

# Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

Editor (see page 8):

David C. Glick

September, 2015

Visit our web site: [www.nittanymineral.org](http://www.nittanymineral.org)

September 16th meeting:

## Quarries and open pits – windows into Earth

Dr. Charles E. Miller, Jr.  
Geologist  
State College, PA

Our September meeting will be held Wednesday the 16th in room 114 (larger auditorium) of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available on our web site.

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

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

about 8:00 p.m.: featured program

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

The program topic for September will be an informative tour through the varied and interesting aspects of geology revealed in quarries and open pits. Dr. Miller will draw upon the large collection of photographs taken throughout his career to illustrate the presentation. Please see the complete article on **page 4.** -Editor

### ATTENDING THE SEPTEMBER MEETING?

Donations of **a few high quality, labeled door prize specimens** are invited.

Your donated snacks and drinks will be welcomed.

Bring a friend!

### Facebook Presence Expands

as reported by John Dziak

An initial version of a nonprofit organization page for "Nittany Mineralogical Society" <https://www.facebook.com/NittanyMineralogicalSociety> has been set up this week by Publicity Coordinator John Dziak. This type of page can be seen by anybody; Facebook membership or logging in is not required. It will be used for NMS announcements and news.

This is in addition to the existing group (discussion page) for "Nittany Mineralogical Society, Inc." which continues at <https://www.facebook.com/groups/293993550756/>. It can be joined by Facebook members who are approved, and only they can see it or post to it.

Facebook members are invited to "like" our new page, and that will mean that they will sometimes have the notifications we put on the page appear on their main view.

## NMS Picnic on September 20 Penna. Furnace, PA 4 to 7 p.m. at The Bingham's



On Sunday, **SEPTEMBER 20**, our club will once again have its annual picnic at the home and shady deck and back yard of Ellen and Stuart Bingham, 145 Goddard Circle, Pennsylvania Furnace, PA, 16865. NMS will provide hot dogs, 'burgs, buns, condiments, canned soft drinks, and place settings. You bring yourself and a friend, and a side dish or dessert to share. Please **RSVP** to [nittanymineral.org@gmail.com](mailto:nittanymineral.org@gmail.com) or (814) 234-4532. Penn State GSCI Club members & friends are welcome as always.

## OFFICIAL NOTICE: Annual Meeting and Elections in October

by David Glick, NMS President

The October 21st meeting will be the **Annual Meeting of the Corporation**, and will include election of officers. In accordance with our bylaws (available on the web site), the Board of Directors, acting as the Nominating Committee, announces the following slate of candidates who have agreed to serve again:

President: David Glick

Vice-President: Robert Altamura

Treasurer: Stuart Bingham

Secretary: Ellen Bingham

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 next year. In many cases it would be useful to have newcomers spend some time on committees and attending Board meetings before stepping into elected office. **All members: please consider volunteering!**

### Upcoming Programs

**October 21:** Sourcing of Archaeological Lithics  
by Dr. Barry Scheetz, Penn State  
joint meeting with Bald Eagle Archaeological Society

**November 18:** Groundwater (details coming soon)  
by Mike Smith, PA DEP

**December:** Holiday Dinner

**Dues Are Due - See Page Two**

## Dues are Due!

by David Glick, NMS President

Our membership year ends on October 31. Members will receive a dues form via their usual method (print or e-mail). New members are invited to join using the same form. The form and payment can be mailed in or brought to our September meeting. Your **prompt payment helps a lot** in reducing work for our volunteer staff. The rate remains at \$20 for an individual member, with other options available. Forms may also be downloaded from our web site.

The dues form includes a line for “don’t send a printed Bulletin.” If you read the Bulletin on the web site anyway, you can help reduce our printing and mailing expenses by checking this line. You can go back to the printed version, or request individual printed issues, at any time.

## Lapidary Demo at Maker Week



Lapidary enthusiast and NMS Vice President Bob Altamura demonstrated the making of cabochon gemstones and tumble-polished stones on Friday, August 28<sup>th</sup> during Maker Week in State College.

-Editor

## Snider to Lecture at Steidle Collection Painting Exhibit in Doylestown

The James A. Michener Art Museum exhibit *Iron and Coal, Petroleum and Steel: Industrial Art from the Steidle Collection*, featuring 54 paintings loaned by Penn State’s Earth and Mineral Sciences Museum & Art Gallery, runs from July 11 to October 25. Related events at the museum in Doylestown include a special reception hosted by the Steidle family on September 9, and a guest lecture on September 29 by Penn State’s Julianne Snider, assistant director for exhibits and collections for the Earth and Mineral Sciences Museum & Art Gallery. The lecture, “Steidle’s Vision: Art as Education”, is described at <http://www.michenermuseum.org/events/?id=422>

A Penn State news story at <<http://news.psu.edu/story/368195/2015/09/03/arts-and-entertainment/ems-steidle-collection-display-michener-museum>> reports that the talk will focus on how the collection was used as both an aesthetic art collection and an educational tool. “This collection was started not only to depict the industries of the time, but to educate students as to the possibilities these industries could provide. Many of these industries have dwindled today, so these paintings are some of the few historical documents we have left showing that period of time in Pennsylvania,” said Snider. - Editor

**It's Mineral Show Season!**  
**See the listings on page 8.**



## NMS Picnic



Nittany Mineralogical Society will provide hot dogs, 'burgs, buns, condiments, canned soft drinks and place settings.

You bring yourself and a friend and a side dish or dessert to share.

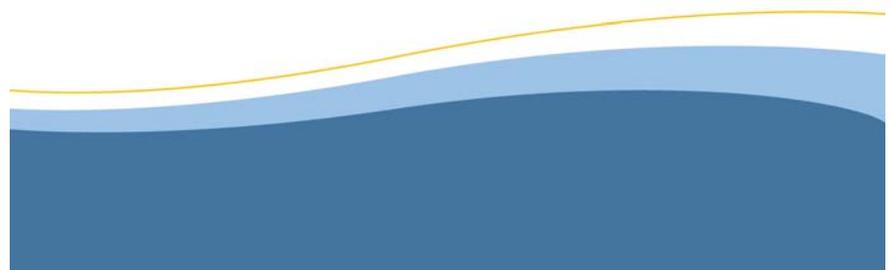
**September 20, 2015, 4 to 7 p.m.**

**Ellen and Stu Bingham's house**

**145 Goddard Circle**

**Pennsylvania Furnace, PA 16865**

RSVP to [nittanymineral.org@gmail.com](mailto:nittanymineral.org@gmail.com) or (814) 234-4532



## Active Tectonics in New England Studied by NMS Member

Nittany Mineralogical Society vice-president Bob Altamura has been vigorously active doing geological research in New England during the past few years. The focus of his research has been on active tectonics in the northeastern U.S., and recent publications in regional and national refereed journals have resulted, are in preparation, or are in press. Bob gave a talk to NMS in 2013 regarding the Connecticut investigations and unusual audible earthquakes that occur in a part of his field area. Bob's principal collaborator is R.T. Marple, a consulting geologist from Texas. Other collaborators include Shelton Alexander of Penn State and J. Hurd of the University of Connecticut.

Marple originally contacted Bob for potential collaboration to do research on active tectonics in Connecticut, based on Bob's previous publications involving the interpretation of faults from remotely sensed imagery in Connecticut and Pennsylvania. The collaborative investigations of the two have now expanded to Massachusetts, New Hampshire and Maine. A major component of the research includes interpretation of remotely sensed imagery such as recently available LiDAR for the region and most recently high-resolution SONAR of the seafloor of the Gulf of Maine. Arnold Doden's past NMS talk on LiDAR availability in Pennsylvania and Shelton Alexander's past NMS talk on seismic profiling in Egypt, in part, inspired the direction of Marple and Altamura's research. The list below represents recent and upcoming publications by Bob and his colleagues.

Bob will offer a formal field trip scheduled for October 9, 2015, as part of the 2015 New England Intercollegiate Geological Field Conference (NEIGC) headquartered at Wesleyan University (CT) <<http://w3.salemstate.edu/~lhanson/NEIGC/Conference.html>> as well as two meeting presentations on more recent work in MA, NH, and ME that have been submitted for the GSA Annual Meeting in Baltimore during November. In addition, the next issue of *Northeastern Geoscience* is expected to include a short paper announcing a new discovery of submerged ring structures in the Gulf of Maine, apparently linking the New England seamounts to on-land ring structures of the White Mountain Magma Series in southeastern New Hampshire. Please see or contact Bob if you would like to know more about these investigations or for available copies/reprints.

As one can see from the list of publications there has been considerable past work and 2015 has been especially productive.

### LIST OF PUBLICATIONS

**Altamura, R.J.** and Marple, R., 2015 (in press), The Eastford fault extended, a major late-stage regional CT fracture zone that explains the 1987 earthquake swarm near Moodus, CT: Invited for the New England Intercollegiate Geological Conference, Wesleyan University, October 9, 2015, Field Guidebook, Trip A5.

Marple, R.T., **Altamura, R.J.**, and Hurd, Jr., J., 2015 (in press), Ringed structures in the southwestern Gulf of Maine: *Northeastern Geoscience*, Volume 33, pages 3-7.

Marple, R. and **Altamura, R.J.**, 2015 (submitted), Discovery of submerged ring structures and bathymetric lineaments in the western Gulf of Maine: further evidence for the Great Meteor hotspot track and a possible association with the 1755 Cape Ann, MA earthquake: Geological Society of America Abstracts with Programs (National meeting, Baltimore, MD).

Marple, R. and **Altamura, R.J.**, 2015 (submitted), Massachusetts Bay lineament: a submerged, 100-km-long, northwest-trending brittle fault zone east of Boston, MA: Geological Society of America Abstracts with Programs (National meeting, Baltimore, MD).

Marple, R.T. and **Altamura, R.J.**, 2015 (in preparation), Discovery of submerged ring structures, bathymetric lineaments, and linear positive gravity anomalies in the western Gulf of Maine: Further evidence for the Great Meteor hotspot track and a possible association with the 1755 Cape Ann, MA, earthquake: Seismological Research Letters.

**Altamura, R.J.**, Marple, R., 2015 (in preparation), The Eastford fault – evidence for a late-stage regional structure in eastern Connecticut and south-central Massachusetts: implications for the origin of Moodus area seismicity: Invited for publication in *The Professional Geologist* (journal of the American Institute of Professional Geologists), Boulder, Colorado.

Marple, R., **Altamura, R. J.**, and Hurd, J., 2015, Peverly Brook scarp and lineament of southeastern New Hampshire, USA: a Late Pleistocene or younger fault scarp: Seismological Society of America Meeting, Pasadena, CA.

Marple, R., **Altamura, R. J.**, and Hurd, J., 2015, Great Bay lineament: cause of the 1755 Cape Ann, Massachusetts, earthquake?: Seismological Society of America Meeting, Pasadena, CA.

Marple, R., **Altamura, R. J.**, and Hurd, J., 2014, Relationship between the 1727 Newbury, Massachusetts, earthquake and a restraining bend along the postulated southwest continuation of the Norumbega fault system: Geological Society of America Abstracts & Programs, (National Meeting, Vancouver, British Columbia, Canada), Vol. 46, Issue 6, pp. 765.

Marple, R., **Altamura, R. J.**, and Hurd, J., 2014, Possible connection between the Norumbega, Eastford, and Misery Hill faults of New England and evidence for post-Triassic and Late Cenozoic deformation: Geological Society of America Abstracts & Programs, (National Meeting, Vancouver, British Columbia, Canada), Vol. 46, Issue 6, pp. 595.

Marple, R.T., **Altamura, R.J.**, Alexander, S.S., and Hurd, J.D., 2013, Evidence for post-Triassic brittle faults in eastern Connecticut and south-central Massachusetts using LiDAR, geomorphic, and geophysical data combined with field observations: Implications for the origin of the Moodus area seismicity, in Cox, R.T., Tuttle, M.P., Boyd, O.S., and Locat, J., eds., *Recent Advances in North American Paleoseismology and Neotectonics East of the Rockies*: Geological Society of America Special Paper 493, p. 51-88.

**Altamura, R.J.**, Marple, R., Alexander, S.S., and Hurd, J., 2012: The Eastford lineament – evidence for a late-stage regional fracture zone in eastern Connecticut and south-central Massachusetts: implications for the Moodus Area Seismicity: Geological Society of America Abstracts with Programs (NE GSA meeting, Hartford, CT), volume 44, no. 2, p. 61.

Alexander, S.S., Marple, R., and **Altamura, R.J.**, 2012: Seismic investigations of the Eastford lineament and its relationship to recent Moodus CT earthquake activity and older faulting: Geological Society of America Abstracts with Programs (NE GSA meeting, Hartford, CT) volume 44, no. 2, p. 62.

Marple, R., **Altamura, R.J.**, and Hurd, J., 2012: Evidence for the post-Alleghanian Bunker Hill fault zone and Z fault in the eastern highlands of south-central Connecticut using LiDAR and geomorphic data integrated with field investigations, Geological Society of America Abstracts with Programs (NE GSA meeting, Hartford, CT) volume 44, no. 2, p. 62.

Marple, R., **Altamura, R.J.**, and Hurd, J., 2012, Evidence for pre-Wisconsinan and Late Pleistocene- Early Holocene tectonic uplift in south-central Connecticut from an integration of geomorphic data and stream vector analysis: Geological Society of America Abstracts with Programs (NE GSA meeting, Hartford, CT), volume 44, no. 2, p. 51.

## Quarries and open pits – windows into Earth

Dr. Charles E. Miller, Jr.  
Geologist  
State College, PA

Quarries and open pits are “windows into Earth” - providing geological information not always available from outcrops, roadcuts, drilling, and aerial imagery. This talk describes what geologists see in some of these excavations. Examples include: folding and faulting, giant centipede trackways, vertebrate fossils, the largest stromatoporoids (fossil sponges) in the State, two-inch thick calcite veins, large stromatolites (fossil algae), dinosaur footprints, eurypterids (“sea scorpions”), starfish, conularids, and other geological features. Also discussed are potential environmental impacts these excavations may have.

Some quarries have national or international notoriety, such as the Empire Quarry in Indiana (Figure 1). This quarry produced stone for the Empire State Building in New York City. Also in the mid-west is the Thornton Quarry south of Chicago. It is excavated through a coral reef. In Bolivia, the Cal Orcko Limestone Quarry exposes 5,055 footprints and 462 trackways of dinosaurs (Figure 2).



Fig. 1. Empire Quarry of Mississippian Indiana (Salem) Limestone.

More locally, a nondescript borrow pit on the flank of Tussey Mountain, five miles from Pine Grove Mills, yields some of the finest fossils from the Ordovician (485-444 million years ago, Ma) Reedsville Shale. At many central Pennsylvania localities, Reedsville fossils are disarticulated or the matrix so indurated (cemented) that extrication is difficult. In contrast, some fossil layers here are weathered enough so fossils easily separate out (Figure 3). Of particular note, in June a Penn State geosciences honors student and NMS member, Anna Whitaker, discovered ophiurid starfish (Figure 4) at this locality. These may be



Fig. 2. Cretaceous dinosaur tracks and trackways; Cal Orcko Limestone Quarry in Bolivia.



Fig. 3. The trilobite *Flexicalymene* from the Ordovician Reedsville Shale borrow pit on Tussey Mountain. Image by the author.

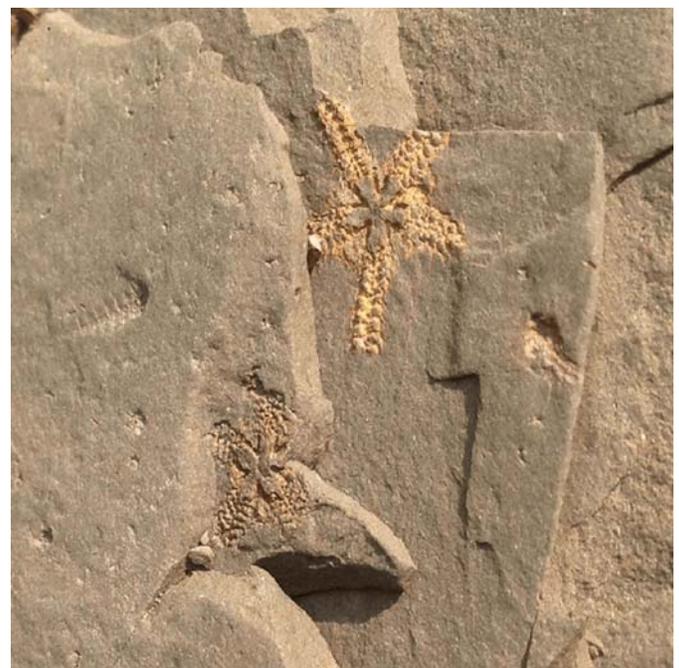


Fig. 4. Starfish from the Ordovician Reedsville Shale borrow pit on Tussey Mountain. Image by Anna Whitaker.

the first reported starfish in the Reedsville. Starfish have been found in the correlative Martinsburg Shale at Swatara Gap. She later also discovered the first conularid at this pit. Like starfish, these fossils are uncommon in Pennsylvania and have not previously been described in Centre County. Conularids are one of those fossils unfamiliar to some geologists.

Fossils at this site have been prolific, both in actual numbers and in taxa. Straight-shelled cephalopods, normally rare at most sites, are more common here. Fossil taxa include brachiopods, pelecypods, bryozoans, crinoids, trilobites, gastropods, cephalopods, starfish, and conularids.

Another sandstone and shale borrow pit - in Cambria County - exposes large (4-inch-by-12-foot) trackways of a giant centipede (Figure 5). This is in the Pennsylvanian (300 Ma) Casselman Formation. One trackway may be longer as part is hidden where it intersects a highwall. The centipede walked over rippled sediment at the sand/water interface. Preservation of such tracks in rocks this old is uncommon. The trackway has since been covered. Trackways are examples of ichnofossils (trace fossils).



Fig. 5. Trackway of giant centipede in the Pennsylvanian Casselman Formation at a borrow pit in Cambria County, PA. Image by the author.

Approximately 60 miles east of State College, the Winfield Quarry exposes Silurian Tonoloway and Silurian-Devonian Keyser strata. To collectors, the quarry is best known for minerals such as strontianite, calcite, and celestine. However, in 2008 a spectacular fossil discovery of eurypterids (“sea scorpions”) was made there in the Tonoloway (Figure 6). Fossils are typically rare in the Tonoloway and eurypterids are generally rare in the fossil record, making this a significant discovery. The implications of this discovery will be discussed. In July, a small group, including the author and Anna Whitaker, collected superb eurypterids at the quarry.



Fig. 6. Eurypterid from the Silurian Tonoloway Formation; Winfield Quarry, PA. Specimen and image by the author.

Three miles west of Altoona is the Eldorado Quarry, also exposing the Tonoloway and Keyser Formations. I-99 passes through this abandoned quarry. The Keyser is commonly fossiliferous, as it is here. Unique to this quarry are the largest stromatoporoids (fossil sponges) in the State (Figure 7). Some of these are up to three feet in length. During this time period, they formed reefs (bioherms), some of which are exposed in the highwall. Pennsylvania quarries with bioherms are rare, with only one other reported. In the Eldorado Quarry, some boulders up to 10+ feet in length are crammed with stromatoporoids.



Fig. 7. Stromatoporoids from the Silurian-Devonian Keyser Limestone at the Eldorado Quarry west of Altoona, PA. Image by the author.

Over a million people visit Gettysburg Battlefield each year. Few of them know of dinosaur tracks in a bridge over Plum Creek (Figure 8). The footprints are Triassic age (~210 Ma) from the Trostle Quarry near York Springs. In the 1930s approximately 50 footprints were discovered in the quarry. These were loaned to various institutions, including The Pennsylvania State University where several can be seen in the Earth and Mineral Sciences Museum.

The Triassic is the first of three geologic time periods in which dinosaurs lived. Triassic dinosaurs were diminutive relative to later ones known to most people. The largest Triassic dinosaurs were about the size of an adult ostrich. Trostle Quarry is now abandoned.



Fig. 8. Two three-toed Triassic dinosaur footprints in bridge over Plum Run at Gettysburg National Military Park. The largest is approximately 5-6 inches in length. Image by Vince Santucci (National Park Service).

In 2011 the writer spoke to the Nittany Mineralogical Society on the abandoned Rupp Quarry located behind the Hamilton Avenue Shopping Center in State College. We considered a number of geologic observations in



Fig. 9. Thrust fault in the Ordovician Bellefonte Dolomite at the Hanson Blackhawk Quarry; Centre Hall, PA. Image by the author.

identifying a tidal-flat depositional environment. In a quest for reaffirmation, results of a 1967 article “Tidal Flat Deposits in the Ordovician of Western Maryland” will be compared to our observations and conclusions.

Two other local quarries – Hanson Aggregates’ Blackhawk and Oak Hall Quarries – are discussed. The former exposes one of the best local thrust faults (Figure 9). Strata in the latter are a succession of carbonates transitioning to shale. The carbonates (limestone, dolomite) and shales, respectively, represent shallow-water and deeper-water deposits. The latter close out approximately 100 million years of continuous carbonate deposition as the proto-Atlantic Ocean was closing. In some of the younger carbonates in the quarry are layers of bentonites (volcanic ash) from volcanic island arcs off the eastern coast of North America during an early orogeny (mountain-building episode). The volcanoes have long since eroded away.

All excavations potentially create environmental impact. Some of the deleterious effects might include silt and sedimentation, water degradation, water diminution or loss, and subsidence. Some of these effects may be enhanced when groundwater pumping is used.

In 1946 a limestone quarry in Hershey Valley blasted open a six-inch solution channel, which allowed groundwater to flow into the quarry at 8000-10,000 gallons per minute. Nearby wells, streams, and springs dried up. Water levels in two Hershey Chocolate Corporation wells rapidly declined. When the solution channel was sealed, the same water sources were restored. In 1948 the quarry began a pumping test for deeper mining. Once again, there was widespread lowering of water tables, with the same results as before. In addition, about 100 sinkholes formed. Because two of its wells were affected, Hershey began a hydrogeological investigation. A connection between the aforementioned quarry activities and local springs, wells, streams, and sinkholes was established. Hershey began recharging groundwater. In response, the quarry sued Hershey – and Hershey countersued. The outcome of this litigation will be discussed. ❁

### NEWS FROM THE FEDERATIONS

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

The **EFMLS Newsletter** is available through the link on our web site [www.nittanymineral.org](http://www.nittanymineral.org), or remind Dave Glick to bring a printed copy to a meeting for you to see. The September issue safety article encourages us to set good safety examples for kids, for a variety of reasons. Club Rockhound of the Year submissions are invited.

The **AFMS Newsletter** is available by the same methods. The September issue notes that Rock & Gem, the federation's officially sponsored magazine, is seeking "Lapidary of the Month" articles. Prizes for the Endowment Fund Drawing continue to come in, and are illustrated.

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

**PA & NJ mineral shows are coming soon!**  
**Harrisburg is September 19-20!**  
**See the listings on page 8.**

### FM - Pennsylvania Chapter Symposium November 7 - 8

Friends of Mineralogy - Pennsylvania Chapter will hold their annual symposium at Franklin & Marshall College in Lancaster, Pa., on Saturday November 7, with a field trip (for symposium registrants only) on Nov. 8.

Scheduled speakers are listed below. There will also be invited mineral dealers; a give-away table; silent auctions of specimens, books, tools, and more; and plenty of opportunities for fellowship with other avid collectors. Professional geologists can receive professional development hours for lecture attendance. The web site will soon have any updates and a registration form: <http://www.rasloto.com/FM/>

**Preliminary List of Symposium Presentations:**

- Phosphate Minerals in Pennsylvania  
Michael Stefanic, Pennsylvania DEP
- Preliminary Evaluation of the Mount Pleasant Mills Wavellite Occurrence  
Bill Stephens, Stephens Environmental Consulting, Inc.
- The Geology and Mineralogy of the Grace Mine  
Ron Sloto, West Chester University
- Evolution of Volcanism in Central America  
Ian Saginor, Keystone College
- Mineralogy of the Surface of Mars  
Stan Mertzman, Franklin & Marshall College

- Editor

### Earth Science Week October 11-17: "Visualizing Earth Systems"

from AGI press release

Alexandria, VA -- The American Geosciences Institute (AGI) is pleased to announce that the theme of Earth Science Week 2015 will be "Visualizing Earth Systems." This year's event will promote awareness of the many ways scientists monitor and represent information about Earth systems including land, water, air, and living things.

Earth Science Week 2015 will be celebrated October 11-17. For more about this week and ways to get involved -- including newsletters, local events, and classroom activities -- please see the Earth Science Week web site at <http://www.earthsciweek.org/>.

### Geo-Sudoku

by David Glick

This puzzle contains the letters ACDILNORU. One row or column spells a less-known fossil that can be found near State College (as usual, if you've read this Bulletin's articles, you've seen the word). 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.

U		R			N			
N	A	D			U		R	
O	L		C			A	U	N
	N	C		U	O		D	
				R			L	O
	D		N			C	A	
			U					D
D		L	O					
A			R	N				

### Classifieds

Ads may be submitted to the Editor (see p. 8)

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

**FOR SALE: Microscope & Accessories, Mineral Specimens, Crystal Models.**

Avid collector wants these to be purchased by someone who would appreciate them. Contact Frank & Gail Beall, 724-789-7290. See much more complete listing at [www.nittanymineral.org/beall.pdf](http://www.nittanymineral.org/beall.pdf) and in earlier NMS Bulletin issues.

## Some Upcoming Shows and Meetings

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

See [www.mineralevents.com](http://www.mineralevents.com) for more.

**Sept. 19-20, 2015:** 50<sup>th</sup> Annual Gem, Mineral & jewelry Show by Central PA Rock & Mineral Club. Zembo Shrine, 3<sup>rd</sup> & Division Sts, Harrisburg PA Sat 10-6, Sun 10-5. Print a \$1 off coupon at <http://www.rockandmineral.org/annual%20show.htm>

**Sept. 26-27, 2015:** Franklin-Sterling Hill Mineral, Gem & Jewelry Show, by FOMS & Franklin Mineral Museum. Franklin Borough School, 50 Washington Ave., Franklin NJ. Sat. 9-5, Sun. 10-4. <http://spmom3.wix.com/franklin-gem-mineral>

**Oct. 1-3, 2015:** Mineral & Fossil Yard Sale by Tom Smith, 10 Roger Av., Shippensburg PA. Thurs. 6 p.m. -8 p.m., Fri 8-1 and 6-8, Sat 8 a.m. - 1 p.m., or by appt. 100+ flats of specimens. 2.1 mi from center of town on Earl St Extended (Rt 696 heading N/W) past Shippensburg Univ. Ph. 717-552-6554, [tsmith1012@comcast.net](mailto:tsmith1012@comcast.net)

**October 3, 2015:** Autumn Mineralfest, by Penna. Earth Sciences Ass'n. Macungie Memorial Park, Poplar St., Macungie PA. Sat. only, 8:30-3:00. [www.mineralfest.com](http://www.mineralfest.com)

**Oct. 24, 2015:** (Note this correct date) Ultraviolation, by Rock & Mineral Club of Lower Bucks County <http://rockandmineralclub.wix.com/lowerbuckscountypa>

**Oct. 31, 2015:** (Note this correct date) South Penn Fall Rock Swap, by CPRMC & Franklin Cty RMC. South Mountain Fairground, 1.5 mi W of Arendtsville PA on Rt 234. Sat. only, 8:30-3:00. For GPS, use address 615 Narrows Road, Biglerville, PA 17307. General admissions \$1.00/person. Table for Swappers \$5.00/table. Contact: [tsmith1012@comcast.net](mailto:tsmith1012@comcast.net)

**Nov. 7-8, 2015:** FM-Pa Symposium, Lancaster. See p. 7.

**Nov. 7-8, 2015:** Gemarama, by Tuscarora Lapidary Soc. NEW LOCATION: Hall C at the Greater Philadelphia EXPO Center, 100 Station Avenue, Oaks, PA 19456

### Geo-Sudoku Solution

U	C	R	L	A	N	D	O	I
N	A	D	I	O	U	L	R	C
O	L	I	C	D	R	A	U	N
L	N	C	A	U	O	I	D	R
I	U	A	D	R	C	N	L	O
R	D	O	N	I	L	C	A	U
C	O	N	U	L	A	R	I	D
D	R	L	O	C	I	U	N	A
A	I	U	R	N	D	O	C	L

### INVITE A FRIEND TO JOIN THE SOCIETY

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

### SOCIETY OFFICERS

David Glick (President) 814-237-1094 (h)  
e-mail: [xidg@verizon.net](mailto:xidg@verizon.net)  
Dr. Bob Altamura (Vice-President) 814-234-5011 (h)  
e-mail: [raltamura@comcast.net](mailto:raltamura@comcast.net)  
Ellen Bingham (Secretary)  
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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:

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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 (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and name of photographer or artist.