop 14. Behind this tree is a two-level fracture cave, rich in invertebrate fauna and rigorous to explore. The lower level is obvious, and the upper level is reached by a short climb; upstairs has standing room for a short person, and some flowstone on the walls. Both upstairs and downstairs pinch out, as you would expect, but give us about 80 more feet of cave for the Survey. A short distance beyond this you will see two fractures; the one on the left will take you behind the block of dolomite and out the far side.

Stop 15. You now find yourself in a quaint little "Rock City," cozy, snug, and secluded. Walk through it and come out where the cemetery road forks. Across the road, where the lowering bluff continues, is a metal door with peepholes, and bang on the door. Sounds enormous, doesn't it? Yet, how can it be? Walk around the immediate area and figure it out.

From here the bluffs descend to turf level and disappear altogether when the road curves to the right. Wander around this partly-buried "Rock City" structure; thus ends your walking tour of Buck Creek gorge.

Fern Cliff, Springfield, Ohio
Winter, (Photo W.Freund 1986).



Created by William Freund
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