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

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

December 17th:

Annual Holiday Dinner at Quaker Steak & Lube Restaurant

Happy Holidays!

We hope that you will join us! On Wednesday, December 17, 6:00 p.m., rather than our usual meeting and program, we will have our Holiday Dinner at Quaker Steak & Lube Restaurant, 501 Benner Pike (across Benner Pike from the Nittany Mall), State College, PA 16801 in their "Corvette Room" at the back of the restaurant (just tell the host/hostess that you're with the group in the Corvette Room). The entire restaurant is decorated in automotive memorabilia making the place and our event a lot of fun. There actually is a real red Corvette suspended from the ceiling above part of the Corvette Room.

NMS will pay for appetizer plates to be shared by all those present, then attendees can order and pay for their own dinners. We'll have door prizes also, and both NMS and members who have signed up will have items for sale.

SELLING: We will continue our past tradition where **members** and NMS **can have space on a table at the dinner to sell** minerals / rocks / fossils / carved gems / jewelry /etc. Sellers need to collect PA sales tax. NMS will charge a commission fee at 10% of the vendor's pre-tax sales. NMS will also have items for sale. NMS members who are interested in selling should contact Bob Altamura (raltamura@comcast.net or 814-880-6762) by Dec. 15 (sooner is better) for a space.

-Editor

Minerals Junior Education Day Set for March 28, 2026

Minerals Junior Education Day is set to return on Saturday, March 28, 2026! 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). We have several batches of possible giveaway specimens around which stations could be organized. Donations of minerals, books, etc., to sell at child-friendly prices at the sales table are also welcomed - please make arrangements in advance, so that we can get them organized and priced. Contact coordinator Frank Kowalczyk:
frank.j.kowalczyk@gmail.com or 814-404-9854.

A station at Junior Ed Day 2024. *D. Glick photo*

Tax-deductible Donations Welcomed

by David Glick, NMS President

NMS is a 501(c)(3) nonprofit corporation (registered in Pennsylvania), so your donations are tax-deductible as permitted on your Federal income tax return. The Society welcomes donations which we will use for our various programs, including Minerals Junior Education Day. To donate, make your check out to Nittany Mineralogical Society Inc., note that it is a donation, and send it to the NMS Treasurer: Stuart Bingham, 145 Goddard Circle, Pennsylvania Furnace PA 16865 (before the end of the year if you plan to deduct it on your 2025 tax return). NMS will provide a letter documenting your donation. Thank you!

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 December Newsletter, new President Ronna Watkins reviews recent AFMS accomplishments (Uniform Rules updates, Public Relations initiatives, Juniors Committee programs, Convention events) and introduces herself. The Public Relations Chair writes about raising a club's profile through community action and involvement. Several Rockhound of the year Honorees are introduced. The safety article is on "I", saying, "Yes, we trust the safety efforts of others, but we also want to put the "I" in safety as being ultimately responsible for our own safety... and in helping with the safety of others." The New Programs Competition entry deadline of January 15 is noted. Historian Jennifer Haley requests cartoons and poems from vintage newsletters (and current ones too) for a collection she is compiling. There are Christmas rockhound poems and more in this issue!

The Eastern Federation's December Newsletter includes an article on the 2025 AFMS Scholarship Award winners in EFMLS at University of Maine - Orono, reprinted on page 3. An article on dinosaurs' communication, tactile sensitivity, parental care, etc., is reprinted on page 4; our children's common fascination with dinosaurs can be an entry point for encouraging interest in nature and conservation. The 2026 Wildacres session will be May 11-17, and detailed course descriptions and instructors' biographies are provided. Courses listed are: Advanced Wire Wrapping, Viking Knit, Cabochon Making, Introduction to Inlay, Fused Glass, PMC-Silver, Faceting, and Geology. The EFMLS President's Message from Andrew 'Rockhound' is reprinted at right. *-Editor*

Geo-Sudoku

by David Glick

The puzzle below contains the letters AEGILONRT. One row or column includes the crystal system of tourmaline. 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.

	L						O	G
				L		A		
A				N		E		
T						O		
	O	L		R		T		
I	R			T	E		G	
L		R		O	I		A	E
	I			G		N	L	T
G	A	N						

EFMLS President's Message

from Andrew Rockhound

EFMLS News v. 72 no. 12
December 2025

Happy Holidays everyone, the EFMLS wishes a merry holiday season that is warm, happy and full of cheer! It's now December and every club treasurer is wondering what insurance rates will be for 2026... Well unfortunately, at the time of this writing we have not yet received the quote from Brown & Brown, but do expect it within days. Member dues have not changed, but without an official quote, we do not know what the insurance rate will be. Stay tuned, we should have rates and renewal forms posted and clubs notified as soon as we hear, most likely within the couple weeks of December!

As I write this on November 30th, just after returning from New York, digging Herkimer Diamonds in 5" of snow with Geology Club members and was wondering - What is your club doing for members this holiday season? Holiday party/Special event? Send us your pics to post on social!

As always, if you'd like to contribute to the EFMLS in any way, let us know by emailing me at president@efmls.org and I will see what we can do. Have a very merry December, and please deck those halls with plenty of rocks! Then send us pics to share!

AFMS Scholarship Foundation 2025

Honorary Award Plaque for Distinguished Achievement in the Field of Earth Sciences awarded to Dr. Alicia (Cici) Cruz-Uribe

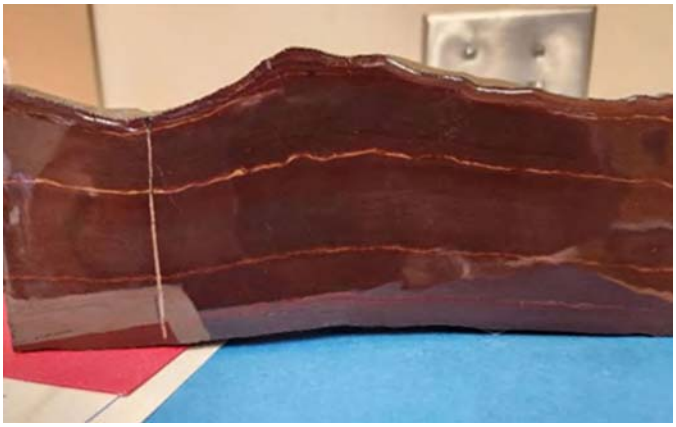
from EFMLS News
v. 72 no. 12 Dec. 2025

Photo: Sylvia Eppig, Lauren Madsen, Dr. Alicia Cruz-Uribe, Josephine Fernholz

I recently had the pleasure of travelling to the University of Maine School of Earth and Climate Sciences, Orono campus, to present the Honorary Award Plaque for Distinguished Achievement in the Field of Earth Sciences to Dr. Alicia Cruz-Uribe for 2025. Andrew Rockhound submitted her name on behalf of EFMLS to the AFMS Scholarship Foundation for this award and the Foundation awarded two of her grad students $4000 scholarships! I was fortunate to not only meet Dr. Cruz-Uribe, but also both of the students, Lauren Madsen and Josephine Fernholz. All three were extremely appreciative of the scholarships, especially since scholarships at this amount are becoming rare!

Dr. Cruz-Uribe is the Edward Sturgis Grew Associate Professor of Petrology and Mineralogy and is the head of the MAGIC Lab (MicroAnalytical Geochemistry and Isotope Characterization Laboratory). Her specialty, metamorphic petrology, is the study of the composition, structure, and origin of metamorphic rocks, as well as the processes that form and alter them. Per her bios on the UMaine Earth and Climate Sciences Department and the Mass Spec Academy, she is particularly interested in understanding the geochemical link between metamorphic processes in subducted slabs and arc volcanism. Her current focus is on using a laser ablation unit coupled to tandem mass spectrometers for trace elements mapping and geological dating.

Lauren Madsen, a PhD student, just co-published a three-year study that redefined the understanding of manganese resources in northern Maine. The U.S. currently imports all manganese, which is essential for steel production and used in clean energy technology. However, northern Maine contains the largest manganese reserve in the U.S., which has been known to geologists for years, but has not been explored. The team completed a geologic remapping of manganese-bearing rocks which led them make several major research breakthroughs and provided more reliable data on manganese resources in Maine in the attempt to protect U.S. production from supply chain disruptions.



Polished Banded Manganese Ironstone Ore

She is currently working with Dr. Cruz-Uribe to analyze rock structures at the microscopic level to better understand how deposits were formed and why in Maine. This will aid in understanding where to locate commercially viable minerals in a way not used before.

Josephine Fernholz is an M.S. graduate student who has joined Dr. Cruz-Uribe and Lauren in their research.

On a different note, this incredible petrified wood piece, about 2 feet in diameter, was donated to the department.

It is so heavy it needs a specially designed stand for it to be displayed on. Until then, it sits on the floor!

It was exciting to me to meet these three ladies who are breaking new ground, literally and figuratively, with their research on a microscopic level that is changing the understanding of how and when our Maine rocks formed and where to locate new deposits of commercially viable minerals.

- Sylvia Eppig, EFMLS Treasurer

Dinosaurs Should Matter to Conservationists

by Matthew Ellerbeck
(Dinosaur Devoted)
from EFMLS News
v. 72 no. 12 Dec. 2025

Many individuals often exhibit a profound interest in dinosaurs during their youth, yet this enthusiasm diminishes long before they reach adulthood. Only a small group of individuals consider dinosaurs in any significant manner (if at all) beyond childhood. Those who do reflect on them typically do so within the framework of them as cinematic monsters.

This is quite regrettable, as dinosaurs represent an exceptionally intriguing category of animals. Recent research and fossil evidence suggest that they were considerably more intricate and complex than most individuals realize.

The notion that dinosaurs were unintelligent, lumbering reptiles is far outdated. In fact, these animals had many different ways to communicate and signal, both with conspecifics and other species within their ecological communities. Many dinosaurs were adorned with crests, frills, spikes, etc., which are thought to be used for attracting mates, deterring rivals, recognizing members of their own species, and threat displays to ward off predators. Additionally, dinosaurs could communicate sonically, and many hadrosaurs (duck-billed dinosaurs) had crests that could help amplify sounds and calls.

Touch also seems to be important to dinosaurs. Evidence suggests that tactile sensitivity played an important role in dinosaur biology, particularly among theropods (carnivorous dinosaurs of a group whose members are typically bipedal, i.e *Allosaurus* & *Tyrannosaurus*). Studies of cranial foramina in large theropods such as Tyrannosaurus rex indicate the presence of extensive neurovascular canals in the facial bones, comparable to the mechanosensory structures in modern crocodilians (Carr et al., 2017; Barker et al., 2023).

This suggests that the faces of these dinosaurs were highly innervated and capable of detecting fine tactile stimuli, possibly aiding in delicate tasks such as nest construction, egg handling, or social interactions in addition to feeding (Kundrát et al., 2019). In living archosaurs, such as birds and crocodilians, tactile sensitivity in the beak or snout is crucial for object manipulation, chick care, and foraging in challenging environments (Hieronymus et al., 2009). By inference through the Extant Phylogenetic Bracket (EPB), similar functions may be applied to theropods, suggesting that their tactile sense was not limited to predation but extended to complex behavioral and social roles, reinforcing the view of these animals as dynamic, behaviorally sophisticated organisms.

Several lines of fossil evidence indicate that some dinosaurs engaged in direct parental or maternal care of their offspring. The classic example comes from the hadrosaur *Maiasaura*, whose nesting grounds in Montana revealed large communal colonies with closely spaced nests, containing eggs, hatchlings, and juveniles. All suggesting prolonged care after hatching (Horner & Makela, 1979).

Troodontids and oviraptorosaurs also show evidence of brooding behavior, with adults preserved in bird-like postures atop clutches of eggs, indicating active incubation and protection of offspring (Norell et al., 1995; Clark et al., 1999). Several theropod dinosaurs are known to have carefully arranged their eggs within nests, reflecting advanced nesting behavior and parental care. The best evidence comes from oviraptorosaurs such as *Oviraptor, Citipati, and Nemegtomaia*, whose fossils show eggs organized in concentric rings and adults preserved brooding atop nests, suggesting deliberate placement for incubation (Norell et al., 1995; Clark et al., 1999).

Troodontids like *Troodon formosus* also arranged their eggs upright and partially buried in symmetrical patterns, indicating active positioning within shallow nests (Varricchio et al., 1997; Varricchio & Jackson, 2016). Some therizinosauroids show similar egg arrangements, hinting at shared nesting strategies among maniraptoran theropods (Averianov et al., 2022).

Furthermore, bone histology of hatchlings from various taxa suggests that some were altricial, unable to fend for themselves, further supporting the need for sustained parental investment (Varricchio et al., 2008). These discoveries demonstrate that, much like modern birds, certain non-avian dinosaurs provided direct care to their young, representing a key step in the evolutionary continuum of reproductive strategies within Archosauria.

Some dinosaurs, like the long-necked Sauropods (i.e *Brontosaurus*), employed nesting strategies similar to that of sea turtles. Sauropods would often dig trenches or other depressions and lay mass amounts of eggs. These were often covered with sand, soil, or vegetation and left to hatch on their own. This method is strikingly different to the more parental dinosaurs, but highlights the diverse behaviors that were found across dinosauria.

Modern birds are classified as dinosaurs, as they represent a very highly derived branch of theropods. However, they exhibit significant morphological differences from most dinosaur species. Consequently,

it is not surprising that many naturalists, upon observing birds, draw little comparisons to their extinct relatives. However, it is important to recognize that dinosaurs exhibited a comparable level of complexity in their behaviors and survival strategies, akin to many contemporary species. Thus, they merit greater acknowledgment as remarkably successful organisms that adapted, diversified, and proliferated across the globe. Certainly, an appreciation for such misunderstood extinct forms can help strengthen a value in the Earth's extant biodiversity.

Research increasingly shows that having an affinity for a particular animal, or forming close emotional connections with wildlife can serve as a gateway to a broader appreciation of nature and support for conservation. Studies indicate that individuals who feel a strong connection to animals exhibit higher empathy and stronger pro-environmental attitudes overall (Whitburn et al., 2020). Reviews also highlight that emotional and cognitive bonds with animals, such as storytelling, recognition, and empathy are powerful motivators for conservation behavior (Marzluff et al., 2017).

This can apply to dinosaurs, as there's growing evidence and expert consensus suggesting that a childhood fascination with dinosaurs can serve as an early pathway into broader interest in nature, science, and conservation.

While few studies examine dinosaurs specifically, related research in environmental education and psychology supports the idea that "gateway taxa" (extinct or living) can ignite lasting curiosity about the natural world. Children who develop deep, sustained interests, like those in dinosaurs, often show stronger scientific reasoning, observational skills, and ecological awareness later in life (Alexander et al., 2008; Patrick & Tunnicliffe, 2013). These interests frequently expand from prehistoric life to modern animals, ecosystems, and environmental stewardship.

Moreover, the same mechanisms that link affinity for living species to conservation concern empathy, curiosity, identification, and storytelling also operate with extinct ones. Dinosaurs offer a vivid entry point into understanding evolution, extinction, and environmental change, which can foster appreciation for biodiversity and the fragility of ecosystems. Educators often note that dinosaur enthusiasm helps children grasp concepts of adaptation and extinction, bridging to modern conservation topics like habitat loss or climate change (Patrick & Tunnicliffe, 2013).

A deeper comprehension of dinosaurs can enhance the appreciation of our present natural environment for both children and adults. Moreover, it emphasizes the significance of parents fostering and supporting their children's fascination with these creatures, guaranteeing that the affection for dinosaurs does not merely become a fleeting interest. By doing this, not only is a fondness for dinosaurs and possibly a passion for environmental stewardship being solidified, but parents also have the opportunity to revive their own enthusiasm for these animals. This is especially important as over 100 species tracked by the New York State Natural Heritage Program, are considered as either endangered or threatened. Equally significant, dinosaurs merit acknowledgment as the remarkable and intricate creatures they were, simply due to their intrinsic value.

About The Author:

From a young age, Matthew Ellerbeck has been fascinated by dinosaurs. His love and passion for dinosaurs inspired him to create Dinosaur Devoted, an outreach education project dedicated to sharing that wonder with others. Through his work, Matthew strives to foster a deeper public understanding of dinosaur paleobiology and to dispel the outdated notion of dinosaurs as dull, cold-blooded monsters. For more information: www.dinosaurdevoted.com

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Tourmaline: Rubellite

Paul Martin Shurte,
Florida Panhandle G&M Society,
The Agatizer 11/2024
via AFMS Newsletter, Vol. 78 no. 1, Feb. 2025

The color of rubellite is strikingly intense – so intense it could pierce your heart. It certainly remains imprinted on your eyes long after you have looked away – like the afterimage of the sun. In the family of tourmalines, where every color is possible, the rubellite reigns as queen. No other gem offers the collector such a complex, vibrant, hot shade of red in such large sizes.

Rubellite is most notably found in Mozambique, Madagascar, Nigeria, Brazil, Russia, Afghanistan, Burma and the United States. It grows in pegmatite veins – those rare and elusive pockets of gems that may also contain quartzes and beryl. A perfectly clear gem is a rarity, but as the story of the rubellite's growth and origin is often told in its inclusions this merely adds another dimension to its charm.

Like all tourmalines, a rubellite is a scientific phenomenon in that it will hold an electric charge when heated. If ever a gem could hold a conversation with a human heart, it would be this one. Pink Tourmaline is the name used for pink to reddish crystals and gemstones belonging to the cyclosilicate tourmaline family. Tourmaline is a group of closely related minerals rather than a single species. Pink tourmaline colors have a wide range, from light to darker pink, purplish pink to peachy-pink color tones. Rubellite is a special variety of pink tourmaline that has a deep saturated pinkish red to violet-red color.

Rubellite almost always has inclusions, and it is much easier to find a flawless light-colored pink tourmaline than a rubellite. Besides ruby and red spinel, rubellite is the only other saturated pink colored gemstone.

Nearly all pink tourmaline's belong to the elbaite species, the most varied in color and variety of all gem quality minerals. The red and pink tones are caused by trace amounts of manganese in their atomic structure. Elbaite often forms in bi or tricolored crystals. Pink with green and pink with blue combinations are not uncommon. Pink tourmalines, especially rubellite, are often strongly pleochroic. This means there is a play of color that shifts depending on what angle you view the stone. Pink tourmaline belongs to the trigonal crystal system and usually forms in prismatic crystals with a trigonal cross section. Tourmaline is one of few gem quality minerals that form in the trigonal crystal system.

Like other varieties, pink tourmaline has pyroelectric and piezoelectric properties. Simply by heating or rubbing the stone, it produces an electric polarization within the crystal. Pink tourmalines have a hardness ranging from 7 to 7.5 Mohs, a vitreous luster and range from perfectly transparent to opaque.

Rubellite and Pink Tourmaline saw a huge surge in popularity when important new deposits were discovered in Minas Gerais, Brazil in the later 80s and early 90s. The most famous localities for rubellite. In the late 90s incredible new rough also started emerging from Nigeria. Other important localities for pink tourmaline include Madagascar, and Shimogyo, Mozambique. The huge popularity of pink tourmaline does not look like it will subside and the value of quality rubellite gemstones is likely to rise.

Chemical Composition:
$(Na,Ca)(Mg,Li,Al,Fe^{2+})_3Al_6(BO_3)_3Si_6O_{18}(OH)_4$
Mohs Hardness: 7–7.5
Luster: Vitreous
Specific Gravity: 3.06 (+.20 -.06)
Refractive Index: 1.62 - 1.64 Fluorescence Inert
Crystal System: Trigonal
Translucent: Diaphaneity to opaque
Color: Pink, Red
Origin Pakistan, Australia, Brazil, Sri Lanka, Africa, USA

Sources: Online and materials around desk

Stromatolites

Judy Beck, McPherson Gem & Mineral Club
AFMS Adult Articles, 1st Place 2025
The Post Rock, 11/2024
via AFMS Newsletter, Vol. 78 no. 4, May 2025

Dinosaur or plant fossils are perhaps some of the first answers to come to mind when considering the oldest biological material on Earth. However, single cell formations known as the stromatolite are the king of ancient biomass. Stromatolites are the oldest fossils, dating back 3.9 billion years. Stromatolites are a sedimentary rock that is formed by fossils left behind by cyanobacteria sometimes called blue-green algae.

The blue-green algae which formed stromatolite fossils were microscopic bacteria. The cells were not plants or true algae but simple prokaryotic cells which grew in dense mats. The word stromatolite comes from stroma meaning layer and lithos meaning rock or layered rock. Fossilized plants are difficult to find from this era in the fossil record because most plant cells require a carbon precipitate not found in the ancient environment to fossilize. The cyanobacteria forming the stromatolite colonized and created slimy mats in salt and freshwater, using the carbon dioxide in the surrounding water to release oxygen through photosynthesis. The photosynthetic process used by the algae created calcium carbonate, forming the required precipitate needed to fossilize. The calcium carbonate coated the slimy surface of the colonies along with sand and sediment forming layers. Layers continued to form and the process was repeated, creating the sedimentary rock layers the stromatolite fossils are found in.

Without large terrestrial plant life stromatolites were key to producing the oxygen rich environment needed for evolving life billions of years ago. Stromatolites can look different depending on where they are found in the world.

Stromatolite producing cyanobacteria is not as common today due to increased predation by other organisms in the modern world.

However, stromatolites can still be found worldwide. The bacteria is most common in the salty seas of the Bahamas and Shark Bay, Australia, and in the freshwaters of Pavilion Lake, Canada and Cuatro Ci'enegas Basine, Mexico.

Photo by C Eeckhout, CC BY 3.0. https://commons.wikimedia.org/wiki/File:StromatolitheAustralie2007_06.jpeg

While not as flashy as other megafauna from the ancient world, there are still those who appreciate these single cell fossils. There are even dealers at American Federation shows who exclusively deal in this ancient material. Indeed, the under-appreciated stromatolite offers a fascinating window into the history of the world and the origins of plant and animal life on Earth.

Sources:

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UPCOMING EVENTS

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

Jan. 31, 2026: Rutgers Geology Museum 58th Annual Open House; theme: TBA. New Brunswick NJ 08901See web site for admission and parking payment.
https://geologymuseum.rutgers.edu/annual-open-house

Feb. 14, 2026: Tucson Mineral Symposium, Red, White and Blue - Celebrate the Spirit of Minerals.
https://www.friendsofmineralogy.org/call-for-papers/

Mar. 7-8, 2026: Gem, Mineral & Fossil Show, by Delaware Mineralogical Society. DoubleTree by Hilton, 4727 Concord Pike (Rt-202), Wilmington, DE 19803. Sat. 10-5, Sun. 11-5.
www.DMSrocks.org , www.facebook.com/DEMineralShow

Mar. 28-29, 2026: Gem & Mineral Show by Che-Hanna Rock & Mineral Club. Wysox Vol. Fire Co. Social Hall, 111 Lake Rd., Wysox PA 18854. Sat. 9-5, Sun. 10-4.
http://chehannarocks.com/show.html

Mar. 28-29, 2026: Mineral Treasures and Fossil Fair, by Philadelphia Mineralogical Society. Lulu Temple, 5140 Butler Pike, Plymouth Meeting, PA 19462 (PA Turnpike, exit 333; or I-476, exit 20) . www.phillyrocks.org

May 11-17, 2026: EFMLS Wildacres Workshop session, Little Switzerland, NC.
http://www.efmls.org/wildacres

Geo-Sudoku Solution

N	L	T	E	I	A	R	O	G
R	E	O	**T**	L	G	A	N	I
A	G	I	**R**	N	O	E	T	L
T	N	G	**I**	A	L	O	E	R
E	O	L	**G**	R	N	T	I	A
I	R	A	**O**	T	E	L	G	N
L	T	R	**N**	O	I	G	A	E
O	I	E	**A**	G	R	N	L	T
G	A	N	**L**	E	T	I	R	O

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

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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
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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