

Nittany Mineralogical Society Bulletin

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

August, 2018

Visit our web site: www.nittanymineral.org

Editor (see back page):
David C. Glick

August 15th meeting:

Show and Tell by the members and guests

Our August meeting will be held Wednesday the 15th in room 114 (the large auditorium) Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available on our web site.

6:45 to 7:45 p.m.: Social hour, refreshments
in the lobby

7:45 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 August will be **Show and Tell**, presented by anyone and everyone who would like to “show and tell” for 5 or 10 minutes or so. This is a great chance to bring in new specimens, lapidary work, books, photos, equipment, projects in progress, interesting contrasts and comparisons, **anything you like** which represents some area of interest in our hobby or science, and share it with others. You can speak about it as informally or formally as you’d like. Stories or questions on their own are fine, too. You can connect with other members who have similar interests, or awaken an interest or spark an idea in someone else. We’ve had many fun and interesting presentations in the past, and look forward to more this time around.

We will have a guest, Jim Van Fleet, Science and Engineering Librarian at Bucknell University, and an avid collector of fluorescent minerals. He is compiling a presentation on fluorescent minerals of Pennsylvania, and looking for good specimens to photograph in the near future. He would be happy to make connections with collectors, and perhaps set up some future photo shoots. *-Editor*

ATTENDING THE AUGUST MEETING?

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

Your donated snacks will be welcomed.

Bring a friend!

Interested in a Flint Ridge Ohio Trip? Or Museum Trips (D.C., New York, etc.)?

Please come to the August meeting for a discussion.



NMS Picnic Sunday August 26 4 - 7 p.m. R.S.V.P.!

We are once again planning our leisurely annual picnic & cookout at the home and shady deck and back yard of Ellen and Stuart Bingham, 145 Goddard Circle, Pennsylvania Furnace, PA, 16865. It’s a great opportunity to relax and socialize. It will be held on Sunday, August 26, 2018, 4 to 7 p.m. Please **RSVP** with the number in your group so that we will have an approximate count - see page 3. *-Editor*

Check the web site for any updates or changes.

OFFICIAL NOTICE: Annual Meeting and Elections in October

by David Glick, NMS President

The October 17th 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, plans to meet in early September to set its recommended slate of officers. If you would like to volunteer to be on the ballot, or nominate someone, it would be most convenient if you would contact the President or other Board member (see page 8) by September 5.

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 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!**

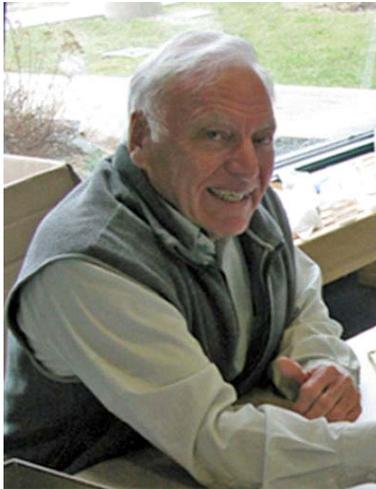
November Meeting Date

Our November regular meeting will be on the second Wednesday, Nov. 14. Our usual date would have been the day before Thanksgiving.

December Meeting Date & Restaurant

Please let the Board know your preference for the December dinner - Wed. Dec. 19, or a weekend?

Honoring Dr. Duff Gold as a Life Member of Nittany Mineralogical Society.



by David Glick,
NMS President

At our May meeting, NMS was pleased to honor Dr David P. “Duff” Gold as the second Life Member of our Society. Duff was a founding member and has been a Board member through the Society’s 24-year history. He served as Treasurer from 1994 to 2007, and Program Chair

from 2007 to the present. Duff was involved with the organizational meeting in January 1994, and gave the presentation at the Society’s first regular meeting in February 1994, “How Do Diamonds Form?” He revisited that program 20 years later, and has given a total of 14 programs over the years. Our annual Minerals Junior Education Day, and other programs educating and encouraging interest in geology among children and the public, have always drawn his strong support.

For our social hour and reception, Dr. Charlie Miller arranged for an “In Love with Geology” cake for Duff, and told some stories (photo below). In the meeting, NMS Life Member Dr. Andrew Sicree (photo above right) recounted Duff’s involvement in starting the Society. David Glick

reviewed his later contributions, and presented a gift consisting of a glass figure of a man exploring a geode.



Photographs by David Glick



To Dr. Duff Gold, for this award and for his many contributions, we say congratulations, and many thanks.



BOARD MEETING NOTICE:

NMS members are invited to attend Board of Directors meetings, which are generally held at 7:00 p.m. on the first Thursday of the month, although we do not meet every month. The next meeting is planned for September 6. 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.

Nittany Mineralogical Society Annual Picnic 2018

Sunday, August 26th, 4 to 7 p.m. at 145 Goddard Cir., Pa. Furnace, PA 16865

RSVP to nittanymineral.org@gmail.com or 814-822-0292

NMS will supply the dogs and burgs, buns, and drinks.
Please bring a snack, side dish, or dessert to share.



Friends and Families welcome!



Field Trip Report: National Limestone's Mount Pleasant Mills and Middleburg Quarries

by Mike Dunton

Saturday, May 12, turned out to be a perfect day for the NMS trip to National Limestone's two quarries. There was rain the night before, but no rain in the morning, although it was foggy and looked like it might start soon. The forecast had called for more thunderstorms at 2:00 p.m. but at 2:00 p.m. the sky was blue with no clouds in sight. By about 3:00 p.m. the clouds were forming and the field trip concluded.

Photographs by Mike Dunton



Middleburg Quarry; fluorite (below left) and calcite (below right) specimens found.



Digging for the wavellite horizon on the ridge at Mount Pleasant Mills



Wavellite specimens



Gastropod fossil from the wavellite ridge

Using Fossils to Date Rock Strata

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

Stratigraphy is a branch of geology studying rock layers (strata). It is primarily used to study sedimentary and layered volcanic rocks. Stratigraphy has two related subfields: lithostratigraphy and biostratigraphy. The former involves correlating strata using physical characteristics of the rocks without considering fossils. The latter focuses on correlating and determining relative ages of strata by using fossil assemblages contained within them.

One fundamental concept in biostratigraphy is the fossil or stratigraphic range. This is the total geologic time of a fossil species or fossil group - from first to last appearance in the geologic record. The concept involves geologic time and, therefore, the geologic time table (Figure 1). Fossil ranges are commonly depicted as shown in Figure 2. Even to the casual observer, it is

apparent that some organisms have longer stratigraphic ranges than others, usually due to evolutionary adaptations that offer ecological advantages over their competitors. One of the longest stratigraphic ranges is that of stromatolites (not shown in Figure 2), which are blue-green algae (cyanobacteria) and range from 3.7 billion years ago to the present. Much shorter is the fossil range of the group known as dinosaurs (also not shown on Figure 2). This collective group is only known from three geologic time periods: Triassic, Jurassic, and Cretaceous. The implications of these two examples are obvious. The stratigraphic range of stromatolites is so great that, as a group, they are not useful for relative age dating of strata. In comparison, if *in situ* dinosaur fossils are discovered, the enclosing strata must be Triassic, Jurassic, and/or Cretaceous in age.

Eon	Era	Period	Epoch	m.y.
Phanerozoic	Cenozoic	Quaternary	Holocene	1.5 23 65 250
			Pleistocene	
		Neogene	Pliocene	
			Miocene	
		Paleogene	Oligocene	
			Eocene	
			Paleocene	
			Mesozoic	
		Jurassic		
		Triassic		
	Paleozoic	Permian		
		Carboniferous		Pennsylvanian
				Mississippian
		Devonian		
		Silurian		
	Ordovician			
	Cambrian			
	Precambrian	Proterozoic		540
Archean		2500		
Hadean		3800 4600		

Figure 1. A generalized geologic time table.

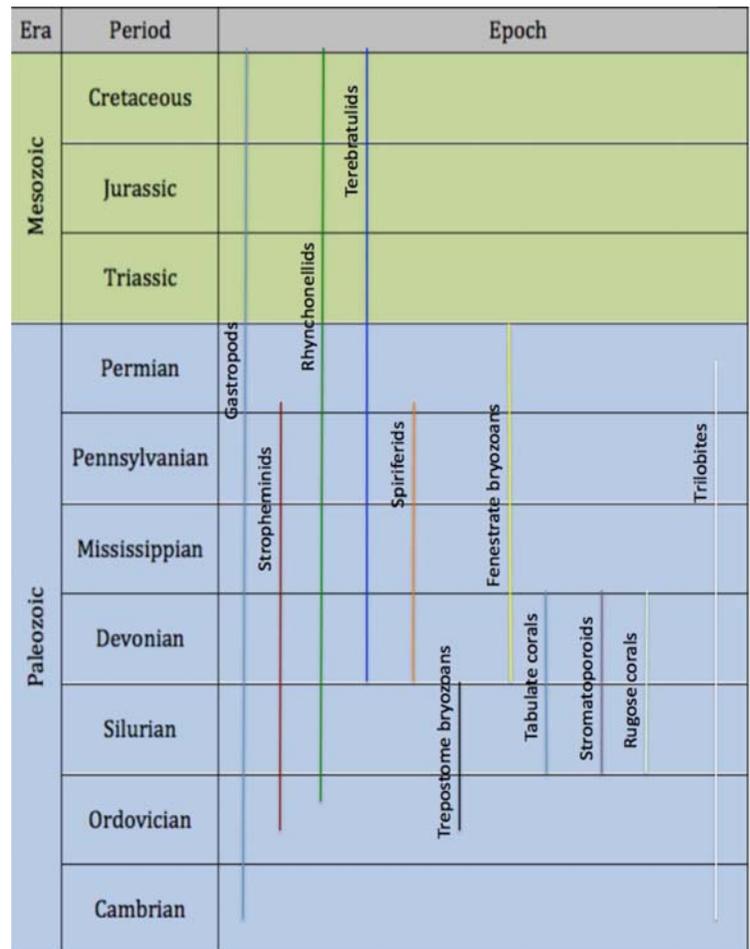


Figure 2. Stratigraphic ranges for selected fossils, for when they were common or abundant.

Determining relative ages of strata first involves identifying fossil assemblages, such as shown in Figure 3. Fossils identified in this assemblage are: gastropods, strophomenid brachiopods, rhynchonellid brachiopods, terebratulid brachiopods, spiriferid brachiopods,

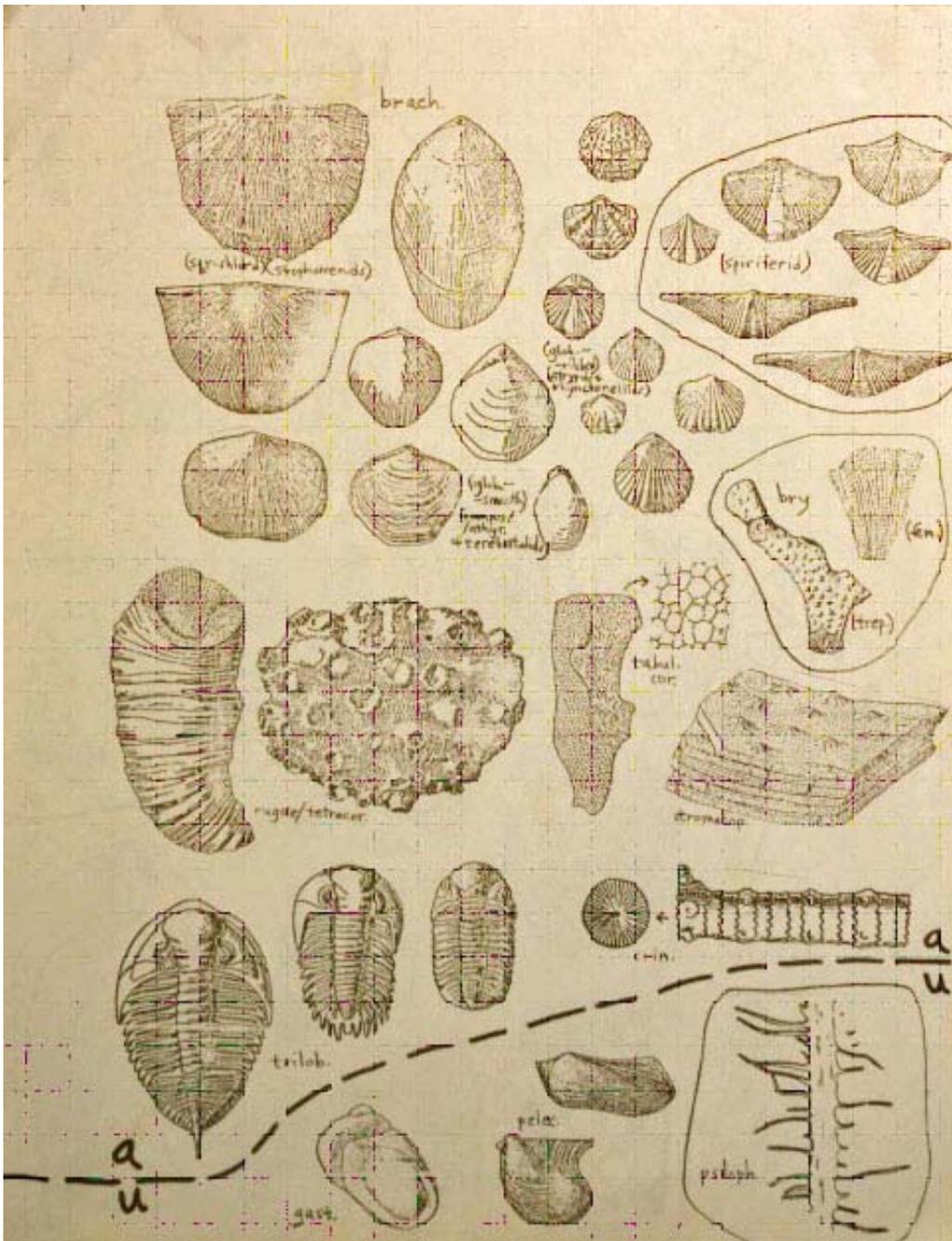


Figure 3. A fossil assemblage. (Roger J. Cuffey)

trepostome bryozoans, fenestrate bryozoans, tabulate corals, stromatoporoids, rugose corals, and trilobites. The reader is referred to the Internet for descriptions of these fossils. Following identifications, their individual stratigraphic ranges can then be plotted and compared (Figure 2). Fossil ranges are found in historical geology and/or paleontology textbooks. Comparisons of the stratigraphic ranges lead to a relative age determination for the rock layers containing this fossil assemblage. Specificity is related to the number of different fossils and fossil ranges used in the relative age determination.

For example, if only the fossil range of gastropods is used, all that could be said is that the assemblage in Figure 3 has a relative age ranging from lower Cambrian to the Recent. This is a span of approximately 570 million years and does not provide enough detail to be of much help in this exercise.

The shortest fossil ranges (Silurian-Devonian) in this assemblage are for tabulate corals, stromatoporoids, and rugose corals. Based solely on these, we could state this assemblage is Silurian-Devonian in age. Can we be more specific? Three fossils – terebratulid brachiopods, spiriferid brachiopods, and fenestrate bryozoans - are all common in the Devonian, but not in the Silurian. These first appearances establish a Devonian date. The Silurian Period was over before they made their first appearance in the geologic record. How do we put an upper age on this fossil assemblage? The tabulate corals, stromatoporoids, and rugose corals assist in this. These three become so rare after the Devonian that one usually does not encounter them on most field trips. The conclusion is that this fossil assemblage must be Devonian or older in age. It is the overlap, or

occurrence all together, of these six fossil types in the Devonian that lets us conclude that the rocks containing them are Devonian rather than either Silurian or later age.

A practical application using fossil stratigraphic ranges relates to a geology field trip guidebook. Figure 4 is an image from the guidebook showing fossils in the wall of a cave in south-central Pennsylvania. Arrows point to possibly three examples of the same fossil, identified in the guidebook as ammonites. However, the

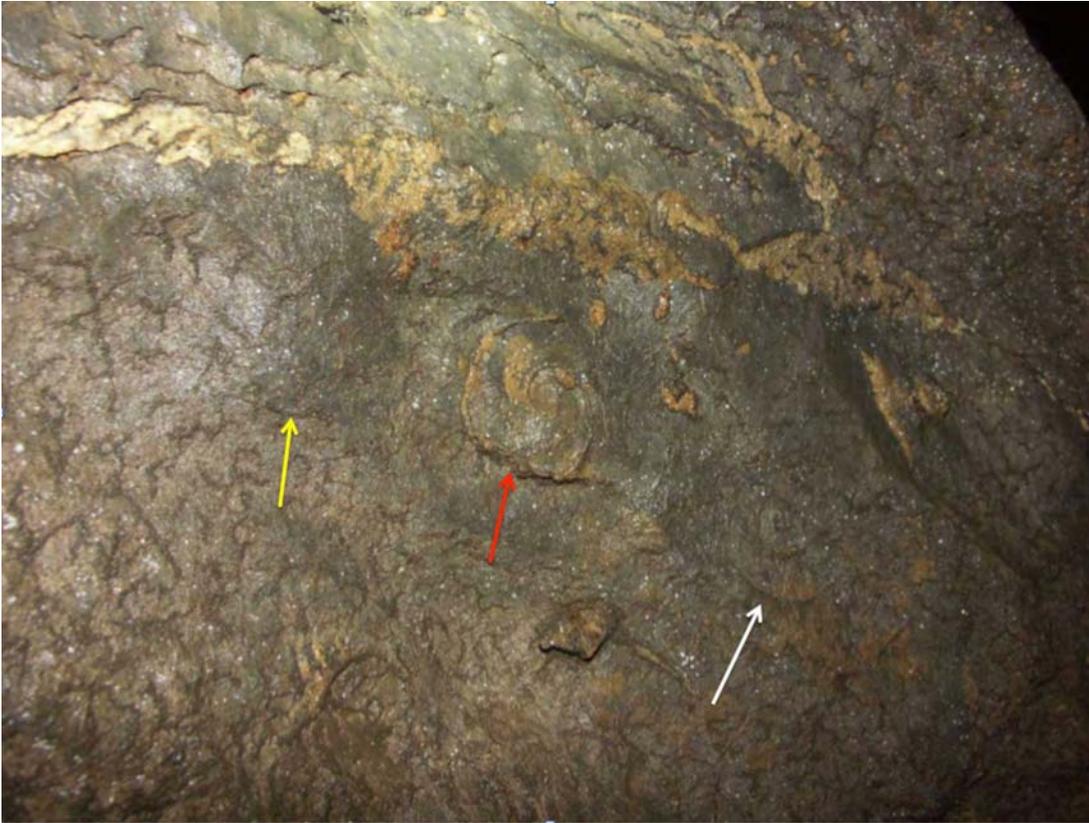


Figure 4: Gastropods in a cave wall of Middle Ordovician Chambersburg Limestone.

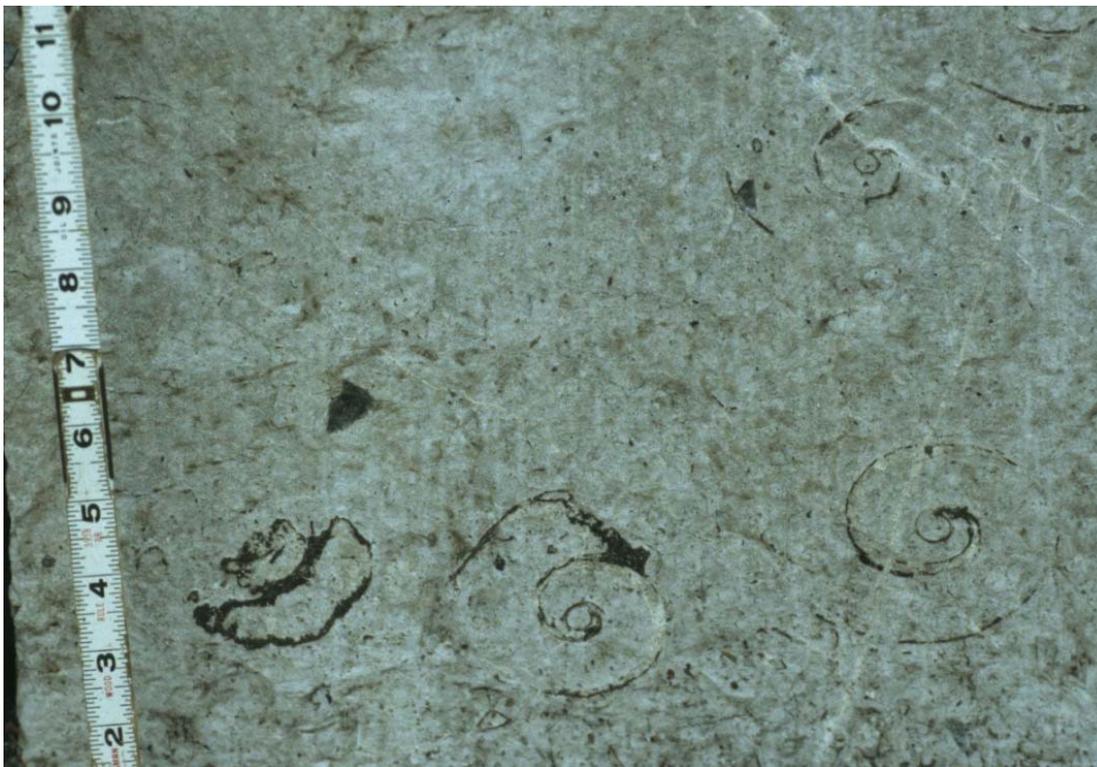


Figure 5: Three specimens (one at top, two at bottom) of the gastropod *Maclurites*. Image by the author.

cave is developed in the Middle Ordovician Chambersburg Limestone. Ammonites did not exist in the Ordovician (they had not evolved yet); therefore, a misidentification should be suspected in this case. And, indeed, reference to paleontology texts indicates these fossils are actually the gastropod (snail) *Maclurites*, possibly the species *Maclurites magnus* - an index or guide fossil to the early part of the Middle Ordovician. Index fossils are used to define and identify geologic periods. The best index fossils are those that are common, easy to identify at the species level, have a broad distribution, and are short-lived (short stratigraphic range). The original misidentification was corrected as a separate, subsequent article. Use of fossils' stratigraphic ranges thereby was significant in leading to this correction and determination of their actual geologic age.

Figures 5 and 6 are images of the large gastropod *Maclurites*, probably the species *Maclurites magnus* in Ordovician limestone from Chambersburg, Pennsylvania. These gastropods are especially conspicuous because of their large size, often ranging 3.5-4 inches in diameter.

Continues on page 7



Figure 6: A 3.5-inch diameter specimen of the gastropod *Maclurites*, probably the species *Maclurites magnus* in Ordovician limestone; Chambersburg, PA. Image by the author.

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 present brief summaries here in order to encourage readers to see the entire newsletters. There's a lot there!

The **EFMLS Newsletter** is now being distributed electronically; a link is available on our web site www.nittanymineral.org. The May issue covered many awards which were presented at the convention. Fall Wildacres will be held September 4-10; class lists and registration forms are included. The Speaker-in-Residence will be Alfredo Petrov, mineral dealer, collecting tour leader, and author. The June-July issue announces that the Federation has a new Facebook page - search for it as "EFMLS." The Bulletin Editors Advisory Committee web page is being updated. "The Price of Safety" article reminds us that the most economical path is the one which keeps us from being injured in the field, workshop or lab.

The **AFMS Newsletter** is available by the same methods. The June-July issue starts with a report from the Conservation & Legislation Committee which is looking for 7 to 10 members to form a right-sized, active and responsive committee. President Sandy Fuller writes about how rockhounds can keep local support in collecting areas through good behavior, clean-up, and patronizing locally owned businesses. Minutes and news from the annual meeting are provided.

-Editor

Geo-Sudoku

by David Glick

This puzzle contains the letters ACEFIORST. One row or column includes reference to the weather - this season, if it's good, we head out collecting.. 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.

	R			S	A			
	F	C	A	R	T	S		O
				O	F			R
A			T			R		
R		I	F			O		
		F				I	S	A
E	C	T						
		R	S	F	C	E		
		A					O	I

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 for more.

Sept. 15-16, 2018: Annual Gem, Mineral & Jewelry Show by: Central Pennsylvania Rock and Mineral Club. New location: Harrisburg Consistory (2701 North 3rd Street) Harrisburg PA 17110 Sat 10-6, Sun 10-5 <http://www.rockandmineral.org/annual%20show.htm>

Sept. 29-30: Franklin-Sterling Hill Gem & Mineral Show. Littell Center, 10 Munsonhurst Road #12, Franklin NJ 07416 Sat.9-5,Sun. 10-4. <http://spmom3.wixsite.com/franklin-gem-mineral>

October 6, 2018: Autumn Mineralfest, by PA Earth Sci. Ass'n. Macungie Mem. Park, Poplar St., Macungie, PA. One hundred tables overloaded with minerals, fossils, gems, jewelry, crystals and geodes from six continents - and possibly from outer space. Sat. only, 8:30-3. www.mineralfest.com

Nov. 3-4, 2018: Friends of Mineralogy - PA Chapter Symposium. Franklin & Marshall College, Lancaster PA.

Geo-Sudoku Solution

T	R	O	E	I	S	A	C	F
I	F	C	A	R	T	S	E	O
S	A	E	C	O	F	T	I	R
A	O	S	T	C	I	R	F	E
R	E	I	F	S	A	O	T	C
C	T	F	O	E	R	I	S	A
E	C	T	I	A	O	F	R	S
O	I	R	S	F	C	E	A	T
F	S	A	R	T	E	C	O	I

Visit us at www.nittanymineral.org

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), 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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Stuart Bingham (Treasurer)
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Door Prizes: Dr. Bob Altamura (see above)
Facebook & Publicity: John Dziak: jjd264@psu.edu

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
209 Spring Lea Dr. phone: (814) 237-1094 (h)
State College, PA 16801-7226

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.