Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc., meeting in State College, Pennsylvania
Contact information on back page

Editor (see back page):
David C. Glick

January, 2025 **Visit our web site: www.nittanymineral.org**

January 15th meeting:

Serpentine, an uncommon green rock-forming mineral, and its occurrences in the Appalachian Mountains with an emphasis on Pennsylvania

Robert J. Altamura, PhD, PG,
Consulting Geologist, State College, PA

NOTE THE NEW MEETING LOCATION

Our January meeting will be held Wednesday the 15th at Centre LifeLink, 125 Puddintown Road, State College, PA 16801. Maps can be found on our web site.

7:00 to 7:45 p.m.: Social "hour," refreshments
7:45 to 8:00 p.m.: Announcements, door prizes,
about 8:00 p.m.: featured program

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

-Editor

Serpentine forms from the alteration of magnesium-rich olivine and pyroxene. Serpentine is a mineral composed (in an idealized case) of magnesium, silicon, oxygen and hydroxyl ($Mg_3Si_2O_5(OH)_4$). Dr. Altamura's presentation will discuss the interesting crystal structures of the polymorphs of serpentine and related minerals, and their geologic history including how they may have been emplaced in the Appalachians.

See the illustrated article on pages 4-5, and please attend our January 15th meeting to see this presentation!

NMS Spring Schedule

February 19: Chronicles of a Hydrogeologist, by Dr. Charles E. Miller Jr. , at Centre LifeLink
March 19, 6:00 p.m.: Geode Night at **Boal Hall**
April 5, Saturday: Minerals Junior Ed Day at CPI
April 16: TBA, at Centre LifeLink
May 21: Dolomite, by Dr. Cole McCormick, at Centre LifeLink

NEW MEETING LOCATION STARTING THIS MONTH

Starting in January, our monthly meetings will be at the Centre LifeLink EMS building (except March 19 Geode Night, at Boal Hall as usual). The location is 125 Puddintown Road, State College PA 16801. Turn off East College Avenue on to Puddintown Road, then in just 500 feet turn left into the long driveway. Parking is at the front door, with overflow off to the left.

SEE MAP ON PAGE 6

JUNIOR ROCKHOUNDS MEETINGS January - April

Junior Rockhounds meetings have begun! They are best for students in 3rd through 8th grades, WITH their parents. They are scheduled for 6:00 to 6:45 p.m. on Wednesdays, twice per month: Jan 8, Jan 29, Feb 12, Feb 26, Mar 19 (Geode Night, with presentation following at 7:00), Mar 26, Apr 2, and Apr 23. Watch this Bulletin and the web site for news and any updates.

The meetings have a different topic each time, such as minerals, fossils, gemstones, geology, and dinosaurs. They include fun hands-on activities and discussions with an expert. Parents stay with their children, and may get a lot out of the meetings too! You don't have to be a member to attend; please come out and see what it's all about. See http://www.nittanymineral.org/juniors.htm

Adults who would like to help present these programs are cordially invited to come to a meeting.

Please Volunteer for April 5 Minerals Junior Education Day

Minerals Junior Education Day is set to return on Saturday, April 5, 2025! We'll need about eight stations where students in grades 1-8 learn about some aspect of minerals, earth sciences or lapidary, and get specimens to take home. It's time to plan for what station you might present, or to volunteer to help at an existing station (we'll have more information about that coming soon). **Advance donations** of minerals, books, etc., for the sales table are also welcomed.-

Contact coordinator Frank Kowalczyk: frank.j.kowalczyk@gmail.com or 814-404-9854.

Geo-Sudoku

by David Glick

The puzzle below contains the letters AEIGLNORY. One row or column includes the characteristic of ophiolites. If you've read all of this issue, you've seen it. 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.

L								I
A	R		E	Y		L		
N		Y	I					
I		N		0				R
E	Y	R			I	A	L	
0					R			
Y	A	E						L
				A	E	R		
	I	0	L					A

FEDERATION NEWS

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 encourage our readers to read their monthly newsletters, which are linked from the left sidebar of our web site, <http://www.nittanymineral.org>.

The AFMS <https://www.amfed.org/newsletter> does not have a separate January newsletter.

The Eastern Federation's <https://efmls.org/> January Newsletter includes president Andrew "Rockhound's" message, reprinted at right, and other Federation news to start the new year. Donations for the EFMLS Annual Auction, to help raise funds for the Endowment Fund, are invited. - *Editor*

EFMLS President's Message

from Andrew Rockhound

EFMLS News v. 72 no. 1 January 2025

Happy New Year everyone from the EFMLS! I hope you are all happy and staying warm during these cold days of winter, we're all here at the EFMLS working hard for you! I personally have spent every day since I took office on November 1st reviewing our policies, positions, operations and offerings to see what our team can do in 2025 to make "what we do" better and more efficient across our organization. I have been working with the great volunteers in our organization on some of this already by putting our heads together and asking how we can do this particular thing better. While we have a lot to do in preparation for our early, end of March AFMS/EFMLS Convention in North Carolina, we are also working to promote the 2025 Wildacres like never before (see my social media article later in this issue), infuse new energy into our youth outreach, and create a comprehensive club membership resource (document/pdf style) with everything the EFMLS can bring to the table for your club, and so much more. Whether your club is brand new, running great, on the brink, or just want to give your members more, we are here for you. Let me know your thoughts, let's work together and see what's possible!

Friends of Mineralogy - PA Chapter 2024 Symposium

by David Glick

Friends of Mineralogy - Pennsylvania Chapter held their annual symposium at University of Pittsburgh - Johnstown on November 8-9-10. Activities began with an informal meet & greet on Friday evening.

The Symposium and accompanying mineral show took place on Saturday. The schedule covered 8:00 a.m. to 5:00 p.m., with six speakers, demonstrations in the lobby, the annual meeting, and breaks with time for refreshments, discussions, and visiting the silent auction and the mineral show. Presenters were:

- Ryan J. Kerrigan, PhD, University of Pittsburgh - Johnstown: Green Rocks of Northwest Portugal – Ultramafic correlations across the Galicia-Trás-os-Montes Zone (GTMZ)
- Ronald A. Sloto, PG, West Chester University: Beryls of Pennsylvania
- Robert J. Altamura, PhD, PG, Consulting Geologist, State College, PA: Serpentine, an uncommon green rock- forming mineral, and its occurrences in the Appalachian Mountains with an emphasis on Pennsylvania
- Tomer Shapira: Recent Discovery of Large Diopside Crystals from the Cascade Slide Area, Essex County, New York
- Ross D. Elliott, PG, Delaware Mineralogical Society (presenter): Pyromorphite- the Famous Phoenixville Lead-zinc Mines
- Bill Stephens, PG, Stephens Environmental, FM, FM-PA, & EFMLS: Geology & Mineralogy of the now famous Wavellite Occurrence, National Limestone Quarry, Mount Pleasant Mills, Snyder County, PA
- Kyle Trostle, PhD, Snellius Minerals, LLC: Macroscale Optical Mineralogy (demonstration).

On Sunday, the field trip participants found their way more than two hours to the east (via roads generally going either northeast or southeast) and gathered at National Limestone Quarry, Inc., at Mount Pleasant Mills, PA. FM-PA continues to be grateful to owner Eric Stahl for allowing our club and others access to such an outstanding collecting locality. On this day, the rain impeded collecting somewhat, and new material had not been exposed in a while, but specimens were still collected. The minerals available there have been described in multiple articles in previous issues of this Newsletter and in the Symposium abstracts.

Throughout the day, Kyle Trostle provided a variety of demonstrations of Macroscale Optical Mineralogy phenomena in a dark tent in the lobby. *D Glick photo*

On Sunday, the field trip participants found their way more than two hours to the east and gathered to collect wavellite, other minerals, and fossils at National Limestone Quarry, Inc., at Mount Pleasant Mills, PA.

Part of the mineral show. *D. Glick photo*

FM-PA Symposium in session at University of Pittsburgh - Johnstown. More attendees were connected via Zoom. *D. Glick photo*

Serpentine, an uncommon green rock-forming mineral, and its occurrences in the Appalachian Mountains with an emphasis on Pennsylvania

Robert J. Altamura, PhD, PG, Consulting Geologist, State College, PA

Serpentine forms from the alteration of magnesium-rich olivine and pyroxene. Serpentine is a mineral composed (in an idealized case) of magnesium, silicon, oxygen and hydroxyl ($Mg_3Si_2O_5(OH)_4$).

Serpentine's physical properties include a predominant green color but may be yellow and rarely purple. Common habits include a massive appearance or a relatively coarse columnar or threadlike appearance (see figures 1-3). Other useful physical properties that can help with field identification are a greasy, waxy, or silky luster; a fracture that can be uneven, somewhat conchoidal, and/or splintery (picrolite and chrysotile); the yellow variety of serpentine may fluoresce a cream-white color under shortwave UV light (Kerr, 1977). Serpentine has three polymorphs (antigorite, lizardite, and chrysotile) that may require X-ray diffraction (XRD) analysis (preferred), scanning electron microscopy (SEM), or optical mineralogical study to distinguish.

As silicates, both olivine's and serpentine's crystal structures are made up of silica tetrahedra (SiO_4) that serve as building blocks for all silicate minerals. In the case of olivine, silica tetrahedra are isolated by magnesium (or iron) cations. For serpentine, silica tetrahedra are arranged in sheets where basal oxygen atoms of tetrahedra are bonded in a repeating array of 6-member rings. Silicate sheets (T layers) are bonded to octahedral (O) layers composed of a metal ion coordinated to oxygens and hydroxyl radicals (6 anions in total). Silicates with this basic structure are referred to as phyllosilicates, and include numerous clay mineral species (e.g., kaolinite, montmorillonite) and members of the mica group (e.g., muscovite, biotite, etc.). Some clay minerals, including serpentine, are referred to as **T-O** phyllosilicates, as the T-O unit cell repeats along the c- crystallographic axis (see Figure 4).

Serpentine has been grouped with kaolinite by the International Mineralogical Association Commission on New Minerals, Nomenclature and Classification (IMA-CNMNC) because they share the same crystal structure. Although mineral species in the kaolinite-serpentine group share this common T-O structure, they may vary in chemical composition or crystal form. Some clay minerals and members of the mica group have a crystal structure that is characterized by **T-O-T** layering packages which also repeat along the c- crystallographic axis (Figure 5).

The geological occurrences of serpentine rocks are alteration of primitive ultramafic rocks (e.g., peridotite and pyroxenite) that accumulated by fractionation of complex magma by crystal settling - or that were derived from the upper mantle by partial melting and would represent the refractory residue of such a process.

Figure 1. Serpentine: Antigorite polymorph. H&K Penn/MD Quarry, Peach Bottom, PA. D. Glick sample.

Figure 2. Serpentine: Antigorite polymorph, columnar variety referred to as 'picrolite.' H&K Penn/MD Quarry, Peach Bottom, PA. Approx. 4 inches across. D. Glick sample.

Figure 3. Serpentine: Chrysotile polymorph, Brazil. Scale unknown. *Photo: Eurico Zimbres (https://commons.wikimedia.org/wiki/File:Chrysotile_1.jpg),"Chrysotile 1", https://creativecommons.org/licenses/by-sa/2.5/legalcode*

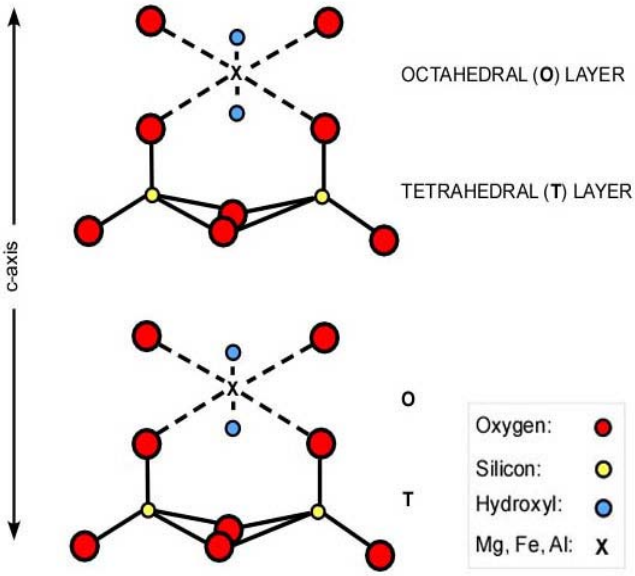


Figure 4. Crystallographic model of kaolinite-serpentine group minerals.

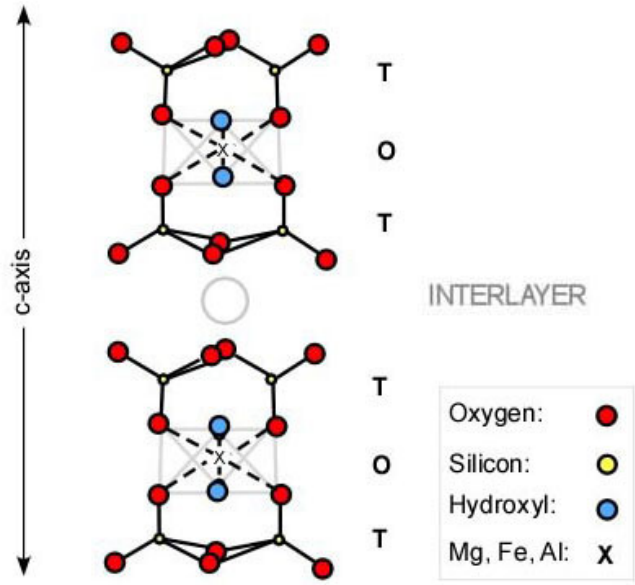


Figure 5. Crystallographic model showing TOT layering characterizing many clay minerals and mica-group minerals. Interlayer ion may be a relatively large atom (~1 Å, e.g., K or Na) or water molecules. In the case of chlorite, the interlayer can be brucite-like (essentially another O layer).

Such rocks might be emplaced in the solid state or in a semi-solid state. With the advance of the mechanism of seafloor spreading at divergent plate boundaries by Harry Hess (1962), partial melting of mantle material to generate peridotites in this way could be envisioned more clearly.

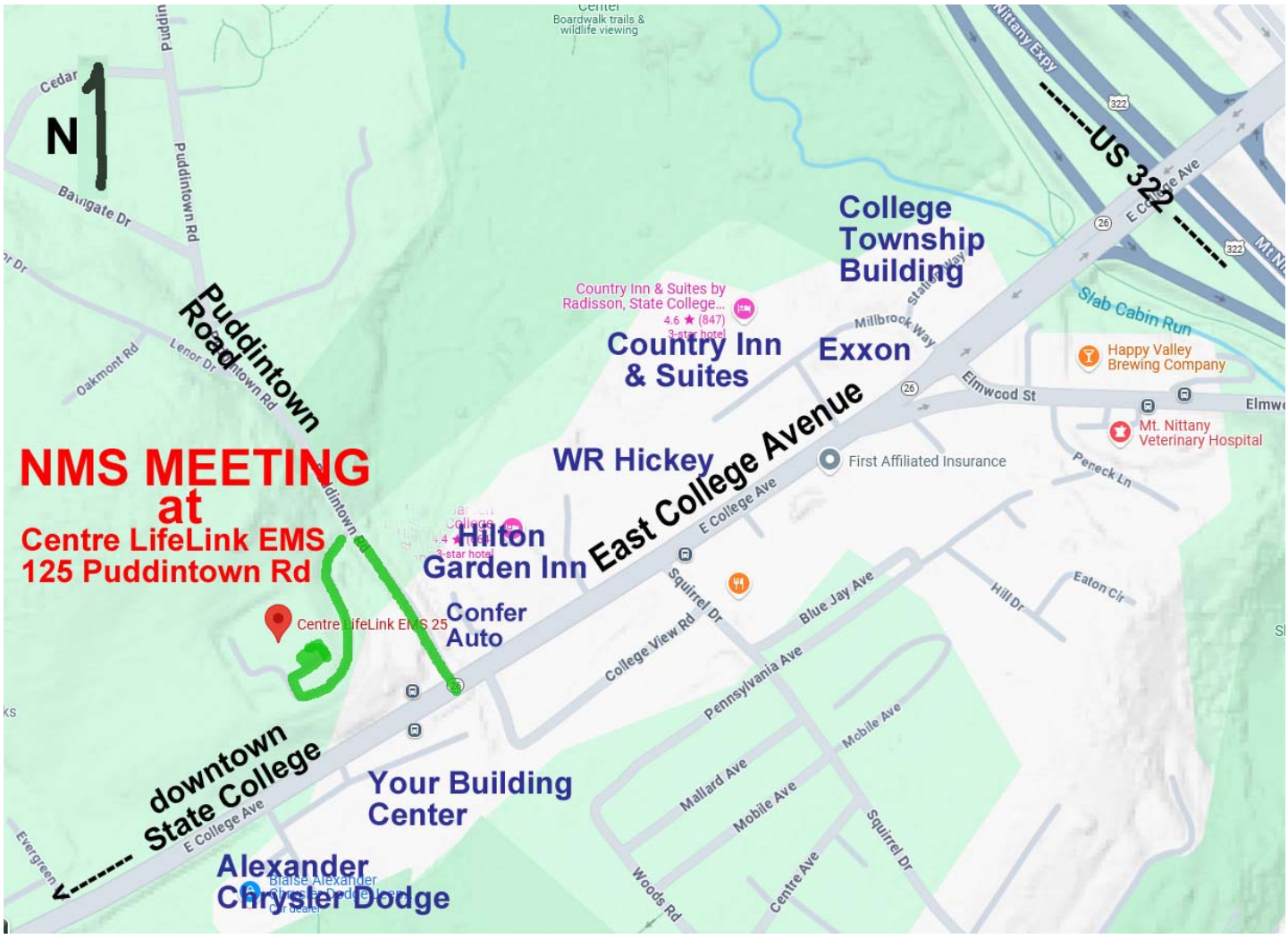
With the further evolution of plate tectonic theory later during the 1960s, a convergent model for the emplacement of intrusive peridotites into the Appalachians (including the PA-MD state line serpentinites) and into other mountain belts of the world could logically attempt to explain alpine-type occurrences of serpentine rocks. Alpine-type ultramafic rocks consist of both sheetlike ultramafic rocks and intrusive peridotites. The sheetlike ultramafic rocks that occur in a sequence, from bottom to top, of: ultramafic rock (commonly serpentinized), gabbro/diabase, basalt and chert, are believed to have originated at mid-oceanic rifts of the Proto-Atlantic (Iapetos) Ocean. The sequence was brought into a lithosphere collision zone during mountain building associated with the closing of that ancient ocean. Such a layering pattern is referred to as an ophiolitic sequence and occurs in bedrock of the extreme northeastern Appalachians. Southwest of Newfoundland, ultramafic rocks do not occur as ophiolitic sequences. Instead, these ultramafic rocks of the Appalachians are believed to be intrusive peridotite, which presumably formed beneath a continental crust according to the model of Chidester and Cady (1972). This seems a logical possibility when an ophiolitic sequence is not present.

References cited

Chidester, A.H. and Cady, W.M., 1972, Origin and emplacement of alpine-type ultramafic rocks, Nature Physical Science, Vol. 240, No. 98, pp. 27-31.

Hess, H., 1962, History of ocean basins, *in* Engel, A.E, James, H. and Leonard, B.F., editors., Petrologic Studies: A Volume to Honor A. Buddington, Geological Society of America, p. 599-620.

Kerr, P.F., 1977, Optical mineralogy: McGraw-Hill, Inc., New York, 492 pages.



NMS begins meeting at the Centre LifeLink building in January 2025 (except March Geode Night at Boal Hall)

Thirty Years Ago in NMS

In January of 1995, NMS was starting its second year of existence. The meeting featured a presentation by John Coolidge, Curator of Paleontology at the North Museum in Lancaster, Pennsylvania. Among the foremost collectors of trilobites in Pennsylvania, he had been collecting fossils for more than 30 years and had a collection of more than 300 trilobites. It was announced that NMS had joined the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS) which at that time included approximately 160 mineral clubs in Eastern states. The advantages of EFMLS membership were noted to include insurance, a program lending library, and being plugged in to a national network of mineral collectors.

Friends of Mineralogy National News

from September 2024 Newsletter v. 54 no. 3
and web site
https://www.friendsofmineralogy.org/call-for-papers/

The 43rd FM-TGMS-MSA Tucson Mineral Symposium

Shades of Green: From Apatites to Zeunerites – More Than Just Emeralds

Saturday, February 15, 2025

Tucson Convention Center,
Tucson, AZ

Plan now to attend!

The forty-third Mineral Symposium, held in conjunction with the Tucson Gem and Mineral Show®, will take place in person on Saturday, February 15, 2025. This symposium is co-sponsored by the Tucson Gem and Mineral Society®, the Friends of Mineralogy, and the Mineralogical Society of America. As a tie in with the show, the symposium theme is the same as the show theme: "Shades of Green: From apatites to zeunerites – more than just emeralds." An audience of amateur and professional mineralogists and geologists is expected. The Symposium Abstracts book with the presentation program can be downloaded from the web page shown above.

UPCOMING EVENTS

Confirm details of events before attending.
https://efmls.org/events/
See other show calendar links on our web site.

Jan. 25, 2025: 57th Annual Open House, by Rutgers Geology Museum. 43 College Avenue, New Brunswick, NJ. This year's theme will be "New Jersey Geology", with a series of lectures and activities related to this topic. All events are free to the public. For details and information, visit: the Geology Museum's website at: https://geologymuseum.rutgers.edu/annual-open-house
- Presentations by Leading Scientists (TBA) in Scott Hall, Room 123 [Note: Specific presentation details will be listed in the Jan. 2025 issue of The Rockhound Register]
- Mineral Sale: Scott Hall, Room 135, from 9 AM to 3 PM
- Rock & Mineral Identification in Scott Hall, Room 205, from 11 AM to 2 PM

Feb. 15, 2025: 43rd FM-TGMS-MSA Tucson Mineral Symposium. Tucson AZ Convention Center. See p. 7.

March 1-2, 2025: 61st Annual Earth Science Gem and Mineral Show, by Delaware Mineralogical Society, Inc. DoubleTree by Hilton, 4727 Concord Pike (Rt-202), Wilmington, DE 19803. Sat. 10 A.M. to 5 P.M., Sun.11 A.M. to 5 P.M. Juniors (12 –17) $3, Scouts in Uniform & Children under 12 Free when accompanied by a paying adult. Tickets only sold at the door. FEATURES: Interesting and educational exhibits of mineral, lapidary and fossil specimens, Outstanding dealers of minerals, fossils, gems, jewelry and lapidary supplies. Quality specimen raffles, Children' booth where youngsters may purchase inexpensive minerals, fossils. Contact: dmsrocksshowchair@gmail.com (Show Chair), Info and Discount coupons at www.DMSrocks.org or at www.facebook.com/DEMineralShow
Gene Hartstein –Show Publicity Chair

March 7-8, 2025: Micromounting Symposium, by Leidy Microscopical Society. Advent Lutheran Church, 45 Worthington Mill Road, Richboro PA 18954. Speakers on Friday & Saturday. Silent Auctions - Give-Away Tables Contact Donald McAlarnen: donmcalarnen@outlook.com leidymicroscopical.com

March 15 - 16, 2025: 59th Annual Gem, Mineral, Fossil & Jewelry Show, by the Gem, Lapidary & Mineral Society of Montgomery County, MD. Montgomery County Fairgrounds, Bldg. 6, 16 Chestnut Street, Gaithersburg, MD. Sat. 10 AM to 6 PM, Sun. 11 AM to 5 PM. https://www.glmsmc.com/show.shtml

UPCOMING EVENTS continued from page 7

Mar. 22 - 23, 2025: 55th Annual Gem & Mineral Show, by Che-Hanna Rock & Mineral Club. Wysox Vol. Fire Co. Social Hall, 111 Lake Road, Wysox, PA. Sat. 9 AM to 5 PM, Sun. 10 AM to 4 PM. http://www.chehannarocks.com/show.html

March 27-30, 2025: AFMS / EFMLS Convention, Hickory, NC.

Mar. 29 - 30, 2025: Annual Philadelphia Mineral Treasures & Fossil Fair, by the Philadelphia Mineralogical Society and the Delaware Valley Paleontological Society. LuLu Temple, 5140 Butler Pike, Plymouth Meeting, PA (PA Turnpike, exit 333; or I-476, exit 20). Free Parking. Sat. 10 AM - 5 PM, Sun. 10 AM to 4 PM. www.phillyrocks.org

Apr. 5 - 6, 2025: 35th Annual North Jersey Gem, Mineral & Fossil Show, by the North Jersey Mineralogical Society. Midland Park High School, 250 Prospect Street, Midland Park, NJ. Sat. 10 AM to 5 PM, Sun. 10 AM to 4 PM. https://nojms.com/

June 7, 2025: Spring Mineralfest, by Pennsylvania Earth Sciences Association (PESA). Macungie Memorial Park, 50 Poplar St., Macungie PA. Free; Sat. only, 8:30 -3:00. https://www.mineralfest.com/

Geo-Sudoku Solution

L	E	G	N	R	0	Y	A	I
A	R	I	E	Y	G	L	0	N
N	0	Y	I	L	A	G	R	E
I	G	N	A	0	L	E	Y	R
E	Y	R	G	N	I	A	L	0
0	**L**	**A**	**Y**	**E**	**R**	**I**	**N**	**G**
Y	A	E	R	I	N	0	G	L
G	N	L	0	A	E	R	I	Y
R	I	0	L	G	Y	N	E	A

ATTENDING THE JANUARY MEETING?
Donations of **one or two high quality, labeled door prize specimens** are invited.
Larger quantities can go in a giveaway box.
Bring a friend!

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 $25 (regular member), $10 (student rate), $18 (seniors), $35 (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 in as directed, or bring your dues and form to the next meeting.

We want to welcome you!

CONTACT INFORMATION

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Facebook: John Dziak: dziakj1@gmail.com
Publicity:

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
425 Armagast Rd. phone: (814) 810-2116 (h)
Bellefonte, PA 16823-9762

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

Visit us at www.nittanymineral.org