

Nittany Mineralogical Society Bulletin

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

February, 2022

Visit our web site: www.nittanymineral.org

Editor (see back page):

David C. Glick

February 16th meeting
IN PERSON at BOAL HALL or via Zoom:

Applied Paleontology

by
Dr. Charles E. Miller, Jr.

This talk is dedicated to Dr. Roger J. Cuffey.

Our February meeting is planned for Wednesday the 16th 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." For this in-person meeting, we will not be serving refreshments. Feel free to bring your own non-alcoholic beverage.

The CDC currently says: "Everyone in Centre County, Pennsylvania should wear a mask in public, indoor settings."

7:45 to 8:00 p.m.: Announcements, door prizes, sales about 8:00 p.m.: featured program

The event has free admission, 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 hope you will join us in person, but if you can't, the Zoom link will be e-mailed to all paid members who receive our e-mails. Others are welcome to request it by e-mailing <xidg@verizon.net>. -Editor

Most people's appreciation of fossils is limited to collecting and seeing them in museums. Who does not get excited about finding a good trilobite or seeing dinosaur displays? Museums broaden our understanding of fossils by explaining how they are used. This talk expands on that theme, discussing examples of applied paleontology. Several examples from the talk are discussed ...

in the illustrated article on pages 4-6.

Recorded Presentations

The majority of the NMS meeting Zoom presentations made during the pandemic were also recorded and may be viewed by using the links on the main page of our web site (scroll down to find them).

-Editor

March 16th meeting,
6:00 p.m.

Geode Night!

NMS is excited to welcome back Jeff Smith, "the Geode Guy," to present Geode Night to our club again. Starting at **6:00 p.m.**, several sizes of whole geodes will be available for purchase. After you buy, Jeff will crack them open for you and you'll be the first person ever to see the crystals inside. This is a great program for kids and families.



A Mexican geode from Geode Night
D. Glick photo.

When the geode cracking is finished, Jeff Smith will present a program on geodes at about 7:15. He and his family have visited the geode mine in Mexico, and he has lots of good stories to tell. It's fascinating! The event is family friendly and very interesting; no purchase is necessary, you can come just for the program.

We will start publicizing early and will be making extra effort to announce this meeting to the public so that we get a good turnout. -Editor

No Minerals Jr Ed Day this Spring

The NMS Board has, with regret, decided not to hold Minerals Junior Education Day at its usual early spring calendar slot this year. This preserves the possibility of some event later in the year, if everything comes together.

NMS 2022 Spring Schedule

March 16, 6:00 p.m.: Geode Night, by Jeff Smith

April 20: Landscapes and Geology of PA, by Bob Altamura

May 18: Caves, by Dr Will White, to be followed by a tour of Lincoln Caverns on Sunday May 22

ATTENDING THE FEBRUARY MEETING?

Donations of **one or two high quality, labeled door prize specimens** are invited.

Additional items can be placed on the giveaway table.

Geo-Sudoku

by David Glick

This puzzle contains the letters ACEILPRTV; one row or column includes the orientation of interesting fossilized trees.. 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.

	C		A			P	R	
				I			L	C
	L	V	P		R	E		
		C		E	P			
V	I				C		E	
P					L			A
T				V	A			
L			C		T		I	E
		A					T	

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. The AFMS News is linked from our web site, <<http://www.nittanymineral.org>>, and can be found at <http://www.amfed.org/afms_news.htm>.

The AFMS February Newsletter is available on the web site and has a variety of interesting articles.

The Eastern Federation continues catching up, with member society dues and insurances fees being collected [NMS has paid both]. The January and February EFMLS Newsletters are available temporarily on the NMS web site at www.nittanymineral.org/efmls-news.htm (or from the "Links To" on the main page). Note the banner - EFMLS CELEBRATES 70 YEARS. News from a recent Board meeting is presented, and JoAnn McGuire of Che-Hanna Rock & Mineral Club in Pennsylvania is introduced as their Club Rockhound of the Year; other articles are reprinted below.

Plans for the spring session of Wildacres, the Federation's retreat in North Carolina, are reprinted in the next article; the full descriptions of courses are in the EFMLS News.

-Editor

EFMLS Spring Wildacres May 16-22

from the January and February EFMLS News

It Is official—the dates for the spring 2022 session of Wildacres will be May 16-22. Wildacres is located in the Blue Ridge Mountains near Little Switzerland, NC.

We are very fortunate to have another fabulous Speaker-in-Residence for the Spring Session -- Dr. Nathalie Brandes. Dr. Brandes is a geologist, author and distinguished college professor and researcher... Her Wildacres presentations will focus on the last major gold rush in the United States (Goldfield, Nevada), silver mines in Norway, Mining in the Ancient World, the History of Mineralogy, and the Geology of Birthstones.

Spring classes (complete descriptions are in the February EFMLS News at www.nittanymineral.org/EFMLS/):

Gem Trees - Pamm Bryant

Gemology-Gem ID - Tim Morgan

Intarsia - John Milligan

Silver Art Clay - Susan Brooks

Scrimshaw - Sandy Brady

Silversmithing - Richard Meszler

Stained Glass - Stephanie Danz

Wire Wrapping - Jacolyn Campbell

Rocks4Kids

Jr Education Day!

by Central Pennsylvania Rock & Mineral Club

Sat. March 5, 2022, 10 a.m. to 3 p.m.

At the Linglestown Life United Methodist Church
1430 North Mountain Road, Linglestown, PA
(This event is not affiliated with or sponsored by
any public or private school district)

Learn about the mineral rich world we live in!

- Experiment • Play Games • See Demonstrations
 - Learn Interesting Facts About Rocks, Gems and Minerals
 - Start Your Own Rock Collection • And More!
- Register early to reserve your spot!

Note: Space is limited on a first come, first serve basis!

Registration fee of \$5 per child includes all activities!

For more info about the event and to register on line or by mail, visit us at: www.Rocks4Kids.org

EFMLS President's Message

Happy Anniversary to the EFMLS [70 Years!].
Congratulations and best wishes for the years to come.

From the EFMLS Bylaws Article II Objectives:

Section 1. To bring about a closer association of the Earth Science Societies in the Eastern part of the United States, and such other areas, domestic or foreign, which in the future may desire to affiliate.

Section 2. To cooperate with educational and scientific institutions or other groups engaged in increasing the knowledge and popular interest in Geology, Mineralogy, Paleontology, the Lapidary arts, and related subjects.

The work of the Federation continues. Plans in the works include:

1. Prepare an operations budget including EFMLS News support, Website maintenance, Zoom account needs, Facebook activity, BEAC and website competitions, etc.
2. Promotion of Wildacres offerings and opportunities so more may enjoy the experience.
3. EFMLS Website streamlining and restructuring will receive attention.
4. Field Trip collecting site public relations, safety, good will, cooperation, and good working relationship development and promotion need discussion and action.
5. Determine the best use of Zoom as a tool. It has a great potential for group discussions and idea sharing among and between club presidents, editors, field trip chairs, safety talks, programs and so on.
6. Communication improvement opportunities abound within the Federation, with clubs contacting the Federation, and the Federation contacting clubs.

Yes, it is an ambitious agenda. Each of the above deserve a page of details, discussion, planning, idea sharing, and action. They offer opportunities for the Federation to help clubs and clubs to help the Federation.

Throughout the years it has not just been about stones and bones, collecting and giving, showing and growing. It has been about relationships, open discussion, cooperation, transparency, inclusion, understanding, progress... and teamwork. Let us honor our past, make the best use of the present, and plan for a future full of promise and potential.

It is time to roll up the sleeves and get to work - together.

Ellery Borow, EFMLS President

Saturday February 12! Friends of Mineralogy 2022 Tucson Mineral Symposium

from the web site

<https://www.friendsofmineralogy.org/2022-tucson-mineral-symposium/>

In conjunction with the Mineralogical Society of America and the Tucson Gem & Mineral Society, Friends of Mineralogy is pleased to announce the return of the annual Tucson Mineral Symposium for its 40th year:

Minerals of the Apatite Supergroup and Mineral Fluorescence

Saturday, February 12, 2022

Tucson Convention Center, Tucson, AZ

The Tucson Mineral Symposium will be held as a hybrid event, both in person at the Tucson Convention Center and online via Zoom. Attendance in either format is FREE. In person attendance does not require registration. To receive the link to attend the online portion, please register on the web site (shown above). The list of presentations is on the web site and in the January NMS Bulletin.

Everything Pennsylvania:

Cut and Polished Pennsylvania Gems and Minerals Temporary Exhibit

At the Carnegie Museum of Natural History (CMNH) in Pittsburgh, the Wertz Gallery of Gems and Jewels <<https://carnegiemnh.org/explore/wertz-gallery-of-gems-and-jewels/>> includes a temporary exhibit on "Everything Pennsylvania." Thanks are due to Debra Wilson, CMNH Section of Minerals Collection Manager, for the information that there are no immediate plans for ending the exhibit. The illustrated web page <<https://carnegiemnh.org/everything-pennsylvania/>> introduces the exhibit: "Gems and Jewelry that will feature gemstones, cabochons, polished spheres and carvings made from minerals unearthed in our own state of Pennsylvania." Some of the items on display include the beautiful translucent green antigorite var. williamsite from Lancaster County carved into an elephant; jet (coal) as a polished egg; and two impressive cabochons cut from multicolored Adams County metarhyolite by mineralogy and lapidary author John Sinkankas. The web page adds, "you will also see faceted gemstones of quartz, amethyst, smoky quartz, aquamarine, and titanite; cabochons of malachite, blue quartz, sunstone, and amazonite; and polished spheres of copper & quartz, and blue quartz."

The main CMNH web page includes visitor information; a visit time slot can be reserved, and admission is half price after 3:00 p.m. every weekday; senior and other discounts are also available.

Applied Paleontology

A presentation to
Nittany Mineralogical Society
February 16, 2022

by
Dr. Charles E. Miller, Jr.

This talk is dedicated to Dr. Roger J. Cuffey.

Most people's appreciation of fossils is limited to collecting and seeing them in museums. Who does not get excited about finding a good trilobite or seeing dinosaur displays? Museums broaden our understanding of fossils by explaining how they are used. This talk expands on that theme, discussing examples of applied paleontology. Several examples from the talk are discussed herein.

Fossils provided the first clue day length and the number of days in a year varies through geologic time. This is an example of fossils as paleontological clocks. The basis of this is that some marine organisms secrete growth lines. If both daily and annual growth lines are observed from the same fossil, days in a year when the organism lived can be counted. This is similar to dendrochronology, or tree-ring dating. Fossils show us that 400 million years ago, there were 391 days in a year. Growth lines relate to the Earth-Moon System.

In the Earth-Moon System, the Moon's gravity creates Earth's tides. In turn, tides produce tidal friction or tidal drag - slowing Earth's rotation, creating longer days. Day length increases as time increases, resulting in fewer days per year. The reverse is also true. Days progressively shorten as time decreases. If we go back 3.4 billion years ago, days were much shorter. Earth's atmosphere was oxygen deficient and cyanobacteria (stromatolites) first appeared. These photosynthesizing bacteria produce oxygen. Consider, each day was about half daylight and half nighttime. If a day was five hours long, then only about 2.5 hours of daylight were available for photosynthesis to produce oxygen. It took the next 2 billion years for day length to slowly increase, allowing more photosynthesis until the Great Oxidation Event (Figure 1) began 2.45 billion

years ago. This is probably the single greatest event for complex life in Earth's history.

We have seen that days shortened with decreasing time. This resulted in shorter intervals between tides. Today, tides change every six hours (two high tides, two low tides). As intervals shortened, tides more frequently affected coastal settings. Related to this is that the Moon continues receding from Earth. The reverse is also true. As we go back in time, the Moon is progressively closer. The closer the Moon, greater is its gravity on creating tides. Ergo, all things being equal, high tides are higher as we go back in geologic time. This means that higher high tides impacted coastal settings. If high tides were higher, then storm surges were more impactful. This is especially true if we go far enough back in time before land plants developed.

"Forensic Files" is a documentary television program showing how forensic evidence is used to solve investigations. In several episodes, diatoms are forensic tools. These diverse organisms secrete siliceous coverings preserved after death. The preservation makes them also useful in forensic geology. During WWII, fossil diatoms were used to determine launch sites of Japanese vengeance balloon bombs. Over 9000 of these hydrogen balloons were launched, mostly landing in Alaska, Canada, and the U.S. Each balloon had beach sand as ballast. The sand was sent to government geologists who identified small fossils (diatoms, foraminifera) in it. At the Smithsonian was a geologist who not only specialized in diatoms but, more specifically, in Japanese diatoms. From this and other information, he was able to recommend launch sites. B-29 bombers were sent, ending the balloon-bomb program.

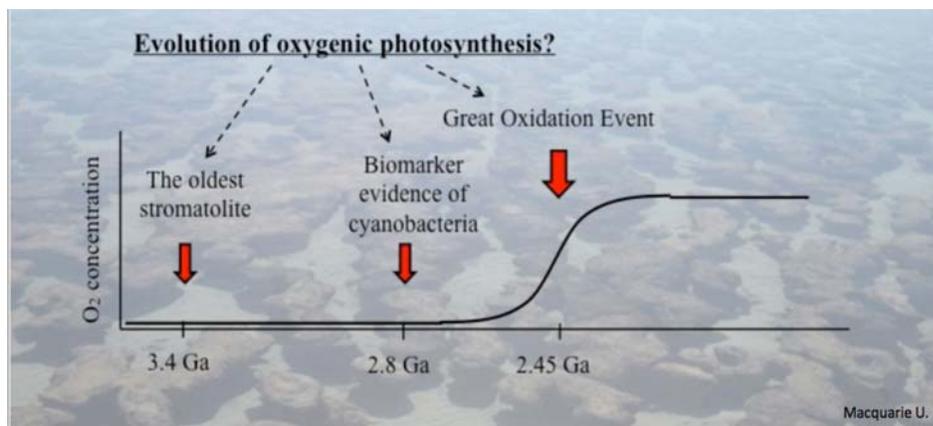


Figure 1: Increasing oxygen concentrations through Earth's early geologic time.

"Jurassic Park" is a 1993 movie about resurrected dinosaurs. One memorable segment is a T. rex chase scene. The speed of the dinosaur was largely based on dinosaur trackways. This is an example of applied paleontology. Dinosaur trackways are ichnofossils (trace fossils) from which much information can be gained. In addition to velocity, trackways may provide information on: whether the animal was walking, trotting, running, or wading; whether it was bipedal or quadrupedal; how it carried its tail; details of soft anatomy of the foot; paleoecology; paleodepositional environment; and more. Of particular note is that, at times, some parallel dinosaur trackways are found in coastal sediments. The consistency of such sediments is constantly changing due to precipitation, desiccation, and splashing from waves. In some of these parallel trackways, footprints are same-sized and to the same depth. On this basis, it is inferred that dinosaurs moved as a small, gregarious herd. It is evidence of social behavior.

Fossil diversity is an example of applied paleontology and refers to variation of fossil types (taxa). Why are marine fossils absent at one locality, plentiful and diverse at another? Marine organisms respond to environmental conditions such as turbidity, dissolved oxygen, pH, salinity, food supply, and energy level. If conditions are favorable, organisms are usually common and diverse. The opposite is also true. The Winfield Quarry in central Pennsylvania exposes the Tonoloway Limestone. Fossils are limited to eurypterids (sea scorpions) and ostracods. This low fossil diversity implies environmental conditions unfavorable to other marine organisms. This inference agrees with sedimentological observations that the depositional setting for the Tonoloway, there, was a restricted environment of hypersalinity (elevated salinity). Hypersalinity is unfavorable to most marine organisms. Although a lake, think of how hostile the Great Salt Lake is to most aquatic organisms.

Another example of using fossil diversity is at the State College by-pass. Two exposures (Figure 2) reveal different fossil

diversities. The northern section exposes the Bellefonte and Loysburg formations. Stromatolites are the only macrofossils, and these are few in number. This road cut has a low fossil diversity. The southern section exposes the Linden Hall, Nealmont, and Salona formations. Macrofossils include gastropods, brachiopods, cephalopods, crinoids, bryozoans, ostracods, corals, and stromatoporoids. Fossils are abundant in actual numbers and in taxa (types). This section has a higher fossil diversity. Why does fossil diversity differ between the two sections and what does that difference indicate? The Bellefonte Formation consists of dolomite; the Loysburg of dolomite and limestone. Most dolomite forms in restricted depositional settings of hypersalinity. A lagoon behind barrier islands or spits does not have direct contact with normal open-marine circulation. As a result, this restricted flow may result in conditions not conducive to most marine organisms: hypersalinity, low dissolved oxygen, reduced food supply, etc. At the by-pass, the Bellefonte and Loysburg are interpreted as tidal-flat, restricted settings. This interpretation is also based on sedimentological observations. In comparison, the Linden Hall, Nealmont, and Salona formations are limestone. Commonly, limestone associates with more open-marine circulation where environmental factors are conducive to organisms. From this relationship and from other observations at the road cut, the Linden Hall, Nealmont, and Salona formations represent relatively deeper water with normal, open-marine circulation. One

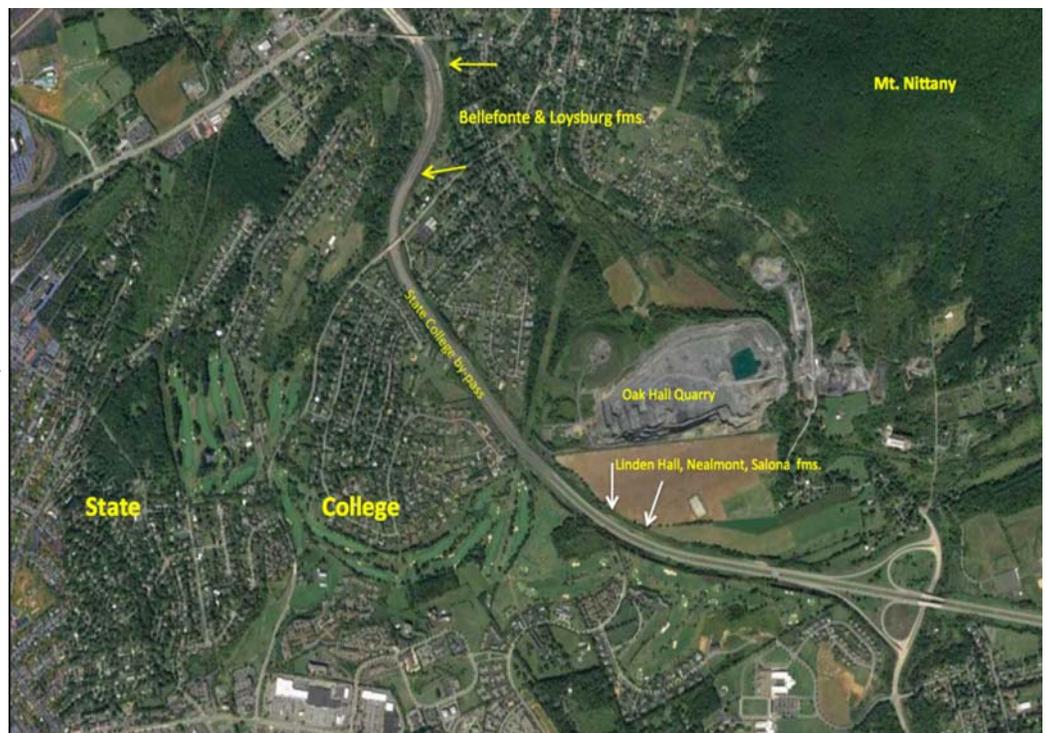


Figure 2: Google aerial image showing the State College by-pass (US 322, south of I-99). Yellow arrows refer to two sections showing different fossil diversities.

has to keep in mind that 1+ million years may have transpired between deposition at the two referenced sections. During that time, conditions changed.

Specimen Ridge, in Yellowstone National Park (Figure 3), is the world's largest petrified forest. Applied paleontology (paleobotany) provides clues about this forest. If you know the plants, you know the climate. If you know the climate, you know something about temperature and precipitation. From these, you usually can infer about wildlife and soils. In this case, paleobotany tells us the climate during the Eocene (40 million years ago) at Yellowstone was humid subtropical. This is the same climate we have today along our Gulf Coast. From this, we know that temperature and precipitation were higher when the forests were growing. Paleobotany also tells us that most of the trees were conifers.



Figure 3: Giant sequoia stump (upper right) and two other petrified trees (lower center), in original growth position. Specimen Ridge, Yellowstone National Park. Image by the author.

Specimen Ridge petrified forests are unique because 27 are stacked on top of each other, and many trees are in original growth position (vertical). The stacking is from repeated, nearby volcanic eruptions covering forests with ash. The ash was a silica source for petrification. A 1963 article stated that 90 percent of the petrified trees are autochthonous (in-place, not transported). Subsequent investigations suggest only 50 percent of the trees are autochthonous, the other 50 percent are allochthonous (transported). Transported petrified trees include both vertical and horizontal examples.

How can trees be in original growth position (vertical) and still be allochthonous? The 1980 Mt. St. Helens volcanic eruption provides insight. There, vertical trees are documented as having been moved laterally, but still retaining their original vertical orientation. That transport was from lahars (volcanic debris flows). Lahars and flowing water are identified as the primary agents of transport at Specimen Ridge during the Eocene.

We know some petrified trees at Specimen Ridge are allochthonous based on observations. Applied paleontology (paleobotany) is useful for this purpose. Some vertical petrified trees have truncated roots - snapped off when the trees were transported. In addition, some of those trees have their bark removed - scraped off during transport.

The White River Group consists of sediments deposited during the Eocene and Oligocene 56-23 million years ago. They are found in several mid-western states and are known to most people as to what you see in Badlands National Park, South Dakota. Figure 4 is a columnar section of the White River Group. These sediments contain the world's greatest collection of vertebrates from that time. Going from oldest to youngest through the sediments reveals transitioning climate. A humid subtropical climate (think of our Gulf Coast) transitions into semiarid conditions of today. Fossils and sediments attest to this. Large herbivores, such as titanotheres, are common in lower and middle formations but missing in the upper interval. As climate became drier, there were insufficient plants to support them. A common fossil in these sediments is the land tortoise. Non-burrowing tortoises are proxies to temperature. They could not have withstood average winter temperatures below 55.4° F.

Epoch	Group	Formation	Comments
Oligocene	White River	Brule	Decreasing precipitation: climate change over 35 million years (EOT). Humid subtropical (forests) to Semiarid
Eocene		Chadron	
		Chamberlain Pass	

Figure 4: Stratigraphic column for the White River Group.

Safety Matters:**WHAT IS IN YOUR CAR?**

by Ellery Borow, AFMS Safety Committee

What is in your car is not a question this committee needs to know. It is a question, however, which vehicle owners might want to address for their safe travels.

Travel with their personal vehicle is not something every rock collector does. However, there is a high percentage of rock collectors who do indeed travel with their own car or truck. The rock hobby is one of mobility - travel to meetings, shows, field trips, visit other collectors, mineral dealers, etc., and back.

What is in your vehicle for potential safety needs? The answer, of necessity, varies with driving conditions and needs. Perhaps it can be assumed, but just in case, your vehicle should already and always have a spare tire, car tire jack, wheel chocks, emergency egress means (window breaker and seat belt cutter), cell phone and emergency phone numbers, gas can, emergency signage or reflectors, and an emergency medical kit stored in an area that is easily accessed (if the kit is in the trunk sometimes the trunk is inaccessible), windshield washer fluid, and perhaps an extra quart of oil and gallon of anti-freeze.

Some additional well considered safety supplies and ideas for winter driving include:

First advice - stay home if the weather is problematic. If one has to travel, allow extra time.

Extra essential medications

Drinking water

Food, snacks

Blankets (enough for all passengers)

Extra winter clothes / gloves, boots (enough for passengers)

Maps, electronic and paper versions (it is very helpful to know where you are when giving directions to rescuers)

Cell phone with a fully charged battery, emergency numbers including for the phone company (yes, you read this listed before but it is worth repeating)

Pencil and paper

Message cards for display in windows

Compass

Jumper cables

Duct tape

Radio and batteries

Wristwatch

Whistle (if one's car is covered with snow it can be difficult to spot, so a whistle may be helpful)

Flashlights (more than one) with batteries

A gas tank kept more than 1/2 full

Let others know where you are going and the timetable - Respect other people's worrying if your plans change. Keep concerned people informed

Not in your car, but in your home, leave a note describing your whereabouts and timetable with date and time of return

Fire starter and starter materials

Ice melt

Sand, salt, or traction mat for tires

Tow rope, chain

Ice scraper

Snow shovel (folding kind is helpful)

Kids games and activities

Nice things to have as well:

Paper towels

Cloth towels

Plastic bags, trash bags

Masks and Hand Sanitizer

Note that a great many of the suggested supplies may be kept in one box. The list is a good starting point but every outing has the potential to be different and may necessitate different approaches and supplies.

Also, please note that it is advisable to know how to properly use the supplies mentioned above.

Venturing forth in your car in winter is an adventure. Please keep the adventure a pleasant one. Your safety matters.

UPCOMING EVENTS

Confirm details of events before attending.

Feb. 12, 2022: Friends of Mineralogy Symposium, Tucson, AZ, and via Zoom. See page 3 (and January Bulletin, p. 7.)

March 5, 2022: Rocks 4 Kids, Junior Education Day, by Central Pennsylvania Rock and Mineral Club. Held at Linglestown Life United Methodist Church, 1430 North Mountain Road, Linglestown, PA 17112. \$5 per child, register in advance, www.Rocks4Kids.org See page 2.

March 11-12, 2022: Micromount Symposium, by Leidy Microscopical Society. Advent Lutheran Church, 45 Worthington Mil Rd., Richboro, PA 18954. Friday 12-6, Sat. 9-6. Reservations, admission fees, etc: donmcalarnen@outlook.com

Mar. 5-6, 2022: 58th Annual Gem, Mineral and Fossil Show, by Delaware Mineralogical Society. Double Tree by Hilton Hotel, 4727 Concord Pike (Route 202), Wilmington, DE. Sat 10-5, Sun. 11-5. <https://www.DMSrocks.org>

Mar. 26-27, 2022: Philadelphia Mineral Treasures and Fossil Fair; 5140 Butler Pike, Plymouth Meeting, PA, . Sat. 10-5, Sun. 10-4. <https://www.philamineralsociety.org/mineral-show/>

Mar. 26-27, 2022: Annual Show, by Che-Hanna Rock & Mineral Club. Wysox Volunteer Fire Co. Social Hall, 111 Lake Road, Wysox, PA. Sat 9-5, Sun. 10-4. <http://www.chehannarocks.com/>

May 16-22, 2022: EFMLS Wildacres Workshop Spring Session, North Carolina. See page 2.

Geo-Sudoku Solution

E	C	T	A	L	V	P	R	I
R	A	P	T	I	E	V	L	C
I	L	V	P	C	R	E	A	T
A	T	C	I	E	P	R	V	L
V	I	L	R	A	C	T	E	P
P	R	E	V	T	L	I	C	A
T	E	I	L	V	A	C	P	R
L	V	R	C	P	T	A	I	E
C	P	A	E	R	I	L	T	V

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 is March 22. 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 \$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

mailing address:

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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
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