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Number 3

BULLETIN OF THE NATIONAL SPELEOLOGICAL SOCIETY



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Editor's Note:

Economy dictated to limit us to essential textual material for this, our first printed issue. Therefore, you will find no maps, no illustrations—photographic or otherwise. This is regrettable but unavoidable at present. Likewise, many contributors—regular and voluntary—may be chagrined to find articles they have submitted are omitted from the Bulletin. This note is to inform them that their material will appear either in subsequent issues of the Bulletin; or, as the case with Kenneth Dearolf's excellent "Report of a Biological Reconnaissance of the New Discovery in Mammoth Cave, Kentucky," they may find their articles appearing in separate supplements to the Bulletin which will appear from time to time. For all other omissions unaccountable, and faults of commission, the editor hereby assumes as full responsibility as his functions permit, pleading that, withal, the times are peculiar.

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BULLETIN NO. 3 of the NATIONAL SPELEOLOGICAL SOCIETY

Special Articles . . .

CAVE EXPLORING AS A SPORT

Like Mountaineering and
Hunting, It Also Serves
Science and Utility

By ERNEST A. BAKER

We are called a nation of sportsmen: yet the first criticism we level against any new sport, not our own, is the question, usually unanswerable and always irrelevant, "What is the use of it?"

One may then, with a certain show of propriety, point out that cave exploring is a sport not entirely lacking in utilitarian or scientific objects. It belongs, in fact, to that large class which originated as something else than mere pastime.

Mountaineering and hunting are typical representatives of that class. The earliest mountaineers were geographers. Cave exploring was first of all taken up as a branch of archaeological and palaeontological research, and then as a general inquiry into the physical nature of caves. But a science that has discovery as its principal object, and hardships and adventure as its natural concomitants, is bound to attract as many sportsmen as scientists.

The geographical might be called the sporting sciences. And so there are now many ardent cave explorers who would blush to be called speleologists, their sole motive being the enjoyment of the game, and scientific results purely a by-product. Thus, the science of caves has given birth to a sport that subserves its aims in the same irregular way as rock-climbing and peak-bagging subserve the aims of geography, geology, meteorology, and other sciences.

Speleology itself is, comparatively, a new science. Cave hunting, the search for human and animal remains, has been an important bypath of scientific investigators since the days of Dean Buckland and the discoveries recorded in *Reliquiae Diluvianae*, 1823. Professor Boyd Dawkins has in recent decades done still more valuable work for palaeontology.

PRACTICAL UTILITY

Speleology is a word of both wider and narrower meaning; in the widest sense covering all kinds of knowledge about caves, their geography, geology, hydrology, their fauna, their palaeontology. But most speleologists confine their attention to the physical characteristics of caves. This side of the inquiry has practical utilities.

At Vauclure, for instance, near Avignon, M. Bouvier, in 1878, explored the channels of a gigantic siphon that carries the waters of an inaccessible reservoir into the Fontaine de Vaucluse, a famous "rising." His object was partly scientific, and partly to determine the nature of this permanent source, so as to utilise its waters to regulate the level of the Sorgue to extend the irrigation system of the neighborhood, and to secure water-power for manufacturing purposes. The Katavothra of Pod-Stenami were enlarged by an enterprising engineer, and protected by iron gratings, after their subterranean exists had been explored, and so utilised to regulate the drainage of the marshy plains of Laibach, and to prevent periodical inundations.

In our own country, underground exploration has brought to light valuable water-supplies, and enabled us to safeguard the public interests by pointing out sources of pollution. Caves are most abundant in the districts where those great fissures known as "rakes" occur, which are rich in minerals, especially lead, calamine, copper, gypsum, and fluorspar. During the short period in which cave work has been taken up as a sport, discoveries have been made, which, of course, it is impossible to particularise, that may be the source of considerable profit in the future.

Caves in the Blue Ridge Mountains of Southwestern Virginia

By DR. A. C. HAWKINS

Persistent rumors concerning a supposed "bottomless" hole in the rocks of the southern Blue Ridge, around which the Blue Ridge Rockway was supposedly forced to detour, have prompted investigation of cave openings which exist in the vicinity of this scenic drive. It has been established that, according to testimony of engineers of the Highway Department, no such detour was made; but the existence of underground openings, some which are of considerable interest, has been proven.

The general location of the openings herein described is in Virginia, in Grayson and Carroll Counties, just north of the North Carolina state line. They are all close to the eastern edge of the 2500-foot escarpment of the Blue Ridge plateau. They are in rocks of the Wissahickon schist series, all of which are pre-Cambrian in age. They may be divided into two principal types.

TRUE SOLUTION CAVITIES

At a point about 5 miles southwest of the town of Galax, in Grayson County, a small aviation field is marked by an airplane symbol on the Gulf Company's road map. The field is on a remarkably flat area about a

mile in diameter, called the Glades, which would appear to have been at one time covered by a shallow lake, which was, due to some natural cause at present not clear, dammed up for a considerable period. The rocks surrounding this area are very unusual. They are mainly of schistose types, which include spotted mica schists, and green chlorite schists of the typical Blue Ridge type which are so well exhibited along the Skyline Drive south of Front Royal, Virginia.

In the woods on the southeast side of the Glades there is a considerable development of underground drainage. Small "fox holes" appear among the rock ledges. These have the appearance of small sink-holes, and are ten feet or more in diameter at the surface of the ground. In the bottom of each a few feet below the ground surface, there is a typical small cave opening partly filled with dry leaves, below which a passage extends downward at a steep angle toward the southeast, along the direction of schistosity in the bedrock. Each of the openings is large enough to permit exploration. When stones are thrown into the hole, they are heard to go downward for some distance before stopping in the dead leaves. When the rock around the opening is tested with hydrochloric acid, very distinct effervescence is observed. Evidently the schist (a mottled green chloritic rock) contains sufficient calcium carbonate to permit the formation of true solution channels, down which the rain water descends, possibly for very long distances, to emerge somewhere along the base of the mountain front, some three miles to the southeast.

Along the great southeastward-facing mountain front a number of large bare outcrops of schist are visible. Some of these have been partially broken up along joint-planes and fracture zones, so that open cavities occur. The largest of these, whose location has been known for many years, is called The Devil's Den.

The Den is in Carroll County, Virginia, one and three-quarters miles south-southwest of the junction of the Blue Ridge Parkway and Route U. S. 52, which connects Hillsville, Va., with Mt. Airy, N. C. It is 11 miles north of Mt. Airy, and 8 miles south of Hillsville, on the Harris farm.

The shape of the openings is that of the letter A or an inverted V. It is 10 feet wide at the top, which is open to the sky. Its bottom, 30 feet wide, is choked with ragged rocks and rotted trees of very large size. The hole is 50 feet deep, and at least 100 feet from front to back. It is difficult of access at present, as it is approached along a steep path down the mountain-side, partly blocked by fallen trees. The top of this path is at a small swinging gate near the lower end of a long northeast-southwest fence; for the cave was once open to the public, and an admission fee was charged.

The cave is at least 300 feet below the level of the top of the Blue Ridge plateau, directly on the mountain front, and is at least 1500 feet above the level of the Piedmont plateau, which stretches to the southeast.

It is not a solution cavity, as there is no reaction when the rock is treated with hydrochloric acid. It is in solid bedrock, however; Wissahickon mica schist,

which is massive and splintery. The main cavity has developed along a joint plane or crush zone, which strikes southeast and dips about 75 degrees southwest. The opening is apparently due to mechanical failure of the rock structure, under the attack of frost and other agents of weathering; in other words, it is the product of normal erosion along the steep mountain front.

LARGE, OPEN CAVITIES

An opening goes down under the ledge on the southeast side. This is not at present visible from the point where the path approaches it; further exploration would be extremely dangerous without proper equipment. Those who visited the cave in years gone by state that there are large open cavities, with constrictions through which thin people only might pass. Two ladders were used to go down into regions of total darkness. Beyond the farthest point explored, stones would go downward a long distance. It seems evident that water which enters the opening at the top during rainy periods may descend all the way to the bottom of the mountain before coming out again.

Other fissures are connected with the large main opening. One of these, which is very interesting, is a nearly horizontal crack, developed along a quartz vein, where a single solid mass of rock weighing thousands of tons has slid down under the influence of gravity. It is said that caving of rock has now partially blocked the entrance to the main cavity, so that exploration would probably be dangerous.

The Den is about half a mile southeast of the nearest point on the Blue Ridge Parkway.

Report of New Discoveries Made In Crystal Cave Since Renewal of Exploration Jan. 1, 1938

By CHARLES T. McGLONE

The heretofore un-named chamber at the lower end of the Half Moon Trail in the North Wing of Crystal Cave, situated approximately 1000 ft. from the entrance has become the center of interest in the new explorations and we have named it Wonder Way Chamber because of so many drop-ways, aisles and breaks or chasms leading from it, down to the Colonnades, numerous chambers and the Crystal River below.

The two drop-ways—one the Ranger's Dread—and Break No. 3, lead down directly to the base Colonnade, the river and its bordering chambers, and by crawling through a low, smooth, flat pass from the Dread brings you into this colonnade, and the family of colonnades surrounding it, which run parallel, angled and crossed in almost every direction, with walls, roof and floor cushioned everywhere with pink to red diamond-pointed crystals, where, wandering amid the beauty, one may lose his course and have to forget the beauty of the scene and hunt his way out.

Many of the chambers, not large of course, at the ends and through the web-work of the Colonnades have

not yet been named and we welcome the visitor whose vocabulary of names is sufficient to do so.

Following this base colonnade a distance of 200 to 250 feet from Wonder Way brings us to a large, hump-backed rock, spanning it from wall to wall, over which you must pass to everything beyond and below. This rock is shaped like an elephant back (and knowing that if he is there, he is dead) hence we named this spot the "Elephant Tomb."

THUNDER HEAD ROOM

Just beyond the Elephant's Tomb is a very pretty, high-topped, sloping chamber which at the time of discovery, 1905, we named the Capitol Room, but because of the arch-shaped pink walls, like a sunset horizon over-hung by a draping of rich white crystal formation giving it the appearance of a cloud, we thought it more befitting and changed the name to Thunder Head Chamber.

Opposite the entrance to this chamber is a stalagmite broken or cracked up from the bottom and slabbed off at the inside, yet standing in perfect position; and although we did not know it at the time of discovery of the Capitol Room and east end of the river, yet it indicates and is directly over the river as it passes from the west end which we have just discovered, underneath this room, to the great east end which we discovered November 8, 1905.

Passing out of Thunder Head Chamber around the broken stalagmite and turning west about 25 feet, and dropping or squeezing down through a hole over behind a rock and climbing down from ledge to ledge 12 to 15 feet, we come to the west side of a small cave-in that has covered the river at this point, with the break in good place, continuing west, but too narrow at this level for entrance.

But working down and back through the rocks of the cave-in toward the underneath of the chamber and the broken stalagmite to a depth of perhaps 10 to 12 feet, the water in the river can be seen through a small hole some 4 or 5 feet below. Then returning to the first level of the small cave-in, a rock can be seen high up in the break out over the river, perhaps a distance of 50 feet away, now known as Eddie's Rest, as it seemed to be a favorite place of Eddie Donahue (a member of the first exploring party) to rest and puff the refreshing cigarette.

From Eddie's Rest, descent begins toward the river, passing over a place where the break widens and makes it quit dangerous to pass, but after passing this point the water can be easily seen and the splash of the water from rocks falling down or thrown into the river, gives a ring that reverberates throughout the break.

At the foot of the descent, about 150 to 200 feet beyond Eddie's Rest, is a floor or walking level about 125 to 150 feet in length and at the west end of this level is the wreck of an enormous cave-in where huge rocks block the break at a great widening and a hard climb must be made to ascend again to travelling ground.

Reaching the top a great shed-like room appears in view. The great rocks upon which we are walking

and resting, so large that the fall could not break them with corresponding marks under-foot and over-head to prove they had fallen from the roof for a distance of about 200 feet, hence we named this chamber the Roof-Shed Chamber.

All through the chamber, especially along and around the slopes of this border is a freakish formation of near petrified mud, looking very much like pottery, but having no textile strength; does not crumble but breaks easily and whittles with a knife like a sperm candle without grit or crumble. It is of thin layer or covering along the rocks and most of it is broken up into small blocks or pieces. In one particular corner of the chamber there are hundreds of short, small, crystal covered stalagmites, ranging from $\frac{1}{2}$ inch to 1 inch in diameter and every stalagmite is capped like soldiers on parade, with a piece of this clay just the size and shape of the top of the stalagmite. This clay is composed apparently of many layers of sediment. The finish of the extreme top is of clay of brownish color, but thin, and changes quickly to that of a whitish clay; then a distinct gray; then reddish, then dark and, near or at the bottom, jet-black stripes which are the thickest of the formation.

The cross-section break of this clay will polish like china-ware and show very conspicuously the bright color of every layer of the clay. A young man from Douglas by the name of Hammer picked out a piece of the clay of sufficient length to cut out a small-size hammer, and after whittling it to perfect shape, polished it, and at the last time I saw it, it looked like a wax figure of a small hammer showing every layer and color of the clay.

At the west end of this chamber the break continues westward in perfect shape and there is an opening leading down off the debris of fallen rock, 15 to 20 feet to the water level, for the first time in the west end after travelling about 500 to 600 feet from Thunder Head Chamber. A beautiful, clear, sparkling, slowly flowing river here has a depth of 29 feet. So blue that it looks almost green or living, here amidst all the splendor of crystaled walls, endless so far as the scene extends along the river. Above it and below the surface, are great banks of snow-white sand at every place where a ledge of rock appears near the water level. There are deep cracklings under foot like frosted snow. We have changed the name of the river from that given it at the time of discovery of the east end; giving it the name it merits—the Crystal River.

After following the river about 300 feet west of Roof-Shed Chamber, the break widens quite considerably for a distance of 150 feet and about the center of this distance a large rock has lodged at the water-top and perhaps extends downward a distance below, and on this rock, since its fall, has grown up quite a stub of stalagmite of icy-looking formation. At this place, on the 18th day of August, 1939, a number of C.C.C. enrollees from the camp at Portal, went swimming in the river while I sat on the rock at the stalagmite and studied the lesson of the occasion. Some of the boys remained in the water for more than a half

hour notwithstanding its extreme cold, for at this point I left a thermometer for one week, which read 50 degrees when I left and was standing at the same reading when I returned.

Following on up the river, almost due west, the break continues very narrow; at points along the way you can reach the water's edge, but soon you have to leave it and go higher in the break. However, at none of these places will you have to climb very high to get by. The crystals are somewhat longer and sharper here and the traveling is not very smooth. This formation and condition continues for about 800 feet and at that point, a great high, white, crystaled arch comes curving down from far overhead, sloping to the west and extending to the water surface, making it impossible to follow further up the river. But the break or chasm which the river seems to follow, or rather come through, opens up again far above the arch, and might again extend down to the water, and by following the break from a higher level we may be able to reach the river beyond it. In this reach of the river the breath is very noticeable on the air when traveling near the water.

Returning near the river-way and the colonnades to Wonder Way Chamber, we continued in the opposite direction of the return, descending through Break No. 1, down into a long chain of high, rough, narrow chambers and cross-chambers, through holes and over humps of the floor-way. Because of this, we named it Leap Frog Lane.

WONDER WAY CHAMBER

At the end of the Lane and about 150 feet from Wonder Way, is an almost perfect circle chain of chambers, into which are two small openings or entrances about 20 feet apart. From the right hand entrance, through and around the circle is about 550 feet. It has three quite large, long rooms, two of which are exceedingly beautiful and unusual. Many interesting and peculiar formations are found here, and in the room first reached from this entrance are many short, but large and small stalagmites of reddish brown or clay color and apparently all are hollow, from the clear, sonorous ring heard when tapped with any hard substance, resounding throughout the circle, and on one occasion I heard the music of it when sitting out in Wonder Way Chamber. A lesson here in nature's acoustics. However, this formation is not of the translucent calcite known for its musical vibrations, such as appear in the Garret Chamber, up over Turn-over Falls, and in form of the Elephant Ear and a curtain of stalactites and stalagmites united there and mentioned in first official report of the cave, where chimes of Lucknow are reproduced. Passing out of this first chamber through a portiere opening, is a long, deep and high chamber with several short chains of small rooms, all beautifully crystaled yet different from any other pocket-rooms. The ending of this room is quite deep down and narrow, but a climb up the crystal walls leads to the third or last and by far the most beautiful chamber of the circle. When the level of this room is reached, it is, indeed, a beautiful scene; glittering

red crystals along the floor, and covering all the walls to where the roof begins. On a great ledge at that level are several large, but short stalagmites covered with a snow-ball capping of rich white crystals. Beautiful clear and white stalactites hang from the sky over head, and at the apex of the roof, which is high up at the east end. The flash of a good light reveals to the eye a great large family or cluster of ice-clear stalactites, long, delicate and really beautiful, and it seems are so located that they are seldom seen. This circle has been named Cleo's Circle for (the then) Mrs. Ed. Donahue, whose persistence in the exploration of this wing led to its discovery.

In the center room of this circle stands a stalagmite on an angle of the further wall of the chamber, which is very tapering and stands 4 to 5 feet high, and just back and above it is an augur-looking hole winding upward, which was called to our attention by Ida Williams, the only woman in the party at that time, and upon her insistence, we turned our attention there. By climbing up back of the stalagmite and using it for "hook on" we reached a tunnel-looking hole, with one very, very tight squeeze, but on a smooth level floor and after squeezing through, we reached a small, room-high chamber about 75 feet from the Circle, which we named Shu-shine Parlor because it is not large enough for anything else.

At the top corner of the "shine" almost over the entrance is a "chute" leading upward; at the upper end are two small exits about 6 feet apart; one leading downward the other upward into a big, dark, smoky-looking chamber, now called the Hill-side of Rocks, because so many giant rocks are there, almost joining but so huge that deep, narrow breaks lie between them, and all are sloping to the right. Therefore, we named it the Hillside of Rocks. The first exit from the "chute" leads around the foot of this hill-side, and the second exit around the top of the hill-side, and all the upper rocks and the pocket-chambers around are literally covered with myriads of short, delicate helectites, a rare cave treasure, and as I remember just now, not found at any other place in this cave. They are so glassy that they look like so many frost circles and when a light is flashed upon them, they seem to reflect it from one to the other. The small pockets everywhere surrounding this chamber look like holes in an iceberg filled with frost-whiskers. Because so many helectites are there, these pockets are called Helectite Huddles.

On the opposite side from the entrance to this Hill Side of Rocks, which is a distance of about 250 feet from Cleo's Circle, visible from most of the rocks at the top of the hill-side, is a low, long black hole, like a "charcoal fresco on the wall" and its challenge is not conducive to sleepiness to one who is experienced in cave-going exploration.

WHITE THRONES

Upon reaching this hole and peering through into the abyss that makes it black, no one who looks into it can help but be dumb-founded by the scene that meets his eye. Darkness to the right and darkness to the left

with four or five great white thrones, white as "the fuller's soap" rising quite above the level of your light. One of them is just in front of you, a distance of 4 feet away, but a dark, deep chasm, 30 feet deep, is intervening between. Each of the thrones has up to three great ghost-like stalagmites standing up like the white monuments of a great cemetery in the night, with the bottom of the chamber about 35 feet below you.

Fortunately, one of the thrones is just in front of the black hole at the entrance, and one of the stalagmites bulges the rock out toward you for its foundation, like the roots of a great tree, to within 3 to 4 feet from your seat in the black door.

Carefully, we pull ourselves across this chasm and onto one of the largest thrones where it seems so secure, solid and safe, that it seems like you have found an abiding place instead of a resting place, which makes one almost want to go to sleep. Here you are in the midst of thrones with but One Ruler, Him who made the throne. The stalagmite pedestals are all as white as Carara Marble, and the traveller is quite pleased to sit and awe contentedly.

The sides of the thrones opposite the entrance are a rounded, crystal-covered rock and by zig-zagging from trail-way level to level to the bottom of the chamber, we find passways or spaces, sometimes of considerable length between the thrones and reaching over to the chasm underneath the entrance. Passing over these trails up and down the sides of the thrones, there are small benches or mesas where the party may sit down and rest and "view the landscape o'er." As the thrones are reached from the floor of the chamber by cut-back trails with many corners or angles, we have named this chamber The Palisades. Two members of the first exploring party—miners from Bisbee—who went into all the skirting chambers at both ends of this big room, estimated the length at about 650 feet. The width varies from 20 feet at the left hand end which is the narrowest, to 120 feet at the middle and opposite end. The height is apparently about 75 to 80 feet.

WANDERING WAYS

About the center of the chamber, opposite the entrance, there are short chains of small side chambers, all very beautiful, interesting and accessible. They were only once explored, by one or two of the first exploring party, and may have something more in store for future exploration. These chains, 3 or 4 in number, have been named the Wandering Ways and many pretty spots are seen in wandering through them. One chain has a perfect shape, large bath tub, about waist deep to a man, bath tub-width and about 8 feet in length. I am most sure there is no such thing as a leak in it, as there is a rougher rim of rock at the top which shows marks of the water, and the inside is smooth with some pieces of clay or sediment at the bottom, which, it seems to me, proves that at formation it was full and the water evaporated away.

No one who has ever seen this chamber, has confidence enough in himself to undertake to describe the beauty of its various formations and the freakish arrangements which only the Hand of Nature can give.

Also it is a hard day's work to reach this chamber and return again to daylight, so very little time has been given to its exploration and study.

Since discovery of this chamber, and because it is so hard to reach and find the way to it from Cleo's Circle, we have marked out a way especially through the Hillside of Rocks and Helectite Huddles to the "black spot" of its entrance, and named that way Ida's Highway, for Mrs. Williams, who pushed us into it.

A crowning feature of this cave, which it seems to me should go hand in hand with its beauty and grandeur, is the perfect air and even temperature that marks its every nook and corner, and in every chamber from King Solomon's Temple to the end of every wing leading from it. The temperature everywhere reads 50 degrees.

King Solomon's Temple is reached at 220 feet from the entrance. Children and old folks alike can easily and safely walk into it in only a few minutes time. The temperature there is 50 degrees and, oh' what a relief it is from the nigh-100 degrees temperature of our long Arizona summers. I have tried it.

Outdoors from Top to Bottom

SCRIPT FOR BROADCAST ON WBRK Monday,

June 2 at 6:45 P. M.—CLAY PERRY.

As promised last Friday evening at this hour, I am going to try to give you who are listening a word picture of an unusual outdoor expedition, for sport and science, which ranged from hill-tops to underground depths of more than 200 feet—a cave man's holiday. Cave women's, too, for there were half a dozen agile and adventurous women in the party of 22 persons who converged upon the cave country of Schoharie County, New York, on Saturday morning and spent the entire day in a very active spelunkers' convention in two remarkable caverns.

We met at ten A. M. on the sunny terrace of Howe Caverns and found that we had five carloads of eager spelunkers from Pittsfield, Westfield, West Springfield, Washington, D. C., New York, New Jersey and Ohio, representing the three chapters or grottoes of the National Speleological Society, headed by William J. Stephenson, national president, who is, in professional life, on the staff of the U. S. Patent Office and whose career as a caveman is to be published soon with pictures taken on this trip, in one of the leading monthly magazines of America.

Bill will loom up, for he weighs 200 pounds or more, yet he dared to trust himself on an old rope that I had borrowed from a tree surgeon who weighs about 125 pounds, to make a descent into a perpendicular shaft 44 feet deep into Ball's Cave, by the unique method employed by mountain and rock climbers who literally slide down backwards with the rope wound around them under one leg, over one shoulder, the free end in front, paying it out as they dangle with feet braced against the rock wall. It is know as the Alpine climbers' elevator method.

The rope did not break, but the rest of us prefer-

red to descend by means of a rickety ladder made of slender tree-trunks with cross-bars arranged at distances calculated to make a rubber man stretch, with a brand new, knotted rope as a safety line, beside it.

But before this weird and wild exploration was begun, we were taken on a guest tour of the lovely, colorful and comfortable Howe Caverns, which I described last Saturday, our party spending an hour and a half of goggle-eyed delight in the caverns, with a special guide and the personal company of Virgil H. Clymer, the manager, who is celebrating the twelfth anniversary of the re-opening of Howe's Cavern under its present management—and who manages to direct several thousand sight-seers through his marvelously housed and developed natural wonder each week in season.

Our trip included the quarter mile boat ride down the crystalline waters of the underground stream, with its brilliant display of formations under powerful lights, white and vari-colored, with a color light-show along the river which revealed to us where the moon really rises—day and night, out of the cold, sparkling depths of this mysterious river whose source is unknown.

The scientific-minded members of the party learned that the only life to be found in the caverns is a species of moss or algae which grows under the lights. There are no fish in the stream, no salamanders,* snails or other animal life; only this fine, hairy moss growth in brilliant green, from spores that may have lain dormant in the darkness for thousands—perhaps millions—of years, to be brought to life by artificial light at last.

Several of us ventured, by permission of Mr. Clymer, into a new section of the caverns, which is being carved along a narrow seam out of the huge entrance chamber, to an unknown goal into the rock and clay and unseen new wonders which are believed to lie buried beyond.

After the long walk and boat ride, the ascent by elevators into the upper air was followed by a general rush for the dining-room to prepare the inner man for the coming rough work in prospect at Ball's Cave.

This cave, never commercialized, lies in the woods on a farm owned by Steve Wilber, on the edge of Schoharie, and is reached from either Central Bridge or Schoharie by way of Sheldon Road and a farm road between Mr. Wilber's house and barn, down across his meadows and fields and up over a hill and down again, a distance of about one mile from the main road.

"EXPLORE AT YOUR OWN RISK," reads a crude sign on a tree at the edge of the yawning sink-hole in the forest, and one look down the rock-walled shaft at the bottom of the hole makes the simple sign eloquent, indeed.

The first descent into such a hole is one of the greatest thrills of cave crawling. I had gone down that old ladder in winter, two years ago, when its rungs were iced to the size of baseball bats and slippery as

* Editor's Note: The cave staff reports finding a Salamander.

soap from dripping water. None of the others had had been in but 19 persons, including three women, climbed and roped themselves down, together with much equipment, in knapsacks, boxes and pockets. A New York photographer made his first entrance into any cave with his teeth gritted and synchro-flash camera hugged tight to his chest. Bill Stephenson's Alpine elevator descent did not appeal to anyone else. It's a highly specialized technique, this sort of thing. But all got safely down to the bottom of the deep well, which is about five feet in diameter, and slid and slithered and crawled down, down fifty feet, over a cliff, then down some more; fifty feet more at a 45 degree slope, to the end of the main passage, where it branches right and left under stone arches so low that one must creep and wriggle on his stomach on very hard damp rocks.

At the right, to my delight, I saw a head sticking out of the lower archway. On my first visit this had been completely blocked by rocks and hard-packed mud and sand. Now it was open, and the first man down, a lad from New Jersey, had wiggled in.

"I've found the lost lake. It's in here," he gasped. "There's a boat in here, too."

I pulled my hip-boots up and slid under and found that he was on the verge of a crystal-clear body of water upon which floated—not a boat, but a caveman's catamaran, a crazy, jerry-built raft of small oil-drums and inner tubes and boards.

INTO ICY STREAM

Now, I have a picture that will be seen soon in the Saturday Evening Post of a fellow floating on one of those things on a cave stream in West Virginia. It looks easy. We got it launched and I waded in until the water crept up near my boot tops, then attempted to get aboard the boat—which we had some-what repaired—and the next moment, I was in the water up to my waist and on one side, to my shoulder. It was cold! But long wool socks absorbed most of it and my cave gloves went into my pockets and I waded on, pushing the raft ahead, and soon got to shallower water—and to a remarkable natural dam curving across the stream—for it was a running stream, not a lake, after all. That dam, of rock, mud and flowstone, was so perfect that we thought it man-made for a time but probing it and examining it closely, we decided it was built by nature, by the slow deposit of limestone and mud on rock, by the water. And there were two more such dams visible, up a flat-ceiling tunnel that looked as if it had been deliberately carved out for an underground canal. The stream came from a distance we could not reach with powerful flashlights. It made a tiny waterfall through an opening in the first dam, beside which was a level shelf where we perched.

Two more spelunkers came in, and being veterans, braved the water without boots, removing shoes, socks, rolling up pants legs. We dragged the jerry-raft over the dam and re-launched it—and then and there christened it the **Bismark**. It proved an apt name. When one of the young spelunkers got onto it it started to dive for bottom. An oil drum popped from under the

boards. We repaired it again, with slimy rope found lying on the shelf. Another mariner ventured to board it, thrusting his bare legs through the tangle of inflated inner tubes between the boards. Pushing himself along over six feet of icy water, by his hands against the wall or ceiling, he reached dam number two and pushed the raft back to us.

Another lad got on it, carrying the rope's end with him so that the third one could tow the raft back. In this manner one man got to the third visible dam, discovered shallower water and another series of small dams which he traveled over until deep water appeared again—and there the Bismark made its final dive and dumped Mr. Petrie of Arlington, Va., into the drink, submerging him completely.

At about this time I waded back and crawled out, more interested in another river, in the left hand passage, whither the rest of the party had passed—but to my astonishment, that river, which we had paddled up in a sea-worthy, cave-worthy rubber boat two years ago, had vanished. The drouth, it appeared, had affected the water level in this cave.

And so we discovered a "lost river" and lost a river on the other hand.

Bell's Cave provides almost every kind of cave variety, save that it has no stalactites or stalagmites. There used to be one large marble-white stalagmite in it, according to an account published by Arthur H. Van Varis of Cobleskill, sometime ago, but it appears to have been lugged away by some vandal. Tiny, infant beginnings of stalactites remain to show that the cave is still a live cave, and growing. But the huge main chamber, with its hill of soft mud which, when it is wet, provides an underground ski slide, and many rambling tunnels and crawlways kept us all busy and interested for three hours. On the way up the ladder one caveman broke a ladder rung, but fortunately he had tight hold on a rope. Nobody was hurt or drowned—and the only accident of the trip was an automobile crash that happened to one car coming from Ohio, which landed a woman in the hospital at Utica with minor injuries. It is safer in a cave than in a car, these hectic days.

Now, the New England Spelunkers' Grotto will conduct another cave trip on Sunday, June 15th. This time we are going to Vermont to try to get to the bottom of Skinner's Cave, a beautifully located cavern halfway up the east side of Mt. Equinox in what is known as Skinner's Hollow, now owned by Nat Canfield, an uncle of the famous author, Dorothy Canfield Fisher. This cave is to be entered right beside one of the old landslides on the mountain, known as the Devil's Wagon Road and it has the unique feature of being a snow and ice cavern which keeps icy cold all summer. It is supposed, according to local legend, to run clear under this long underground journey but the spelunkers are going to see how far they can get in it, this time.

Get in touch with Leo Lincoln, our secretary or with me, before June 14th. Saturday next. Goodbye for now.

An Experience of Cave Fright

By WALTER AMOS

While prospecting for a cave near Morgantown, West Virginia, in the summer of 1928, some friends and I decided that we had found the place we were looking for. After a careful survey of the property, we felt sure that the opening to the cave was in, and at the side of, a large creek.

We employed some men to build a dam and spillway to divert the creek and directed the men where to open the cave. A few days later, the foreman of these men called us on the phone to come and explore the cave opening.

Equipping ourselves with the necessary paraphernalia, we proceeded to explore, descending by the aid of ropes to about 15 feet below the normal level of the creek. We came to a small, low-ceiling room with a lively stream about three feet wide flowing through it. We decided to follow this stream. This we found to be very difficult on account of rock falls encountered in the passageways.

Following the stream, we came to a place where the small stream disappeared beneath a rock ledge. The opening was large enough for us to crawl through, so we continued to follow this stream through a passage about 45 feet long under the ledge. We were very wet and muddy when we emerged in a small room on the other side.

We explored other rooms of no particular interest, and then decided to return. As I was the first one in, I would naturally be the last one out on the return trip. I became interested in some tracks that looked like they had been made by cave rats and, realizing that the others had gone and left me behind, I hastened to follow. In crawling through the small passageway, my clothing became caught on a rock. The water began to rise about me; my flashlight dimmed and I began struggling to free myself, bumping my head on the ceiling of the passageway in attempting to get my face out of the rising water. That is all I can remember.

How I got out, I do not know, but this I do know; my body was bruised and there were many scratches on my face and hands. I had on lace boots and riding breeches with a harness leather belt. The belt was broken, my clothes were practically in rags and dragging behind me. When I finally joined my friends they exclaimed, "Why, what happened to you, Walter?". I did not want them to know that I had been so foolish in becoming frightened, so I told them I had tried a lead that we had missed and had fallen among some rocks.

When we got to the mouth of the cave, we saw that the dam had sprung and water was running in the opening. That was the cause of the rising of the stream while I was in the middle of the passage.

Subsequent exploration proved the cave of no commercial value.

Special Trips . . .

Joint Expedition

REPORT ON JOINT EXPEDITION OF NATIONAL SPELEOLOGICAL SOCIETY, with Members of District of Columbia Grotto, Ohio Grotto and New England Spelunkers' Grotto, May 31, 1941.

Meeting at Howe's Cavern, near Cobleskill, N. Y. At 10:20 A. M., we found 22 persons had reached this goal for a visit to Howe's Cavern as guests of the management. We were greeted by Virgil H. Clymer, manager, Mr. Wall, assistant manager and Mr. Plant, his assistant, and at 11 o'clock were taken down the elevators into the caverns with a Mr. Day as guide, and given "the works" including a boat trip and a chance for some to look into a new development that is being made to open a possible series of unknown passages and chambers off the main chamber at the entrance.

This trip was not at all a scientific study, although it gave members an opportunity to learn something geological and to inspect the curious moss or algae growths which electric light has developed on the rocks and mud. The scientific explanation of this growth is contained in a small pamphlet published by Howe Caverns, which should be on file at Washington, if it is not already. It can be obtained from Mr. Clymer or Mr. Wall.

Mr. Clymer has also promised to furnish copies of any newspaper account of the trip, the names and addresses of all who took part, and other data. He will also furnish a typed copy of a radio talk given by Clay Perry, May 29th, at Pittsfield, in advance of the trip and I am enclosing a copy of one given June 2, telling about it and the visit to Ball's Cave.

As these two scripts contained descriptions of the physical activities, this report will be confined to a digest of notes taken at Ball's Cave, as to directions and distances.

Ball's Cave lies on the farm of Steve Wilber, a resident of Schoharie, Schoharie County, N.Y., whose house and barn stand close to Heldon Road, a cross-over road from N.Y. Route No. 7 to Scholarie. The farm is two miles from the junction of N.Y. 7 and Sheldon Road. A farm road leading between house and barn permits driving across fields, about one-half mile, to an old barn, taking right turn, along fence, at right, to another fence which runs at right angles, up-hill, through a bar-way along edge of this field, following fence at right, to north side of field, turning left and following up hill beside woods and fence to stand of tall white pines and bar-way. Cars may be parked here or driven through bar-way into meadow and parked; possible at time to drive on northerly and westerly to a point near the cave but not recommended for low-slung cars. Very rough.

NOTE: It is recommended that spelunkers refrain

from driving across these fields unless by permission from Mr. Wilber who is very accommodating but might become less so if crops are damaged.

From this bar-way, the distance is approximately one-eighth of mile along a stone fence at right, to bottom of hill and corner of field. About 15 paces south of this corner is an old wood-road which could be followed from farm-house, afoot, in case of impassable roads in fields.

From this corner it is 138 paces to a point along wire fence and woods, where entrance should be made to woods, directly north. This point can be established more easily by pacing 28 paces from a hedge and fence which lie on westerly side of meadow. To get to the cave from here, cross fence and walk 50 paces in, through woods, on a very faint trail. Cave is in large sink-hole crossed by tree trunks, with ladder end extending from shaft in bottom.

A LIST OF THOSE WHO MADE THE TRIP TO HOWE CAVERNS AND BALL'S CAVE, SCHOHARIE CO., N.Y., May 31, 1941, as furnished by Virgil H. Clymer from his register, follows:

R. E. Snell, Washington, D. C.; C. B. Blackely, West Springfield, Mass.; M. B. Williams, West Springfield, Mass.; Gordon P. Campbell, Westfield, Mass.; John S. Butler, Westfield, Mass.; Donald F. Guirk, W. Springfield, Mass.; Donald Haskell, W. Springfield (8 Ludington Court); Michael Anguti (representing American Mag.), Brooklyn, N.Y.; Edward Coughlin, Lowell, Mass.; Robert Bastow, Pittsfield, Mass.; Leo L. Lincoln, Pittsfield, Mass.; Clay Perry, Pittsfield, Mass.; Mrs. Clay Perry, Pittsfield, Mass.; Mrs. Gladys MacWilliams, Pittsfield, Mass.; Frances G. Snell, Pittsburgh, Pa.; Leila Miller, Wheeling, W. Va.; Mabel B. Smith, Berhany Pike, Short Creek, W. Va.; Robert E. Morgan, Washington, D. C.; J. S. Petrie, Arlington, Va.; Donald S. Richard, Washington, D. C.; Charles Matchett, Steubenville, O.; William J. Stephenson, Washington, D.C.

Spelunking

By NATHAN L. MINTZ

A "spelunker" just goes to a cave to see what he can see, as distinguished from a speleologist who makes a scientific study of caves. So here were we three spelunkers among twenty of the other kind of "spels."

After work, Saturday afternoon, we started on our 100-mile trip to Teterton "Mystic" Cave in West Virginia. We reached there about 8 p.m., changed to our cave clothes (anything we did not mind ruining) and were on our way to high—or perhaps, as in such underground affairs—low adventure.

To get into the cave, our party went down a deep hill and then crawled through a narrow passageway. Water, water everywhere and drinkable, too, (we were told). Most of the time the water depth was only a few inches, but occasionally there were water holes which were up to our necks (this measurement was made via a pole; it's just as accurate and much more comfortable).

All of the cave floor was not covered with water,

a good part being dry, particularly on the hilly portions. But it seemed that my sneakers gradually acquired the knack of stepping into the water in preference to dry ground. This was not too objectionable so long as we maintained an approximately vertical position, which we generally did.

Aside from sliding occasionally on the slippery rocks (spiked shoes are recommended), our principal adventures came at the water holes. Previous cave parties had slung poles across. By stepping along carefully on these poles, grabbing at the sometimes blank walls, and turning to face one of the walls when the other was too far away, we spelunkers managed to negotiate two of the water holes. At the third (the one with the water at neck height) we cheerfully gave up all honors to the speleologists and retraced our tired steps.

There were five in our little returning party. I, bringing up the rear of this group, was about 200 paces behind the others. My feeble flashlight was flickering valiantly in the pitch darkness. Now it was a race against time. The burning question was: which would go out first—the flashlight or I? I won—the flashlight went out first. Luckily, I was a very short distance from the others and skidded safely back to the starting point.

We then rolled out of the cave and into bed.

Trout Cave

E. S. SIMMONS' CAVE

Location of cave: Cave post office, Pendleton Co., W. Va. The cave itself is located directly in back of the house of E. S. Simmons, which for a long period of time was the actual post office at Cave, W. Va. A large hill, which stands by itself, rises immediately in back of Simmons' house. The entrance to the cave is on the south side of the hill and has been boarded up and locked by Simmons. An old entrance lies slightly below the main entrance and slightly to the east. Another entrance lies still lower down the hill, and is a small almost unnoticeable hole.

The cave itself consists primarily of one large room which, so far as is known, at the time of this writing, is the largest room in any cave in W. Va. Dimensions of this room are 420' from one end to the other, and 165' at its widest point. The room has a small lake almost in its center. This, incidentally, is also the widest point of the cave. The lake itself lies at a level approximately 12 to 15 ft. below the main room, and extends for a considerable distance under the floor of the room.

The dimensions of the lake are roughly 57' x 15'. In several places the lake narrows down to approximately 2' length and 3' width, thus forming almost three perfect rooms. The first room at the entrance is, roughly speaking, 15' in diameter; the middle room about 10' in diameter, and the far room a little over 25' in diameter, with a shelf of 5' on the far side. The walls of the lake were probed for possible openings

underneath the surface of the lake which might extend further back in the cave. However, the walls were found to be solid and no openings were to be found. The floor of the lake appears to be mud, and the lake is about 5' deep adjacent to most of the walls. It is deeper in the center, but the depth of it there was not taken.

The mud in the bottom of the lake is such fine silt that the least agitation muddies the lake so that the bottom is undiscernable. Exploration of the lake was conducted by an inflatable boat lent to the society by the Coast Guard. This boat proved quite satisfactory. It was light, easy to inflate, and is flexible when small passages are encountered, that is, the sides of the boat may be pulled up and the boat made somewhat smaller, or even bent in the middle. The lake was surveyed from the boat, with light from candles placed on the shore.

Off of the main room, to the east, are series of small crawling passages. These passages are fairly well decorated, and through these passages the other entrances above referred to may be entered. Outside of the fact that they are decorated and necessitate crawling, they are not of particular interest. On March 22, 1941, the cave was surveyed by James Fowler for fauna, and several specimens taken. The cave was surveyed for mapping on May 4, 1941, by a large party from the Society. No particular attention was paid to fauna on this trip.

As a matter of history, the cave was used as a ball-room several times, the last being in 1895, on the Fourth of July, when a grand dance was held at an admission of \$1.00 per person. The Simpson family still retains some of these old tickets. There is no record of this cave ever having been mined for salt peter. Mr. Simpson has records of a survey reported to have been made by an engineer, in which the room is described as being 440' long and 220-some ft. wide. However, no place was found in the main room by our party which would support the statement that the room was 200 ft. or more wide.

The majority of the floor of the main room was soft mud with many massive boulders piled up on the east or north side and at the end of the room. The room ran generally in a northerly direction with the entrance being on the south. In all probabilities, the room extends practically through the entire hill, and the extent of the cave being controlled by the outline of the hill.

ADDITIONAL NOTES ON TROUT CAVE: A further exploring party conducted to Trout Cave on the evening of May 3, 1941, and the party was in the cave from 9 until 2 o'clock. About 1,000 ft. of new passages were mapped, however, the end of this cave was not reached. No new specimens of fauna were taken with the exception of a few bats. However, some specimens of cave earth were taken in an effort to ascertain what caused the unusual sooty and blackness of this cave.

Blowing Cave

(Reached Sunday morning, June 22, 1941, by Jean Shear, Rita and John Mills, Bob Heustis, Bill and John Petrie; entered and partially explored 9.30—11.30 by the last three.)

After a midnight visit by the combined auto parties of five with Pete and two with Gus, under Gus Hortman's leadership, thru a portion of interesting Withero's cave, and a good night's rest nearby, John, Bob, Bill and Pete investigated Rhea's cave, while the girls, dressed in their good clothes for breakfast before changing for their next intended destination—Clark's cave—visited outside. We found the detailed description of this small cave as presented in Bulletin No. 1 almost letter perfect.

We then started for Clark's cave and stopped for a few minutes to let Bob, Bill and Pete examine briefly the described relatively short, small Blowing Cave with side "fissures too small to be followed by human beings." Although hungry for more breakfast than the bananas and milk purchased with supper the night before at the grocery-restaurant in Millboro, the girls readily consented to the short delay involved. Expecting no extended trip, no excess equipment beyond an extra set of batteries, carbide and water and specimen bottles which happened to be in Pete's coverall pockets, was taken into the cave. Bill and Bob had their usual carbide lamps and Pete his flashlight. The camera and flash bulb outfit, (rather laboriously carted for 2½ hours thru the "crawly" passages of Withero's for use as it turned out only in the Throne Room and in a transverse fissure with interesting formations) were later regretfully missed. Even more important lacks were extra tips for the carbide lamps, or other reserve lights, of which more later.

Telling John and the girls we would probably be back in ten or fifteen minutes, Bob, Bill and Pete entered this cave along the roadside with a good sized creek flowing along the opposite side several feet below the road level. While rambling thru various leads described, Pete heard Bob call that he had found an extra lead beyond a narrow opening in a nearly closed west wall of a long up-slope thru which it was possible to squeeze.

NUMEROUS HOLES

Descending a long incline we crawled beyond the "squeeze" generally westward and then found a passage around a sharp rock bend to the right where, by walking inclined (somewhat as in Boyer's cave near Harrisburg), we emerged into a long series of rooms and descending passages with the surface silt and clay becoming stickier and stickier and overheard dripping more and more frequent and pronounced. Obviously, we were getting below the level of the creek outside in view of the descent already effected, and were apparently proceeding somewhat northerly into the mountain in the general direction of Withero's cave.

Numerous holes and small rock climbs and still more slippery muddy slopes retarded our progress, and occasionally we had to carefully avoid slipping into wash holes or sinks to a probable stream beneath. At one point, Bob's lamp became clogged, and with nothing

besides an obviously too large nail to clean it, we finally had to abandon attempts and proceeded with two lights only for the three of us. With increasingly slippery travel this was not so hot—so we thought then.

Further on we had a short crawl thru a low passage beyond a slippery clay ravine, and more of the same, —varying rooms, passages, etc., with more and more water mingled with the clay under foot. Soon we had an excellent lubricated twist-slide into a larger room, with the slopes becoming larger and certainly not less slippery. Here, Pete temporarily lost one tight-fitting golf rubber completely buried from sight in the ooze. Somewhere along here Bob lugubriously complained that if conditions didn't soon improve he was afraid he might get his clothes muddy!

RUMBLING STREAM

Splash, squash, slip, slide—on we went. Then, as we scrambled over and thru a rocky wider passage, we heard a large stream rumbling ahead, and burst into a room with dimensions in a score or more of feet and the stream partially covered below us making considerable noise. We ceased our heel-digging efforts to remain upright, and each on well-lubricated third "foot" as whimsically designated earlier by John Mills, coasted several body lengths to the upslope across the stream, here visible thru an outlet hole four or five feet deep.

A short way over more rough, rocky slopes the stream became visible thru a passage six or more feet wide and somewhat higher, with banks too narrow to enable traversing dry shod. So Pete waded upstream to look for Doc Morrison's specialty while Bob and Bill investigated the surrounding slopes. After uncovering uncounted rocks from the stream bed and finding no snails or any sign of elusive "fauna"—a period interspersed with frequent calls from the boys behind—Pete was about ready to report wild life in this cave conspicuous by its absence, when a ¼" crawler was turned up to view.

The mouth of the alcohol bottle was almost ready for him when he disappeared in a fissure in the encrusted stone, from which efforts to break away the crumbly rock with an 8-penny nail were insufficient to reveal his hiding place. The prey escaped, but not the desire to "obtain a specimen" from this field new to the Society, which urge was whetted by the knowledge that where one existed there might be more.

Probably five minutes more were spent before further search was rewarded by another apparently of the same (to Pete unknown) species, and this time this one didn't escape a pickling bath. Pete then proceeded a short distance further upstream, perhaps 50' all told, but finding no good stopping point, and realizing that we had already been in over an hour, and almost imagining a search party after us, regretfully turned back to the waiting room.

Bill and Bob were found twenty feet or more up a steep slope overhead where the lead continued. With their one carbide lamp they decided to investigate it further while Pete waited atop the stream at its point of disappearance. He had the peculiar feeling, sit-

ting there in the empty blackness, of varying degrees of light and dark, as if a light were frequently approaching and receding from some turn around a bend. It most certainly wasn't the sort of "darkness that could be felt" described in the Good Book.

Feeling secure and immune from any decayed vegetables or other manifestations of appreciation of his vocal attainments he helped while away the time by singing thru several stanzas or parts thereof of "The Lost Chord", but discovered that even the abysmal depths and echoing walls of Blowing Cave can't make a Caruso out of a mere would-be speleologist!

Finally, Bill's shout announced the wanderers' return with the disconcerting information that they were now traveling without lights, and, as they might have added truthfully, not at excessive speed! Spotting them upon emergence and guiding them "on the beam" around the edge of the room, we rejoined at the top of our "toboggan" sloop, whereupon at 11 o'clock after 1½ hours time from the entrance, we started on our return. Procedure varied with sometimes one and sometimes another with the single torch sometimes ahead and sometimes in the middle.

With frequent appeals to shed a little light on the situation by those in the rear, the head man rapidly conducted the others back over the same trail we had come in, thanks to the guide thread, we soon picked up, that we had followed for a long way in. It was not particularly useful in entering but was decidedly helpful in the light of only one flashlight during exit.

Shortly beyond the crawl and ravine, Pete discovered loss of two of his specimen bottles, one containing the precious "specimen of fauna." Despite appeals to reason which the boys perhaps felt but were sports enough not to utter, Pete returned and luckily found the missing bottles even before reaching the twistiest part of the crawl where the probabilities seemed best they would be found.

Resuming exit as fast as we could under these somewhat precarious conditions thru lack of sufficient light, we consumed a full half hour regaining the entrance. During this period we had other incentives for getting out fast, besides our desire to allay the presumed fears and known hunger of the girls, and these included a real appetite ourselves for a noon-time meal and no desire to outlast our batteries in any endurance test. Down the shelter of the bank along the creek Bob and Bill stripped to the shorts and proceeded to wash their clothes while Pete removed articles from coverall pockets and went in, clothes, shoes, spiked rubbers and all in the stream breast deep in spots.

John Mills gleefully pictured this search for cleanliness. Shortly after, with explorers donned in street clothes sans underthings, all resumed on wheels our search for food, after finding Blowing Cave to be decidedly of interest to at least three amateur speleologists, and, contrary to the Bulletin report, well worth further investigation, particularly of the course and source of Pete's stream.

Not to mention speculation as to its ultimate destination, probably beyond and below the roadside creek,

who knows but that in Blowing Cave it may be none other than lower reaches of the tiny rill, at Morrison's Hole in Withero's Cave, grown big by the confluence of unknown tributaries coursing "without haste but without rest" thru the blackness of eternal night beneath these everlasting hills of the Old Dominion?

"C'mon, gang, let's go see! What are we waitin' for?"

Further Notes on Blowing Cave

Blowing Cave, Bath County, Virginia, was among one of the first caves to be mapped and reported by the Society (see June, 1940 Bulletin of D.C.S.S.). At that time, despite rumors by the natives concerning the existence of a large lake in the cave, it was thought that the cave had been thoroughly surveyed, and that such rumors were either the product of local imagination or else quarrying operations had either destroyed or closed any parts of the cave containing such a lake. This June (1941) a party of our members reinvestigated this cave and found a small opening through which it was possible to reach the large main cave which had been the subject of the local rumors.

The opening by which entry is made into the main cave of the passage lies at the far part of the cave previously mapped and on the left wall of the passage at point where it apparently peters out. The entrance to the new part hereinafter called the keyhole, escapes detection until one is practically into it. Crouching ten feet away where the dirt slope is within three feet of the ceiling, the keyhole is practically invisible even when its presence is known. The cave gives the appearance of being completely mud blocked. This incident should serve to clearly illustrate the care and pains that is needed to properly explore and map a cave. No hole should be overlooked or passage assumed to peter out. The impossibility of ever calling a cave fully explored is here well illustrated. Other examples are the recent discoveries made in Mammoth and Wyandotte Caves, though each cave had been known for over 100 years and both were thought to be fully explored. This should give heart to new explorers who may think that all caves are by now fully explored. In subsequent mapping, care should be exercised against marking any passage as ending unless the blackened walls are actually touched. Symbols should be used to show passages that narrow down too small for actual traverse by the mapping or exploring party and other symbols should be adopted to show passages not explored to the end due to difficult going, lack of time, etc.

Coming back to the physiogony of the cave, after passing through the keyhole, the passage doubles back down a dirt slope similar to the one which ascends to the keyhole. From here the cave proceeds in a northerly direction, through a passage having an angular shaped floor quite similar to the ridge of a roof. Next, a series of large rooms are encountered. The floors of these rooms are either mud covered or are worse; broken stone covered with mud. The third room of

this series of rooms has been appropriately named the Break a Leg Room. The first room is the largest and has a large dangerous pit on the eastern side. From the second room a series of dead-end passages lead off on the west side. At the end of one of these (Meenan's Dome) is a chimney which reminds one of the wells and chimney of Schoolhouse Cave. From the Break a Leg Room, the cave continues in a northerly direction in a series of passages all with mud floor to what is known as Petrie's Lake Room. This room, approximately 150 feet long by 50 feet wide, is often filled in the center by a lake, usually ten or more feet deep. In dry seasons, the lake dries up and a stream of considerable size flows across the room from east to west. Rough calculations computed from the deflection angle of the measuring tape show this stream bed to be over thirteen feet below the level of the Cow Pasture River which runs directly by the entrance of the cave fourteen feet below its mouth and 150 feet away. A line of levels run with a land level discloses the pit in the first room to be 12 feet below the level of the Cow Pasture River.

When the stream is running, a passage exists to the east side of the lake room. This passage is 4 to 5 feet wide and 6 to 7 feet high and has been explored for about 50 feet by Petrie who was stopped by lack of time. Exploration of the cave past the lake room still remains to be done.

There is much evidence to indicate that in times of flood the lake rises and fills much of the cave. From the Break a Leg Room on, the floor of the cave is entirely of deposited mud. Often the mud is in huge piles on one side of the room or passage or may be piled at either end or in the middle as a mountain, in whichever way the receding flood water left it. As the floor passage leading off of the Break-a-Leg Room to the Lake Room starts at the approximate level of the Cow Pasture River and does not again rise above that level before reaching the lake, and as it is in this portion of the cave that the majority of the mud deposits occur, it is thought that the stream in wet seasons and times of flood must flow at a greater velocity than the opening of the lake room can take care of, thus backing up water to form a lake, which, in times of flood, probably fills all the lower passages to the level of the Break a Leg Room.

On June 22, 1941, the lake was down and the stream was running with considerable noise. On July, 1941, the lake was absolutely silent, up 10 to 15 feet, with a length of about 35 feet. On Sept. 19, 1941, the stream was again running. 1941 in this region was generally a drought year.

No fauna has yet been reported from this cave. ^{EXC. AS NOTED BY PETRIE IN JUNE} Further data is advisable.

Clyde Cochran Sinks

Hillsboro—Pocahontas Co., West Virginia

The entrance to the cave is at the south side of the bottom of a medium sized sink. In wet weather, a stream flows into the sink from the west and drains directly into the cave. The bottom of the sink directly

in front of the cave is composed entirely of broken rocks of considerable size and, as expected, many of the small rocks and much rubbish have been washed into the entrance of the cave.

The cave, though about five feet high at the entrance, quickly flattens out until at the end of daylight the average ceiling height is about one and one-half feet and the width about fifteen feet.

The course of the cave is down after approximately 50 feet. The bottom is generally solid rock excepting where small recent deposits of stream sand and gravel are found. After a crawl of 150 feet, the cave opens up into a small room 25 feet in diameter and six feet high. This room has apparently been formed as a result of a small (wet weather) stream uniting here with the main cave at an angle sufficient to cause a whirling action of the water and thus to form the nearly circular room.

From this room on, the cave begins to open up. A distance further, a series of large chambers are formed and the first mud encountered. The first chamber is entered by a drop of fourteen feet, and the next chamber is in turn fourteen feet below the first. To the left (south) of the second chamber, a wet mud slide indicates seepage directly from the ground surface. This second chamber is unusual in that it is nearly divided in two by a curtain of rock less than two feet thick hanging from the ceiling to within one foot of the floor and attached to the right (north) hand wall of the room. Farther on is a room which is entirely occupied by a lake averaging not more than 65 feet in diameter. The depth of this lake at the center is unknown but is over six feet.

On the far side of the lake, a small stream flows down a passage having a slope in excess of 10° and thus into the lake. No outlet for the lake is visible. The lake possesses considerable current in a clockwise direction at all points on its surface and thus indicates some under water outlet.

LAKE OUTLET SMALL

Evidence is present to indicate that the surface of the lake varies, even to the point of filling the room. From this, it can be presumed that the lake outlet is quite small, and that no further passages or leads of the size to accommodate a man exist from this point on.

The passage by which the stream enters the lake is quite small and after 200 feet becomes too restricted to be followed further. The floor of this passage is a mixture of mud, sand and gravel laid down thinly on solid rock.

The surface of the lake was explored by means of an inner tube raft which is to be made the subject of a separate article. The local boys state that at times of low-water, one can wade around the edge of the lake, but that it has never been known to go dry.

The day that the cave was surveyed, the water of the lake was quite muddy. No effort was made to sample the lake waters for the presence of life.

The only cave life observed were cave crickets and a salamander. These items were turned over to the U. S. National Museum at Washington, D. C.

It is noted that the surface stream which feeds the cave in wet weather runs toward the east while the cave bears to the west in a semicircular course that eventually arrives back directly under the bed of the dry stream. It is further noted that about 300 feet on up the dry stream bed from a position directly over the lake one comes to an active stream that disappears at this point, and is without a doubt the stream that flows into the lake.

Directly over the mud slide in the room with the rock curtain is a small spring that flows for a few feet and disappears. This, in all probability, accounts for the mud carried down into said room.

SERIES OF SINKS

Directly to the east of the sink where the entrance to the cave is located is a series of large sinks, the bottoms of which are at progressively higher levels than the entrance sink. It seems reasonable to presume that the stream which now sinks and runs into the lake at one time in the past sank into each of these sinks in turn, and left it as each new sink at a lower level developed. In each of the old sinks all possible cave entrances have been blocked by Talus. With the main all-weather stream overflowing directly into the lake instead of through the cave entrance in the sink, the development of a new sink should proceed quite rapidly. Observation in the future may prove quite valuable as a means for casting some light upon the speed with which the sinks in this area actually develop.

A further interesting fact is that the main cave leads back toward the newly developing sink instead of toward all the sinks previously used by the stream. Apparently there is a tendency for water to take a direct zigzag course down to the main level master water in the shortest course possible rather than to continue to gradually wear down the established water courses. This tendency has been observed to be clearly illustrated in Hell Hole and Mike Caves. It is hoped that this phenomena will be discussed in detail in later articles released by the Hydrology committee.

Another line of sinks is presented a slight distance (about 150 yards) to the south. One of these has an entrance over fifty feet wide and twenty feet high. Complete investigation of this sink was not made due to the dangerous conditions of the rock. The cave was bone dry and the slightest false move would cause large pieces of rock to fall from the ceiling and wall. Deadflow stone was abundant on the walls. After entering about 100 feet (still in sight of daylight), the cave narrowed down into a small lead that might be completely blocked by the slightest rock fall. At this point, exploration of this sink was abandoned. What, if any, connection the south line of sinks has with the main sink above reported has not been determined, and should be made the subject of further study.

Trip to Clyde Cochrane Sinks

(November 10-11, 1940)

The entrance is at the bottom of a sink in a small

valley. Terrific washes have come down this sink as is evidenced by the bare rocks and boulders which are rounded and worn smooth. The entrance is about five feet high and twenty wide. Although the day was fairly warm, icicles two feet long were hanging on the lip of the entrance. We entered with all equipment, including ropes, rope ladder, two planks and two inflated inner tubes which were to be used to explore the lake.

For a hundred or more feet, we had to crawl on hands and knees. The floor, dry at the time, was of pebbles, the roof was semi-elliptic and water worn through solid rock. The passage was about two to three feet high and four to twelve feet wide. No side passages along this tunnel. Then the passage opened, both up and down. A rope ladder was necessary to facilitate the further exploring as we could see at least two passages leading from the bottom of the drop. The drop of fifteen feet was negotiated successfully. The two passages leading further down converged into one.

Alongside the convergence was a red mud bank on which we found several orange hued salamanders. The passage was a bit muddy from here on; also we could hear falling water. The passage at this point was about four feet wide and perhaps twelve feet high. We came to another drop of about eight feet with a sharp turn to the right. Stepping warily along this passage, I thought my eyes were going bad because it seemed misty straight ahead. And imagine my surprise when I stepped directly into the lake, without even seeing it! So clear and still was the water that I never even sensed its presence. An almost colorless crawfish headed for deeper water as the other explorers arrived. Except where we stood, as far as we could see, the ceiling touched the water at the edges of the lake, rising to from three to eight feet near the center. From our vantage point, there appeared to be no ingress or egress of water, although from the sound emitted, there should be quite a waterfall nearby.

We tied the planks to the two inner-tubes, providing a very unstable float. Swimming trunks and sweat-shirt were the order of the day as I volunteered to man the Speleological one-man navy. A rope was tied to the stern as a precaution in case any severe current was encountered. I straddled the boards to assist in maintaining balance. A carbide lamp was precariously set at the bow. With a flashlight in one hand and a stick in the other, the craft was launched amid the cheers of thousands who had gathered at the launching. Propelling and steering was accomplished by pushing against the ceiling with a stick. Each push had to be easy in order to maintain equilibrium. Skirting the rim of the lake, I found only one other spot where it was possible to land. This had a slight slope with a gravel bottom, in a passage about four feet wide and high. Water rushing over this gravel into the lake was the cause of the "roaring waterfall" we had heard for some time. My legs were numb from dangling in the water so long, so I decided against further exploration of the passage at the time, although I feel sure that it extends for some distance beyond the

lake. No outlet for the water was to be seen anywhere; it probably drains by siphon or small cracks in the rock. In order to expedite my return across the sixty or more feet of water, I was pulled back by the rope tied to the stern of the raft. Several minutes of massaging returned the circulation to my legs, leaving no ill effects from the cold immersion. The raft was quickly dismantled and we retraced our steps to the outer world, stopping only at the rope ladder where several pictures were taken.

Several months later, Jim Lavelle and I launched the Speleo's second ship of state, the two-man life raft obtained from the U. S. Army. We took the maiden cruise on a smaller lake which is beneath the largest underground room of any cave we have mapped in West Virginia to date.

LIFE RAFT OR TUBES

Comparative data on the two rafts:

One man can carry the life raft, while it takes at least three to carry innertubes, planks and rope. In assembling the raft, I would say that the life raft is a bit slower, requiring at least fifteen minutes of strenuous pumping. The planks were tied to the innertubes in about five minutes. The period of time for dismantling is about equal, requiring just a little more time to pack the life raft. The life raft carries two men, dry and in comfort; the tube raft carries one man, very wet and in extreme danger of being spilled. The tubes (when inflated) and the planks occupy more luggage space than the life raft. In the water, thou, the tube raft can negotiate narrower passages. A good bit of equipment can be carried in the life raft while the tube raft can carry nothing. For an underground river or lake of any size that requires the use of flotation gear, I recommended the life raft whenever practicable.

WILLIAM J. SCHLICHTIG.

Sharp's Cave

Poekonos County, West Virginia

Visited July 26, 1941

By Stephenson and Petrie

Location: Park cars at fountain on U. S. 219, on right side of road about two miles northeast of Shady Forks. Cross road and cross field on north side of road. At northeast corner of field, a small ravine runs into the mountain toward the railroad. Cave is located on west (left hand) side of ravine about fifty to one-hundred feet up the bank from its floor, at the point where it seems to end. This is about 100 to 125 yards in from the road.

Entrance of the cave is the lower of two sink holes. The hole is 3' x 1' and drops down about 15' to the cave floor. At this point (under the entrance), the cave runs east and west or nearly parallel to the mountain's face and constitutes a passage 2 to 3 feet wide and 5 to 10 feet high. To the east, the passage ends in a pit 15 feet deep and eight feet in diameter after about six feet. To the west, the passage continues 12 feet to a pit 15 feet to 20 feet deep which opens as a cone under the passage. A one-foot shelf allows easy tra-

verse past the pit. Twenty-five feet further the passage ends in a shelf and dirt slope that leads down twenty or twenty-five feet to the lower level. This lower level extends back under the upper level to both pits, but is clogged by a dirt fall at the eastern pit.

At the bottom of the shelf there is a room twenty-five feet in diameter which connects with another 25' diameter room (15' ceiling) to the north. The cave was not explored past this point, but the passage continues as a large lead to the north (under the mountain). A stream and waterfalls are reported to exist about two hundred yards down this passage. The exact size and extent of this cave is unknown.

The upper level between the two pits abounds with spiders—at least two types—one small and the other fairly large were collected. Also, flies and mosquitoes were present. One cave rat was seen. This rat was about eight inches long, tan on top and white beneath; was quite tame and voluntarily walked to within two feet of Stephenson and then apparently sensing Stephenson's intention of adding him to the Society collection, scampered with high speed up the vertical wall and disappeared in a crack in the ceiling.

Outside temperature was 84° and that in the upper level between the pits (approximately end of daylight) 70° F.

Further exploration of this cave was called off as size of party was too small to do it safely.

Lava River Caves State Park

By JOHN ELLIOT ALLEN
State Geologist

What is the origin of this uncanny subterranean tube, roofed over and walled by solid rock? Located only a few yards west of the Dalles-California highway U.S. 97, at a point 13 miles south of the town of Bend, this half-mile-long cave was first discovered and explored in 1904 (?) and was made a State Park so as to preserve its unusual geological features and enable it to become more accessible to the general public.

Driving over the level or gently rolling lava plain, studded with yellow pine (*Pines ponderosa*), it is a distinct surprise to stop at the edge of this steep-walled, well-like depression, into which one descends by a series of rock-cut and rock-built steps for over 50 feet into the depths. Near the entrance the collapsed roof of the tube is piled in a chaotic jumble of giant blocks, around and over which one climbs with careful regard for one's shins. Then the tube levels out, and for some distance the floor is made of fine sand from wall to wall, and the arched roof becomes gradually lower and lower until finally they meet, and although the tube itself undoubtedly goes on, the sand fills it to the roof and one can go on no further.

Minute pencil-sized drippings of cold lava hang from the roof as miniature "stalactites". Along the walls in places are narrow rock benches. The geologist notices all these features and deduces from them the origin of the cave. The rock "drippings" are mute evidence of the molten rock which once filled and then

drained out the tube. The narrow rock benches show where the draining melt came to a temporary standstill, cooling against the walls before the tube was completely emptied of lava. The sandy floor must have been washed in by the waters which flooded the entire area, probably as the great Ice-Age glaciers in the mountains to the west melted and drew back their icy tongues as a warmer climate developed.

The geologist visualizes a great outpouring of molten rock from some vent in the crust of the earth—a vent which was probably located to the south-east. This molten river flowed down the shallow valley, a valley lying between two older lava flows derived from the same vent or others nearby. As it flowed, its edges and bottom, in contact with cold rock, cooled and solidified; its surface, giving off heat to the air, also hardened. The still molten heart kept on feeding the advancing tongue of the flow, the hardened crust forming a tubular conduit. Then for some reason, the flow of liquid stopped or was cut off at the source. Since the lava tube, running down the valley, had a perceptible gradient, the molten core kept on moving, and the tube slowly was drained, leaving the open cavity we explore today, gaining access to it through its collapsed roof.

Nestle's Quarry Cave

Directions: two miles past Falling Waters curve on road from Martinsburg (W. Va.), to Hagerstown; turn left 0.7 mile at Marlowe, right for 1.0 mile; then left for about 300 feet. Cave is on the left, a narrow crevice in some rocks, about 25 feet from the road. Outside ground marked with one sink hole after another, apparently following stream.

Description: Cave goes down on about 30° slant for about 75 feet and opens into a hall about 75 feet long. Then it goes down about 50 feet and opens into another hall about 150 feet long, with a stream of about 75 G.P.M. flowing along the bottom. Ceiling in bottom hall about 25 feet high, opening into upper hall through several windows. No extensive or intricate side passages. Cave walls all clean blue or gray stone, almost no formation except for the bottom of the halls being filled with very light tan crystalline terraces and pools.

FRANK SILVER.

(Martinsburg, W. Va.)

(This report is typical of the preliminary one which should always be forwarded by leaders to Society headquarters when a new cave is investigated. Such reports impose no literary burden, yet serve to keep our records up-to-date and accurate. Incidentally, reports should be written at once, while data is fresh in mind, and mailed in promptly.)

Niagara Cave, Harmony, Minn.

This cave is located four miles southwest of Harmony, Minnesota, on the Iowa-Minnesota line. It is reached by a four-mile good gravel road from Harmony on U. S. 50.

We five (Trone, Heins, Reichard, Morgan and Petrie) were cordially greeted by Mr. Al Cremer and given a pass through this cave. Aside from its beauti-

ful waterfall, it is characterized by high, narrow canyons with a comparatively smooth floor winding through a distance of about half a mile and extending, it is said, more than 300 feet below the surface.

Although formations are not profuse, the sheer clean lines and freshness of the passages through the joint system in the Galena limestone have a beauty and impressiveness all their own and make this cavern well worth a repeated visit.

J. S. PETRIE.

Cavetown Cave

The caves reported to exist at Cavetown, Md., were investigated on May 10, 1941, by a party of the society consisting of Bill Stephenson, Chris Mansfield, Henry Allnutt, David Chalkley, Donald Black, and Harry Topliss.

A rather extensive inquiry of Cavetown resulted in learning that the only cave at that town was located in an abandoned limestone quarry. As extensive caves must have existed at this town at one time, causing the town of considerable size to take the name of Cavetown, apparently the main caves which previously existed at the site of the limestone quarry must have been destroyed in the quarry operations. There still exist three small caves in the face of the quarry.

The quarry itself is quite extensive, extending for over 500 yards in length, and 200 or 300 yards in width, and approximately 100 feet in depth, located right along the railroad at the Cavetown station, and cannot be missed. The quarry runs generally from north to south. The rock at the southern end of the quarry is much more massive and less stratified and broken than that at the north end. Apparently the dip of the rock extends slightly in a northeasterly direction.

The rock exposed on the quarry face on the northern part of the quarry is much broken. This broken structure appears to be a peculiarity of this layer of limestone and appears to be much shattered wherever the quarrying work has exposed it. The main cave at present existing is about two-thirds of the way up the wall of the quarry in approximately the center. It is merely the small remains of an old lead.

Many formations are still to be found in what is left of this cave. It does not extend into the face of the wall over 60 ft. It is 7 ft. in height and 10 ft. in width, and peters out after 60 ft. Another small cave is found at the far south end. This does not extend back over 10 or 15 feet, but is interesting as it shows evidences of having previously extended further out toward the area which has been worked by the quarry. Many other leads are discernible along the face of the quarry; many mud-filled.

MUCH WATER WASH

The quarry offers an excellent study of how water has worked its way down from the surface to form a cave in the rock beneath. These areas in the southern face of the quarry, a large rip, now mud-filled, by which water obviously must have entered the older

cave system. All the way up the face of the quarry south to north, are other leads which were apparently caves, and are now mud-filled. Many rocks on the quarry floor showed evidences of water wash, and were evidently former parts of cave wall. Much calcite deposits all in broken condition were found on the quarry floor, apparently having been discarded during the quarry operation.

At the far north of quarry, just outside of the quarry working, the cave entrance, which is about 20' in width, 10' in height, extends into the face of the cliff for about 16', then drops down into a large room of about 20' in diameter and 10' in height. This cave is in an exceedingly dangerous condition. The rock is all shattered and appears to be ready to fall at a moment's notice. Apparently, this shattered condition is, as before stated, merely the condition which appears to be universal in this strata of rock.

This cave itself appears to be so shattered that there is no evidences of water erosion. All of these above referred to caves have been on the west wall of the quarry. Slight evidences of caves were seen on the east wall, but were not in anywhere near as good a conditions as those along the west. Apparently, at one time a large cave existed at approximately the center of what would be the quarry work, as the explorer of the quarry stands at almost 15' above the surrounding level. It is probable that cave passages still exist below the present level of the quarry explored. This floor, however, at present, is composed entirely of discarded material, so it has been impossible to tell whether or not any existing passages are below the floor which might have been filled in.

Field Trip to John's Cave

(April 27, 1941)

Party met at Skyline Caverns at 10 A.M. Those present were Eno, Doc Welsh, McCauley and Lavelle from Washington and Jim Beard, Albert Beck, Edwin Gage from Pittsburgh.

The leader, Jim Lavelle, being unusually absent-minded this morning, left behind the directions for reaching the caves to be explored and had to use the rest of his memory in trying to find the caves. The following are the results:

Stopped at Cedarville where an old timer directed us to a cave about 100 yards from the point at which the new highway leaves the old to cross Crooked Run. The cave is about 20 feet from the left shoulder of the road. We found that the road commission had filled it in and after excavating a bit decided that it was too dangerous.

At John's Filling Station, Ninevah, we obtained permission to explore the caves nearby. John's Cave we found to be filling with mud and debris flowing in from a sinkhole which had been filled with empty oil cans. A lower level has been reported but we found no entrance. Presumably it would be reached by following the mud flow but the passage has been almost completely blocked.

Not having the exact direction, we missed Blind Fish

Sink by about 50 yards and found another hole which had been barricaded by junk and barbed wire. We slipped past and into the cave but found nothing worth recording except its position—across the road from John's Cave bearing a bit South.

We had lunch at Front Royal and after a vote we went to Allen's Cave for the benefit of the Pittsburghers and others who hadn't been there.

J. I. LAVELLE.

Peacock Cave

(July 20, 1941)

Arlington, Saturday, 3 p. m., and after a half hour delay in Winchester finding a compass, arrived at Mt. Lake, Garrett Co., Md., at 7:15. After a brief meal, a substitute violin-and-piano program, for the choral one scheduled, was enjoyed until 9, after which we had a brief chat with Rev. Felix Robinson, (met at the Mt. Porte Crayon dedication a fortnight earlier) and then left for Blackwater Falls and Canyon where we camped.

A good breakfast at Davis Hotel headquarters and an interesting ride across the Dolly Sods back road brought us to Smokehole Caverns at 8:30. First leaving information for later parties at the Cabins Store, we went through the cavern hurriedly—Mrs. Petrie's first visit and the second or third for the rest of us.

Returning to the Cabins by 9:15, we waited until 10:30 for Dr. Welch and Chalkley who did not arrive, nor Phyllis Trone, the remaining one who had definitely planned to attend but who has been incapacitated since Thursday with severe ivy poisoning. Whereupon, we three men changed at the gate, three miles up the mountain road, and Mrs. Petrie returned for the 2 p. m. music festivals at Mt. Lake, 55 miles distant, the long way round via Petersburg and Red House. We arranged to meet at this gate point again between 6:30 and 7 p. m.

Carrying our cave paraphernalia, including two wire cages by Lindberg for the Allegheny wood rats known to live in Peacock Cave, we hiked down the hill through Redman's Gap and found no boat available on this north branch of the South Fork of the Potomac. Some distance upstream we found a locked boat. A little further on we waded across. Further upstream we found delicious ripe blackberries and then the spring land-mark fifty minutes from the car. Then the grueling climb through underbrush up the steep mountain side toward the top wherein lies Peacock Cave.

Unlike the February 22 trip, this time we had no blazing by Jack Preble to guide us nor any Schiller Martin to help follow it. Nevertheless, with surprisingly little deviation from a direct course, we reached the triangular hole in the cliff side forty minutes later. Dividing one pound of fig bars among us, we thus fortified ourselves for the rough dirty entrance crawl, begun at 1:05, and subsequent exploration. Before reaching the formations, Lindberg and Bob each saw a

rat and hopefully but not overconfidently we left our two cargo traps spaced apart and baited with Davis breakfast ham reinforced with fig bar.

From the pillar room, where Preble and others waited during the previous trip while others mapped the east down passage, we vainly sought from the two rooms to the north the northerly rocky passage with the strong draft marking the furthest point of previous exploration reached by Snell. Then we found it off the descending east passage after winding around through a none-too-well remembered series of ups and downs.

Again the strong draft of cool air was conspicuous. Noting the bearing as 20° e. of n., Bob started with the tape into this rough rocky passage entered, I believe, previously only by Snell, Bob Morgan and Bill Stephenson. Although not too small for fairly rapid progress, the jagged character of both walls and floor with two "natural bridge" blockings made the 60' passage to the first room roughly 6' in diameter take considerably longer than one of Bob Feller's fast ones from mound to plate. Pete and Lindberg followed, with the compass glass, unfortunately breaking it en route. Pete's progress or lack thereof was illustrated by Bob's No. 1 flash bulb picture.

From this 6' room, Bob climbed up a steep westward passage 30' to the limit of practicable traverse. With Lindberg, he constituted Bob's picture No. 2 with Pete at the controls.

A remarkably strong cold blast, perhaps no colder than the surrounding air, but of sufficient velocity to feel much colder, coming from a small crevice at the edge of the floor under a rough formation wall to the northwest attracted our attention. Thrusting a flashlight through, we could see a cavity plenty large enough to work in, but extent undeterminable. By taking turns scooping away the mixed edge of the formation wall above, we finally enlarged the crevice sufficiently to let Bob squeeze through, followed after more enlarging by Pete also flat on back head first. The rather comical appearance of Bob's disappearing torso with waving blue denim clad legs prompted Pete's No. 1 photo. The more distinctive other end of Bob's torso on return later was the subject of Pete's No. 2.

ROOM BEYOND

Beyond this artificial "squeeze" with the least waste space in any direction around the shoulders and hips yet encountered we found the passage ascend slightly n.w., rough and ragged with cave coral encrustations on small apparently dead stalactite formations. Twenty-seven feet up was an enlargement in the passage from which another passage opened steeply upward to the west up which Bob, only, ascended about 20' and could see a larger room beyond, difficult to reach and with loose dry and apparently dangerous overhanging walls.

To the northwest, up a slight slope, a narrow passage was blocked by stalactite and stalagmite formations which with a hammer could easily be broken away to let a small person proceed into a long passage extending 20' or so visible beyond. As it was now approaching 4 p. m. and our party too small for safety—

we progressed no further. The source of the cold draft, whether from an opening nearer the top of the mountain or otherwise remains as much of a mystery as before. This and the undoubted presence of further explorable passages makes this cave well worth further expeditions aside from the fauna aspect.

On the return journey, Pete took his third and last cave picture, of Bob and Lindberg, in the main passage, and Bob took his No. 3, No. 4 and No. 5 of Pete and Lindberg at the ladder and among the main passage formations.

NO RATS IN TRAPS

Further out, Lindberg saw his second rat, but unfortunately for the aspirations of the Washington Zoo, not to mention ourselves, it was not in either trap. Bill Stephenson's transmitted idea of direct seizure as the best mode of capture stimulated suggested addition of a few grains of salt on their tails. Regretfully, we plugged the entrance of both traps and left them on rocks in the main passage for use of perhaps more lucky subsequent explorers. Bill suggested cheese as the bait next time.

Deprived of a rat to make his toting of the cages up the mountain and into the cave seem worthwhile, Lindberg had his delight at leaving the cages accentuated by finding a fly of some sort for preservation in the alcohol bottle. He was already carrying in a paper sack the lone bat we encountered in one of the rooms north of the pillar room, of which more later.

At 4:15, we emerged and devoured our remaining pound of fig bars. While Pete and Lindberg consumed ten minutes descending to the spring, Bob exercised his rock climbing technique in a six-minute-or-less performance. Lindberg couldn't be persuaded to enter the water, but Pete and ~~Bill~~ surely enjoyed their Potomac swim and berry feast nearby. About 5:50, we started the return hike and just short of an hour later reached the road up the hill in time to hear Mrs. Petrie turning around preparatory to her wait for us that didn't happen—a perfect timing. She had left Mt. Lake after a fine concert about five o'clock and found at Cabins no information of any other explorers. We lost no time in making the City Restaurant in Petersburg and then an uneventful return home—another successful (not fool) trip, despite the disappointment of small numbers to share the interesting experiences of the day.

J. S. PETRIE, Leader.

Schoolhouse Cave Trip

By JOHN F. MEENEHAN

October 18-19, 1941

This trip was planned to enable members of the National Speleological Society, who had never been through this cave, to view part of it in safety.

I was asked to lead the trip and invited the following members of the Society as my working party:

Dr. William Welch, John Fishburn, David Chalkley, Tony Eno.

These men were selected for their climbing ability

and their willingness to manage hard, dangerous tasks with intelligence, and without complaint.

Dr. Welch, Chalkley and myself left Washington Friday evening, with my car loaded with equipment and food for two days. There was room for everything but the passengers. We arrived at the cave early Saturday morning and immediately bedded down until 8 o'clock in the morning.

Eno and Fishburn arrived as we finished breakfast and helped unload the car. It was with a feeling of dismay that we surveyed the high pile of ropes and ladders and miscellaneous articles, which ranged from chocolate bars to a portable searchlight, that we had to transport into the inner rooms of the cave. It seemed impossible that we could get things set by Sunday morning.

MAKING READY

We placed the first guide rope down the slope from the entrance and gradually accumulated our supplies at the base of the wall under the long passage. Here we dropped ropes, hauled everything up the wall and continued our trek to the "Jumping-off Place."

Here we started placing ladders and safety lines, and with infinite pains for safety proceeded down to the Grotto. Here we anchored the 80-foot ladder and unrolled it down the slope to the Cascade pit. I then put on a safety rope and rappelled down to the Balcony with a good deal of trouble as the ropes were caught on knobs all over the slope. Once I was on the Balcony I called down Fishburn and together we hauled down a 30-foot ladder and more ropes. We put a fixed safety along the Balcony and the ladder from the keyhole down to the Cascade slope. From this point we could see that the big ladder ended fifty feet above the bottom of the slope, so we had to rearrange it down to the "Nick of Time." With the placement of a fixed rope down in the Cascade slope, our work for the day was finished. It had taken about seven hours to complete the task. We spent the next four hours in exploring and in getting out of the cave.

The following day, the members who had been attending the Symposium started arriving about 9 o'clock and as fast as they assembled, we sent them into the cave under the guidance of one of the working party.

The following persons made the trip into the cave:

Dr. Robert Lewis, George Walker, Frederick Kraus, and Robert Duffy, of Philadelphia, Pa.; William Stephenson, John Meenehan, John Fishburn, Alice Mead, and John J. Wilson, III, of Washington, D. C.; John S. Petrie and E. Anthony Eno, of Arlington, Va.; George Dare, Ed. Schugt, and Sam Allen, of Steubenville, Ohio; Walter Ammon, of Morgantown, W. Va.; Frank Silver, Robert Thompson, Raymond Wolford and Ison Shreve, of Martinsburg, W. Va.; Dr. William Welch, Virginia Welch and Margaret Rosenberger, of Rockville, Md.; David Chalkley, of Bethesda, Md.; Dr. Felix Robinson and Ariel Robinson, of Oakland, Md.

The party was out and all equipment cleaned up by 4:45 P. M., a feat which was made possible by the active cooperation of the whole party.

Boone's Cave In North Carolina

By A. C. HAWKINS

Davie County, in northern North Carolina, is closely connected with the life and adventures of Daniel Boone. Just north of Mocksville, in that county, along U. S. Route 601, a highway marker indicates the little cemetery just off the highway, where Boone's parents are buried.

Along the Yadkin River in this county and in Davidson County, which is adjacent to it on the eastern side, Boone and his companions apparently spent a considerable time. At a point along the rocky river bluff on the Davidson County side, there is a small public park, with steps leading down to an opening which is called Boone's Cave. Within this cave it is said that Boone and his party frequently found shelter.

The location is about 30 miles south-southwest of Winston-Salem, and some ten miles north of Salisbury. It is located along a secondary highway (yellow gravel); but small road signs, intended for those who are interested, make it easy to find.

The cave is in a coarse granite-gneiss which is indicated on the geological map to be of Archean age. This rock is not soluble in weakly acidulated water, in the sense that limestone is; but the feldspar crystals in the rock are its weak point, whereas they readily decompose, yielding white kaolin, and breaking down the rock-structure. At places where the feldspars are especially numerous, large, or bunched together, the rock may disintegrate with relative rapidity, leaving open cavities.

Boone's cave is half way down the steep face of the cliff, about 50 feet above the present level of the broad river. But there was a time, long ago, when the river-level must have been where the opening now appears. It seems most likely that the main part of the opening was made at that time. The natural disintegration of the rock, due to decomposition of the feldspar crystals, would be hastened by the presence of running water with its scouring action.

The entrance to the cave is ten feet or more high and perhaps twenty feet wide, but it narrows a short distance so that it is no longer possible to stand in it. Inquiry from those who have explored it farther brings out statements that they have explored the hole with lights, and have found that it is possible to follow it backward for some distance, although it is necessary to squeeze through somewhat narrow openings to do so. Alongside the larger hole there is a smaller, more restricted one.

Cave Structure at Cartersville, Ga.

By A. C. HAWKINS

Cartersville, in Bartow County, Georgia, is located at a point 43 miles northwest of Atlanta, on U. S. Route 41, the main highway to Chattanooga.

The vicinity of Cartersville is famous for its mines, from which barites, iron ore (limonite), manganese ore

(pyrolusite), and ocher have been taken for many years past. The most of the mining is of the open-cut type; the ore deposits are associated with the great Cartersville overthrust fault, which extends in a north-east-southwest direction, passing to the east of the town. This fault brings pre-Cambrian crystalline rocks of the Piedmont types into a position overlying the Paleozoic quartzites, shales, and limestones of the Cartersville valley.

Two miles due west of Cartersville there is a large quarry which is very active at present. It is locally called by the name of Ladd's lime cave, and is operated by the Ladd Lime & Stone Company of Cartersville. The quarry is located on the east side of a small mountain having an absolute elevation of slightly over 1200 feet (in contrast to the elevation at Cartersville, which is 760 feet). This eminence lies close to the north bank of the Etowah River. It is slightly elongated in a north-south direction, being about 1 mile long in that direction, and $3/4$ of a mile in its east-west extent.

The limestone composing the mountain evidently belongs to the Cambro-Ordovician series which includes much cherty material in massive strata, resembling the Conococheague limestone of the Valley of Virginia. The presence of this resistant chert explains the existence of the many small limestone mountains in this region. The limestone in the northern part of the mountain is much crushed and recrystallized as the result of earth movements associated with the overthrust faulting; in the southern portion, recognizable strata are highly inclined. The whole mountain is honeycombed with solution cavities, some of which attain real cave proportions. They are filled with stalactites, stalagmites, and flow-stone in abundance; and one or two occurrences of cave pearls are reported. The formations are of all sizes and types and of every tint from dark brown to pure white. The material deserves systematic study, as do the solution cavities also, but all the material is going through the crusher. There is heavy blasting every day, and visitors are discouraged because of the extremely hazardous condition of rocks and formations shattered by the quarrying operations. It is certain, however, that scientific investigation would receive whole-hearted co-operation from the management.

Salisbury, N. C.,
June 13, 1941.

The Linville Caverns In North Carolina

By A. C. HAWKINS

If you enjoy the proximity of majestic mountains, then include Linville, North Carolina, in your itinerary. Almost within the shadow of Grandfather Mountain (elevation 5964 feet) lie the shadowy depths of Linville Gorge. The said shadow would certainly extend as far as the gorge in the very early morning, were it not for intervening ridges which are almost as high. The cave is located about 300 yards west of U. S.

Route 221, (221), at a point about 30 miles nearly due north of its junction with U. S. Route 70. The cave is thus about 70 miles from Asheville.

This cave has been known to men for a very long time. Its entrance was evidently open, as a clear stream flowing a good many gallons per minute, which, as the creator of the cave, has the privilege of traversing the entire length of it, emerges into the daylight from an opening under a ledge of limestone. There is probable truth in the story which is told to the effect that soldiers of the Revolution, on their way to Kings Mountain battlefield, spent some time in the cavern.

This is the only true limestone cave so far discovered in North Carolina. It therefore attracts many tourists. The limestone is of lower Cambrian age, probably near the horizon of the Shady Dolomite of the South. The underlying rock is a heavy-bedded, white Cambrian Quartzite, which forms the best flank of the high mountains to the eastward, and evidently caps Grandfather Mountain itself.

The extent of the limestone is relatively small, as it is limited to the bottom of the valley for the most part, and is only a few miles long and very much less wide. This limestone is folded and faulted down into its present position, and as a result, its entire structure has been so thoroughly crushed and splintered that very few traces of bedding remain. There is a suggestion of a dip of about 15 degrees toward the south-east near the cave entrance.

ON ONE LEVEL

No structure is evident within the cave, except for two sets of irregular and poorly developed vertical joints. These intersect nearly at right angles, and extend in a roughly northeast-southwest, and a northwest-southeast direction, respectively. Solution along these joints has determined the locations of the passages within the cave. There is a fall of about 14 feet in the bed of the stream from the room, which is now open to the public, from farthest back from the entrance, to the entrance itself.

This cave was partly filled with clay, which was excavated to give headroom; much of this clay is partially "petrified", i.e., evidently cemented by layers of calcareous flowstone. Large retaining walls have been built, especially on the east side of the cave passage, indicating a loose condition of the entire rock structure. All this has made touring very safe; the walks are dry and the lighting system adequate.

The cave is all on one level, at least so far as now open to the public; but numerous small "leads" go upward and downward at various angles, and one large one, still filled with clay, has never been explored. As the thick limestone strata evidently extend up the eastern side of the mountain for some distance, it is possible that higher cave levels exist. The effects of solution on the limestone are very strongly marked, and many "formations" are simply curiously dissolved limestone masses.

There are a number of groups of stalactites and columns, and some flow-stone. Some of the pendent formations are fluted and attractively grouped. They are

generally not large, and most of them appear to have been formed some time ago, and to have largely ceased growing. A few of them are clear translucent yellow and dripping water. It is estimated that the portion of the cave now open to tourists is about 800 feet long altogether, not including a number of interesting side passages. It is to be hoped that more development work can be done.

Salisbury, N. C.

June 14, 1941.

Skinner's Hollow Cave

A more or less free-hand description of the New England Spelunkers' Grotto expedition to Skinner's Hollow Cave, Mt. Equinox, Manchester, Vt., on June 15, 1941:

A typically beautiful cave day. Bright sun, fleecy clouds, sultry weather. The kind of a day that occurs so often when spelunkers decide to dive down into the under-world away from sun and warmth.

Two cars left Pittsfield at 9 A. M., an hour late due to one party mis-understanding the time set for departure. Near Manchester, both halted to witness a unique rainbow around the sun, a perfect, huge circle, with a fragment of a second one, resembling a double corona, but with all the colors of the spectrum plainly visible for about half an hour.

Arrived at the residence of Nat and Hermione Canfield at 11 A. M., and found the old folks at home and ready to welcome us. The road to the cave runs right through their farm-yard and cave crawlers are welcomed to the grassy yard among the jersey cattle, and buff orpington chickens and permitted to park and drink cool spring water piped eight miles down from Mt. Equinox.

The Pittsfield party of seven started up the mountain at once. No word from the West Springfield or Westfield spelunkers. Carrying a sledge-hammer (8-lbs.) and a rope, 200 ft. long, plus other equipment, we followed old roads and the bed of a brook, to FOOLVILLE, an ancient settlement up in the "hopper" of the mountain, and passed on, still keeping more or less to the bed of the main brook. Clay Perry, acting as guide, found the landmarks and trails, etc., somewhat confusing after three years had passed from his first visit here.

HOOR AND HALF CLIMB

The brook-bed route is very interesting, if difficult. At this season it was innocent of water save for a tiny pool here and there, but the rock formations are curious and interesting. Walking an old road for some distance, a strange beetle was discovered, pushing a perfectly spherical ball of mud with its hind feet to get out of the rut. Marked the spot expecting to find him near when we returned. Picked up orange salamanders. Arrived at the cave after one hour and 20 minutes climb. It was very sultry, everyone perspiring. Found a nice little trickle of water coming down the landslide, and drank gallons. Rested and cooled off some.

Since June, 1938, a log cabin had been built within 300 feet of the cave. We learned later it was built this spring by two brothers, named Clark whose ancestors are reputed to have discovered the cave. Mosquitoes, flies and no-seeums plentiful.

Found the cave entrance full of old logs, mud and ice. The temperature outside estimated at 75 to 80. No thermometer. Unmelting ice in entrance within ten feet of surface where ferns grow. Attached rope, doubled, about a boulder with a slippery pole for it to run on and began descent. Found broken rock where someone evidently had hammered out the upper passage. Original, old lower entrance badly blocked. It took fully half an hour for ten persons to get in and down. Tuggey, who is broad and thick, preferred to remain outside and probably this was better for him as it was a squeeze in two places to get through.

(Measurements of drops, etc. in formal report by Lincoln).

The cave entrance is very impressive. It is a hole in a high limestone ledge, decorated with ferns and other green growth, close beside a steep, rugged cliff which has been cleaned by the older landslide. Water dribbles over the marble and limestone, keeping it bare and clean and forms little pools in shelves, and vanishes in the brook bed, right below. The cave, however, was quite dry save for a drip here and there and much ice. The rope was strung down from the outer level through a second one and hung perpendicular in the third and deepest shaft (about 20 feet) with quite smooth walls, few footholds.

NO FORMATIONS

The main passage is a cleft or rift, with no flowstone or other formations. Stratified limestone. Indeed, the entire cave so far as can be negotiated is completely without flowstone, stalactites or other typical limestone cave formations. The ancient landslide is said to have cleared away a hill which formerly almost closed the cave entrance. Another, which took place in 1938 (according to Nat Canfield), joins it right opposite the cave. The old one is known as the Devil's Wagon Road. A marble quarry was once worked, up here, and huge blocks of it are in the brook bed or landslide course, some having been carried a quarter of a mile by floods and freshets. It is pure white marble but we found none in the cave; rather a dull, brownish limestone, sometimes light gray.

In normal years snow remained in the outer chamber all summer, and it was a custom to have maple wax parties on July 4th on this snow. Ice in the entrance and all through the cave makes footing tricky and everything is very cold. Hands grow numb on the rocks. Extra warm clothing is needed, even in summer.

One lone bat was seen high up in the lofty chamber. No other cave life was observed at all.

Clay Perry, wearing a "Ristlite" flashlight, strapped on his left wrist, found himself without light 15 minutes after entering. The contacts had failed and this cheap (98-cent) gadget is **not** recommended for cave work. It is too fussy to refill, for one thing, requiring

use of a screw driver or knife blade, etc.

Skinner's Hollow Cave was so named because once it was owned by Governor Skinner of Vermont. The local legend is that at the very bottom is an underground river that "runs under the mountain from Manchester to Sandgate, a distance of about eight miles." In the very bottom "well", estimated to be 20 feet deep, below the last negotiable level, there was to be seen rounded rocks and sand, indicating running water at some time. Now dry entirely.

In entering we all took the upper passage, through a very narrow lemon squeezer, then down and down. Paul Perry, aged 14, in ascending up the loftiest chamber (35 feet by measurement, from roof to floor) found a way into the old passage and wormed down to within three feet of the "Devil's Pulpit" room, where there is a block of limestone in curious shape and position suggesting a devilish pulpit but without the traditional heat of his nib's domicile. Paul removed some loose rock to enlarge the passage but after one had rolled down and hit Lincoln on the leg, this work was discontinued. A knotted cord and the rope itself was used to take measurements.

TO FOOLVILLE

About one and one half miles up from the Canfield farm is the site of FOOLVILLE, where once a few houses stood, and the inhabitants were considered to be damned fools to go up into such a place. There is now a neat wany-edged board cabin and sleeping-shack in a nice clearing, owned by Mr. and Mrs. Jim Graham of Manchester, who operated a greenhouse in the town and come up here, carting things in an ancient Model-T Ford once used as a snow-mobile, with four drive wheels and skis. (Now four-wheeled). They have piped spring water across the deep gully of the brook to a walled pool in their yard. Mrs. Graham writes for the Vermont Highway Magazine and some newspapers and is a cave addict despite her confessed shivery fear of the same. Very hospitable. Offered to let spelunkers enter their cabin while they are away if they wish. Thir son, Bruce, aged ten, rattles down the rough road on a balloon-tired scooter and actually beats his father in the Ford.

The country is real Vermont mountain wilderness, timbered with huge oaks, maples, yellow and white pitch, pine, spruce, black cherry, butternut.

There is reputed to be another cave up on the mountain but no one could give directions to it. Skinner's Hollow Cave is at an altitude of about 1800 to 1900 feet above sea-level. From there on the climb is extremely steep to above 3000 feet. No trail. Because of the limestone, it is probable there may be another or other caves somewhere in the vicinity but the steepness and roughness of the country makes it difficult to explore. Magnificent scenery and fine folks to meet.

CLAY PERRY.

P. S.—Delegates from Westfield and Springfield arrived up the road as we were descending, just below the Graham cabin and went on to explore it, also. They reported getting to the bottom, using a rope, and that the main passage runs due east and west, with the largest chamber off to the left, also running east and west.

P. P. S.—Several new members are to join the N.S.S. soon.

"Ibinthruthesinks Club"

From THE POCAHONTAS (W. Va.) TIMES
Sept. 19th, 1940.

It may come as sort of a surprise to many inhabitants of Ohio, West Virginia and Maryland, (we had better include the District of Columbia, too) to know that this city of Steubenville, Ohio, is the international headquarters of one of the most exclusive clubs in the entire country. The club or society I refer to is called the "Ibinthruthesinks club." This club is composed of members who have made the dangerous and hazardous passage through the tunnel, or sinks, of Gandy Creek, in the mountains of Randolph county, West Virginia.

At the Sinks of Gandy the little babbling stream of Gandy Creek hits the side of Yocum Knob. Instead of going around this knob as any well respecting stream should do, darned if it doesn't take a short cut and tunnel through the mountain. The underground passage through this natural tunnel and, incidentally, the widest natural bridge, has the Natural Bridge of Old Virginia beat a thousand ways . . . anyone dressed in silks and satins can negotiate the passage underneath that arch! To penetrate the uncertain tunnel, or sinks, of Gandy creek the explorer need to equip himself, or herself, with rubber-soled sneakers, rubber boots or bathing suit. The going is none too good, slippery mud, fallen rocks, wading alongside bottomless pools and then ducking under a rock wall or curtain of rock until you see a faint glimmer of daylight near the exit. For a distance of 3,200 feet, from entrance to exit, you are in the dangerous maw of one of the most outstanding of all natural phenomena.

NO DUES OR FEES

Sunday, September 1, our little band of explorers from Steubenville met our invited guests and candidates for initiation into the Ibinthruthesinks club ("I've been through the Sinks" club; is what it means) at the Sinks, or tunnel of Gandy Creek. This club has no initiation fee, no dues and no assessments. All that is needed to qualify a candidate for full membership in the organization is a weak mind and a stout pair of legs. After that the rest is up to the candidate who wants to be initiated into the mysteries of West Virginia's most outstanding underground attraction.

Most of our readers will remember the expedition we conducted on May 30, when we were attended by a photographer from Life magazine. How we were trapped in that underground river by a cloudburst; how the water was rising at the rate of three inches every hour and us in that spot for five hours!

You readers will remember how Schiller Martin and myself conducted a retreat from that dangerous situation comparable to the retreat of the British army from Holland and Denmark. We pulled that gang of adventurers and explorers out of the Tunnel of Gandy without loss of limb or life. We did have one cracked skull—but that's nothing!

On our expedition of September 1, we were again promised a photographer. Seems like they had all their available photographers out photographing jitterbugs,

society, and panty-waist parties. They had no time nor inclination for us fellers that dared to stick our noses into things beyond their knowledge or comprehension. We gave them an opportunity to put on a real, honest to goodness, daring and adventurous party and they failed us. Seems like they were afraid of the dark and the wet feet we all experienced . . . well! says I . . . better luck next time.

VISITORS FROM FAR AND NEAR

Anyhow, here we were at the entrance to the tunnel of Gandy Creek all ready to penetrate the unknown. There was William Stephenson, president of the Speleological society of the District of Columbia; his secretary, Al Lewis, and their followers from Washington, D. C. Flashlights ready, lunches packed, dressed in bathing suits, sneakers and coveralls were Miss Barbara McClennon, Jack Clark, Mrs. Merle Stephenson, Miss Florence Whitley, Jack Schultz, Dr. William Welsh, Alden Snell, Helen Adams, Dr. Bennett, Bob Lichman and Dr. Morrison, all from Washington, D. C. From Clarksburg, Salem and Bridgeport, West Virginia, came Slim Spence, Mr. and Mrs. Corder Teter (Mrs. Catherine Teter fed us fellow explorers on fried chicken, meat loaf and potato salad.) Mr. and Mrs. Stanley Butler, and a lot more good scouts, the names I cannot remember. Davis, West Virginia, was represented by Belmont Clever, a crazy, adventurous aviator, but a real pal in an emergency. From Morgantown came Dr. Paul Price, state geologist, and his buddy Al Miller, of the state road commission. Ravena, Ohio, was represented by Paul "Tennessee" Jones, a big shot in the League of Ohio Sportsmen. Our fair city had as its guides into the unknown depths of The Sinks of Gandy Creek, George Dare, Schiller Martin and myself (we were lost in that dismal hole for five hours on our preliminary expedition in 1936), Walter Radinsky, John Campbell, "Casey" Shugt (hero of the Hell Hole expedition) Miss Helen Gavin, Mrs. Kathryn Johnson, Mr. and Mrs. Fred Sandblade, George Bordon and family and Jack Palmeter, sister, mother, father and friends. Gosh! did we put on a party. Our friends from Marlinton failed us—we were expecting Cal Price, editor of the Pocahontas Times, several forest rangers, school teachers and various inhabitants who wanted to attend one of our escapades. I think the weather scared them out—but we found the roads, streams and The Sinks in perfect condition.

Anyhow, we got through The Sinks or Tunnel of Gandy Creek in fine fettle. We found a new entry in this underground horror . . . we found where a slide and a slip occurred and opened into an entirely new wing. Dr. Welch and his party explored this new opening and were surprised at its beauty. Bill Stephenson, Ted Jones and Slim Spence were busy mapping this underground river and unless figures lie, their records show that the tunnel enters at 3,200 feet and makes its exit at an elevation of 3,205 feet. I was never much on figures and cannot understand it. It may be due to the fact that the river has several beds, rising and sinking and sinking and rising; as fancy dictates. Anyhow, we got twenty new members into

our society—a society or club, where money is nothing. You must negotiate the Sinks of Gandy, crawl on your belly through slippery mud, slide on moss-covered rocks, scale gigantic boulders, wade and swim through bottomless pools, dodge bats, etc., and come out smiling at the exit before you become an honored member of our club. "Hit shore is fun."

Then we afterwards explored Hermit's Cave. This was where some New York dude lived for six years and was featured in Harper's New Monthly Magazine for 1872 by Porte Crayon, West Virginia's pictorial artist, explorer and historian. I hope I can give you the story about this fellow later on. About him and his romance with Dilly Wyatt, "she's our brag girl in the mountin's, she is." Schiller Martin, Dr. Welsh and Bill Stephenson explored this Hermit's Cave and found a beautiful room glistening with crystal formations, stalactites, alabaster terraces and stalagmites. We will have to do some more work on the Hermit's Cave some day before it is dammed up or closed by yellow mud.

ADVENTURE AT SINKS

The whole party was a success even if Life magazine disappointed us. We still have a thousand and one things yet to investigate. The story of Peg Teter and the counterfeiter, Dilly Wyatt and her fascinating fiddling, the murder of Abdul Abdullah, the peddling Syrian, who was ambuscaded by Burley May and Pharis Lamb and his broken and bullet riddled body tossed into eternity into the Sinks of Gandy creek. But one thing puzzles me. Where did Turkish coin come from that George Dare picked up at the exit of the Sinks of Gandy Creek in 1936? Was this a memento of the murder of an alien Syrian peddler? I'll have to ask my good friend Douglas McNeill, of Marlinton, about that! He is the author of "The Last Forest" (all about West Virginia, Gauley Mountain, hunting and fishing). He was also the prosecuting attorney for Pocahontas county at the time this poor Syrian was liquidated, or purged, in the Sinks region. Maybe we can get his story for the folks who are interested in this column . . . I sincerely hope so! (The Herald-Star, Steubenville, Ohio.)

Fog In Snedagar's Cave

On a visit to this cave July 26, 1941, entrance was effected through the upper entrance into which the stream now runs. An attempt was made to map the entrance passage now followed by the stream, but this passage was blocked after about 250 feet due to accumulation of drift wood. On the trip through the cave, many passages not included on the previous trip were noted, but were not mapped due to lack of reference points to tie them in with the previous work. The main stream bed was mapped from the main room back up as far as the falls.

Great quantities of driftwood was everywhere encountered especially in the entrance stream bed and in the lower stream bed of the main room. The stream of the main room appears to have been much scoured since the trip of last November 11. There must have

been a heavy flood in this region in the near past. From the formation in the main room on, there was a strong blast of air blowing in or down the passage. This passage was not followed as far as the lake due to weariness of the party, but should have been.

Temperature outside was 90°, in the main cave was 50°, at the end of the main passage approaching the lake was 51°, and in the entrance room 60°. The entrance room was so full of fog that it was almost impossible to see more than 25' even with strong lights. Progress across and through this room had to be assisted by a compass, the same as at sea. There is no reason why this phenomenon of cave fog should not be quite common wherever warm outside air enters a cold cave in any quantity, but still it is the first time that it has been encountered and recorded by members of our Society.

A study of the surface and cave indicates that the stream must have originally entered the cave by the main entrance on the south; then later deserted this entrance when it broke through the new entrance on the north. This north side bears evidence of at least three distinct but now deserted entrances besides the present stream course. Inside the cave, the new part shows distinctly three more levels, but they are so inter-connected they cannot be traced entirely through the cave.

No fauna of any kind was observed or collected on this trip.

Hell-Hole

Report, July 6, 1941

Thursday night, July 3rd, and Friday morning, several cars left for Seneca Caverns and Hell Hole. From Washington were Fishburne, Hortman and Eno; Lavelle, McAuley, Goodfarb and Kuwitz; Meenahan, Wilson, Allnut and Chalkley; and Heustis, Mansfield and Whitley, with Petrie; arriving in the order named. Others included Dr. Price and a station wagon full of his students; the Snells of Pittsburgh, Lila Miller and Mabel Smith of Wheeling.

Mr. Dare and the Prebles of Steubenville, O. B. Harmon, and locals. Dr. Harmon and Dr. Krause's winch at Seneca Caverns, and the first two cars got it to Hell-Hole early Friday on the platform that had been reinforced by Chalkley and others before noon. The streams then flowing into the cave was so large and the mist so heavy that Fishburne who was lowered 50' or so found it utterly impracticable to view the cave further at that time.

Meanwhile, some of us explored various distances into Schoolhouse cave up to the jumping-off place. The Fishburne, Lavelle and Meenahan cars visited two other caves before Sunday morning, of which more by another author. The Steubenville, Pittsburg-Wheeling and remaining Washington car outfits went through Seneca Caverns and then via Harmon after a social get-together at Mouth of Seneca to hotel headquarters at Davis.

Afer "Katy's" bountiful supper, a few who were short

on sleep made it up while most of the assembled party, now enlarged by others, including the Strothers of Detroit, and Rev. Felix Robinson of Oakland, attended the exhibition of cave pictures in color given by "Ducky" Thompson at the lodge.

Saturday morning, many visited the nearby beautiful Blackwater Falls, now swollen by the continuous rains to almost record-equalling proportions, and the even more beautiful canyon. One of the party (Pete) who had seen the Rhinefall in Central Europe was struck by the similarity between the swollen Blackwater and this famous cascade, and except for the substitution of the green for the yellow mottled walls of the canyons, the general effect of Blackwater and Yellowstone rivers in their canyons was quite similar.

SOME TAKE HORSES

The party now comprising about fifteen cars, including Stephenson's with Al Lewis from Washington, then assembled a few miles beyond Harmon at the Wolford Farm where horses were provided for at least some of those desiring them for the hike up the mountain whose dedication as Mt. Porte Crayon was one of the two high lights of the long week-end trip. This ceremony under the direction of Jack Preble and with the cooperation of Rangers Wood, Averill and Thompson was greatly enjoyed by about 35 people and will be long remembered. Details of this story are presented in a separate paper.

Returning from Mt. Porte Crayon, the Stephenson and Petrie parties made a quick dash to Hell-Hole and found conditions favorable in the absence of much more rain to a descent the next day as had also been originally planned.

Saturday evening, a delightful party long to be remembered was given by the Davis Hotel management. Music and Ducky Thompson's color pictures featured the evening. A newly arrived party of four from Arlington including a botanist and two ladies originally from Sweden and Switzerland, who later commented on what a wonderfully fine party our combined mountain-climbing and cave exploring groups were.

Sunday morning, we were off not too early for Hell-Hole. About 11 a. m., under superb supervision of Tony Eno,—engineer-in-charge—Fishburne was lowered on the spinning cable and connected the guide rope and set up the telephone at the bottom. His account, elsewhere, of proceedings at the bottom should be most inclusive inasmuch as being first man down and last up his 8½ hours in the cave was the most comprehensive of any of the party.

After establishment of satisfactory communication and facilities for lowering others without undue spinning, the rest of the day until dark, or over eight hours, was spent lowering and later raising a total of twenty-four into and out of the deep pit. The work at the top, involved assisting successive individuals into the safety belt and swing seat, under the platform, this phase of operations being ably handled largely by Tony Eno.

The winch crank was operated by one or two persons, the girls manfully taking their turn to lower the

"victim" down over the ledge and through the clear drop, a total of 165 feet to the rocky talus slope directly below. After thirteen were down, each return trip brought somebody back, and whereas one at the crank was sometimes sufficient going down, two generally found plenty of exercise in cranking up the loaded sling.

Another individual, Petrie for the most part, handled the safety brake and during ascent guided the winding cable back and forth over the drum to prevent irregular pile-ups. One or more were constantly on the phones maintaining communication. At the bottom, various ones under Fishburne's leadership took turns at the phones and assisted unseating and seating of descending and ascending explorers.

Meanwhile, various sub-groups under leadership of the more experienced speleologists explored the several rooms and passages off the enormous main room into which all were first lowered. These included the bat room, holding tons of guano, the porthole and tunnel beyond leading to the 57' drop, and the stream passage beyond the porthole. Telephone communication with the main room was everywhere perfect, but that between extensions into remote passages and the surface was somewhat weak, indicating need for revised set-up.

Although some rain fell in the early morning, the weather was propitious, the cloudy morning gradually clearing into a sunny afternoon. The bright sunlight flooding into the large lateral openings onto the ledge was a cheering sight. The turbulent stream of Friday had dwindled to a thin trickle and inasmuch as it fell well removed from the descending cable, no inconvenience therefrom resulted.

Finally about 7:30 p. m., John Fishburne, No. 1 down became No. 24 and last to be hauled up after guide rope and telephone connections were severed. His barely audible yell was the prearranged signal to begin hoisting him, and shortly after, his safe arrival concluded what in the language of Clay Perry's write-up in the Saturday Evening Post was undoubtedly a successful trip, for had not twenty-four been lowered and twenty-four brought safely back?

I am sure everyone who entrusted his life to the thin cable joins in a hearty note of appreciation for the efficient and self sacrificing efforts of engineer Tony Eno at the surface and his able second-in-command, John Fishburne, at the bottom, during this long eventful day.

Dismantling of portions of the superstructure and unleashing of the winch was hastily effected and with plenty of husky aid, the winch was dragged up the 20' steep bank and carried to the car in the twilight and returned to Seneca Caverns and D. K. Harmon's custody. Many thanks are due him and hereby extended for his efficient cooperation in this matter as well as help in operating the winch.

Amid farewells and happy congratulations, the various cars dispersed on their respective ways, and the 1941 adventure undertaken literally "in spite of hell (-hole) and high water" entered into history.

The enclosed table gives the order number of ascent

and descent and approximate time spent underground of each of the two dozen participants.

Order No.	Ap. Time	Order	Ap. Time	Time
In	Entering	No. Out	Out	In
1. Fishburne	11:00	24	7:30	8 1-2
2. Meenahan	11:45	13	5:30	6
3. Mansfield	12:00	8	4:15	4 1-2
4. Mad. Root	12:30	6	3:45	3 1-2
5. Beard	12:30	5	3:30	3
6. Root	12:45	1	2:30	2
7. Gage	1:00	4	3:15	2 1-2
8. Wilson	1:15	14	5:40	4 1-2
9. Jankowski	1:30	2	2:45	1 1-2
10. Alice Root	1:45	7	4:00	2 1-2
11. Beck	2:00	3	3:00	1
12. Thompson	2:15	11	5:00	3
13. Allnut	2:30	12	5:15	3
14. Chalkley	2:45	15	5:50	3
15. Virginia Welch	3:00	10	4:45	2
16. Heustis	3:15	22	7:00	4
17. Frances Snell	3:30	17	6:10	2 1-2
18. Preble	3:45	9	4:30	1
19. Whittley	4:00	19	6:30	2 1-2
20. Matchette	4:15	18	6:20	2
21. Welch	4:30	16	6:00	1 1-2
22. Snell	4:45	21	6:50	2
23. Worden	5:00	20	6:40	1 1-2
24. Petrie	5:15	23	7:10	2

A Prehistoric Cave—Woodson Co.

(From HISTORY OF KANSAS,
Chicago: A. T. Andreas, 1883, Vol. 2)

This cave is situated about twelve miles north of Toronto, on Section 13, Township 24, Range 14. Its mouth is about fifty feet wide and ten feet high, and the cave extends back about twenty feet. In the mouth of the cave lies a rock about nine feet long by six feet wide, the surface of which is nearly horizontal, the rock having evidently fallen from the roof of the cavern.

On the surface of this rock are cut numerous figures of various sizes and shapes, some of which are indescribable. No system or regularity was observed by the inscribers, but the different figures and groups of incisions are scattered promiscuously, often overlapping and interlacing each other, as if done more for pastime than for the purpose of leaving any record of events then occurring to be read by future generations.

Some of the figures represent the human body, other parts of the body, as the head, with a small hat on, and marks down the chin, which may have been meant to represent the beard. One may have been designated to represent a little idol, another a bird's foot, another looks like a capital A, etc.

Great interest is manifested in them by the people of Woodson County, which is doubtless altogether owing to the fact of their mysteriousness. The same interest will probably always attach to them. There is but little reason to hope that they will be so deciphered as to throw any light on the history of the past.

These tracings, or figures, or hieroglyphics, as some call them, were discovered about May 15, 1858, by Esquire Robert Daly, while out on a private hunting expedition. At the time of discovery, they were covered over with dirt and debris, and partially overgrown with moss. Mr. Daly, who was one of the first settlers in this part of the county, has resided in the vicinity ever since, and now lives about one and a half miles south of this prehistoric cave.

S Y M P O S I U M
O F
S P E L E O L O G Y

FIRST ANNUAL CONFERENCE
of
THE NATIONAL SPELEOLOGICAL SOCIETY
at
YOHAMONY FOREST COLONY
Brookside, West Virginia

OCTOBER 17, 18, and 19, 1941

A Fine Fall Vacation for Members and Their Families

INDOOR AND OUTDOOR PROGRAM

Side Trips for the Family

RATES

\$2.00 per Day Room and Board

50c Registration Fee and 25c for Family

PROGRAM

Symposium of Speleology

FRIDAY, OCTOBER 17

- 12:00 pm Lunch
- 1:00 pm 1st Registration Period
- 1:30 pm General Meeting—Plan Conference in Detail—Short Talks
- 2:30 pm Trip to Cave near Parsons, West Virginia
- 7:00 pm Dinner
- 8:30 pm Lectures and Pictures
- 10:00 pm Second Registration Period
- 11:00 pm Bed

SATURDAY, OCTOBER 18

- 8:00 am Breakfast
- 9:30 am Start of Conference—Opening meeting—Several Short Talks
- 10:00 am Committee Meeting and Conferences
- 11:15 am Outdoor Demonstration and Exhibits
- 12:30 pm Lunch
- 2:00 pm Main Meeting, Dr. Charles Butts, speaker
- 2:55 pm Intermission
- 3:00 pm Committee Reports and adoption of reconnotis
- 4:00 pm Open Discussions
- 6:30 pm Dinner
- 8:00 pm Social Evening
- 11:00 pm Bed

SUNDAY, OCTOBER 19

- 7:30 am Breakfast
- 8:30 am Short Final Meeting
- 8:45 am Devotional Exercises
- 9:00 am Leave for Cave Trips

SECTION A.—To School House Cave. (This section limited to those having previous cave experiences as this cave is large and dangerous.)

SECTION B.—To Blackwater Falls—Little Skyline Drive—Smoke Hole Cave and Seneca Caverns. Both sections meet at 4:30 P.M. at Seneca Caverns and leave for home. Saturday —Program for families— noon trip to Deer Park, Maryland, etc.—Bridge.

The specific speakers, with the exceptions of the main talks by Dr. Butts, have not been listed as it is desired to keep the program flexible so as to make the best use of the talent present. The following definitely plan on attending and stand ready to take part in the program:

- Dr. R. W. Stone, Penn. Geological Survey*
- Dr. Paul Price, West Virginia Geological Survey*
- Mr. Wm. M. McGill, Virginia Geological Survey*
- Mr. Charles Mohr, Phila. Academy of Natural Science*
- Mr. James Benn, U. S. National Museum*
- Dr. Joe Morrison, U. S. National Museum*
- Dr. Felix Robinson, Oakland, Maryland*

Report of First Annual Symposium of Speleology

MORNING SESSION

The Symposium was opened by a short address of welcome by Dr. (Rev.) Felix Robinson, chairman of the committee on arrangements. Dr. Robinson stressed the folklore side of Speleology and laid emphasis on the value of speleology as a hobby which would get people out of the noise and bustle of the city and down to earth and nature, so to speak. He pointed out the many recreational and spiritual values to be received from the trips back into the hills to look for caves and from the quiet of the underground trips.

Following Dr. Robinson's opening remarks, a brief outline of the organization of the society was given by its president, William J. Stephenson. The duties and problems of the various committees were briefly referred to. After Mr. Stephenson's preliminary remarks, the work of many of the committees was taken up in detail. Open and sometimes spirited discussion was held on many of the committee subjects. The following is a brief summary of some of the highlights of the committee reports and discussions:

BULLETIN AND PUBLICATION COMMITTEE

Following some discussion of past Bulletins, there was quite a lengthy forum on our best method of reporting on caves. Emphasis was placed on accurate directions as to their locations, also as to the desirability of reporting the locations by latitude and longitude. Dr. Ralph Stone suggested that reports in the Bulletin be in a chatty sort of way, and that detailed reports of scientific nature be withheld for separate publication. Dr. Price suggested that the reports published in the Bulletin stress those features of a cave that were unusual or peculiar to that cave. Al Lewis proposed that there be a section of the Bulletin devoted to elemental instruction and suggestion: for example, cautions against breaking formations, removal of unknown objects that might later prove to be of scientific value, such as artefacts, etc.

FINANCE

The general state of the Society's finances was reviewed, including a summary of receipts and expenses for the last year. The question of obtaining endowments, grants, gifts, etc., for special and general purposes was discussed at length. The impossibility of the Society publishing a first rate printed regular periodical with the present membership dues was recognized. Possible sources of endowments and grants were discussed.

Dr. Paul Price pointed out the possibility of state aid in publishing papers restricted to work in any single state.

The advisability of directed appeal to the members

for specific gifts was discussed. The general opinion on this subject was that any such appeals should be few and specific. An appeal for funds to support a printed Bulletin was thought justified.

It was agreed that all members should be constantly reminded to be on the lookout for financial aid or possible gifts of equipment, service, etc., as necessary as direct money donations. Several gifts or loans of equipment to the Society were reported to have already been made. The Society was said to be still badly in need of mapping equipment and office files and supplies.

FORMATIONS

This subject involved much active discussion. Drs. McGill and Price both took a leading part. The need for standard terminology and definitions was repeatedly emphasized. It was pointed out that Dr. R. J. Holden of V.P.I. is at present chairman of the formations committee and is already working on this question of definitions. All seemed generally to agree that the generic terms should be first defined and that terms for species could be adopted later.

As an example, it was pointed out that the term "Helictite" is broad and generic; that if this fact was recognized and adopted, then names for the various types and species of this type of formation could be adopted later.

McGill stressed the desirability of confining the first set of definitions to actual structure and leaving definitions by source of formation to be drawn up as a future project. The desirability of a collection of photos illustrating each type of formation was stressed. All new or unusual formations should be photographed *in situ* with some reference object to indicate size.

INDIVIDUAL CAVES

The proposed work of this committee was outlined. The possibility for original work by the unskilled layman through this committee was discussed. The desirability of individual members or groups of members taking over certain interesting undeveloped caves, keeping records of public attendance by maintaining a roster at the entrance, placing signs in the cave warning of danger or giving directions, taking continuing observations as to temperature, moisture conditions, etc., was discussed. It was pointed out that such more or less supervised caves would prove of value for instruction to beginners in the field of cave study and exploration.

EQUIPMENT AND SAFETY

Planned outdoor demonstration on the proper use of certain equipment was cancelled on account of rain. A general discussion of this subject was tabled because

of the lack of time and also because there is planned an extensive article on the subject in some further issue of the Bulletin.

MAPS AND MAPPING

Mr. Stephenson gave a short review of methods of taking notes which is now recommended by the mapping committee, and answered questions as to how the present system had developed. It was pointed out that a detailed article on this subject was planned for the Bulletin in the near future. The conference was at this point adjourned for lunch.

AFTERNOON SESSION

LIBRARY

The afternoon session was opened with a short talk by Robert Bray on the Society library. Mr. Bray gave a short resume of the present contents of the library and outlined the steps being taken to continue building it up. He pointed out that any and all additions are at present acceptable and ended with a plea to the members to use the library and not let it stand idle. A new catalogue of the material in the library is in process of preparation for distribution to the members.

FAUNA COMMITTEE

Mr. Bray's talk was followed by a report from Mr. James Fowler concerning the work of the fauna committee. Mr. Fowler described his effort to catalogue all reported cave fauna. He explained his system of doing the basic classification in the order of their place in the animal kingdom, and cross cataloguing as to specific caves. He explained that the fauna committee is now in a position to have practically any specimen identified; most of such work being by the U. S. National Museum. He requested all speleologists who are not experts on fauna identification to send any specimens directly to him. He urged those who were qualified to make identification to periodically send in full reports of any such identifications made as well as copies of back records, so that the Society could gradually build up a full and complete reference list of all cave fauna found in the United States.

The reports of Mr. Bray and Mr. Fowler were so complete and well presented that little after-discussion was needed. They may well serve as models for further committee reports.

Miss Florence Whitley, reporting as an individual member of the records committee, gave a brief report of her progress building up a record file of cave pictures. Miss Whitley explained that prints of all pictures turned over to the records committee are being mounted in loose-leaf binders with as much pertinent information concerning them, including the name of the photographer, as is available. She explained that these books will be made available to the members, and that eventually this should become a large available collection of pictures. She announced the hope that some time in the future a collection of salon prints of pictures taken by our members could be assembled and made available for exhibition purposes.

MAIN ADDRESS

Following a brief intermission, Dr. Charles Butts

gave the main address of the conference. His subject was the development of deep caverns below ground water level. Lack of space prohibits a complete reprint of Dr. Butts' talk. Dr. Butts dealt with the problem of some deep limestone caverns recently discovered by test boring for dam sites on the Tennessee River. He accompanied his talk by charts and diagrams illustrating how local conditions could force a water circulation deep down under the ground and thus produce caves or water-filled cavities at and along the more soluble joints and seams. He then carried this discussion to conditions found in other parts of the country and then discussed the likelihood of these same conditions producing any of the caves now existing near the surface. Dr. Butts' talk, though directed to a highly technical subject, was presented with such clearness that those present who lacked previous scientific training were able fully to understand the subject that he presented. The talk was followed by approximately a half hour of general discussion during which Dr. Butts graciously attempted to answer all questions presented.

SUPPLEMENTAL TALKS

Following Dr. Butts' talk, Dr. Ralph W. Stone gave a short address on the subject of cave folklore. This talk in part developed more fully many of the points made by Dr. Robinson early in the morning. Dr. Stone especially emphasized need for research in this field of folklore while there are still those alive who can give first hand information as to many of the tall tales now connected with many of the eastern caves. While he recognized the fact that many of the stories associated with caves have little if any truth, this condition in no way detracts from their value as part of our folklore. Further, the truth of such tales can be more easily ascertained now than years hence.

Mr. William M. McGill showed samples of what he called "cave biscuits" and gave his explanation as to their origin. This subject developed considerable discussion both as to the theory of the development of this formation and also again raised the question of terminology when distinction between these biscuits and cave pearls was attempted. It is hoped that this subject may be fully presented in a separate paper in some further issue of the Bulletin.

CLOSING PAPER

As a closing talk, Dr. James Benn delivered a paper on the origin and types of caves. This paper generally paralleled the talk given by Dr. Benn at the March meeting of the Society this year at the U. S. National Museum. The paper was quite comprehensive and contained much material not included in Mr. Benn's previous talk. It is understood that Mr. Benn plans to publish this paper separately and when this is done, reprints will be furnished the Society's library.

(Editor's Note: The Society encourages the publication of technical papers by the membership in the journals of the various presently existing technical societies to which they may belong and the furnishing of our library with reprints. Our Bulletin for the present will be devoted to articles of general, rather than specific, interest.)

Following Mr. Benn's talk, the conference, as such, was declared adjourned at 4:30 P. M.

BOARD OF GOVERNORS' MEETING

At 5:10 P. M., a Board of Governors' meeting was held and the following changes in the by-laws adopted:

Section III (a) was abolished, and the following substituted therefor:

III (a) "Any accredited member of the Society may be a member of the National Board of Governors provided that he is not an officer in any Grotto. The Board of Governors shall be composed of twelve (12) members. Each Grotto may send one representative to any meeting of the Board of Governors, however. Said representative must be acceptable to said board, and shall have the right of making and seconding of motions and of entering into all discussions, but shall have no right of vote."

Section III (d) was abolished, and the following substituted therefor:

III (d) "Three (3) members of the Board of Governors shall constitute a quorum."

Section III (e) was modified by the following addition to said section:

The Secretary must be properly notified of a substitute being appointed for a member of the board by said member, or such substitute must bring written notification of the substitution from the member appointing him."

EVENING RECEPTION

Immediately after the evening meal, the clan gathered through the rain at the nearby woodland home of Dr. and Mrs. Graven for a delightful informal reception. Mrs. Graven, herself also a psychiatrist and formerly of Vienna, Austria, proved a charming hostess. The Chateau, built to a delightfully unique design was beautifully furnished and equipped with trophies and curios that filled an uncounted number of enjoyable "speleologist-hours" spent in their examination, amid general visiting and enjoyment of the innumerable varieties of delectables so generously provided.

The laden tables furnished a rare opportunity for "Ducky" Thompson's photographic art of which he availed himself for the benefit of all, and not merely those not fortunate enough to be present, and thus preserved in realistic color all the tempting deliciousness so lavishly displayed. An hour or more of Thompson's beautiful kodachrome slides of previous speleological activities closed a most delightful evening that will long be remembered.

FIELD TRIPS

On Friday afternoon a short trip was made to John Friend's Salt Peter Cave, an undeveloped cave near Oakland, Md. This cave was fully mapped and studied for the existence of fauna.

On Sunday, September 19th, the Symposium broke up into several groups. One group of 24 of the more hardy members made the descent into School House Cave and took in the main room and the passage back to the dome room. This cave which has been repeatedly referred to in previous Bulletins, requires a series of rope ladder climbs totaling more than 180 feet.

Mention must be made of the excellent work of

John Meenehan and his crew, consisting of Dr. Welch, Dave Chalkley, Tony Eno, and John Fishburn, who worked all Saturday to put the rope ladders in place and thus make this cave accessible for those who wished to see it.

Another group took in a number of the smaller, undeveloped caves of this neighborhood; while still a third group were entertained by Smoke Hole and Seneca Caverns, the two developed caves of this area.

It is reported that almost all members arrived home safely Sunday night. ?

MABEL SMITH, *per 6-2-41*
Recorder for the Symposium.

THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA

September 17, 1941.

Mr. William J. Stephenson
4912 43rd Place, N. W.
Washington, D. C.

Dear Mr. Stephenson:

I am greatly interested in your plans for a symposium in West Virginia on October 18 and 19. There is considerable likelihood that I shall be able to attend. Whether or not I attend I could send you a collection of about a dozen salon prints of cave fauna for display. If I attend, I could offer several contributions:

- a. Illustrated talk on cave fauna of the U. S. with Kodachrome slides and movies. (Kenneth N. Dearolf, Dayton Public Museum, could take the invertebrate animals—I could give the vertebrates and summarize the whole thing by a film. Time, up to 1 hour.)
- b. Illustrated talk on exploration of the original tunnels of the Pennsylvania Superhighway. (An attempt to rescue several thousand bats hibernating in the old tunnels was made. Time, 20 to 30 minutes.)
- c. Demonstration of bat banding and bat tagging and the release of tagged Pennsylvania specimens as part of an experiment on homing ability of bats. Time, 15 minutes.

I don't want to take more than my share of the program; I'm simply offering these ideas for possible use.

I hope that there will be opportunities for visiting some of the caves. I'd certainly like to at least dip into Hellhole or Schoolhouse, though I'd settle for Smoke Hole, Timber Ridge, etc. There should be some swell opportunities for cave photography. By the way, a round-table discussion on cave photography would be in order.

Dr. Erwin R. Pohl, Mammoth Onyx Cave, would be a valuable addition to any speleological conference. He has visited the great Mexican cave of Cacahuamilpa, has made extensive surveys in the Mammoth cave region, and has good data on cave temperatures.

I'm enclosing, on loan, the program of a conference of the British Speleological Association. It's bulging

with features that we could adapt.

Isn't there a chance that enough persons could arrive early Friday to make worthwhile the scheduling of some activities for Friday—visits to certain caves, for instance? It is 280 miles from here, so I'd try to make a four-day trip out of it. I don't yet know whether there are any good prospects of other members and interested persons coming on from here. I'll do a bit of scouting.

Yours for a great symposium,
Cordially,

CHARLES E. MOHR,
Director of Education.

VIRGINIA CONSERVATION COMMISSION

September 16, 1941.

Mr. William J. Stephenson,
4912 43rd Place, N. W.
Washington, D. C.

Dear Mr. Stephenson:

Upon my return to the office this morning from an absence in the field, I was glad to find awaiting my attention your interesting letter of September 11th.

Briefly, I think the idea of a symposium on speleology as outlined in your letter a very fine one. I shall be very glad to cooperate as fully as I can with you and other members of the National Speleological Society in trying to make a success of the proposed meeting. At this time it would be very difficult for me to try to make definite plans or count definitely on being able to attend the suggested meeting the second or third week in October. I hope, however, that at the end of another week or ten days, I will be in a position to advise you more definitely as to whether I can plan on attending and participating in the meeting.

If possible to do so, I shall certainly be among those present and will be glad to participate in the program that may be worked out. I shall also be glad to send you, when I write you next, names of those individuals of whom I know that are interested in speleology, and most of whom should be prospective members of the Society.

Wishing you and those active members of the D. C. Grotto success in successfully working out a definite plan for the meeting and with kindest personal regards, I am

Sincerely yours,
WILLIAM M. MCGILL,
Assistant State Geologist.

Jones' Quarry Cave

(Berkeley Co., West Va.)

From Falling Waters post office on U. S. 11 (at bend in road where one coming north first views the river) to north six tenths miles and turn right on dirt road (road goes on southeast side of house and barn), and go four-tenths miles to old Quarry on left. Cave entrance can be seen two-thirds way up quarry wall at north end of quarry.

PRESIDENT'S COMMENTS . . .

Research Projects

A number of interesting projects related to the study of speleology have been suggested for the Society's consideration. None, however, have yet been initiated, mainly because of the present lack of reliable volunteers to see them through. The owners of practically every developed cave with which the Society has had any personal contact has offered the facilities of their cave for such subjects. It seems, therefore, that an attempt should be now made to get under way two or three worthy projects which may well be the beginning of an extensive and correlated program of cave research.

Foremost among such projects would be a study of growth rates of cave deposits. While some little work has been previously done along this line, the field is virtually untouched. Good reliable base marks for further measurements should be immediately established in as many caves, and under as great a variety of conditions, as possible. Arrangements should also be made for taking humidity, temperature, and circulation readings at these base marks at regular intervals.

This project would probably be best undertaken by a number of volunteers who would be responsible for the establishment of the base marks and subsequent observation and reporting of results to the formations committee. Those interested in working on this project should choose the cave or caves in which they plan to work and then notify Dr. R. J. Holden, at V.P.I., Blacksburg, Va., the chairman of the formations committee, so as to avoid duplication of effort.

Another project of merit is the gauging of cave streams and ponds. Observation on small cave streams and ponds, if taken in quantity and plotted against the rainfall at the cave, should prove of great help in studying the rate at which surface moisture is absorbed and works its way down to the underground reservoirs. Work done on this project can be done by responsible individuals in the same manner as suggested for the formation study. Needless to say, all members engaging in this work should notify Dr. R. W. Stone, chairman of the groundwater committee, or work with or under some member of that committee.

Another project is that of temperature study. Such study should be especially valuable if made on caves known to possess a large range of variations within the cave and from season to season. The mere placing of maximum and minimum thermometers alone in such caves would be a good start, though continuous graphic temperature records would be obviously more desirable.

Members engaging in this study may also be able to arrange with developed caverns to take daily readings for them at a number of particular points within their caves.

As this project does not fall clearly within the scope

of the present committees, members taking up this study are asked to report to and cooperate with the committee on general geology.

The study of bats and their migrations is also an **extensive problem**. **A great opportunity is offered** to aid in this study by banding of bats found in caves for further identification. Those interested in this work should contact Dr. Chas. E. Mohr of the fauna committee at the Philadelphia Academy of Natural Sciences.

The above projects have been specifically mentioned as they seem to be the ones which can be tackled by individual members without any need of extensive preparatory training. It is hoped many of our members will desire to engage in these study projects, and by so doing should give them the deep satisfaction of knowing that they are putting their cave experience to practical use.

It is expected and hoped that the chairman and members of our various committees will, in further issues of this Bulletin, describe the various projects in which they are engaged and explain how the individual members who so desire can help with those projects.

WILLIAM J. STEPHENSON, President.

(We had hoped to include in this section an extensive article on "Cave Equipment" prepared by Mr. Stephenson for the January issue. Unfortunately it was somehow lost in the mails. Mr. Stephenson will, it is hoped, emulating Carlyle, take advantage of his notes and rewrite the article for a future Bulletin.—Ed. Note.)

LETTERS . . .

CAVE DESCRIPTIONS

Mr. Peter Zodac, Editor, October 27, 1941
Rocks and Minerals,
Peekskill, N. Y.

I have noted with interest the various descriptions of caves which appear from time to time in **Rocks and Minerals**. These little articles have been most carefully briefed and catalogued by us but would be of great help if the locations of the caves were more accurately given.

Our society in cooperation with the U. S. Geological Survey has worked out a standard method of reporting cave locations by means of latitude and longitude. If a cave is so reported, the location will remain definite regardless of changing landmarks, or a change of ownership of property. It may also be easily found and reached by anyone possessing a U. S. Geological Quadrangle map.

In accordance with our procedure for locating a cave, field notes are taken which will enable the cave to be accurately located on a quadrangle map; in fact, it is most desirable to have the cave located on the map while one is in the field. From the map, the latitude and longitude can easily be computed as each quadrangle carries the latitude and longitude usually marked to the nearest degree. Some of them even are marked down to the nearest five minutes. By the use of these maps, great accuracy can usually be obtained in the location of the caves. Anyone posses-

ing such a map can usually spot the cave on his map with a corresponding degree of accuracy.

It would seem that the above system which we have adopted for locating our caves would also be of use in reporting the location of quarries, mines, and other mineralogical finds. Anything which you can do to sponsor more accurate reporting of location, especially by latitude and longitude as above outlined, will be appreciated by our Society. If you will throw the weight of your publication behind this project of having caves (and perhaps also mines, and quarries, etc.), reported by latitude and longitude, it will greatly aid in promoting accurate reporting. It will also aid in establishing a uniform system throughout the country— which system, as above explained, meets with the approval of the Geological Survey.

Yours Sincerely,

WM. J. STEPHENSON, President.

ERNEST A. BAKER, M.A., D.Lit.

St. James's Lodge, Kirkbrook Park Road,
Blackheath, S.E.3, Feb. 27, 1940.

Dear Mr. Stephenson:

Thank you and the Speleological Society for doing me the honour of making me an honorary member — though the card of membership mentioned does not seem to have been enclosed. I wish the Society every success, & shall be glad to hear of your doings from time to time.

There is a good deal in what you say about the average cave map. But, after all, my old friend Martel, the real pioneer of cave-exploring, set an excellent example in the classic "Les Abimes" & his other works. You would find first-rate maps & sections also in the Journal of our Yorkshire Ramblers' Club, starting in 1899 & now in its 7th vol. Drop a line to my old comrade, E. E. Roberts, 12, Southway, Harrogate, their President, who has just told me that he is about to write a book on the subject. The Journal of the Mendip Research Club is also good in this respect, though on a smaller scale. The President is another of my old collaborators, H. E. Balch, Wells, Somerset.

As to Casteret, I must say that like Martel I have the utmost respect for his daring in penetrating caverns where it would have been impossible to have comrades. Read also his "Au fond des gouffres." He has done unique work, though I must admit I always preach caution, & have run risks only by inadvertence or when absolutely pushed to it.

Perhaps there is too much of the tone of adventure in my book. But you must allow for the fact that I went in for Caving originally as a sport & recreation, an offshoot of my old sport of mountaineering & rock-climbing. I am not a scientist, & my research work has been in other fields. When we made discoveries or explored unknown regions, we conscientiously mapped out the terrain & recorded our results; but this was not the primary object. I have been too busy with other labours, e. g. the book in the enclosed prospectus, & as head of a department in the University of London, not to require some such relaxation. You

would find a lot of my books, & also some of my old students, in the big libraries of the U. S. A.

Possibly we may meet some day, either in your country or mine; let us hope so.

Yours very sincerely,

Wm. J. Stephenson, Esq.

E. A. BAKER.

CHAMBER OF COMMERCE AND MINES

Douglas A Ariz., July 19, 1941.

Mr. Clay Perry, President
New England Spelunkers Grotto No. 1
National Speleological Society
c/o The Saturday Evening Post
Philadelphia, Pennsylvania.

Dear Mr. Perry:

We have read with great interest your story in the Saturday Evening Post of July 12th entitled "Come Let Us Go Spelunking." We are more than ordinarily interested because of the Crystal Cave, located a short distance from Douglas, which we believe has great possibilities after some development.

The Crystal Cave in Cave Creek Canyon is on Forest Service land and had aroused some interest in the Southwest before the turn of the present century. There have been spasmodic explorations of the Cave at various times in the intervening years but nothing has ever been done definitely toward making it easy of access to visitors.

We are sending you herewith a report of New Discoveries in Crystal Cave written by Charles T. McGlone.* Mr. McGlone was one of the first Forest Rangers in the Chiricahua Division of the Coronado National Forest and is a man now in his seventies. He was retired from the Forest Service some years ago but has always maintained a very keen interest in the exploration and development of Crystal Cave. Mr. McGlone is thoroughly convinced from the exploration work he has done that our Crystal Cave will take its place with any in the United States, and some of the rooms which he describes must be dazzlingly beautiful.

Attempts have been made at various times to have the National Forest Service, the National Park Service, and other organizations do the development work which is necessary before the cave can be opened to the general public. An organization like yours, composed of men and women interested in the development of these wonders of Nature, with no thought of commercial profit, are doing a very valuable job in bringing these beauty spots to the attention of the general public. We are convinced from the years that Mr. McGlone has given the Crystal Cave that your organization or some of its members would have a real "busman's holiday" in exploring Crystal Cave.

Our interest in bringing it to your attention is not entirely selfish although we realize that the development of this Cave would bring many hundreds of visitors to this area. We are convinced that such trips would be justified and that these visitors would feel well repaid for inspecting this beauty spot. Such attention as your group might create through a visit to

the Crystal Cave might be instrumental in attracting the National Geographic Society to make a picture trip and scientific expedition to this point of interest.

Arrangements can be made, and we will be very glad to help make such arrangements, to have Mr. McGlone act as guide for any members of your group, or any photographers or scientists who might be sent by the National Geographic or other societies. If you care to discuss the matter further with Mr. McGlone, you may address him in care of this Chamber and we will see that your letter is delivered to him promptly.

We extend to you, to the members of your organization, and any other Spelunkers, a very sincere and cordial invitation to visit our Southwestern sun country to learn at first hand of the many scenic and climatic advantages with which this section has been so abundantly blessed.

Very truly yours,

CHAMBER OF COMMERCE & MINES

MICHAEL F. McCUE, Secretary.

(* This appears on Page 2)

FROM LISBURN CAVE FILE

3128 Chestnut St.
Camp Hill, Penna.
June 1, 1941.

Mr. William J. Stephenson,
4912—43rd Place, N. W.,
Washington, D. C.

Dear Mr. Stephenson:

I hope that these letters are not coming too fast and furious for you. You see, every once in a while I get an idea of some sort, and I have to write to you before I forget it.

This time, it's another map. If you remember, you asked me some time ago for a map of the cave at Lisburn, York Co., Penna. Well, here it is.* I do not swear that it is absolutely accurate, because I firmly believe that no cave map is that. However, it does give a fairly good idea of the general plan of the cave. The entire cave is on practically one level, with a rise or fall in the passageways sometimes of maybe five feet at the most. Towards the rear of the cave, there is quite a definite slope upwards. In one place in particular (marked X on the map) we had considerable difficulty in getting through. The height of the lead here is little more than eight inches. It took another boy and myself close to five minutes to get thru this lemon squeezer. At the place marked #, we were unable to get thru at all. People on opposite sides of this narrow place could shake hands and see each other, but could not get thru; it was about four inches high. The room having all the blocks fallen in from the roof certainly did not make us feel any too safe.

Several more blocks seemed about ready to fall, so we didn't spend too much time there. In the maze marked * we got lost the first time we got into it. That was because we neglected to take any string. The room marked @ had some formations on the roof and walls, but they were nothing to brag about. The point

marked (#) was about as far as Dr. Stone and his companion, Schaffner, were able to go. Several places throughout the cave, we observed a kind of mold or fungus different from any we had seen before. It was silver-grey in color, and about 4 or 5 inches high. It was composed of long fibers that stuck straight up in the air, and looked like glass threads. We didn't disturb any of this; if you want me to send some to you for identification or museum purposes, I'd be glad to get it. If you want some samples of the stratified flowstone to be found in the cave, I'll gladly get some of that, too. Dr. Stone says that the cave is in Triassic conglomerate. Since I'm no geology expert, I couldn't say from personal observation; however, that's for your information.

Are you able to quote me any prices on miners' helmets as yet? I'm thinking of buying some rope, but am uncertain as to what size to get. Is three eighths enuf, or is $\frac{1}{2}$ " better? Could you quote me any prices on say 300 feet of the one you would chose, and tell me a good place to get it? Maybe you could get a reduction for me somehow thru the Society. I'd appreciate your help in this.

Sincerely yours,

DON BLACK.

(* Editor has the map if you are puzzled)

ALAMOSA DAILY COURIER

Alamosa, Colorado,
July 11, 1941

Mr. Clay Perry
c/o The Saturday Evening Post,
Philadelphia, Pa.

Dear Mr. Perry:

I have just read with interest your article, in the July 12 issue of The Post, entitled, "Come, Let Us Go Spelunking". Although your datebook as far as "Spelunking" is probably filled for some time to come, I would like to tell you about a cave in this country. You may find some points of interest.

The cave is called the Marble Mountain Cave and is located above timber line at about 12,000 feet on the northeast face of Marble Mountain in the Sangre de Cristo Range. The Sangre de Cristos form the east boundary of the San Luis Valley. The cave would lie roughly southwest from Pueblo and northeast from Alamosa, facing the Wet Mountain Valley. I realize this description is a little involved, but that doesn't really matter.

The cave, as far as I have ever been able to find out, has never been explored by anyone of this generation. I first heard of it when I came to Alamosa eleven years ago and at that time I determined that some day I would "look into it". The Denver Post had at one time considered an expedition, but didn't go through with it. The Colorado Mountain club made an attempt to explore it but was unable to reach the end. I have talked with Forest Rangers who have gone into the cave a very short distance. What they tell is something like this: Commanding the approach to the cave are the remains of an old fort, undoubtedly

Spanish. There is a cross painted on the rocks just outside the entrance. A tunnel goes in horizontally for about fifty feet and then is obstructed by a well about twenty feet across which drops vertically. At one time the well was bridged by a timber (which would have to have been brought up a very steep mountainside). Members of the Colorado Mountain club were lowered into the well and found a landing about seventy-five feet down, on which was found a windlass made of a tree trunk, the roots of which formed the handles. Remains of leather thongs were also found. It is my understanding that the explorers went a little further and then gave up. I have also been told that this same party crossed the timber over the well and explored for a considerable distance in the horizontal tunnel, but ran out of guide line and also gave up in this direction.

About five years ago, a few of us decided that The Daily Courier should sponsor an exploration of this cave. Five of us made a preliminary trip in August to look the ground over. If it appeared practical, we planned to make elaborate preparations, field telephones, winches, etc. The results of our trip follow: We found the fort as described (worth the trip in itself). It was built of stone and consisted of an elaborate system of pillboxes, redoubts, etc., the walls were still in fair condition although overgrown in places. A force of men here could have easily defend the entrance of the cave. The cave entrance is high on the countain side and would require pack animals to transport equipment to it. Even in August the entrance was blocked with snow and ice, which could have been cleared away if we had had shovels and picks. The cross was plainly visible, but weatherbeaten. A blast of cold air poured out of the entrance, this almost strong enough to "blow your hat off. We were immediately forced to the conclusion that the job was much too big for our limited experience and pocketbook.

We talked to a rancher who had been raised on a ranch settled by his father at the foot of Marble Mountain. He confirmed all that I have written here as legend of fact. He also told of the finding of a suit of Spanish armor (it is well established that Spanish explorers were in this country and worked mines and even mills). There seems to be a mystery about the Marble Mountain cave; one can sense that in talking to some of the people in the Wet Mountain Valley. It is an interesting speculation: why the fort?; why the windlass?; why the strong wind?; is there another entrance?; perhaps on this side of the range?; maybe there's a cache of Spanish gold someplace in the insides of Marble Mountain! Anyway, I hope you and your friends might be interested enough to look into the situation some day.

I will be glad to get further information or data if available or do anything to cooperate if you are interested. I'll be glad to hear from you or perhaps you might be through this way; in which case we could talk it over.

Sincerely yours,

JOHN L. DIER.

Cave Fauna . . .

RECENT ADDITIONS TO THE CHECKLIST OF FAUNA FROM CAVES EXPLORED BY THE NATIONAL SPELEOLOGICAL SOCIETY

J. A. FOWLER, Fauna Committee

The list below represents recent additions made to the previously reported list of fauna from caves explored by the members of the National Speleological Society. These additions are made possible both by the fact that new caves have been visited, from which initial collections of fauna have been made, and by new finds in caves already explored. Also, such corrections as were necessary in the original faunal list published in the last Bulletin are indicated in the list that follows:

PHYLUM ARTHROPODA

Class Crustacea Order Decapoda

A single individual found in the mud under a rock beside the stream flowing through Wood's (Landon's) Cave, near Rileyville, Page Co., Va., although apparently a surface form, seems of sufficient potential interest to include in this list.

Class Insecta

Order Diptera (Flies, mosquitoes, etc.)

- Fly**, *Antocha saxicola* O. S.
Needy's Cave, Waynesboro, Franklin Co., Pa.
- Fly**, *Limonia badia* (Walker)
Needy's Cave, Waynesboro, Franklin Co., Pa.—
1 specimen.
- Fly**, *Rhymosia triangularis* (Shaw)
Needy's Cave, Waynesboro, Franklin Co., Pa.—
3 specimens.
- Fly**, *Exechia umbratica* (Aldr.)
Needy's Cave, Waynesboro, Franklin Co., Pa.—
3 specimens.
- Fly**, *Leria defessa* O. S.
Needy's Cave, Waynesboro, Franklin Co., Pa.
- Mosquito**, *Culex restuans*
Needy's Cave, Waynesboro, Franklin Co., Pa.—
1 specimen.

PHYLUM CHORDATA

Class Amphibia Order Caudata (Salamanders)

Red-backed Salamander, *Plethodon cinereus* (Green)
Whitings Neck Cave, Scrable, Berkeley Co., W. Va.
This is the second time this species has been recorded from this cave. On the last occasion, however, the specimens were found under rocks and leaf mold around the sink-hole entrance to this cave. This second record is based on collections made Aug. 3, 1941, in that part of the cave which overlooks the Potomac River. Here the species was found definitely within the cave proper, being taken under a rock in the main

corridor as well as being seen in a niche in the wall. The specimen in the niche in the wall was noted because its head was jutting out of a sort of burrow made in the dirt which filled the niche. When an attempt was made to collect the specimen, it promptly drew itself back into this crevice which was too narrow to permit the capture of the specimen.

Wood's (Landon's) Cave, Rileyville, Page Co., Va.—a single specimen of this species was collected on the floor of this cave some distance from the opening of the cave.

Slimy Salamander, *Plethodon glutinosus* (Green).

Props Cave, Pendleton Co., W. Va.

Whitings Neck Cave, Scrable, Berkeley Co., W. Va.—this is a new record from this cave, the species not having been found here previously. Two adults were collected under a rock in the drier passage to the left of the muddy main passage in that part of this cave which overlooks the Potomac River.

Long-Tailed Salamander, *Eurycea 1. longicauda* (Green)

Whitings Neck Cave, Scrable, Berkeley Co., W. Va.—two adult specimens of this species, which is more or less associated with a cave habitat in many parts of its range, were collected in that portion of the cave overlooking the Potomac River where one was found in a crevice in the wall and one under loose rocks on the floor.

Wood's (Landon's) Cave, Rileyville, Page Co., Va.—two adult specimens were found during the initial exploration of this cave, one on a ledge above the running stream in the cave, and the other on the floor along the wall of the cave. The first individual jumped into the stream when attempts were made to capture it but it was collected on the bank on the other side of the stream on the return trip.

Order Salientia (Frogs)

Pickeral Frog, *Rana palustris* Le Conte

Whitings Neck Cave, Scrable, Berkeley Co., W. Va.—this was another amphibian common inside that part of the cave overlooking the Potomac River on the same day that the three species of salamander mentioned above were collected. This frog was to be found along the damp walls on the floor of the cave in side passages off the main corridor.

Wood's (Landon's) Cave, Rileyville, Page Co., Va.—this frog was very common in this cave from the mouth of the cave just past the "spring room" to a considerable distance inside the cave proper.

Wood Frog, *Rana s. sylvatica* (Le Conte)

Ball's Cave, Cobleskill, Shoharry Co., N.Y.—a single specimen collected 95 feet below the surface in a large lake about 250 feet away from any daylight.

Whitings Neck Cave, Scrable, Berkeley Co., W. Va.—this species was associated with *R. palustris* above in this cave, being found in similar situations, but being more common than the former species.

Class Mammalia Order Chiroptera (Bats)

Little Brown Bat, *Myotis 1. lucifugus*

Mike's Long Cave, Luray, Page Co., Va.—1 specimen.

Social Bat, *Myotis sodalis*

Trout's Cave, Franklin, Pendleton Co., W. Va.—3 specimens.

Georgian Bat, *Pipistrellus s. subflavus*

Trout's Cave, Franklin, Pendleton Co., W. Va.

Ogden's Cave, Middletown, Frederick Co., Va.

Mike Long's Cave, Luray, Page Co., Va.—2 specimens.

Big Brown Bat (House Bat), *Eptesicus fuscus*

Wood's (Landon's) Cave, Rileyville, Page Co., Va.—5 specimens collected in cracks in the wall just inside the mouth of the cave in the portion used as a "spring room" by the owners.

Evening Bat, *Nycticeius humearlis*

CORRECTION—This species was included in the initial faunal report through a mistake in identity. This error was detected by Mr. Charles E. Mohr, who pointed out that this species has not been recorded from caves.

Some Caves of Southern Illinois

By **LESLIE HUBRICHT**

The author's interest in caves is confined to the animals found therein. Consequently, no attempt has been made to make maps or to explore beyond that which was necessary to collect the fauna. The following data are published so that those who are interested in caves as caves may find and study them.

STEMMLER'S CAVE. 2 miles south of Bluffside, St. Clair County. A karst solution cave. The entrance is in a large sink-hole. A stream flows the length of the cave which can be traversed down stream for about a mile. This is the type locality for the blind snail *Ammicola aldrichi antroesetes* Hubricht. Six species of crustaceans and a cave milliped are also found here.

ICE CAVE. Camp Vandeventer, 5 miles west of Waterloo, Monroe County. A small karst solution cave. The entrance is at the base of the bluff along Fountain Creek. A small stream runs thru the cave, in which a snail, *Physa halei* Lea, and two species of crustaceans are found.

MORRISON'S CAVE. 2 miles south of Burksville, Monroe County. A karst solution cave, probably the largest in southern Illinois. The entrance is in a sink-hole in which a stairway has been built. During the World Fair at St. Louis in 1904, a track was laid on the floor of this cave and sight-seers were pushed about on cars. A stream flows thru the cave and can be followed in either direction for an unknown distance. This cave is the type locality for three species of crustaceans: *Asellus packardi* (Mackin & Hubricht), *Gammarus troglophilus* Hubr. & Mack., and *G. acherondytes* Hubr. & Mack. Three other crustaceans, two mollusks, a flatworm (an undescribed species), and a milliped are also found.

FULTS CAVE. Just north of Fults, Monroe County.

A small, simple solution cave. The entrance is high up on a bluff overlooking the Mississippi River flood-plain. A short distance within the entrance the cave forks. The right fork is a narrow passage winding downward an unknow distance. The left fork is larger but goes back only a short way. Near the end is a pit about twelve feet deep and eighty by ten feet across at the bottom and becoming much smaller at the top. Across the bottom of this pit runs a small stream which contains an undescribed species of crustacean of the genus *Apocranonyx*. A cave milliped is also found in this cave.

WET CAVE. Near Roaring Springs, 6 miles south of Anna, Union County. A small, karst solution cave. The entrance is in a small sink-hole on a hill side. A large stream runs thru the cave containing three species of crustaceans. There is a small cave nearby known as **DRY CAVE**. This was not visited.

CAVE HILL CAVE. 3 miles west of Horsehoe, Saline County. A simple solution cave. The entrance is a small hole about two-thirds the way up on the north side of Cave Hill. There is a stream in the back part of the cave which contains three species of crustaceans.

CAVE SPIDERS

By **ALLAN F. ARCHER**

Neither the cataloguing nor the describing of cave spiders is complete to date—that is, for the number of caves from which specimens have been taken. My personal knowledge of cave spiders is confined to eighty-six caves in Alabama and some four in Tennessee.

At present the taxonomy of cave spiders is being handled by Dr. W. M. Barrows of Columbus, Ohio, and Dr. W. J. Gertsch of the American Museum of Natural History. Their results will have to come out in print before anything approaching finality can be attained.

The purpose of the following paragraphs is to cover a few general facts about cave spiders. In Alabama, fifty-eight caves have been recorded as having cave spiders, but identifications have been completed so far on material from forty caves. Several caves in east Tennessee have been worked up, while the Virginia material is undoubtedly still going through the mill. The known caves have anything from one to six species recorded from them. More than half have two species or less.

An examination of the species composition of spider faunas in caves indicates that at least part of the species are strays. Wherever permanent streams occur, and at the same time form a capacious entrance beneath the ground water-loving spiders such as *Theridiosoma radiosum* (McCook) are apt to put in their appearance. Species accustomed to living deep under ledges also inhabit caves. Spiders that live under rocks entirely outside of caves may also occur within them. Certain species like *Theridion ambitum* Barrows are found in many cave systems, but are not always subterranean; *Meta menardi* (Latreille) is generally in caves, but may be found in other dark habitats, over a

very wide geographical area. *Phanetta subterranea* (Emerton) and *Microneta latidens* Emerton turn up very frequently, while *Calymnaria cavicola* (Banks) and *Clubiona pallens* Hentz are frequent.

The truly endemic species belong to the Nesticidae, mostly species of *Nesticus*. Besides *Nesticus pallidus*, there are species like *N. carteri* and *N. tennesseensis*, and some undescribed as yet.

In general, cave spiders inhabit webs. The larger species are orb-weavers, but these are rather in the minority; they are also exceptional in being dusky in color. The smaller species are quite pale, and their eyes, if present, are pearly. The smallest species known is *Anthrobia mammouthia* Tellkamp. It is eyeless, as are many species of *Nesticus*. The eyeless species are quite unknown outside of caverns, but some of those having eyes are by no means so confined. In bodily form, cave spiders have more or less globose abdomens and rather slender legs.

From: "Natural History," October 1941, Vol. XLVIII, No. 3 (Pub: American Museum of Natural History, 79th St. at Central Park West, New York City, N. Y. Editor: Edward M. Weyer, Jr. Ph.D.)

Special Trips . . .

Mt. Etna Cave

(Report as of July 13, 1941)

This cave is located about fifty yards to the east of the road running from Smithsburg and Cavetown to Boonsboro, Maryland, and about three miles north of Beaver Creek. The entrance is about two-thirds of the way up the side of hill or ridge that parallels the road at this point for a considerable distance. As the cave has been developed by its owner, Mr. C. C. Martin, Route 1, Hagerstown, Maryland, its location is marked both by signs and cement steps leading to a small house over the entrance. Apparently the development of this cave has not been successful, for it has not been open to the public for the past five years. In spite of the five years lack of use, the cave is in good condition. All light fixtures and stairs are in good shape.

The cave itself is developed along the strike of the rock and is the result apparently of an abandoned water course. The major part of the cave lies on a nearly straight line running from 40° to 220°. The cave maintains a comparatively uniform cross section throughout, i. e., about seven feet high and ten to fifteen feet wide. Throughout much of its length, the cave has become so choked with cave deposit that the effective width is reduced to from 2' to 5'. Nearly all the deposition has taken place along the west wall of the cave, the east wall in places being bare of formation. But the formations on the West wall are practically continuous throughout the cave.

The main entrance of the cave is at the north end and is a stairway of nineteen steps. Forty-eight feet

from the entrance a passage cuts back toward the northeast on the left; from hereon the cave is on a single level having practically no changes of elevation and, as before stated, runs in a nearly straight line to its end. The cave ends after about 300' in a rock fill where stone broken away during its development has been deposited. Mr. Martin stated that the cave at this point was so choked with formation that further development was impracticable. It is thought that it is extremely likely that the cave would be found to extend for an indefinite distance if one cared to back his way further through the formations at present choking the cave at this point.

The lead to the northeast before mentioned rises to what appears to be a higher level through a thirty foot passage with a floor sloping up at 25°. This level consists of a series of three well decorated rooms averaging 25' wide and 10' high running parallel to the main cave. The north room is the largest and has a door on the west wall which pierces the hill not 50' in back of the entrance house. At the north end of this north room, the cave apparently continues, but narrows down to one foot in width and becomes mud choked.

The other two rooms of this series have not been developed. The southernmost one is quite small with a four foot ceiling. It is apparently directly over the main cave passage. So much deposition has taken place in this room that it is now impossible to tell whether the cave extends farther as a second level, or whether the original stream at about this point dropped down to the level of the main cave through a passage now filled by deposits.

Several interesting types of deposits were noted. About one hundred feet from the south end of the cave, there is a group of stalactites possessing the peculiar red streak of the type previously discovered and reported in Baldwin's Cave (see May Bulletin, 1941). Several Bacon Rind formations possessing a delicate fluted edge of a type not heretofore reported were noted. In some entrances, the flutes extended well into the body of the formation. Also many stalactites of carrot shape and of the pencil-like variety are present.

Cave of the Winds

Manitou Springs, Colorado

This cave is located in the side of a canyon wall along a two-mile, one-way-drive from the town, and two miles from the foot of Pike's Peak.

Our party (Trone, Heins, Reichard, Morgan and Petrie) arrived early in the morning. Messrs. C. I. Snyder and E. R. Campbell of the management received us cordially and assigned an able guide, Bud Gardner, to conduct us on a free trip through the cave.

This cave is likewise quite extensive and filled with interesting formations, including a sarcophagus, miniature battleship, pillared rooms, branched stalagmites and ceiling helictites comparable with some at Skyline Caverns, Virginia. Its visitation was no anti-climax to the thrilling Pike's Peak trip of the day before.

J. S. PETRIE.

Virginia Illustrated

Containing A VISIT TO THE VIRGINIAN
CANAAN and THE ADVENTURES of
PORTE CRAYON and HIS COUSINS

Illustrated from drawings by Porte Crayon

New York

HARPER & BROTHERS, PHILADELPHIA
PEARL & FRANKLIN STREETS

1871

(The cavern described, incidentally, is near Lacey
Springs, Va., still occasionally visited.)

As they were grouped around the hostel fire that night, Crayon intimated to the ladies that he might be persuaded to relate an adventure which befell him in the neighborhood during his first visit to the bridge. As the proposition met with cordial approbation, he commenced as follows:

"In the fall of 1834 I made a pedestrian tour—to which you have sometimes heard me allude—in company with my friend, Jack Rawlins. Our route was nearly the same which we have followed, and on our arrival here we were entertained in the room which we now occupy. Remember every thing as if it had been but yesterday. The house was temporarily in charge of a couple of youths not much older than their guests, and who, for the sake of convenience, I shall call Bob and Tom Johnson, although, in truth, I do not recollect their real names. But you must bear in mind that the names are the only fictions made use of in the narrative. While we were studying the bridge, I heard, with emulous breast, of the feats of General Washington, Miss (——), and the nameless man who climbed the cliff, and was burning to write my name somewhere, either in the Temple of Fame or the Booth of Folly, it mattered little, for at that age I ranked the heroine of the stump and the successful cliff-climber with the founder of the universities and the leader of armies.

"One night the leader of our entertainers happened to speak of a wonderful cavern that was in the neighborhood. He described it as a great opening like a well, near the top of a hill several miles distant. It had never been explored, nor even fathomed, and was an object of mingled curiosity and terror to all who knew of it, and many were the stories and traditions connected with its fame. It was said that, during the Revolutionary war, chests of money had been thrown into it to secure them from Tarleton's thieving dragoons, and the owners, having been slain in battle, had, of course, never returned to claim the treasures. Men and cattle that disappeared from the country were all accredited to this mysterious hole, and murders were suspected of throwing the bodies of their victims therein for better concealment, although Bob frankly acknowledged that since his day there had been no one murdered thereabout that he knew of.

"He went on to say that on many a Sunday he had

amused himself, with some of the bolder spirits of the neighborhood, in throwing rocks and logs into its yawning mouth, and listening with awe to the hollow crash and booming reverberations that followed. 'No one has ever dared to descend,' said he; 'and, indeed, I should be sorry to see any one undertake it.' My feelings during this narrative resembled those of St. George when he found the dragon's nest. Here was a dragon indeed worthy of my daring. 'Bah!' said I, affecting carelessness—for I was bursting with anxiety lest some one might go down into the hole before I could get to it in the morning—'Pshaw!' I will descend and explore this wonderful place, if you will only point it out to me to-morrow morning.' The young man looked at me with an expression of mingled terror and incredulity. Jack Rawlins began to protest, when Tom laughingly remarked that he need not be uneasy; he'd warrant that I'd go not farther than the mouth. 'There, you've settled the matter,' cried Jack in despair; 'he'd go now, if it was the mouth of the bottomless pit.'

"Bob took an early opportunity to call me aside, and with a countenance playing between eagerness and doubt, asked if I seriously intended to do what I had said. I assured him of my determination. 'Well, stranger, if perhaps you should find those chests of money . . .'" Here he paused warily. 'Oh, we'll divide, of course,' said I, 'we four.' Certainly, he replied, with delight; 'that's no more than fair. We will show you the way and assist in letting you down; but we must keep dark about it, for the place belongs to a stingy old fellow, who would go crazy if he heard of our enterprise, and would claim every thing we might happen to find.' Although I set but little store upon the imagined treasures, I was ready enough to amuse myself with the golden hopes of my host or to bedevil any stingy old fellow at a venture, and it was arranged in full council that we should start after an early breakfast next morning.

"Whether I slept well or ill, or what was the character of my dreams that night, I do not remember: but I do recollect that in the cool of the morning, during the secret preparation of ropes and lights, some awkward misgivings began to sneak into the castle of my determination. But I was fully committed, and my native pride, assisted by the stimulus of a rapid walk of several miles, brought me to the scene of action in such high condition that I surveyed the black mouth of the awful pit without a tremor.

"'Young man,' said Bob Johnson, significantly, 'I reckon you'll not venture?'" I stiffened up, and to this implied doubt made scornful answer, 'Do you think, sir, that I would walk all this distance, with a pack of ropes and candles, merely to look down into a hole in the ground? Get your ropes ready.'

"The bed-cords were unrolled, and a short stout stick, like a well-digger's hourse, tied to the end of one of them. A couple of sound fence-rails were then procured and cautiously laid across the center of the opening, which was eight or ten feet in diameter. In the meantime I had taken off my coat, tied a handkerchief about my waist, when Jack Rawlins suggested that al-

though we had taken the precaution to measure the depth of the cavern, we had forgotten to try whether it contained bad air. This suggestion was immediately acted upon. The lantern with a lighted candle was attached to the end of a cord and lowered until it touched the bottom, from whence it was drawn up after a few minutes, still burning. The experiment was reckoned satisfactory. Jack Rawlins shook hands with me and said, 'Well, Porte, I've done my best to prevent you going on this fool's errand; all I can do now is wish you good luck! I was getting impatient, and chid my lagging assistants, who seemed loth to begin; but at length everything was arranged. I bestrode the stick and gave the coil of rope to the two Johnsons; another rope I knotted around my waist, put it in charge of Rawlins, and then, with lantern in hand, slid into the opening. Steadying myself with one hand on the rock and the other on the rail, I swung off, crying, "Now keep cool, boys, and lower away!"

"Down I went steadily enough for a time, gripping the cords with one hand, the lantern with the other, and pushing myself clear of the black, slimy rocks with my feet and elbows. For the first thirty or forty feet the opening was walled around like a well, but presently I swung clear of everything; the cords, which were new, began to untwist, and I whizzed around like a teetotum.

"Lower away, boys!" I shouted, for I had become so dizzy that I could neither see nor hear. After a time I stopped with a bump. "The rope's run out!" cried a voice so high and faint that it sounded like the note of a wild goose. 'All's well! I have arrived safe.'

"As I recovered from my dizziness, I disengaged myself from the ropes and looked about me. I was seated upon the apex of a pyramid of mossy rocks and decayed logs, which rose in the center of a black cavern of unknown dimensions. I seemed to be walled around with thick darkness, and the opening through which I had descended shone above me like a moon in an inky firmament. Taking the candle, I descended from my resting place and proceeded to explore my newly discovered empire. The feeble rays of my tallow dip revealed nothing more than an irregular floor of moist clay and walls of limestone rock, covered here and there with a few dull, dirty incrustations. After groping about two thirds of the way around this circular hall, I found an arched opening about the size of an ordinary doorway. Into this passage I penetrated with difficulty for twenty or thirty yards, when my heels flew from under, and I slid, I can not tell how far, down into what seemed, by the sense of touch, to be a bed of soft mud. It is needless to say I lost my candle in the fall, and was left in utter darkness. Here was a predicament for a hero. Above, below, on every side, I felt nothing but slimy mud. I feared to move, lest I sink into some deeper quagmire.

"I was not so much alarmed at first, but, as my body began to chill, my heart sunk with the temperature of my blood. I began to calculate the chances of escape. 'If I am not forthcoming in due time, will Jack

Rawlins come to my assistance? Will any one come? Portentous question. Is not this cavern the bugbear of the country, and will my disappearance serve to allay that terror? Oh, powers of mud, the heroic spirit was subdued within me—no! not all subdued; the idea occurred to me that possibly a cry for help might reach the ears of my companions and hasten my relief. But pride forbade; I resolved to die first.

"Anon, I began to fancy that I could see the walls of my prison and the passage through which I had fallen, and soon that doubt brightened into reality. My eyes, becoming accustomed to the darkness, had begun to take in the feeble light that was reflected from the main cavern. Cautiously I crawled up the slippery ascent, and in a few minutes re-entered the hall, which appeared so light that I could see over its whole extent without the aid of a candle. I scraped myself as well as I could, and then looked about for the chests of gold and dead men's bones. My search was unsuccessful, and I concluded they must be concealed under the pyramid of rubbish which had been thrown down the opening, and for aught I know they may be there to this day. I took no very accurate observation as to the size of the cavern, but guessed it was about one hundred feet in diameter the same as its depth, which we ascertained by measuring the ropes.

"I called to my friends above that I wished to ascend, and received the prompt reply that all was ready. Mounting my wooden horse, I carelessly drew the other cord around my body without even tying it, and ordered them to hoist away. No sooner was I clear of the bottom than the spinning motion recommenced, and I continued with such rapidity that I presently lost all cognizance of things around me. A sharp bump on the head advised me of my arrival at the ledge, and I eagerly grasped at the rock, but the projection shelled off and crashed into the gulf below. 'Pull, boys, pull!' I was drawn up several feet; then there was a pause, and I was lowered again out of reach of the rock, and the dangerous whirling was renewed. Dizzy as I was, I divined the cause of the difficulty. My friends were working at the two ropes on opposite sides of the pit, and the new cords had become twisted together until they could no longer separate them, and I consequently remained dangling in the air. Nor was this all. In their fright and confusion, the Johnsons threw their rope, and seemed ready to take to their heels. Rawlins, however, planted himself again a rock, and with straining sinews held on until he perceived the stone against which he was propped slowly moving from its position. It lay upon the declivity near the mouth of the cave, and if it had rolled must inevitably have gone down the opening. Just at that moment they heard my order to put the ropes together and all pull on the same side. Such was their presence of mind that this simple idea had not occurred to them before. The Johnsons seized the cord, ran to the other side, and the trio pulled with renewed vigor. With such energy was I now dragged up, that my knees, elbows and shoulders were bruised and lacerated by the sharp rocks, and when I was within twenty

feet of the top the stick upon which I rode slipped from under me, and I held on by my hands alone. Upon that grip hung life or death. I knew it. The blood started from my finger ends, but my nerves were firm. Presently I found myself landed in the upper regions, and, before I relaxed my grasp, or my half-phrensied considered me safe, I was dragged a hundred feet from the mouth of the cavern. For several minutes all were silent, and sat pale and exhausted, panting like overdone hounds. The first greeting I received was from Bob Johnson. 'You blasted fool,' cried he, 'I've a mind to club you within an inch of your life. I never was so scared! Tom swore he would not pull another man up from that hole for all the gold in Rockbridge.

"As for me, I sat for sometime in a state of profound physical and mental apathy, the usual result of excitement and violent exertion. When at length I rose to start homeward, I found that I moved with difficulty, and could not put on my coat without assistance. Although I managed to walk back to the hotel, it was several days before I could use my hands as usual. At supper I was ravenous, and the desperate efforts I made to handle my knife and fork were ludicrous enough.

"And thus ends the story of that perilous adventure."

Morrison Cave, Montana

This cave, developed privately by a prospector for whom it is named, has the peculiar if not unique distinction of being first a National Monument (Lewis and Clark) which later became Montana's only State Park. It is located about fifty miles northeast of Butte, just off Route 10-S, midway between Three Forks and Whitehall. A C.C.C.-built gravel road 3.2 miles long winds 1000' up through a canyon to the office and parking area situated almost exactly one mile above sea level.

A half-mile trail leads up about 300 feet to the entrance of the cave. A continuous trip, except for one side trip, over 2200 feet of trails and 600 of stairs, requires about one and one half hours and exists through an artificial tunnel 530 feet long cut in the solid rock, to a level trail of approximately the same half mile distance back to the office.

This beautiful Sunday morning, we five (Trone, Heins, Reichard, Morgan and Petrie) overtook Chief Guide Bruno Petsch half way up the trail preparatory to a regular tour. It happened that he had not known of the existence of the Society, although he had made an extensive collection of cave brochures. His eager acceptance of the proffered May 1, 1941 Bulletin and "I want to join today" ejaculated almost instantaneously after learning there was a national group interested in things evidently of profound interest to him, was indeed a heart warming experience.

The unspoiled naturalness of this extensive cave on three levels was most attractive to us five Easterners. To find the beaten path not too stereotyped in course, and the comprehensive yet informal explanation given by our geology graduate guide were somewhat of refreshing novelty to us.

This Montana limestone cave is packed full of inter-

esting features. The most impressive display of all and one ranking with anything seen before or since in any cave is the Empire State Column in its setting among lesser formations in an enormous room.

Mr. Petsch is enthusiastic and happy in his work and justly proud of this beautiful cave. In the opinion of the writer, the Nation's third largest state can likewise justly be proud of its single park and its custodian.

Romance of Hermit's Cave

(Topeka Capital, August 24, 1924)

There is another relic about Council Grove of a different type. It also has a romance woven about it. Early in the sixties a priest made his way to Council Grove. He was afraid. He was fearful because he had sinned against his pledges and vows as a monk in the "Grotto of Nymphs" on the Island of Capri. He became sought by Jesuits, who wanted his life in atonement. He became known as "Father Francesco," and while he was young in years he was an eloquent speaker.

He came to Council Grove and took refuge in a cave that has since become known as "Hermit's Cave", and he soon was known the length of the land as the "Hermit Priest of the Santa Fe Trail." He had few belongings, chief among them being an old mandolin on which he was accustomed to play on moonlight nights. He also had a few well-bound books, which he read almost constantly and between whose covers no other person was ever privileged to look. The Indians could not understand his ways and were afraid of him. There were few languages of which he was not master.

One day a stranger came to Council Grove. The hermit priest recognized him as a Jesuit missionary and fled. He was not seen again by Council Grove people. About a year later a hermit priest was found dead in a cave in Mexican mountains. A rude wooden cross stood before the cave and the words "Jesus Maria" and "Capri" were scratched on the walls of the cave at Council Grove and lead to the belief that the man found dead was none other than the hermit priest of the Santa Fe Trail.

For many years after the flight of the priest the cave was looked upon with much interest. It still has a curious attraction, but of late years much of it has been destroyed by the weather, and it is probable that in a very few years the hermit's cave will be no more than a memory.

Cave-Pool

Banff, Alberta, Canada

This cave is of interest not because of size or formations, but on account of its association with splendid outdoor warm springs bathing pools on the outskirts of this resort town nestling in its Rocky Mountain setting of indescribable beauty.

One enters the cave and ascends a series of steps and terraces for a distance of about 100 feet, where the path divides and encircles a lake about thirty feet in diameter. Then one takes a delightful swim in the warm water pool adjacent to the entrance!

"Hole in the Wall"

A Cave near Salina, Kansas.

(From an article in the Saline County Journal, September 6, 1877. In Saline County clippings, v. 1. p. 17-20)

Less than 30 miles from Salina, over quite a large extent of territory, nature has piled up everlasting hills with rugged and rocky sides. In these hills west of Brookville is a cave known as "Palmer's Cave", or "Hole in the Wall."

The hills make an avenue leading to the cave. Great, huge cliffs rise on each side of a narrow vale, and the face thereof—scarred and battle-worn by time and elements—covered with moss and everlasting shedding tears into the depths below, sends out shrubs and stunted brush to catch the sunlight, and mingle their foliage with the forest trees, towering from the vale below. And right near one of these, in fact, in the very center of a similar cliff, is presented the cave before referred to. The exact situation of the cave is in Section 29, township 14, Range 4 west. The land itself is owned by Col. S. M. Palmer, of this city. The path up the hillside to the cave is comparatively an easy one to travel. It is only a few steps before you are ushered through the door into this "rocky house." The cave in shape is like an arc. It has two entrances—some twenty feet apart. It is perhaps ten or twelve feet high and six feet wide. It was for a long time the home of an old trapper, whose name has escaped us.

By adding a little mortar and stone, and putting in door frames, Col. Palmer has made of it a very passable habitation. It is a cool resort in summer and a warm one in winter. How long it has been known it is not possible to tell. Every inch of its sides, ceiling and passageways is covered with what the visitors call "hieroglyphics"—the picture writing of some tribe or tribes of Indians. A man can spend hours in tracing out these characters in stone, which are so intermingled as, at first sight, to resemble somewhat the Harper's Bazaar pattern sheet. In one of the "galleries," near the spring, is cut a life-size picture of some chief, no doubt, who won renown and immortality in his tribe. We can easily trace representations of men, arrow heads, horses and other animals. There are some characters which are "above the reach and ken of mortal (white) apprehension." It needs some better antiquary than is found "around these diggin's" to interpret all these "signs and wonders." Peradventure, they may be the mournful history of some great battle fought thereabout. They may take upon themselves the dignity of a book of history, and tell of the glorious achievements of the past and of the humbled position at present of one of the Indian tribes now roaming the plains. The cave may have been a "summer resort", where the aristocratic bucks and squaws of "all nations" assembled to pass the hours pleasantly away; and before the season was passed registered their names in "characters of living light," to tell future generations that they could afford such luxuries. We might mention that it was possibly here all the high-toned warriors passed pleasant honey-

moons, after having wooed and won their husky mates.

Near one entrance to the cave a spring bubbles up, and its waters flow over the bank, murmuring sweetly on their way to Mulberry creek.

Cave of the Mounds, Blue Mounds

Wisconsin

This cave, just off Route 18, west of Madison, was discovered in August, 1939 during quarrying operations, and has no natural entrance.

Our party of five (Phyllis Trone, Sandy Spring Nurse, Paul Heins and Donald Reichard of Public Roads, and Robert Morgan and John Petrie of Patent Office) arrived Sunday afternoon (Aug. 3, 1941) and found Mgr. Pond swamped with visitors—3400 that day he said. Our three members were given a pass and a special guide assigned to our party.

The cave in Galena Limestone is not extensive and has no outstanding formations, a pyramid of elephants and a fried egg being among the not-too-close resemblances noticed. A five foot fossil fragment of what was once perhaps a 20-30 foot Cephalopod embedded in the roof, and black and white ribbon stalactites around a roof entrance hole were among the most outstanding features noted.

The cave extends in both directions from the entrances and has several blind leads. The passageways are narrow and make progress very slow in the heavy traffic experienced. We understand work is in progress toward relieving the congestion.

J. S. PETRIE.

Clark's Wonderful Caverns

(Copy of ancient document on Clark's Cavern furnished by Mr. W. G. Clark, McClung, Va.)

Away back nearly 200 years ago perhaps in the seventeens, an old Indian by the name of Tommy Goens was bear hunting on what is known as Tower Hill Mountain. He shot and crippled a large black bear. The bear in a rage took an eastward course leaving Goens behind. There being snow on the ground the wounded bear could be easily tracked as now and then an occasional blood stain could be seen on the snow. The pursuit was continued for several miles, over hills, thru fields, and to the Cowpasture River. The bear travelled, and crossing the river, found refuge in what is now known as Clark's Wonderful Caverns. At this time, it was almost dark and Goens could not see to follow the bear any further.

Several years passed, and one day this man, who had perhaps forgotten about his exciting hunt which took place a great many years previous, decided to go in the cave and look around, and to his surprise, the bones of the bear were still intact.

No more that we know of were these Caverns visited until the war between the states, 1861 to 1865, when they were searched for Salt Peter. This was dug up and carried out by men in bags on their shoulders. It was put thru a process by boiling in large kettles for

several hours, and then let stand until cold when the crude stuff could be readily skimmed off the top. This was sent to Richmond, Virginia, where a certain percent went to the manufacture of gun-powder.

At times, some 200 men worked in the cave. They are ridiculed by some folks now as being slackers, but they saw a pretty hard life, sometimes very hungry, as food was scarce. Sometimes the soldiers would take their dogs with them to work. At times the dogs would get lost and wander about thru the Caverns until instincts would give them the idea to retrace their steps and they would track themselves out. At one time one dog failed to come back and a week later came out at what is known as Blowing Cave near Windy Cove Church several miles distant. The dog was almost overcome with fatigue and almost starved to death. He could hardly walk.

After the war was over no further investigation was made until recent years. They have been explored for quite a distance and there are some wonderful formations found there. And more to be found in the future. God has fixed some wonderful shapes of stone back in these Caverns for man to look up and show to the world his wonders. We believe God intends for man to see his wonderous workings.

Trip to Silers Cave

On Sunday, February 2nd, 1941, Silers Cave was visited by a party composed of Jack Wilson, John Meenehan and Al Lewis of the Speleological Society and Ruth Nordstrom of Washington, D. C. The cave was entered at about 11:30 a. m. Party carried a copy of the Society's map of this cave and made smoke marks on the walls of the cave to correspond with letters indicating positions on the map. The Society's symbol of an arc over each letter will identify it as corresponding to the letters on the map. These letters are B, C, D, E, F, G, H, R, & a. Positions indicated by other letters on the map were not visited.

At point Q on the map an a is indicated. This is really a cleft and was entered by Wilson, Meenehan and Nordstrom. We followed it into what appeared to be the bottom of several deep wells and stopped at a point where there was some question of squeezing through although the cave continues beyond. Meenehan climbed up one of these wells and found same to be dangerous because of loose and balanced material. We returned to Q and were joined by Al Lewis who had been collecting bats and had about 14 of them in a bag.

All members of the party proceeded to a point that is probably the same as passage P-N on the map. Midway along this passage there is a pit on each side, the one on the left being a little steeper and with a dangerous looking rock embedded in the mud at its top. This rock proved to be firm and both pits were explored. The one on the left was entered by Meenehan and Wilson and several leads and side branches run down to their ends.

All members of the party entered the pit on the

right, which also has several false leads. However, one lead opens up on a wide cleft about ten or twelve feet deep and too wide for use to work our way down comfortably. This pit was not entered because the approach to it is over a large flat rock which appears to be supported on top of and to be an extension of a thin mud bridge. By crawling out to the edge you can look over and back under the rock you are lying on and the inability to find anything but mud supporting it gives one a feeling of insecurity.

In my opinion, a good cave partly would be able to proceed beyond this point and into the cleft in question. Left the cave about 7:30 p. m. It was dark and snowing outside. Also cold. Ate in Martinsburg at the "Princess." Meenehan took a number of Kodachrome Color projections, in the cave.

J. J. WILSON.

Further Notes on Silers Cave

This cave was reported in the June Bulletin of the Speleological Society of the District of Columbia by Dr. Robert Coats. Since June, a number of trips have been made to this cave, and much additional data has been collected. One trip was entirely devoted to a careful checking of the map prepared by Dr. Coats. This checking was conducted as a matter of mere routine since it is hoped eventually that every map prepared by the Society will be at some time carefully checked and additions and corrections noted for further revision.

The checking of the map of this cave was of special interest due to the unusual intricacy of the cave and due to the fact that it had been made by spot drawing by a plain, able method as against all of our other maps which have been prepared from notes. The outstanding results of this checking is the amazing accuracy of the map. The members of the party on the checking trip are all unanimous in their praise for the fine work done by Dr. Robert Coats who made the map under the extremely difficult conditions encountered in this cave.

The trip through the cave showed all surveyed passages as marked on the map to be correctly shown. All unsurveyed passages were found to be shown with sufficient accuracy to warrant their being marked in full line as are those actually surveyed with the exception of the passage "V" which was not found. No additions to the map were found in the portion of the cave south of Passages "S", "C", "D", "E", "F". The area bounded by Passages S-Z, C, D, H, I-J, has a small maze of passages which still need to be surveyed and added to the map. Other unmapped passages exist in the areas J-I-Q, P-M-K. Another small system of passages lies to the north of L-M-N, but all end in fallen and broken rock which is extremely dangerous. It is believed that the part of the cave north of L-M-N probably approaches the north limits of the cave hill and that such passages have collapsed for that reason. In view of the dangerous character of this part of the cave, it is recommended that mapping of this cave be

be present in the same number in summer and winter. They are most numerous in the northern-eastern parts of the cave, but can not be described as present in any great numbers in any locality. A peculiar root-like formation has been observed in passage W and Room (4); samples of these have been collected but not yet identified. Where these were collected, they were most numerous near small cracks in the ceiling. The rocks at these points are estimated to be 15 to 20 feet thick. An accurate check of this thickness should be made later should they turn out to be tree root so as to give some further light on the ability of tree roots to penetrate the crevices of rocks. carried, for the present, no farther north than passage L-M-O.

A new pit was found at the west end of room (2) about five feet in diameter and dropping down twenty feet below the floor level to a mud fill. Several pits in the neighborhood of P and N lead down to a lower level about fifteen feet below the main floor level in that part of the cave. This lower level is generally blocked within fifty feet of the bottom of each pit. An exception is the pit at the northeast corner of intersection " " which leads to a passage that extends well over 100 feet and which has a chimney five feet in diameter and over thirty-five feet in height apparently leading into a part of the upper level between and to the east of Q and P which is cut off from the rest of the cave. The main floor of the cave north of A-B lies at a level nearly eight feet below the parts to the southmost of the passage north of A-B averaged a good twenty feet in height, but in many places they divide into upper and lower levels with passages two or three feet in height and ten to twelve feet apart; this was especially true of the connecting passages running north and south where in many instances only a small upper level passage, requiring a crawl, now exists, the lower level being apparently filled by accumulations of mud.

Very few formations exist in this cave. The best from point of beauty surround the lake at (1). One other large column partially blocked the passage near -Z-. Some other very delicate feathery small helictite-like deposits are found on the walls of passage -X-.

The entrance of this cave is a twenty foot vertical pit near the top of a small hill, which hill drops off gradually in all directions. Point C is very nearly under the top point of the hill. The cave system apparently extends under the whole hill and has been limited by approach to the surface thru the sides of the hill. A hasty survey appears to indicate that only in an eastern direction from F to D and in a westerly direction from U to J is it possible for the cave to extend much farther without breaking through the surface of the ground. Any further exploration should therefore pay particular attention to this area. That most of the passages of the cave probably end near ground level is borne out by the finding of a rabbit skull at the end of the south passage at X at the bottom of the mud fill blocking the cave. This skull must

have been washed down with the mud that now blocks this passage.

Little Fauna has been observed or collected. The usual cave crickets occur in large numbers near the mouth and reach considerable size. These have been found as far in as passage -N-. The only bat found so far are the *Hipostrellos*, *Subflavus*, and these seem to

Ogden's (Grandpappy's) Cave

(May 25, 1941)

Party consisted of McKee, McCauley, Eno and Lavelle who arrived at the cave on Saturday afternoon and John and William Petrie, Frank and Hallie Fisher, Don Reichard, Robert Morgan, Coral Rose, Wilson, Meenahan and Dr. Morrison who came down on Sunday.

The first party went into the cave upon arrival. The water had been siphoned off and progress was comparatively easy through the sections which had been mapped. The main purpose of this group was to set up camp, take a look at the cave and be on hand to guide the main party the next day.

On Sunday, before entering the cave, an attempt was made to organize a mapping squad. No support whatever was received so the matter was dropped. Tony Eno led the party back through the cave while McCauley and Lavelle directed the stragglers and concentrated on the sections between the entrance and the siphon.

A small spring was noted just above floor level along the right hand edge from the entrance and about fifteen feet from the stream bed. It is believed this spring may be of interest to Dr. Morrison and others.

In the meantime, the rest of the party had progressed beyond the area previously mapped and McKee feminine contingent managed to get themselves mud-promised to make the proper changes on the maps. The drier than anyone else.

INDIAN WRITING

Mr. Wm. J. Stephenson:

One of the reasons for this letter is to tell you that . . . I have recently discovered what we feel absolutely certain is "Indian writing" in Wyandotte. I won't take the space to tell you all about it now, but we first got on the trail of it through a letter written in 1818. It is high on the wall of the first large passageway in Wyandotte, which you probably remember. I am taking some pictures of it soon and will be glad to send you copies.

One of the guides at Wyandotte has also found the name of William Henry Harrison back in the Old Cave Route. He was supposed to have visited the cave in 1806, and although plenty of people have looked long and searchingly for his name in the cave, no one has ever found it until now. Will see that you get a picture of it also.

GEORGE F. JACKSON.

Log of the Society

Reports of New Caves Visited Since May, 1941

The following caves have either been reported for the first time or are previously reported caves for which additional reports have been filed.

These reports are in summary only—more complete reports on many of the caves are in the Society's files and are either printed in detail elsewhere in this bulletin or will be made available upon request.

Repeat trips to caves where no additional information of interest was found are not herein mentioned.

Georgia

1. Ladds Lime Cave—Near Atlanta—Reported in detail in this bulletin.

Illinois

1. Cave Hill Cave—Saline County. Reported by Hubricht.
2. Fults Cave—Monroe County. Reported by Hubricht.
3. Ice Cave—Camp Vendeventer—Monroe County. Reported by Hubricht.
4. Morrison's Cave—Burksville, Monroe County. Reported by Hubricht.
5. Stemmlers Cave—Bluffside, St. Clair County. Reported by Hubricht.
6. Wet Cave—six miles south of Anna, Union County. Reported by Hubricht.

Indiana

1. Wyandotte (Comm.)—Visited by party of Society, September, 1941. Fauna collected. Pictures taken.
2. Marengo (Comm.)—Visited by party from the Society, September, 1941. Fauna collected.

Kentucky

1. Floyd Collins Crystal Cave (Comm.), Barren County. Visited by party from the Society, September, 1941. Fauna collected, pictures taken.
2. Great Salts Cave (undeveloped), Barren County. Visited by party of the Society, September, 1941. No fauna. Pair of Indian Moccasins found by Joe Griffiths. Photo.
3. Hidden River Cave (Comm.), Hardy County. — Visited by party from the Society, September, 1941. Fauna collected. Photos.
4. Lost River Cave (Comm.) Visited by party from the Society September, 1941. Photos. Main commercial development—a park and dance hall in the entrance, rest of the cave closed; no fauna collected.
5. Mammoth Cave (Comm.), Barren County. Visited by party of Society September, 1941. Fauna collected. Photos.

6. Mammoth Onyx Cave (Comm.), Hardy County. — Visited by party of the Society September, 1941. Photos.—Fauna.

Maryland

1. Cave Town Cave, at Cavetown. Visited May, 1941. No fauna; no map. Report filed.
2. John Friend Salt Peter Cave. Oakland-Garrett County. Visited October, 1941. Mapped. Fauna collected. Cave has small running stream. Reported in full. *WJS. FR + J*
3. Mt. Etna Cave.—Ex-commercial. — Smithtown.— Visited by large group July, 1941. Mapped; fauna collected; good formations.

New York

1. Balls Cave. Visited by party of Society, June, 1941. Reported by Clay Perry. Fauna collected.
2. Howe Caverns (Comm.) Visited by party of Society, June, 1941. No map. No fauna collected.

North Carolina

1. Linville Caverns (Comm.) Visited August, 1940. Reported by Dr. A. C. Hawkins in this issue.

Pennsylvania

1. Chicken Cave. Shippensburg, Cumberland County. Reported by Donald Black. Some fauna collected.
2. Huber Coy Cave. Shippensburg, Cumberland Co. Reported by Donald Black. Some fauna collected.
3. Lisburn Cave. Lisburn, York County. Reported and mapped by Donald Black. Some fauna observed.

Tennessee

1. Nickajack Cave, Shellwood. Cave of large proportions lies under Tennessee, Alabama, and Georgia; has a large stream and large formations; as yet not thoroughly explored. In process of development. Visited by party of Society, September, 1941. Photos taken, but no samples of fauna obtained. Room in this cave for lots of work of all types.
2. Ruby Falls Caves (Comm.) Part of Lookout Mountain Caves, Chattanooga, Tenn. Visited by party from Society in company with Mr. Lambert, the discoverer and developer. No fauna. Studied.
3. Wonder Cave (Comm.) Monteagle. A well decorated beautiful commercial cave. Visited by party from the Society, Sept., 1941. Some fauna collected.

Virginia

1. Blowing Cave, Bath County. Further exploration in mapping conducted from June to September. Stream and lake found. Line of levels partially new to point below level of Cow Pasture River. Further reports furnished. No fauna record. Very muddy. *WJS. FR + J*
2. Bowl's Cave. Millwood, Frederick County. Visited

LOG OF THE SOCIETY

- May, 1941 and reported by T. T. Perry. Cave blocked by rock choke a short distance in. No fauna reports.
3. Devil's Den.—Carroll County. Visited and reported by Dr. Henderson, August, 1941.
 4. The Glades Foxholes.—Grayson County. Visited and reported by Dr. Henderson, August, 1941.
 5. Good's Cave.—Summit Point, Frederick County. Visited June 1941, but not explored.
 6. Rich Patch—near Lowmor, Allegheny County. Visited, mapped, and fauna collected, Sept. 1941.
 7. Springhill—alias Geology Cave. Lexington, Rockbridge County. Further work done Sept., 1941. Dye placed in stream suspected of flowing through the cave, but not seen in stream in cave. Dr. Stowe of Washington and Lee University promises to do more work on this cave. Accurate maps should be made as soon as possible. Some fauna collected and photos taken.
 8. White's Cave.—Summit Point, Frederick County. Visited July, 1941. Cave reported to be large, now fallen in. Many sinks present nearby. Too dangerous for digging. No fauna.
 9. Wood's Cave.—Rileyville, Page County. Visited and fauna collected, Sept., 1941. Sketch map made. Cave contains active stream and good collection of fauna.
- Vermont**
1. Skinner's Hollow Cave.—Manchester. Visited by New England Grotto. Reported by Clay Perry.
- West Virginia**
1. Blue Hole Caves.—Franklin, Pendleton County. Several small caves visited. A large cave reported to be here not found. No fauna records.
 2. Trout Rock Cave.—Franklin, Pendleton County.—Further exploration by Fishburn, September, 1941. Produced 300 more feet of passages; these yet to be mapped and report still to be furnished.
 3. Dyer's Cave.—Wardensville, Hardy County. Several trips to this cave. Some fauna reports. Mapped. Full report by Eno.
 4. Fifth Quarry Cave.—Morgantown, Berkeley Co.—Visited and mapped. No fauna observed. Some decoration. A small cave.
 5. Hell Hole.—Pendleton County. A new visit to this cave, July, 1941, reported by Petrie. Pictures taken, but no fauna records. Some further mapping done.
 6. Hermit's Cave.—Osceola, Randolph County. Visited and mapped by Jack Butler from New England in August, 1941. Full report not yet in.
 7. Indian Cave.—Near Chester. Visited by Steubenville Grotto, Sept., 1941. Complete reports not yet in.
 8. Jones Quarry Cave. — Falling Waters, Berkeley County. A small interesting cave. Good decorations. Some dangerous places. Some fauna collected. Mapped, Sept., 1941.
 9. Key Hole (alias Chalk Cave) — near Whitman. Visited by Steubenville group, Sept., 1941. Not yet properly reported.
 10. Mystic Cave (alias Luke Rains and Timberidge), Teterton, Pendleton County. Three or four visits by Steubenville and Pittsburgh Grottoes. Not yet thoroughly explored. Pictures taken. Streams and lakes in the cave. Good fauna population, but not yet properly studied. Good formations and photo opportunities. Not yet mapped or properly reported.
 11. Nessler Cave.—Falling Waters, Berkeley County. Investigated by Frank Silver and party, Sept., 1941.
 12. Peacock Cave.—Smoke Hole, Grant County. Visited and explored further by Petrie's party, July, 1941. Additional report in files.
 13. Schoolhouse Cave.—Key, Pendleton County. For reports of further work see article by Wilson in this issue.
 14. Sharp's Cave.—Slaty Forks, Pocahontas County.—Visited and partially explored Aug., 1941. Some fauna collected. Reputed to have a flowing stream but not found on first trip.
 15. Shepherdstown Caves (alias Sheepshead Cave). — Shepherdstown, Berkeley County. Small holes in cliff near Potomac River. Not mapped. No record of fauna.
 16. Snedegars Cave.—Hilltown, Pocahontas County. Revisited and more notes taken and reported, Aug., 1941.
 17. Stevenson Cave (alias Hundred Holes).—Martinsburg, Berkeley County. Visited but not thoroughly explored. Many small caves in this area. Mainly sink holes. Several reported large caves in this area not found. No fauna. The entire system of caves and sinks need detailed mapping.
 18. Stephens' Hole.—Marlington, Pocahontas County. A spring issues from side of hill and also a blast of cold air. No entrance could be effected without digging.
 19. Warner's Boudou Cave.—Keys, Pendleton County. A small well-decorated cave probably part of Hell Hole-Schoolhouse system. Visited July, 1941. Picture taken. No fauna collected. Full report lacking.
 20. Cow Hole Well.—Keys, Pendleton County. A 150 foot well with bottom clogged by rock falls. Visited and explored by Meenehan, July, 1941. No pictures or fauna reports. Complete reports not finished.
- It is expected that by the time the next issue of the Bulletin is ready all caves will also be located by latitude and longitude.

Commercial Caves . . .

PROGRESS ON SYNOPSIS OF COMMERCIAL CAVES

By J. S. PETRIE

In June, 1941, a letter was addressed to the Geological Survey of practically each state, requesting a list of its commercial caves, etc. To date all but about a dozen have complied, and the missing states are being followed up by more specifically addressed letters to the governors or other officials whose names have been obtained as likely correspondents for the National Geological Survey.

In October, 1941, letters were sent to the managers of known caves in a majority of the states requesting information regarding: 1. Location; 2. Period during the year open to the public; 3. Hours open during the day; 4. Time required for a tour; 5. Approximate size; 6. The price of admission; 7. Any unique or peculiar features; 8. Any other pertinent facts.

Splendid cooperation in this project is evidenced by reports within two weeks from about a third of the hundred-odd caves, with more replies coming in every day.

Managers of the following caves in about 30 states

were addressed. This list doubtless includes, unintentionally, some non-commercial caves, the exact status of some caves not being yet known to us. The list omits a few states known to have several commercial caves, from which states no complete information has yet been obtained, but which will be included if possible in the complete report later.

The Cooperating Developed Caves, in addition to those reported in May, 1941 bulletin, are:

Pennsylvania	Baker
Wisconsin	Cave of the Mounds
Minnesota	Niagara
Montana	Morrison
Colorado	Cave of the Winds
Indiana	Wyandotte; Marango
Kentucky	Mammoth, Crystal, Hidden River, Mammoth Onyx
Tennessee	Nickajack; Ruby Falls; Wonder

Any one knowing of any other commercial caves in this country is requested to communicate with the writer at 400 S. Glebe Road, Arlington, Va., giving name and post office address of the cave or management.

REPORTED COMERCIAL CAVES

Symbols and Abbreviations: Black type signifies confirming data received; Commas between different name of cave; *Ex-commercial; N.P. for National Park; N.M. for National Monument; S.P. for State Park; P.O. for Post Office; O for None known.

State	Cave Name and P. O. or town	Cave Name and P. O. or Town
Ala.		
Ariz.	Colossal: Vail	
Ark.	Big,Hurricane: Pindall. Diamond: Jasper. Wonderland: Bella Vista.	Crystal,Mystic,Mansion: Harrison. Onyx,Robin's: Eureka Springs.
Cal.	Lava Beds N. M.: Tulelake.	Moaning: Vallecito.
Colo.	Cave of the Winds: Manitou Springs.	
Conn.	O.	
Del.	O.	
Fla.	Florida Caverns S. P.; Marianna.	
Ga.	Cave Spring: Floyd Co.	
Ida.	O.	
Ind.	Marengo: Marengo	Wyandotte: Wyandotte.
Ill.	O.	
Ia.	Crystal Lake: Dubuque. Wonder: Decorah.	Wompi: Monona.
Kans.	O.	

(Continued on Next Page)

State	Cave Name and P. O. or town	Cave Name and P. O. or Town
Ky.	F. Collins Crystal: Horse Cave. Diamond: Park City Hidden River: Horse Cave. Lost River: Bowling Green.	Great Onyx: Mammoth Cave. Mammoth Onyx: Horse Cave. Mammoth N. P.: Mammoth Cave.
La.	0.	
Me.	0.	
Maryland	Crystal Grottoes: Boonsboro.	*Mt. Etna: Cavetown.
Mass.	Red. Bat: New Ashford.	
Mich.	0.	
Minn.	Mystery: Spring Valley.	Niagara: Harmony.
Miss.	0.	
Mo.	Crystal: Cassville. Fairy: Reed Spring. Jacob's Cave: Versailles. Marvel: Reed Springs. Meramec: Stanton. Mushroom: Sullivan. Polar Bear: Noel. Smittle: Grove Spring. Spring: Van Buren.	Crystal: Springfield. Fisher's: Sullivan. Jacob's Cavern: Pineville. Mark Twain: Hannibal. Missouri: Leasburg. Onandaga: Leasburg. Sequiota: Springfield. Spanish: Ponce de Leon.
Mont.	Morrison S. P.: Whitehall.	New Year: Lewisburg (being devel.)
Nebr.	0.	
Nev.	Lehman N. M.: Baker.	
N.H.	Lost River: Kinsman.	Polar: Rumney.
N.J.	0.	
N.M.	Carlsbad: Carlsbad.	
N.Y.	Howe: Cobleskill. Knox: Altamont.	Secret: Cobleskill.
N.C.	Linville: Ashford.	
N.D.	0.	
Ohio	Ohio: West Liberty.	Seven: Bainbridge.
Okla.	Alabaster: Freedom.	
Ore.	Lava S. P.: Bend. Sea Lion: Florence.	Oregon N. M.: Cave Junction.
Pa.	Alexander: Naginey Crystal: Kutztown. Historic Indian: Franklinville. Lincoln: Huntington. Penn's: Centre Hall. *Veiled Lady: Bellefonte. Woodward: Woodward.	Baker: Williamson. Hipple: Waterside. Indian Echo: Hummelstown. Lost River: Hellertown. Seawra: Lewistown. Wonderland Coral: Manns Choice. *Onyx: Hamburg.
R.I.	0.	
S.C.	0.	
S.D.	Crystal: Rapid City. Ice: Galena. Jewel N. M.: Custer. Rushmore: Keystone. Stage Barn: Piedmont. Wonderland: Piedmont.	Davenport: Sturgis. Jasper: Custer. Nameless: Rapid City. Sitting Bull: Rockersville Gulch. Wind N. P.: Hot Springs.
Tenn.	Cudjo, Soldier: Cumberland Gap. Indian: New Market. Lookout Mt.: Lookout Mt. Ruby Falls: Lookout Mt. *Tennessee: Chattanooga.	Dunbar: Clarksville. Jewel: Dickson. Nickajack: Shellmound. Ruskin: Dickson. Wonder: Monteagle.

(Continued on Next Page)

State	Cave Name and P. O. or town	Cave Name and P. O. or Town
Tex.	Boerne: Kendall Co. Hammetts: Cypress Mill. Richland Springs: Richland Springs. Wonder: San Marcos.	Cave-without-a-name: Boerne. Longhorn S. P.: Burnet.
Utah	Timpanogos N. M.: Salt Lake C.	Endless: New Market.
Va.	Battlefield Crystal: Strasburg. Dixie: Salem. Grand: Grottoes. Melrose: Harrisonburg. Shenandoah: Shenandoah Caverns. Skyline: Front Royal.	Luray: Luray. Massanutten: Harrisonburg.
Vt.	0.	
Wash.		
W.Va.	Organ: Lewisburg. Smokehole: Petersburg.	Seneca: Riverton.
Wis.	Cave of the Mounds: Blue Mounds. Eagle: Muscoda.	
Wyo.	0.	

A Proposed Reading List from Books in the Library of the Society (*)

- 1—Geological Map of the Appalachian Valley of Virginia with Explanatory Text. By Charles Butts; University of Virginia, 1933.
- 2—Carlsbad Caverns; National Park, N. M. U. S. Dept. of the Interior, 1938.
- 3—Origin of Limestone Caverns. By W. M. Davis; Geological Society of Am., Bulletin 44, No. 3, Sept., 1930.
- 4—Caverns, Ice Caves, and Natural Bridges. By Junius Henderson. University of Col. Studies, Vol. 19, No. 4, Oct. 32.
- 5—Mammoth Cave. By Geo. M. Staples; pub'd. by Mammoth Cave, 1938.
- 6—Cave Life in Kentucky. By Vernon Bailey; University Press, Notre Dame, Ind., 1933.
- 7—Animal Life of the Carlsbad Cavern. By Vernon Bailey; Williams & Wilkins Co., Baltimore, 1928.
- 8—Adventures Under Ground, By T. C. Bridge; T. Nelson & Sons, London, 1937.
- 9—Famous Caverns and Grottoes. By W. H. D. Adams; T. Nelson & Sons, London, 1886.
- 10—Missouri Cave Remains. By Prof. A. Burrill; Jefferson City, Mo. 1925.
- 11—The Cave Fauna of North America. By A. S. Packard; in National Academy of Science, Washington, D. C. Memoirs, Washington, 1888, V. 4 (1st Memoir Part 1.)
- 12—Celebrated American Caverns. By H. C. Hovey; R. Clarke & Co., Cincinnati, 1882.
- 13—Cave Hunting. By W. B. Dawkins; MacMillan & Co., London, 1874.
- 14—Caverns of Luray. By O. T. Mason; in Ann. Rept. Smithsonian Inst.
- 15—Pennsylvania Caves. By R. W. Stone; Harrisburg, Dept. of Internal Affairs, Topographic & Geologic Survey, 1930.
- 16—Caverns of Virginia. By W. M. McGill; University of Va. Bulletin 35, Ed. series No. 1, 1933.
- 17—Ten Years Under the Earth. By Norbert Casteret, Greystone Press, New York, 1938.
- 18—Geology of Edmonson County. By J. M. Weller, Kentucky Geological Survey, Frankfort, Ky., 1927.
- 19—The Oregon Caves. Prepared by U. S. Forest Service; Washington, D.C., Govt. Printing Office, 1926.
- 20—Rivers That Flow Underground. By Chester A. Reeds. The American Museum of Natural History, New York, N. Y. Reprinted from Natural History, Vol. XXVIII, No. 2, 1928.

(* A complete bibliography on Speleology, indicating those titles in the Library of the Society will be issued soon as a separate publication.)

It shall be the continuing policy of the editors to select reports to be published in the Bulletin upon the basis of general interest. Members of the Society and others wishing more detailed reports on these and other caves listed in the Log of the Society, or wishing maps of these caves, may obtain either reports or maps at cost, by inquiry directed to the Editor or chairman of the Records Committee.
