

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

Editor (see page 8):

David C. Glick

April, 2014

Visit our web site: www.nittanymineral.org

April 16th meeting:

Rock Spheres: Discovery Cubed

by Jim Garthe

Our April meeting will be held Wednesday the 16th in room 116 (smaller auditorium) of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available on our web site.

6:30 to 7:30 p.m.: Social hour, refreshments in the lobby

7:30 to 8:00 p.m.: announcements, questions, answers

about 8:00 p.m.: featured program

The event has free admission, free parking, and free refreshments, and is open to all; parents/guardians must provide supervision of minors. Bring your friends and share an interesting evening.

The program for Wednesday, April 16 will feature NMS longtime club member Jim Garthe discussing how and why he makes rock spheres. Jim describes it this way:

"As a kid, I was always intrigued by rocks and quartz crystals. However, I was seeing just the exterior of the rock, and little did I know what extreme beauty was within the core of the weathered piece I clutched in my hand. Now as an adult, I have the equipment and wherewithal to explore the interior of that country rock. A sphere is the perfect shape to allow a person to see the interior from all angles, and it seems to incite the basic human urge to grasp it to feel its surface smoothness.

"This program will explain the joys of searching for just the right stones in the field. It will also discuss start-to-finish details of the sphere making process and how you too might want to begin a new hobby for yourself. Additionally, I will explain ways to display the spheres by making your own artistic bases, often making thoughtful gifts for family and friends, especially if the rock came from somewhere meaningful to them. The program will close with show and tell." ❄



Another Successful Minerals Junior Education Day

by David Glick,

NMS President and Junior Ed. Day Coordinator

On April 5th, we held our 18th annual Minerals Junior Education Day, at another new venue. The Central Pennsylvania Institute of Science and Technology worked very well for us, and having all the stations in one room was helpful. We had seven stations (plus sales tables), with souvenirs from each to remind the students about what they learned at each station. The stations were:

Bedrock Geology

of PA

Gold Panning

Fluorescence

Fiber Optics in

Minerals

Identifying Gems

Vertebrate Fossils

Invertebrate

Fossils

Attendance was about 132 students (plus lots of family members). The light crowd was pleasant for

everyone, but we hope to increase our advertising and attendance next year. Accounting is still in progress but we definitely came out ahead. NMS is grateful to all of



Duff Gold shares his expertise at Bob Altamura's Bedrock Geology of Pennsylvania station. D. Glick photo.

Continued with photos on page 2

Junior Ed Day *continued from page 1*

our member and non-member volunteers, as well as many other organizations and individuals, including the following: Co-sponsorship and assistance was provided by the Bald Eagle Chapter of GPAA; Junior Museum of Central Pennsylvania; Penn State Geosciences Club; Penn State Earth & Mineral Sciences Museum. Subway, Brothers Pizza, Chick-fil-A, and Giant provided lunches for all of the volunteers. Samples for handouts, sales

and door prizes were provided by long-time major supporters Michael and Barbara Sincak of Treasures of the Earth; John 'Pen' Ambler and Trish Ambler; the collecting group of Skip Colflesh, Scott Snavely, Ryan O'Neal and Bob Buckmoyer; Ruth D. Park; John Passaneau; and Willard Truckenmiller.





NEWS FROM THE FEDERATIONS

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies. We present brief summaries here in order to encourage readers to see the entire newsletters.

The **EFMLS Newsletter** is available through the link on our web site www.nittanymineral.org, or remind Dave Glick to bring a printed copy to a meeting for you to see. The April issue includes an introduction from Ken Creed, new AFMS Scholarship Foundation Coordinator. We are reminded about the Fall session of Wildacres Workshops, September 1-7; class descriptions, schedule and registration form are included (and are also on the EFMLS web site). Mary Bateman thanks the judges for the big Bulletin Editors' Competition. Historian Andy Celmer writes about alchemists through history and their contributions to science.

The **AFMS Newsletter** is available by the same methods. The April issue starts with photos of newly donated prizes in the AFMS Endowment Fund drawing, including (timely for our program this month) three spheres. Keep watching the newsletter for more photos of prizes. President Richard Jaeger mentions the Endowment Fund drawing, Club Rockhounds of the Year, and the AFMS/Rocky Mountain Federation convention and show (July 9-13 in Tulsa, Oklahoma). President-Elect Marion Roberts of Modesto, California, introduces himself. Shirley Leeson asks everyone to go to www.amlands.org, choose Newsletters and then the Jan-Mar 2014 newsletter, and read the articles on p. 8 and 9-13 about Special Recreation Permit requirements for non-competitive events on BLM lands, which would include rockhounding field trips. The Conservation & Legislation column provides some comments and history about collecting on US Forest Service lands. The many possible distractions while driving are discussed in the safety article (*distractions while hitting a chisel with a hammer are dangerous also - Editor*). Steve Weinberger provides an article, with photos, on the National Rockhound and Lapidary Hall of Fame, housed at the Pioneer Auto Show at Murdo, South Dakota.

Please see the web sites for the complete Newsletters. There's a lot there!
- Editor

ATTENDING THE APRIL MEETING?
Donations of labeled **door prize specimens** are invited.
Your donated snacks and drinks will be welcomed.
Bring a friend!

Geo-Sudoku

by David Glick

Mammoths and mastodons are the source of some large and fascinating fossils. This puzzle contains the letters ACDEHMPRY, and one row or column spells out the group of mammals which includes those animals. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 8.

			R	C				H
				E			A	
D	E				A		C	
C		R		D		P		
A			M	P	H	R		C
		Y			E	A		M
M	R			Y			E	
		A		M		D		
	H	D	E					Y

20 Years Ago in NMS

Our April 1994 meeting program on **Gems: Science, Synthesis, Beauty and Deception**, was presented by Dr. Kurt Nassau, author of *The 15 Causes of Color in Gems* and *Gems Made by Man*.
- Editor

History and Geology of Peiper Cave, Carnegie Cave, and Cleversburg Sink, Cumberland Valley, Pennsylvania

Charles E. Miller, Jr.
Retired geologist

Peiper Cave, Carnegie Cave, and Cleversburg Sink in the Shippensburg area have sustained great popularity for about 60 years. These rank among the longest caves in the State. Stone (1932) and Smeltzer (1958) provide the most complete descriptions. This paper presents additional history and geology. Cumberland Valley caves formed over the past three million years (White, 2007; White, 2009; White, personal communication, 10-1-12).

PEIPER CAVE

Introduction

Peiper Cave is a well-known maze cave along the north side of Interstate 81 near Shippensburg in Cumberland County. It is located between Fayette and King Street Exits. A spectacular discovery in 1948 was vandalized seven years later.

History and Geology

The cave was discovered in the early 1930s when limestone was quarried for crushed stone for Southampton Township roads (Smeltzer, 1958). Quarrying began there in the 1800s. At the time of discovery, Hun and Bill Coy of Shippensburg were doing the quarrying (Edgar E. Peiper, personal communication, 3-18-91). The small quarry is near the south end of a narrow wooded ridge on the former Peiper farm, previously the Cyrus Railing and, before that, the Bumgardner farm (Smeltzer, 1958). Having owned the farm on which Peiper Cave is located since 1937, Peiper sold the property in 1972 to Rick Unger of Shippensburg. Unger's house now sits on the ridge top directly above the cave.

Along the same ridge in which Peiper Cave is located and a few hundred feet south of the entrance is a burned-out house. Spelunkers usually pass it on their way to the cave. Susan Heller formerly owned the house. Following her death, the house burned (Edgar E. Peiper, personal communication, 3-18-91). Prior to the fire, several Heller children also lived there. During the years they used the cave as a playhouse, entering it as their own, to such an extent that they did not like cavers going there. Upon seeing cavers, the children ran into the cave, hid, and made ghost sounds in an attempt to scare people out of the cave (Bernard Smelter, personal communication, 3-22-91).

In 1948 the Philadelphia Grotto made a significant discovery of a "Hidden Passage" decorated with one of the most remarkable speleothem displays found in a Pennsylvania cave (Figure 1). In 1955 virtually all of the speleothems were vandalized (Smeltzer, 1958). Despite vandalism, some interesting speleothems still exist in Peiper Cave, including helictites. Peiper Cave also provides excellent examples of dome pits, passages developed along vertical joints (Figure 2), flowstone (Figure 3), and breakdown (Figure 4).



Figure 1: Prolific speleothems in the Hidden Passage of Peiper Cave. Image by Bernard L. Smeltzer.

A conspicuous feature in Peiper Cave is breakdown – i.e., en masse failure of cavern roofs or walls (Davies, 1951). The largest breakdown accumulation is in the First Room (Smeltzer, 1958; Figure 4). Here limestone blocks up to 10 feet in length lie in a jumble, nearly filling half of the passage. Sometimes rock debris, clay, and travertine obscure breakdown. In these cases, recognition may be based on cave ceiling morphology.



Breakdown in Peiper Cave creates flat ceilings (Figure 4). Figure 5 is a less common form of breakdown – rock slab separation from a cave wall. This slab is 20 feet long and 20 inches wide standing on edge along the left wall of the northern end of the First Room (Smeltzer, 1958).



Left: Figure 3: Flowstone in Peiper Cave.

Above: Figure 4: Breakdown in the First Room of Peiper Cave. Note the flat ceiling.

Right: Figure 5: Slab breakdown in Peiper Cave.

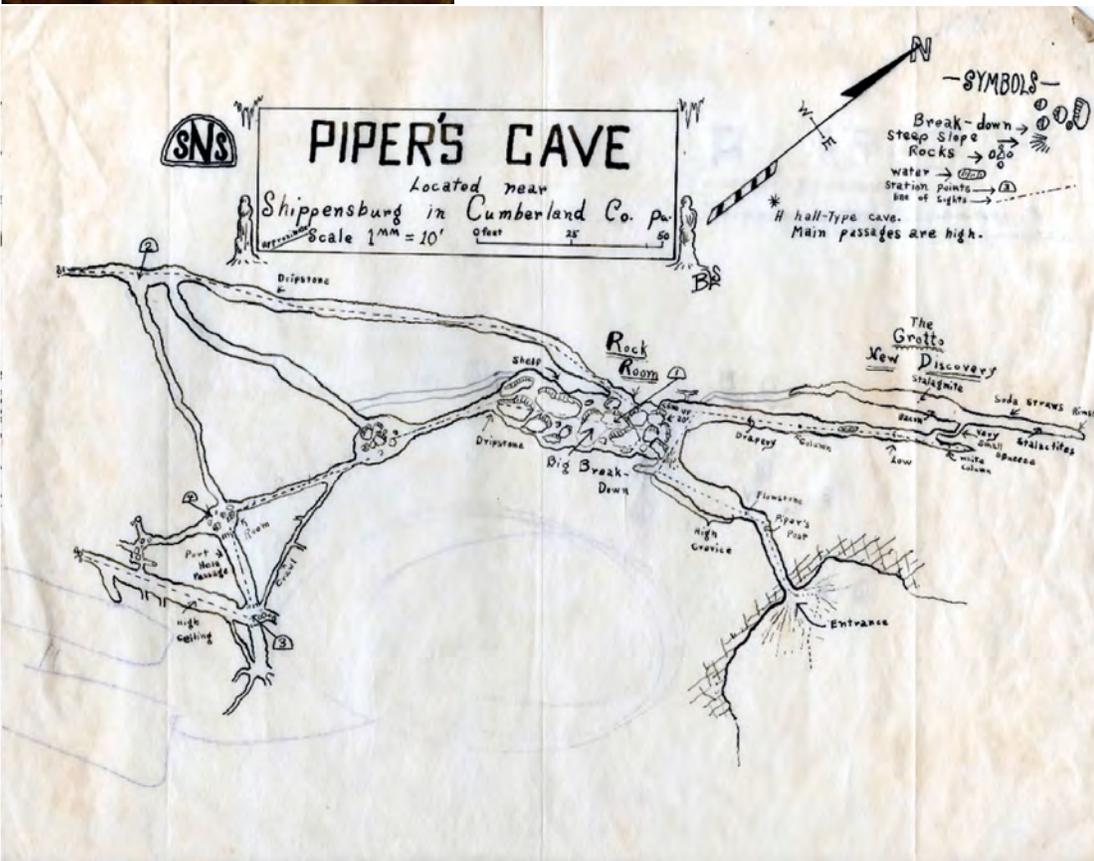


Figure 6: Earliest known map of Peiper Cave. Survey and drawing by Bernard L. Smeltzer. Note spelling of the cave name.

average density for limestone of 150 lb/ft³, the buoyancy of the rock in water contributes an upward force of 62.4 lb/ft³. When passages are drained, 42 percent of the support is removed.

It was not until late 1948 or early-mid 1949 that Peiper Cave was first surveyed and mapped (Figure 6). This earliest map identified the cave as "Piper's Cave." The map did not show the complex maze network, a pattern not common in the Cumberland Valley, found in later maps. Duffield Cave at Duffield is another maze cave. Peiper Cave has the most complex cave pattern in Cumberland and Franklin Counties.

CARNEGIE CAVE

Introduction

White and White (1969) cite eight processes activating cavern breakdown. Of those, loss of buoyant support by gallery draining appears to be the major contributor to breakdown in Peiper Cave. In this process, assuming an

Carnegie Cave is a popular cave partly located under Interstate 81 near Exit 10 (King Street Exit) at Shippensburg. It has 1905 feet of passages (Bernard Smeltzer, personal communication, 3-22-91) and has been explored for at least 80 years.

History and Geology

The earliest description of Carnegie Cave is from Stone (1932), giving a location on the Mower Farm. Entrance was through a quarry opening in the north bank of Thompson Run [Creek]. Smeltzer (1958) updates land-ownership information, stating the cave is on the Henry Jacoby property, formerly the Carnegie Farm. Originally there were three cave entrances, all in the aforementioned quarry. Only one entrance remains owing to Interstate 81 construction in the early 1960s. Prior to completing this section on June 9, 1964, the York Grotto petitioned PennDOT to preserve access to Carnegie Cave. The main entrance, located in the I-81 median, was maintained when corrugated metal pipe was cemented in the opening and extended out the west side of the highway embankment (R.E. Mueser; 1-16-83; personal communication). This pipe is three feet in diameter and 155 feet long. Sections of it were sealed together with a bituminous, tar-like material. The original (easternmost) entrance lies approximately 30 feet vertically below the highway—a distance short enough that, underground, one can hear truck traffic from the surface. Most of the areal extent of the cave lies north-northwest of I-81.

On July 9, 1967 Carnegie Cave became the only local cave to sustain a fatality. On that day spelunkers exiting the cave left two burning candles in the drainpipe. A different group of three entered the cave, passed the candles, and explored the cave. Upon returning to exit, they saw a wall of fire encircling approximately 25-30 feet of the inside of the drainpipe’s middle section. One of them panicked and crawled through the flames. The other two retreated to inner recesses of the cave and waited for rescue. The panicked caver died three days later from second- and third-degree burns. (NSS Cave Accident Reports, 1967).



Figure 7: Three-foot column in Carnegie Cave.

Carnegie Cave’s popularity has resulted in vandalism. However, some excellent speleothems persist. Figure 7 shows a three-foot “fluted column” at cross-section S-S’ shown on Smeltzer’s 1958 map. Especially interesting in



Figure 8: Rimpools in Carnegie Cave.

this cave are the well-developed rimpools or rimstone dams (Figure 8) in the northern terminus, northwest of cross-section v-v’ on the same map. These speleothems form on cave floors and consist of narrow, interconnected ridges bounding pools of water resembling terraces. Water usually flows over them from one crescent-shaped pool to another (Franze and Slifer, 1971). Rimpools form when water flows over an obstruction and is slightly agitated, causing carbon dioxide to be given off and calcite precipitated on the lip of the dam. As more water flows over low parts of the dam than elsewhere, more calcite is deposited on them and the top of the dam, therefore, keeps nearly level (Moore and Nicholas, 1964).

CLEVERSBURG SINK

Introduction

Of Cumberland Valley caves, Cleversburg Sink is unique in that it intersects the water table. As a result, it is flooded most of the time. This flooding thwarted spelunkers for decades. Only during prolonged droughts could they explore lower levels.

History and Geology

Earliest report of Cleversburg Sink is in 1929 when two hunters discovered the sinkhole and cave (Stone, 1932). The cave was not entered because it was flooded. This is the first documentation of the cave as the landowner previously knew of the sinkhole but not of a cave below.

Unlike other spelunkers, in the 1970s the writer used one-man rafts (Figure 8) to explore the cave. These provided observational vantage points not possible during routine explorations. Floating on the water table put us up to 40 feet above the cave bottom. These higher-level observations revealed previously unknown features in Giant Hall (Smeltzer, 1958): a 25-foot tall column (Figure 9), prolific stalactites 2-3 feet in length and drapery (Figure 10); fish;

large breakdown blocks wedged in the narrow passage; and the greatest vertical development of local caves, ranging 70-80 feet. The referenced ceiling speleothems in Giant Hall are too high above cave bottom to see if explorations occur when the cave is dry. Rafts also offered opportunities to photograph a 30-foot decline in the water table over a two-week period. This observation complements more recent pressure-transducer readings of water-level measurements in the cave (Feeney and Mishler, 2011). Also, in more recent years, wetsuit diving has been done here (Kenneth Tayman, personal communication, 8-2-12).

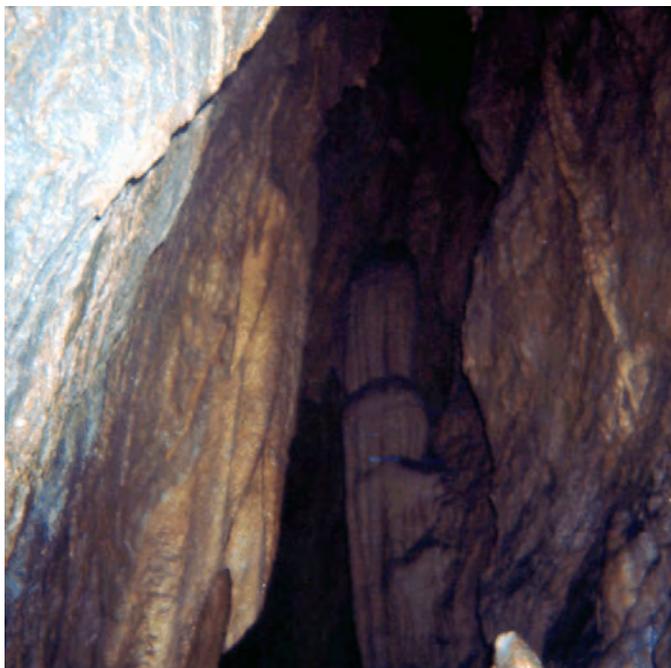


Figure 9: 25-foot column in Giant Hall, Cleversburg Sink.



Figure 10: Prolific speleothems on the ceiling of Giant Hall in Cleversburg Sink. Photograph by David Hoover.

Fish in Cleversburg Sink ranged up to approximately eight inches in length and may be from Burd Run and Thompson Creek. Smeltzer (1958) reports surface surveys of the cave indicate the far end of the southwest branch lies within 20 feet of the two streams intersecting. Feeney and Mishler (2011) infer that some water in Cleversburg Sink is allogenic and is likely from the referenced streams.



Figure 11: Using one-man rafts in Cleversburg Sink.

Additional images of the subject caves are in the Mid-Atlantic Karst Conservancy library.

REFERENCES CITED

- Davies, W.E., 1949, Features of cave breakdown, *NSS Bull.*, v. 11, pp. 34-35, 72.
- Feeney, T. and Mishler, M., The potential for allogenic recharge to Cleversburg Sink, *GSA South-Central Pennsylvania Northeastern (46th Annual) and North-Central (45th Annual) Joint Meeting*; 3/20-22/11.
- Franz, R. and Slifer, D., 1971, *Caves of Maryland*, Maryland Geological Survey, Educational Series No. 3, p. 15.
- Moore, G.W., and Nicholas, G., 1964, *Speleology, the study of caves*, Boston, D.C. Heath, 120 p.
- NSS Cave Accident Reports*, 1967, pp. 4-5.
- Smeltzer, B.L., 1958, *Caves of the Shippensburg area*, Mid-Appalachian Region, *National Speleological Society Bull.* 4; October 1958, 14 p.
- Stone, R.W., 1932, *Pennsylvania Caves*, 2nd Edition, Topographic and Geologic Survey, Harrisburg, PA, p. 55.
- White, W.B., ed., 1976, *Geology and biology of Pennsylvania Caves*: Pennsylvania Geological Survey, General Geology Report 66, p. 52.
- White, W. B., 2007, Cave sediments and paleoclimate, *Journ. of Cave and Karst Studies*, v. 69, no. 1, pp. 76-93
- White, W. B., 2009, The evolution of Appalachian fluviokarst: competition between stream erosion, cave development, surface denudation, and tectonic uplift, *Journ. of Cave and Karst Studies*, v. 71, no. 3, pp. 159-167.
- White, E. and White, W., 1969, Processes of cavern breakdown, *National Speleological Society Bulletin*, v. 31, n. 4, pp. 83-96.

Classifieds

Ads may be submitted to the Editor (see bottom right)

FOR SALE: 2 Homemade Lapidary saws for sale - 14" and 18". Both come with working motors, arbor, belt, pulley, rock clamp/carriage, and a blade. Both are mucked-out and ready to move. Both could use a little TLC. For more info contact Mike Zelazny at fabricatefilm@yahoo.com

Some Upcoming Shows and Meetings

Our web site <http://www.nittanymineral.org> has links to more complete lists and details on mineral shows and meetings around the country.

April 18-19, 2014: First Gem, Mineral & Fossil Show for the non-profit **North Museum of Natural History and Science**. At Farm & Home Center, 1383 Arcadia Rd (off Manheim Pike), Lancaster, PA. Friday 10-6, Saturday 10-5. www.northmuseum.org/rockshow/

April 26-27, 2014: Monongahela Rockhounds Gem, Mineral and Fossil Show. West Mifflin Volunteer Fire Co. #4 Skyview Hall, 660 Noble Drive, West Mifflin (Pittsburgh), PA 15122. Sat. 10:00 - 6:00. Sun. 10:00 - 4:00. Free Admission & parking. www.monongahelarockhounds.org

April 26-27, 2014: 42nd Annual NJESA Gem & Mineral Show (plus outdoor swap and sell), by New Jersey Earth Science Assn., Franklin-Ogdensburg Min. Soc. & Sterling Hill Mining Museum (NJ). Franklin School, 50 Washington Ave., Franklin, NJ. sterlinghillminingmuseum.org

May 3-4, 2014: 11th Annual Show & Sale, by Mineral. Soc. NE PA. Oblates of St. Joseph, 1880 Hwy 315, Pittston PA

May 10, 2014: South Penn Spring Rock Swap, sponsored by Central Penn. and Franklin County Rock & Mineral Clubs. South Mountain Fairgrounds, Arendtsville, PA.

May 17-18, 2014: World of Gems and Minerals, by Berks Mineralogical Society. Leesport Farmers Market Banquet Hall, Rt 61, Leesport PA.

June 7, 2014: Spring Mineraldust - Mineral Fossil and Gem Show sponsored by the Pennsylvania Earth Sciences Ass'n. Macungie Memorial Park, Macungie, PA

Geo-Sudoku Solution

Y	A	M	R	C	D	E	P	H
R	C	H	P	E	M	Y	A	D
D	E	P	Y	H	A	M	C	R
C	M	R	A	D	Y	P	H	E
A	D	E	M	P	H	R	Y	C
H	P	Y	C	R	E	A	D	M
M	R	C	D	Y	P	H	E	A
E	Y	A	H	M	C	D	R	P
P	H	D	E	A	R	C	M	Y

INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having among the finest line-up of speakers of any earth sciences club in the nation. Everyone is welcome at our meetings. If you'd like to be part of our Society, dues are \$20 (regular member), \$7 (student rate), \$15 (seniors), \$30 (family of two or more members, names listed). Those joining in March or later may request pro-rated dues. Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available at www.nittanymineral.org), make checks payable to "Nittany Mineralogical Society, Inc." and send them to

Nittany Mineralogical Society, Inc.
P.O. Box 10664
State College, PA 16805

or bring your dues to the next meeting.

We want to welcome you!

SOCIETY OFFICERS

David Glick (President) 814-237-1094 (h)
e-mail: xidg@verizon.net

Dr. Bob Altamura (Vice-President) 814-234-5011 (h)
e-mail: raltamura@comcast.net

Ellen Bingham (Secretary and Acting Treasurer)
e-mail: emb22@psu.edu

John Passaneau (Treasurer, on leave) 814-231-0969 (h),
e-mail: jxp16@psu.edu

OTHER CONTACTS

Field Trips: Ed Echler 814-222-2642
e-mail preferred: eechler@comcast.net

Junior Rockhounds: Dr. Andrew Sicree
814-867-6263 (h) e-mail: sicree@verizon.net

Membership Chair: David Glick (see above)

Programs: Dr. Duff Gold 865-7261(o), 238-3377(h)
e-mail: gold@ems.psu.edu

Door Prizes: *volunteer needed!*

Refreshments: *volunteer needed!*

Facebook: Mike Zelazny e-mail: maz166@psu.edu

The **Bulletin Editor** will welcome your submissions of articles, photos, drawings, cartoons, etc., on minerals, fossils, collecting, lapidary, and club activity topics of interest to the members. Please contact:

David Glick E-mail: xidg@verizon.net
209 Spring Lea Dr. phone: (814) 237-1094 (h)
State College, PA 16801-7226

Newsletter submissions are appreciated by the first Wednesday of the month. If you include photographs or graphics, please do not embed them in word processor files; send them as separate graphics files (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and name of photographer or artist.

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