

Nittany Mineralogical Society Bulletin

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

February, 2025

Visit our web site: www.nittanymineral.org

Editor (see back page):

David C. Glick

February 19th meeting:

Forensic hydrogeology and more: Chronicles of a hydrogeologist

Dr. Charles E. Miller, Jr.

AT CENTRE LIFELINK

Our February meeting will be held Wednesday the 19th 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

This month's talk discusses projects the author worked on as a state hydrogeologist. These involved mining permits and water investigations for coal and noncoal (sand and gravel, topsoil, flagstone/bluestone, and limestone) operations. Water investigations are examples of forensic hydrogeology - i.e., using geoenvironmental science to provide data. Each investigation is a "whodunit." The consistent question is: "Who affected my water?" Hydrogeological techniques, observations, and interpretations are akin to strategies and clues used in mystery stories.

See the illustrated article on pages 4-5, and see this presentation at our February 19th meeting!

NMS Spring Schedule

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

Mineralogy Short Course?

Anyone interested in taking a short course in mineralogy for amateurs is invited to contact Dr. Andrew Sicree at <aas132@psu.edu>. PowerPoint lectures combined with hands-on learning with specimens would provide an interesting and educational experience. For those age 16 and up, accessible for everyone regardless of math and science background, the plan would be for 8 meetings of an hour or more, or equivalent, for a total fee of \$99 per person.

MEETING LOCATION

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 7

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 held at Boal Hall, scheduled for 6:00 to 6:45 p.m. on Wednesdays, twice per month: 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! At this event, students in grades 1-8 with their parents visit at least 8 stations to learn about some aspect of minerals, earth sciences or lapidary, and get specimens to take home. Most of the learning stations are set; if you haven't volunteered yet to help at an existing station, please do so. We'll discuss it more at the February meeting. **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 ABGILNOST. One row or column includes a mining technique that may be legal or illegal. 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.

		G	I			O		L
L	S		B	G		I	N	A
I	A		O		L	T		
		T		L	S		I	
	I							N
			A	I			T	S
G	N	I					A	
O	T	S		A				
								O

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>> February newsletter introduces Rockhounds of the Year from many clubs. Tickets for the Endowment Fund drawing are available, and color photos of some items in the drawing are presented. The safety article covers keeping the club's first aid and safety kits up-to-date. Leading up to the March AFMS/EFMLS Convention, Cheryl Neary writes about "The Roads to North Carolina."

The Eastern Federation's <<https://efmls.org/>> February Newsletter includes president Andrew "Rockhound's" message, reprinted at right, and other articles reprinted starting on page 6 of this issue. See the Newsletter for Wildacres articles. *- Editor*



EFMLS President's Message

from
Andrew Rockhound

**EFMLS News v. 72 no. 2
February 2025**

Happy Groundhog Day
everyone!

As we move through the winter closer to our early March AFMS/EFMLS joint convention, and rebuilt Wildacres session in May, I am happy to say the state of the EFMLS is positive and working hard toward these events, and a bright future! You will see in this issue, updates and details on the convention from Cheryl Neary, plus the registration form. We welcome all clubs to register and attend the convention in beautiful North Carolina! We also have already announced the 2025 Wildacres sessions, with details and registration forms available on the website at efmls.org. Check out exclusive posts about Wildacres on our social pages leading up to this year's session as well!

As part of my duties as president, I am proud to announce my nomination of Alicia Cruz-Urbe, from the University of Maine, to the AFMS Scholarship committee as our scholarship honoree. She will award two of her deserving post grad students each a \$4,000 scholarship from the AFMS fund. We have worked with the University of Maine and its professors in the past, and as a president with more blood drawn from Maine's mosquitoes than any doctor, it is my honor to select them this year.

After already welcoming 2 new EFMLS clubs for 2025, I have been working with 2nd VP Jake Van Der Vliet who has been key to updating our initial communications and guidance for applying clubs. His geological outreach experience has been priceless in these updates. We have almost finished our new "EFMLS Club Resource Package" which we plan to distribute to renewing and newly joining clubs, to promote the utilization of the programs the EFMLS and AFMS provide. We should be sending this out soon, we are just waiting for a few remaining details.

After spending January writing convention reports, selecting awardees and creating social posts, I can say the future is bright for the EFMLS, and our amazing volunteers are working to bring it to you! ❄️



The Road to Hickory, North Carolina

by Cheryl Neary

from EFMLS News Feb. 2025, v. 72, no. 2

This year's 2025 AFMS/EFMLS Convention, March 28-30, 2025, will be held in Hickory, NC. Hickory is in the foothills of the Blue Ridge Mountains in the western part of the state. Did you know that the mountains were named for the blue haze created when light scatters across the mountains and the isoprene is released into the atmosphere. Isoprene is a colorless, volatile organic compound produced by plants, animals and bacteria. Isoprene plays a role in protecting plants against a variety of abiotic stresses, such as sunlight, temperature, winds and precipitation.

The Blue Ridge Mountains span Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, and Georgia. The EFMLS has clubs in all but South Carolina and Georgia, and we hope to see many of the clubs represented, not only from the states mentioned but from all the states in the federation!

So, what does this mean? First, the host hotel is Hampton Inn – conveniently located next door to the Metro Convention Center where the club show is being hosted. The show is a wonderful three-day event. For \$6.00 you can visit the show for three days! One of the days, the Pottery show is also being hosted at the Convention Center – and for a separate admission price you can view/buy some spectacular pieces. To make a reservation at the Hampton Inn, call 828-624-2000, and inform them you are under the Catawba Valley Gem & Mineral Club for the group rate of \$139.00. The rooms will be held at this rate until February 26th and after that the discount no longer applies.

The registration form is [on the EFMLS web site]. The deadline for the registration is March 01, 2025.

This date will be here before you know it – so I suggest – take the time today to fill it out and send to Terry Russell with your check and be sure to email to Cheryl Neary @ ciervo.neary@gmail.com.

If you are planning on exhibiting a showcase, there are at least 10 cases available from the host club. The sizes are as follows:

Regular/Small 40" W X 19" D X 22" H

Larger 48" W X 24" D X 24" H

Of course, you are always welcome to use your own! A separate form is attached, if interested!

The registration form is quite informative. If you have any

other questions concerning the registration form, please feel free to contact me at either my email above or at 516.449.5341. Please leave a message if I do not answer.

I have been to the show numerous times. It is a wonderful show. There are quite a few things for the children - so bring your families! This club is one of the few clubs in the EFMLS that have a number of showcases, which are not only attractive to view but informative. At these shows and conventions, it is always a great opportunity to discuss meeting ideas, field trip information, etc.

The EFMLS is planning on a zoom annual meeting, if you are unable to attend. Please make sure, your delegate form is sent to me (attached in this newsletter), even if you plan on being on zoom – only registered attendees will be allowed to vote.



The EFMLS Convention field trip is Monday, March 31, to Probst Farm, Lincoln County, North Carolina, a recently reopened dig site for sapphire.

From Cheryl's article in the **October EFMLS News**:

Friday the Catawba Valley Gem and Mineral Club will open the doors at the Convention Center for their three-day show. The EFMLS annual meeting will be Friday night. A Cracker Barrel session (no - this is not at the Cracker Barrel restaurant- right down the street) will precede the meeting. Saturday morning is the BEAC breakfast and Saturday night is the banquet. The auction will be held on Saturday afternoon-TBD.

The host hotel is the Hampton Inn conveniently located next door to the newly revamped convention center.

On Saturday of the show is also a pottery show at the convention center as well.

There are 25 rooms reserves at a rate of \$139 per night. They will hold the rooms at that rate until Wednesday, February 26, 2025. Don't wait! When reserving just ask for Catawba valley Gem & Mineral Club. 1-828-624-2000

The convention is March 27-31st (Thurs - Monday), The hotel rate is Wed. 3/26- 3/31. ✱

Forensic hydrogeology and more: Chronicles of a hydrogeologist

Dr. Charles E. Miller, Jr.

This month's talk discusses projects the author worked on as a state hydrogeologist. These involved mining permits and water investigations for coal and noncoal (sand and gravel, topsoil, flagstone/bluestone, and limestone) operations. Water investigations are examples of forensic hydrogeology - i.e., using geoenvironmental science to provide data. Each investigation is a "whodunit." The consistent question is: "Who affected my water?" Hydrogeological techniques, observations, and interpretations are akin to strategies and clues used in mystery stories.

The projects were in Clearfield, Clinton, Lycoming, Sullivan, Potter, Tioga, and Bradford Counties in Pennsylvania. All are in the Susquehanna River Basin (SRB), draining to the Chesapeake Bay (Figure 1).

Managing the watershed is important because what happens in one part potentially affects the Bay. As examples, two coal strip mines in Clinton County are discussed because they impacted waters of the Commonwealth. Certain mining practices at these sites thwarted environmental enforcement. One illegal practice was drilling and/or shooting (blasting) the pit floor to drain accumulated water. Pit-floor water is often acidic because of contact with residual coal. The proper practice is to pump the water to ponds for chemical treatment. At the second site, there was evidence tampering to "muddy the waters" when it came to assessing liability. How these practices were identified and outcomes of the investigations are discussed.

The watershed concept is also employed in smaller areas, as in water-supply investigations. Regardless of size, a watershed must be delineated. The basic tool for this is the topographic map - the "map of a thousand uses." The technique is discussed with applications.

The next time a sign reads: "Entering the Spring Creek Watershed," you can better appreciate how it was drawn. Only after its boundaries are delineated can a watershed be properly managed.

This talk also discusses public and private water supplies. The former usually consists of high-volume wells (as in State College), reservoirs behind dams, or rivers. Now consider something different - a public-water system from an abandoned, underground (deep) coal mine. At the time of the author's work, this system served at least 100 people. Chemically, the water met drinking-water standards. That was not necessarily true for bacteria. Reflecting on this scenario, during field work elsewhere, a small community with no public sewer and no septic tanks was visited. Homes were located over an abandoned deep mine, some of which can extend a mile or more. Because most of the coal has been removed, deep mines act as aquifers, conveying water. This deep mine became a free public sewer. Appreciate that what goes into the deep mine at this community may emanate from the same mine a mile or more away, and be used for whatever purpose.

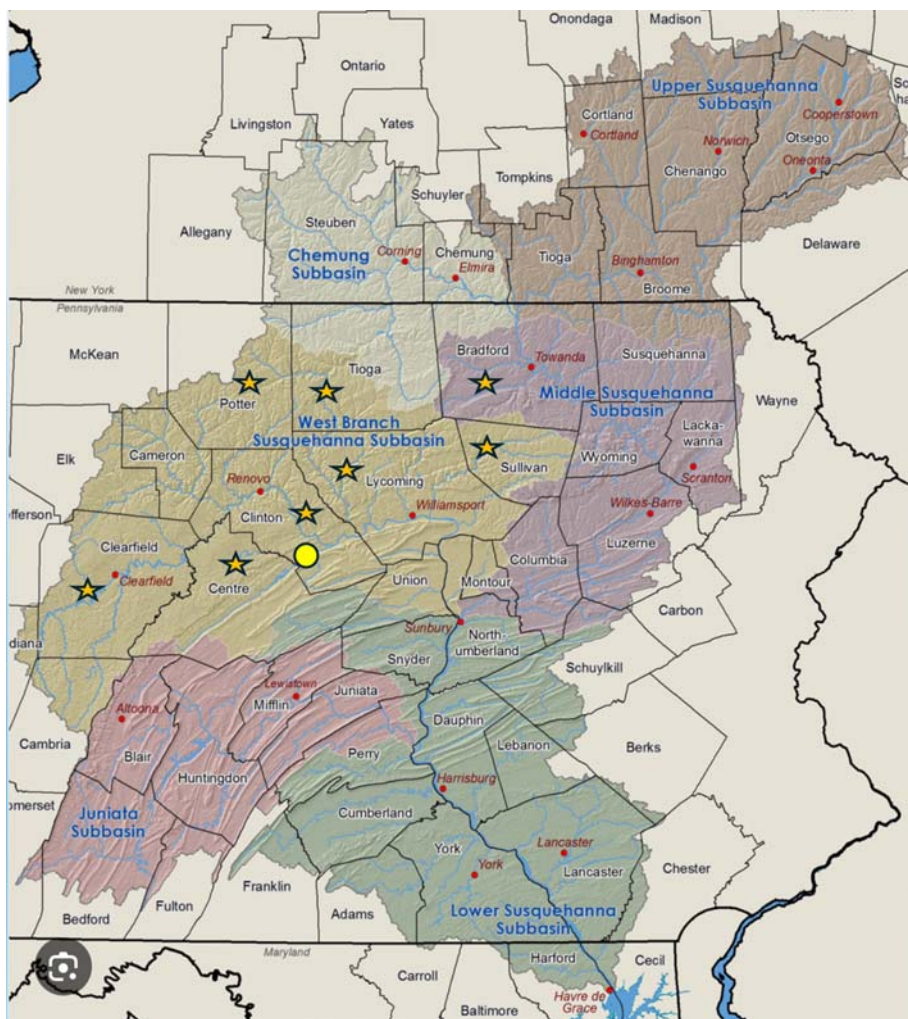


Figure 1: Map of the Susquehanna River Basin and counties the author worked in.

The wide use of private water supplies relating to mining creates situations waiting for investigations to happen. Consider an unprotected impoundment in an abandoned strip pit, replete with junked vehicles and trash, used as a private water supply. Then, there is the drilled water well that had no protective well cap or other cover. What can go wrong with that scenario?

In the course of investigations, several misconceptions regarding blasting became apparent. Many people think dynamite is used as the explosive. It is not. Rather, ANFO (ammonium nitrate fuel oil) is the primary blasting agent. Timothy McVeigh used a variant of this in the 1995 Oklahoma City bombing. A related misconception is that blasting fractures radiate out hundreds of feet, thus damaging homes and wells. US Bureau of Mines (USBM) studies show blast fractures radiate out 22 times the hole diameter. Blast holes are six inches (0.5 feet) in diameter. Ergo, blast fractures extend out - at maximum - 11 feet from the blast. This explains why shot patterns are not spaced more widely apart (Figure 2). If blasting fractures radiate out hundreds of feet, less blasting holes would be needed, saving money. Another observation confirms the USBM findings. After blasting only 15-20 feet away, an adjacent drill hole may retain a water column. This would be impossible if blasting fractures radiate as far as some think. Finally, people find it difficult to distinguish between air and ground vibrations from blasting. Air vibrations shake buildings but do not affect water wells. Ground vibrations, on the other hand, may or may not affect the well, depending on circumstances. In one investigation, a portable

seismograph was set up at a complainant's drilled well. This was approximately 1200 feet from blasting. At that distance, the signal (ground vibration) was attenuated and not detected. Because the complainant was unconvinced, the author performed a demonstration. A textbook was dropped near the seismograph, from shoulder height. The impact registered on the seismograph. Would dropping a textbook on the ground impact a water well 100 feet deep? The complainant was unwilling to accept scientific logic.

Now, consider an investigation involving two drilled water wells and surface coal mining approximately 900 feet away. The wells were drilled to the same depth and were only 15-20 feet apart. The first well silted up 15 years before nearby mining. This means natural conditions caused the silting. The complaint alleged more recent, nearby mining caused the second (newer) well to collapse or silt up due to blasting. Blasting was within legal limits. Water sampling of the newer well for total suspended sediments (TSS) before and immediately following a blast showed no change. If ground vibrations from blasting shook the well, as alleged, one would expect increased TSS. What would be your hydrogeological assessment of this complaint?

This talk describes 27 scenarios. Some became studies in human nature. Opposition to a project can be in many forms. Consider homes along a two-lane road. Off this road, on the same side, was a one-acre site for proposed sand and gravel mining. Opponents of the mining argued the road was too narrow for haul trucks, and would create safety hazards. At the same time, this road was suitable for school buses, fuel-delivery trucks, moving vans, FedEx trucks, and RVs - but not haul trucks.

One project involved a large sand and gravel operation requesting an amendment. As part of the review, private water supplies proximal to the site were inventoried. Zoning is a mechanism for controlling land use. One resident opposing the mining stated that if zoning came up for vote again, as it did 10 years ago, he would still vote against it. He did not want government telling him what he could or could not do with his property. Essentially, he wanted to have his cake and eat it too.

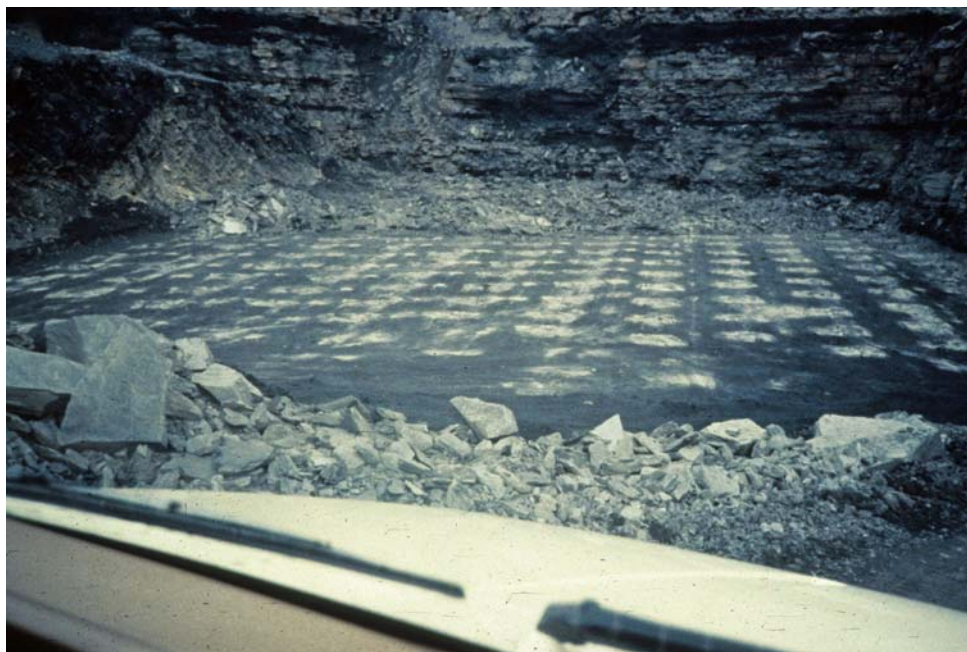


Figure 2: Shot (blasting) pattern at a surface coal mine.

Several New Exhibits at Penn State Earth & Mineral Sciences Museum & Art Gallery

by David Glick; photos by the author

The last few years have seen multiple changes in the EMS Museum gallery on the ground floor of Deike Building. It's all on one side of the hall now; the flooring has been replaced; the windows have been replaced along with the rest of those in Deike Building; and a glass wall separates it from the variable temperature and humidity of the heavily used hallway. At the south end, another plaster relief map from the historic College of Earth & Mineral Sciences buildings has been restored and installed. See the web site for hours and more: <https://museum.ems.psu.edu/visit>

Some new temporary exhibits were introduced at a reception on January 30; see the Museum newsletter <https://museum.ems.psu.edu/about> and elsewhere on the web site for these and other exhibits.



Partial view through the glass wall from the hallway



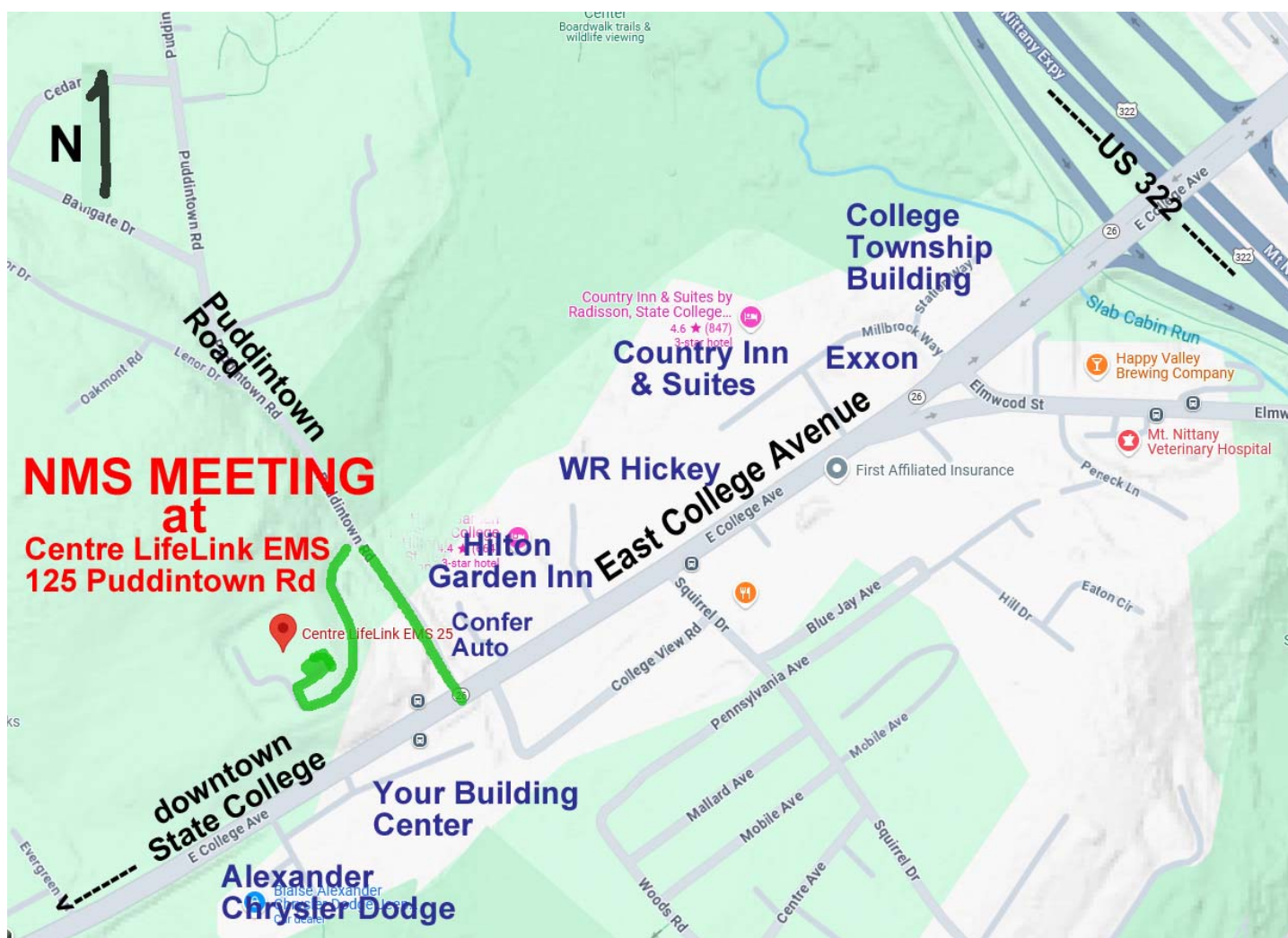
The Smoky City: Pollution and Progress in Pittsburgh exhibit by J. Hart, shown in part here, combines specimens, technological artifacts, paintings and photographs to tell its story.



Old-timers like the author will recognize the model of the Drake Well from the south vestibule of Deike Building in the 1980s.



Pride Rocks by D. Kinkaid tells the stories of LGBTQ+ scientists and events with geological specimens.



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



UPCOMING EVENTS

Confirm details of events before attending.
<https://efmls.org/events/>

See other show calendar links on our web site.

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's 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

UPCOMING EVENTS continued from page 7

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 Cty 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>

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. See page 3.

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

T	B	G	I	N	A	O	S	L
L	S	O	B	G	T	I	N	A
I	A	N	O	S	L	T	B	G
A	O	T	N	L	S	G	I	B
S	I	L	T	B	G	A	O	N
N	G	B	A	I	O	L	T	S
G	N	I	L	O	B	S	A	T
O	T	S	G	A	N	B	L	I
B	L	A	S	T	I	N	G	O

ATTENDING THE FEBRUARY 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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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