

Nittany Mineralogical Society Bulletin

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

Editor (see back page):

October, 2023

Visit our web site: www.nittanymineral.org

David C. Glick

October 18th meeting:
IN PERSON at BOAL HALL

Geology Field Excursions in Central Pennsylvania

by Dr. Charles E. Miller
Nittany Mineralogical Society

Our October meeting will be held Wednesday the 18th in Boal Hall (Boalsburg Fire Hall), 113 East Pine St., Boalsburg, PA 16827. Maps can be found on our web site.

7:15 to 7:45 p.m.: Social "hour." We will serve some refreshments - snacks and beverages - or feel free to bring your own non-alcoholic beverage.

7:45 to 8:00 p.m.: Annual Meeting; announcements, door prizes, sales

about 8:00 p.m.: featured program

*The event has free admission and free parking (lot just east of Fire Hall along East Pine St.), and is open to all; **parents/guardians must provide supervision of minors.***

Bring your friends and share an interesting evening.

We expect to record the presentation for later posting on our web site.

For the past 12-15 years, the speaker has accompanied Duff Gold (Penn State Professor Emeritus of Geology) on geology field excursions in central Pennsylvania. The outings are the result of his consulting and other pursuits in geology. A wide variety of topics and sites are presented in this month's talk, a few of which are discussed in the article on **page 4**, such as faults, sinkholes, fracking, quarrying, and PennDOT. ❄️

ATTENDING THE OCTOBER 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!

New DUES Year Starting

by David Glick, NMS Membership Chair

Thank you to the many members who have already renewed their membership! I am gratified by the response to last month's announcement.

If you haven't renewed yet, our new membership year starts on November 1. Annual dues are: \$25 regular membership; \$18 seniors 65 years+; family \$35; students \$10. For NMS members, a dues form is included with this issue, either on paper or electronically. The form is also available <<http://www.nittanymineral.org/mem.htm>> on our web site. We will be working on updating the menu for paying via PayPal. Your dues are used for programs and speakers, meeting hall rental, refreshments, educational activities, Bulletins, and mailing expenses. We look forward to your continuing membership!

OFFICIAL NOTICE: Annual Meeting and Elections in October

by David Glick, NMS President

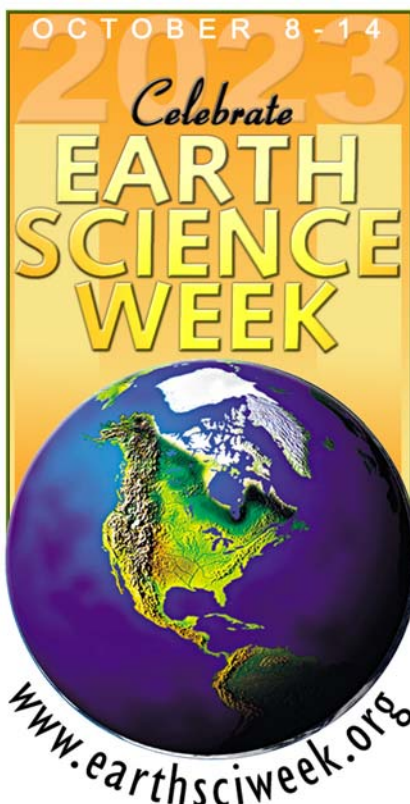
The October 18th meeting, to be held at Boal Hall in Boalsburg, will be the **Annual Meeting of the Corporation**. Business will include election of officers. In accordance with our bylaws (available on the web site), the Board of Directors, acting as the Nominating Committee, met and nominated the following slate of officers:

President	David Glick
Vice President	Bob Altamura
Treasurer	Stuart Bingham
Secretary	Barry Schetz

The Board truly needs **additional volunteers** to get involved with running the Society, providing **new energy and fresh thinking** and some new names on the ballot in the future. Newcomers could spend some time on committees and attending Board meetings before stepping into elected office. Please consider volunteering!

Upcoming Meetings

December dinner is set for Wed. the 13th
November 15: Applying Non-traditional stable isotopes to traditional Geological Problems, by Adam Ianno, Pennsylvania Geologic Survey
December 13 (not Dec. 20): Holiday Dinner at Quaker Steak & Lube; sales by NMS & members, free appetizers.



Earth Science Week

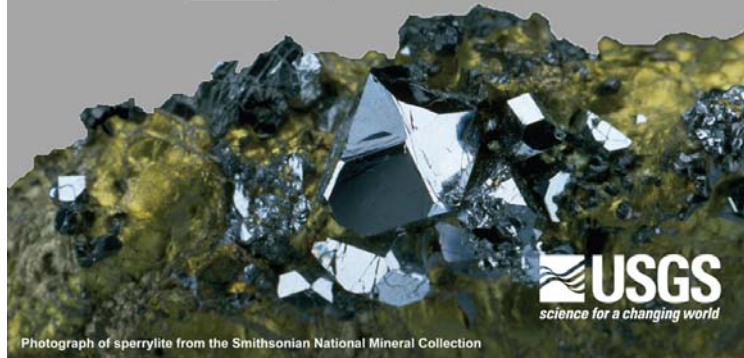
There's lots of interesting and educational material about Earth Science Week, Minerals Day, National Fossil Day, and more, on the web site at <https://www.earthsciweek.org/> -Editor

NMS Leaders Altamura, Sicree to speak at FM-PA Symposium

After having met in Lancaster, PA, since 2009, and in Media, PA, for 9 years before that, the Friends of Mineralogy - Pennsylvania Chapter Annual Symposium is moving to Johnstown for the first time this year. It is expanding to have an associated show open to the public, and as usual will have a field trip the next day. Among the mineralogical presentations will be NMS's Dr. Andrew Sicree on "Minerals from Centre County: From the bottom of the quarry to the top of the Sky" and Dr. Robert Altamura on "A Model for the Cause of Iridescence in Plagioclase Feldspar and the Effect of Superimposed Polysynthetic Twinning." See the flyer below and <<https://rasloto.com/FM/whats-new/>> -Editor

A GEOLOGIST TONGUE TWISTER

Geologists collect
slate and shale slabs
sparkling sperrylite
stinky sulfur
silvery silicon
sedimentary sandstone
and shards and slivers
of silvery schist



Tongue Twister written by Donna Beaver Pizzarelli for Earth Science Week 2020. Photograph of sperrylite from the Smithsonian National Mineral Collection, by Chip Clark .

Rockin' in the Alleghenies - JOHNSTOWN FM-PA Annual Symposium and MINERAL, FOSSIL & GEM SHOW



Friends of Mineralogy - Pennsylvania Chapter
SYMPOSIUM & SHOW Nov. 11, 2023 - Field Trip Nov. 12
Attend ONLINE -OR- IN PERSON at University of Pittsburgh - JOHNSTOWN

FIRST ANNUAL MINERAL, FOSSIL & GEM SHOW SHOW SATURDAY 8:30 - 6:00 ADMISSION FREE TO ALL 40 TABLES OF SELECTED VENDORS

SYMPOSIUM for mineral collecting enthusiasts Non-members \$ 15.00 Members \$10.00 Students free

Friday evening Nov. 10: Meet & Greet - bring your mineral specimens to talk about.

Saturday Nov. 11: Hybrid Symposium - **ONLINE** or **IN PERSON**

8:00 a.m. to 5:00 p.m. at University of Pittsburgh - Johnstown

Seven talks by knowledgeable **SPEAKERS** concentrating on **Pennsylvania Mineralogy & Geology** and more:
Gypsum Occurrence in the Vanport Limestone, Lawrence County, PA - by William Kochanov, PG
Minerals from Centre County: From the bottom of the quarry to the top of the Sky - by Dr. Andrew Sicree
A Model for the Cause of Iridescence in Plagioclase Feldspar and the Effect of Twinning - by Dr. Robert Altamura, PG
Geology & Mineralogy of the New Paris Quarry with Emphasis on Structural and stratigraphic relationships as assessed using Modern Mapping Techniques - by Bill Stephens, PG, and Stephen R. Lindberg
The Geochemistry and Petrology of the Bald Hill Bentonites in SW PA - by C Howard, A Schreckengost, Dr. R Kerrigan
Insights from phosphatic conodont fossils recovered from a Silurian-Devonian inland sea...New Paris quarry...PA - by C. Coughenour & S. Lindberg
Examining Mineral Fluid Inclusions to Assess the Economic Potential of Allegheny Hydrothermal Systems - by Aleya Schreckengost

Silent Auction - Give-away Table - Meet Fellow Collectors - Rock Giveaway by UP-J
Professional Geologists: Six Professional Development Hour credits available for full lecture attendance

FIELD TRIP Sunday Nov. 12 New Paris Quarry. Open only to symposium registrants. Register now!

Visit our web site for details, registration form, changes and updates: www.rasloto.com/FM

EFMLS Social Media Update
by “Andrew Rockhound”
EFMLS Social Media Director

Our new Facebook page “Eastern Federation of Mineralogical and Lapidary Societies” is up and running, please Like, Follow and Share! It’s at <<https://www.facebook.com/efmls.org/>>. The earlier EFMLS Shows and Events page at <<https://www.facebook.com/EFMLS/>> is still going strong. We are posting upcoming events to both pages, but focusing more on positive outreach like club activities, field trip highlights and member spotlights for the new page. Does your club have a new “Rockhound of the Year”? Send us a pic and description! We need you and your club to send us your photos, so we can post them, so just use the message button on the page to send us your content. The page is only as good as the clubs who participate in sharing content! Please don't send us stuff to sell, or spam. Let's get this page rolling by members following it, from all the clubs in the Federation!



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 our web site, <<http://www.nittanymineral.org>>.

In the AFMS September Newsletter, President Cheryl Neary says goodbye as her year in office ends. She writes about volunteering, and travel to federation conventions. There’s lots of news about awards, minutes of the AFMS annual meeting, calls for support needed to keep collecting areas open on public lands, and background information on Ventura, California, where the 2024 AFMS Convention will be held. The AFMS 2023 first place juniors article is printed; it tells the story of a new dinosaur species from Colorado described after a fossil was in storage at Yale’s Peabody Museum for 117 years.

The Eastern Federation’s October Newsletter has Bill Stephens’ President’s Message, covering Herkimer mining, the first Earth Bling Mineral and Music Fest, and EFMLS business. The Social Media Update, with new Facebook page, is reprinted above (and a link is on the NMS web home page). The Federation’s Club Rockhound of the Year award is described. The safety article is about venomous snakes. *-Editor*

**Minerals Junior Education Day
Set for March 23, 2024**

Please save the date to volunteer at our annual event for kids and families. Plan an educational station with souvenir giveaways, or volunteer to help at an existing one. Watch for details in the coming months. *-Editor*

Geo-Sudoku

by David Glick

The puzzle below contains the letters ABDEMOPSY. One row or column includes the place where a dinosaur fossil hung out for a while. If you’ve read 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.

E				P	B			D
P		D				Y	B	
			Y	D			O	
	A	M			D			Y
		Y	P			M		
D		P					S	
	D		E	S				
A	S		D		Y	B		P
M			A					S

Geology Field Excursions in Central Pennsylvania

Dr. Charles E. Miller, Jr.
Nittany Mineralogical Society

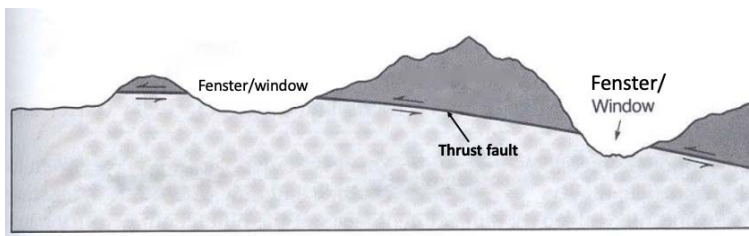


Figure 1: Two fensters, or tectonic windows, exposing a thrust fault. Modified from www.southalabama.edu.

Introduction

For the past 12-15 years, the speaker has accompanied Duff Gold (Penn State Professor Emeritus of Geology) on geology field excursions in central Pennsylvania. The outings are the result of his consulting and other pursuits in geology. A wide variety of topics and sites are presented in this month's talk, a few of which are discussed in this article.



reverse fault resulting from compressive stress (Figure 1). With the Birmingham Thrust, Cambrian (older) strata are pushed over Ordovician (younger) strata, resulting in out-of-normal-sequence stratification. Erosion at Birmingham, modified by road excavations, creates a fenster or tectonic window (Figure 1) through which the fault is seen. This fault has probably challenged more minds over the past 88 years than any other structure in central Pennsylvania. The fault is inferred to extend 22 miles, from Birmingham to Bellefonte. At Birmingham, there is approximately 5000 feet of horizontal displacement on the fault.

The compressive stress forming this fault originated to the east when the Appalachian Mountains formed 250 million years ago as the African and North American crustal plates converged. One can appreciate the tremendous stress created - and distance traveled - from converging crustal plates. Westward-migrating stress attenuated in the western and plateau regions of Pennsylvania.

Duff worked on the Birmingham Thrust Fault at Birmingham and at Skytop. Later, we described inferred splays of this fault at the Scotia/Grays Woods I-99 interchange (Figure 2).

Faults

Central Pennsylvania is replete with faults. These breaks in rocks along which there has been differential movement add complexity to stratigraphic sections. Their associated stresses truncate and displace strata, causing lengthening and shortening of sections. One of the biggest in this area is the Birmingham Thrust Fault, named for the community of the same name southeast of Tyrone. A thrust fault is a low-angle ($\leq 45^\circ$)

Another local thrust fault is exposed in the Blackhawk Quarry (Figure 3). Duff developed a student exercise to determine the amount of movement along the fault. There is a dark side to this quarry. In 2016 a Penn State professor



Figure 2: Panorama composite of the Scotia/Grays Woods I-99 interchange roadcut. The faults are inferred splays of the Birmingham Thrust Fault. Image by the author.

was pushed off the 80-foot highwall. The coroner indicated he may have lingered several days before his body was found five days later.

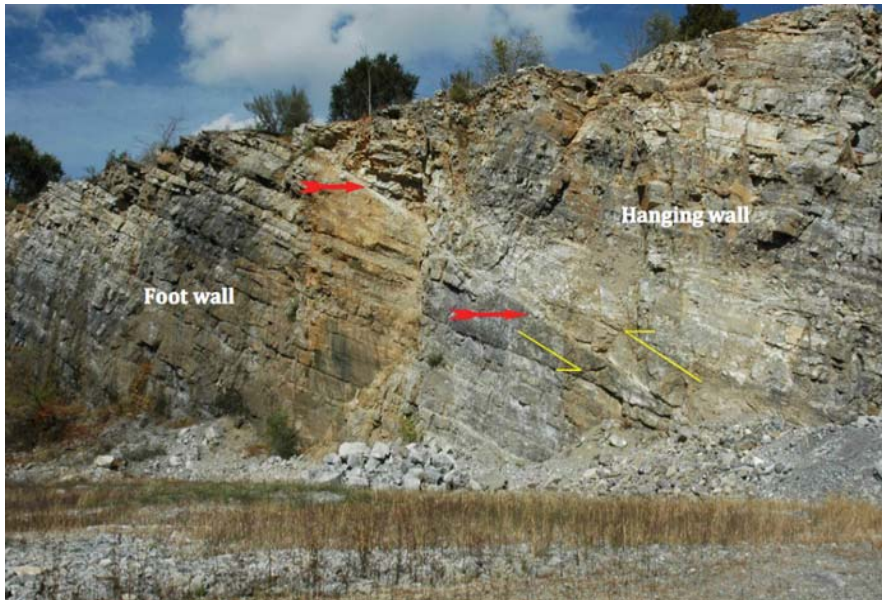


Figure 3: Thrust fault in the Ordovician Bellefonte Formation at the Blackhawk Quarry. Image by the author.

Sinkholes

Sinkholes either form from natural processes or man-induced circumstances. The former are mostly from solution of more soluble rock, such as limestone. The latter result from groundwater pumping of fluids (water or oil), broken water or sewer pipes, or collapse of underground mines.

In 2018, a 1.5-foot-wide sinkhole opened in Rt. 26 at the Nittany Mall. Approximately 20 feet from that sinkhole was one near the shoulder, previously repaired. Other sinkholes were observed in adjacent fields on both sides of the road. Sinkholes in the farm field on the north side may be linked to runoff from Mt. Nittany. Prodigious runoff from the mountain contributes to sinkhole formation in adjacent carbonates. Sinkholes in a retention pond on the opposite side are probably linked to parking-lot runoff.

In 2016, we looked at two swallow holes that drained a pond's volume by 50 percent (Figure 4). These were naturally occurring. In 2018, we inspected sinkholes adjacent to Rt. 26, along Spectrum Control's property, near the

intersection with Science Park Road. Some of these sinkholes are recurring, and are periodically filled in. At least two, possibly three, have a rectilinear (straight-line) alignment, suggesting development on a fracture trace. In 2013, we observed excavation and remediation of a recurring sinkhole at Memorial Field in State College. Originally, the sinkhole was the central drainage point of a large, closed depression (uvula) in a former farm field sold to the school board for \$3000 in 1914. This sinkhole has been problematical. It drains surface storm water from five directions. Using the sinkhole to drain surface water is convenient. However, there are potential problems with doing so. If subsurface drainage is blocked, Memorial Field rapidly floods during a storm. Funneling copious volumes of surface runoff into the sinkhole potentially enlarges the opening, possibly resulting in renewed subsidence. Additionally, directing runoff from streets into the sinkhole is not the best practice for protecting groundwater quality. Most groundwater in karst flows via solution channels. These act as pipes, conveying large volumes of water, sans filtration. Oil, sediment, winter salt, etc. from streets can be transported great distances via solution channels. Downgradient water wells may intercept this polluted water. Probably more egregious was when, for several years after the school board purchased the sinkhole, locals used it as a dump for their trash. Chemicals and decomposed organics replete with bacteria drained into the local groundwater.



Figure 4: Swallow holes in pond off Rt. 45, State College. Image by the author.

A 75-foot sinkhole, 12-15 feet deep, opened in Amblewood Way in State College on 12-25-2022. We visited the site a few days later. Residents of 18 townhomes were displaced. In March 2023, State funding was secured to help cover costs of inspections, renovation, and sheltering. As a result of this sinkhole, legislation was to be introduced to provide families in the future with relief for up to 90 days for disasters, like sinkholes. The cause of the subsidence has not been made public.

Figure 5 (yellow arrow) shows a sinkhole cross section at Oak Hall Quarry. This perspective is unusual because, mostly, people have a bird's-eye view, looking down into the sinkhole opening.



Figure 5: Cross section of a sinkhole at Oak Hall Quarry. Image by the author.

Consulting for quarries

There are two primary reasons quarries hire a geologist: to maintain or increase production, and geoenvironmental issues. Regarding production, one must appreciate that quarry operators are production people, not geologists. The foreman may not know what geological formation(s) they mine. If their product meets specifications, they sell it. To maintain or increase production, a quarry may want to mine additional land. A geologist can render advice that saves the company money. For example, if the company is considering purchasing property, is it wasting money for land with inferior stone? As an offshoot, some of Duff's quarry work was published, providing information for others. The talk highlights some observations at several quarries in central Pennsylvania.

In 2016, Duff consulted at the Naginey quarry in Naginey, Pennsylvania (near Milroy). This was an old quarry with an interesting story. In 1868, workers intersected a cave that became known as the Charles Naginey Quarry Cave. It became a tourist cave. Typical of the times, exaggerated claims were made to promote the cave. One promoter went so far as to associate Edgar Allen Poe with the cave. This was quite remarkable, to say the least, **considering Poe died 19 years before the cave was discovered.** In 1905, a highly decorated passage was discovered, but expanded quarrying eventually mined out the cave.

Chalk art?

Much attention has been given to fracking - i.e., fracturing shale (such as the Marcellus Formation) using high-pressure fluids to release natural gas. The nascent fractures are called hydrofractures. They are analogous to plumose fractures (Figure 6), a.k.a. naturally occurring hydrofractures. These propagate from an origin point as the rock fractures under high pressure. Figure 6 shows chalk highlighting these fractures in Huntingdon. This is not geologic vandalism. The chalk is temporary, washing off from rain. Chalk highlights such as those in Figure 6 make it possible to see plumose fractures in shale which, otherwise, are difficult to discern.



Figure 6: Chalk highlights of plumose fractures in the Brallier Formation at Huntingdon, PA. Image by the author.

Consulting for PennDOT

Duff was geological consultant for PennDOT at Sky Top and at the new Rt. 322 four-lane alignment at Potters Mills. At each locality, it was necessary to identify geologic formations. Of particular note was the Ordovician Bald Eagle Formation. This geologic unit was the source of most, or all, of the acid-rock drainage that created a \$100+ million problem during I-99 construction at Sky Top. The Bald Eagle also occurs at the Potters Mills site. As part of his work, Duff measured structural orientations of formations, joints (fractures), and faults. As one drives the Potters Mills section, metal wire mesh can be seen draping some of the roadcuts. These are the result of his observations. The mesh covers sections in which joints daylight into the highway cut, a condition conducive to slope failure.

If you believe in fake news and conspiracy theories, that Earth is flat, and the pandemic was a hoax, the following, from the Potters Mills section, is for you.

Duff, thank you for taking the time. There are more sinkholes out there.

October Meeting Door Prizes



Monday April 3, 2017

"Keeping our readers informed"

Geologist prevents landslide

A geologist, Duff Gold, showed super-human strength in stopping a 60-ton boulder from rolling onto a busy roadway in central Pennsylvania. While consulting, Gold held back the boulder until PennDOT crews arrived. PennDOT and Governor Tom Wolf are citing him for his heroic effort. Gold is a retired Professor of Geology at Penn State. Read more about the story.



Figure 7: Image and story by the author.

UPCOMING EVENTS

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

See other show calendar links on our web site.

Oct. 28, 2023: Ultravioletation Fluorescent-only Mineral Show, by R&M Club of Lower Bucks County. First United Methodist Church, 840 Trenton Rd, Fairless Hills, PA 19030. Sat. Only, 9-4.
<https://sites.google.com/view/lowerbucksparocks/shows>

Oct. 28, 2023: South Mountain Rock Swap & Sale, by Franklin County R&M Club. South Mountain Fairgrounds, west of Arendtsville PA on PA Route 234. Sat. Only, 8-3. See Facebook Franklin County Rock and Mineral Club

October 28-29, 2023: 2nd Annual Gem, Mineral, Fossil, and Meteorite Show. Mount Bethel Fire Hall, next to the Mount Bethel Firehouse. Sat. 9-5, Sun. 9-4. 2341 N. Delaware Dr. (AKA Rt. 611), Mount Bethel, PA 18343. See Facebook Mount Bethel Gem Show

Nov. 4-5, 2023: Gemarama, Theme: World of Quartz, by Tuscarora Lapidary Soc. HALL D at the Greater Philadelphia EXPO Center, 100 Station Avenue, Oaks, PA 19456. Sat. 10 a.m. - 6 p.m., Sun. 10 a.m. - 5 p.m. Online ticketing now available. Full details at <https://www.lapidary.org/gemarama/>

Nov. 10-12, 2023: Friends of Mineralogy- PA Chapter Symposium, Johnstown, PA. Symposium for mineral collecting enthusiasts. Fri. eve. Meet & Greet; Sat. Hybrid Symposium - Online or In Person; Sun. field trip. See page 2 and <https://rasloto.com/FM/whats-new/>

Geo-Sudoku Solution

E	Y	A	O	P	B	S	M	D
P	O	D	S	E	M	Y	B	A
B	M	S	Y	D	A	P	O	E
S	A	M	B	O	D	E	P	Y
O	E	Y	P	A	S	M	D	B
D	B	P	M	Y	E	A	S	O
Y	D	B	E	S	P	O	A	M
A	S	O	D	M	Y	B	E	P
M	P	E	A	B	O	D	Y	S

NMS BOARD MEETING NOTICE

NMS members are invited to attend Board of Directors meetings, which are generally held at 7:30 p.m., early in the month or as decided by the Board, although we do not meet every month. The next date has not been decided. Members who would like to attend should contact president David Glick to verify time and place; those who would like to have their discussion item placed on the agenda should contact him at least one week in advance of the meeting.

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 to the next meeting.

We want to welcome you!

CONTACT INFORMATION

mailing address:

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 Penna. Furnace PA 16865

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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