

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.
P.O. Box 10664

State College PA 16805

Editor (see page 8):

David C. Glick

October, 2011

Visit our web site: www.nittanymineral.org

October 19th meeting:

Cave Minerals as Paleoclimate Archives

by William B. White

Professor Emeritus of Geochemistry, Penn State

Our October meeting will be held Wednesday the 19th in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available through our web site.

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

7:30 to 8:00 p.m.: Annual Meeting & Elections, announcements, questions, answers; door prize drawings

about 8:00 p.m.: featured program

*The event has free admission, free parking, and free refreshments, and is open to all – **Bring your friends and share an enjoyable evening.** -Editor*

Rainwater on limestone terrains percolates through the soil where it picks up an excess of carbon dioxide and various organic molecules and trace elements. The water eventually reaches underlying cave passages where the excess CO₂ is degassed and calcite or aragonite is deposited as the stalactites, stalagmites and flowstone that decorate caves. Other minerals may also be deposited.

Stalagmites, in particular, grow over tens of thousands of years layer upon layer so that a longitudinal slice of a stalagmite is a microstratigraphy of the growth period. Uranium-thorium dating allows for an absolute determination of the age of calcite deposition. Because the water that formed the stalagmite originally came from the surface, each layer contains a trace element and isotope signature which relates to the surface climate at the time of deposition.

Caves have become an important archive of paleoclimate information. This talk will be an overview of what we've learned and how we learned it.

ATTENDING THE OCTOBER MEETING?

Donations of door prize specimens are invited.

NMS will provide ice, soft drinks, and juice;
your donated snacks will be welcomed.

Bring a friend!

Junior Rockhounds meet October 19th

Junior Rockhounds will meet at 5:00 p.m. on the third Wednesday of the month this Fall. That's the same night as our regular meetings; the dates are **October 19** and Nov. 16. We'll decide on the December meeting a little later.

Each month's Junior Rockhounds meeting has a new topic or topics with fun, hands-on learning for the kids. We encourage those who attend to become NMS members, but it's not required. Just \$7.00 covers a whole year (through October 2012) of student membership. Parents may get a lot out of the meetings, too! Check the web site for news, or contact Dr. Andrew Sicree (see page 8). - Editor

Dues are Due!

by David Glick, NMS President

Our membership year ends **this month**, so it's time to pay dues. If we have not processed your payment as of October 13, a form is enclosed with this Bulletin; the form and payment can be mailed in or brought to our October meeting. Your prompt payment helps a lot in reducing work for our volunteer staff. The rate remains at \$20 for an individual member. Members must renew in order to receive printed Bulletins and other member benefits **after November 1**.

The dues form now includes a line for "don't send a printed Bulletin." If you prefer to 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.

Annual Meeting and Elections in October

by David Glick, NMS President

The October 19th meeting will include a brief Annual Meeting of the Corporation and election of officers. As announced last month, the slate of candidates is the list of current incumbents:

President: David Glick

Vice-President: Robert Altamura

Treasurer: John Passaneau

Secretary: Ellen Bingham

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 or remind Dave Glick to bring a printed copy to a meeting for you to see.

The October issue starts with news on the Eastern Foundation Fund. The top ten or more articles and poems in six categories of the Bulletin Editor's contest are available through a link on the AFMS home page. At the end of her term, President Betsy Oberheim looks back on the year and introduces another Pennsylvanian, R.J. Harris, as the next President. There's a review of the September Wildacres Workshop with color photos, and a report on the Wildacres Appreciation Award which went to Bruce Gaber and his late wife Cathy.

The **AFMS Newsletter** is available by the same methods. The October issue has not yet been received, but should be on their web site soon.

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

Earth Science Week from their web site www.earthsciweek.org/

The American Geosciences Institute (AGI, which changed its name from the American Geological Institute this month) hosts Earth Science Week every year in October. Earth Science Week promotes understanding and appreciation of the value of Earth Science research and its applications and relevance to our daily lives. "Our Ever-Changing Earth," the theme for 2011, engages young people and the public in learning about the natural processes that shape our planet over time.

The 2011 event was held October 9-15. During the week, AGI and the National Park Service collaborated on the second annual National Fossil Day on October 12. In addition to online resources, local events, and art and photo contests, the National Park Service and the Smithsonian Museum of Natural History held a National Fossil Day celebration on the National Mall in Washington, D.C.

AGI provides extensive Earth Science Week materials for teachers and students on its web site <http://www.earthsciweek.org/>, as well as a kit of physical materials (DVDs, posters, activity sheets, etc.) which can be ordered at low cost. Kits with different themes from earlier years are still available. This month's web page at <http://www.earthsciweek.org/newsletter/October2011.html> may also be of particular interest. The dates for the 2012 are October 14-20 - put them on your calendar!
- *Editor*

Ultraviolation Fluorescent Mineral Show October 29

"If your rock doesn't glow, this isn't your show!"

Adapted from a
2002 show review by David Glick

Ultraviolation is a fluorescent-mineral-only show presented by the Rock and Mineral Club of Lower Bucks County. It will be held from 9:00 a.m. to 5:00 p.m. on Saturday, October 29, 2011, at the First United Methodist Church, 840 Trenton Road, Fairless Hills PA, 19030. Parking is behind the church and the entrance is on the lower level at the eastern end. There is a \$2.00 donation for admission, and children 12 years old and younger are admitted free.

The show is all in one room, with a good, simple layout (an advantage in the dark!). Many of the dealers have multiple UV lamps suspended just above the surface of their tables, some had display cases with top- or side-mounted lamps, and others used hand-held lamps. Some attendees carry their own battery-powered lamps, which seems to be a useful method. There are a lot of UV lamps!

One of the features of this fluorescent-only show is that the room lights are out for 20 minutes of each half-hour, allowing good viewing with the dealers' or one's own ultraviolet lamps. Looking around a big room and seeing table after table of glowing minerals in every color is a real treat.

The show is now in its 22nd year and is well-known and well-attended. Most of the space is occupied by dealers, who come from several states and have a wide assortment of fluorescent material from around the world. When I attended in 2002, there were about 25 dealers. Franklin, New Jersey, material was readily available but not overwhelming. I bought 5 specimens, all showing fluorescent crystals, from China, Mexico, Norway, and the U.S. Show organizer Larry Kennedy later received a letter from an attendee who got about 19 species from locations including Europe, Greenland, Baffin Island, and North America. In addition to the dealers, there were displays, prizes, and food available. Everyone involved was friendly and helpful and it was a very pleasant experience overall.

South Penn Rock Swap Saturday, October 29, 2011

Each year, the Franklin County and Central Pennsylvania Rock and Mineral Clubs host the South Mountain Fairgrounds, 1.5 miles West of Arendtsville, PA on Rt.234. It is held from 8 a.m. to 3 p.m. The Fairgrounds are 1.5 miles west of Arendtsville, PA on route 234; that's northwest of Gettysburg and west of Biglersville. General admission is \$1.00 per person, and the table fee for swappers is \$10.00 (multiple tables are allowed for the \$10.00 fee).
- *Editor*

"OUT OF AFRICA"

The 2011 GEMARAMA Show outside Philadelphia

From their web site

www.lapidary.org/gemarama.htm

2011 will be the 42nd year that Tuscarora Lapidary Society has hosted its annual fine gem, jewelry and mineral show, Gemarama. The theme this year is "Out of Africa." In addition to vendors you would expect at any gem show, a third of the show houses over 30 instructional and competitive cases and a large lapidary arts demonstration area where visitors can see live the cutting of stones, jewelry making, beading, chain making, wire-wrapping, and other arts and sciences associated with lapidary.

Dates/Hours: Saturday November 5, 2011, 10 a.m. - 6 p.m.
Sunday November 6, 2011, 10 a.m. - 5 p.m.

Location: Founders Pavilion at CFS, the School at Church Farm, 1001 E. Lincoln Highway, Exton, PA 19341. It is located ½ mile west of the Frazer - Rte. 30 exit off of Route 202. (Set your GPS unit to 1001 E. Lincoln Hwy, Exton, PA.) A detailed map is available on the web site.

Admission is \$6 for adults, \$1 for children under 12 years of age; two-day adult tickets are \$9. With our discount coupon (available on the web site.) the adult single day admission is \$5. Boy Scouts and Girl Scouts in uniform and accompanied by an adult Scoutmaster are admitted free.

Things to do:

Dealers: Our dealers come from all over the country to display and offer their specialties. They bring a wide variety of gems, minerals, fossils, lapidary supplies, cut and polished stones, beads, finished jewelry, carvings and much, much more. (For a list of our dealers, see the web site.)

Exhibits: Club members and invited guests exhibit many fine displays of the lapidary arts, jewelry, minerals, and fossils in both informative and competitive classes. Competitive exhibits are evaluated by teams of judges before the opening of the show. Awards are given in several categories.

Demonstrations: Come watch how we make beautiful cabochons and faceted stones from gem rough, or how we incorporate those lapidary creations into jewelry. You can also view incredibly beautiful microscopic mineral specimens, or watch bead stringing or the creation of wire-wrapped jewelry, and much more. There is information in the demonstration area about classes offered at our Skill Center and an opportunity there to sign up to receive information on upcoming class schedules. Continuous demonstrations include: Cabbing, Faceting, Micromounts; Intermittent demonstrations include Bead Stringing, Chain Making, Channel Jewelry, Intarsia, Metalcraft, Mini Gem Trees, Silver Smithing, Wax Modeling, Wirewrap Jewelry

You will also find children's crafts, games, and coloring books on gems and minerals. There are exhibits for the vision challenged, Treasure Wheel, Silent Auction, Dime Drop, Grab Bags, Mystery treasures for children. Back Copies of Lapidary Journal, Rock & Gem, etc., will be for sale. The Concession Stand has excellent quality food at reasonable prices.

- Editor

Note from the President

by David Glick

Our fiscal year and administrative year end on October 31. Dues are due now, as noted on page 1, and prompt payment helps reduce the workload for the volunteers who run the club. While you're writing checks, please remember that as a 501(c)(3) nonprofit, NMS will also happily accept your cash **donations**, and provide the appropriate documentation for your income tax deduction.

As mentioned last month, the Board is looking for a site for our December Social. We are tending toward continuing to have it at a restaurant, but may skip the sales aspect this year because we have not yet identified a suitable venue in a friendly jurisdiction. If you feel strongly that we should provide for members with sales tax licenses to sell their goods, please contact me as soon as possible.

Unfortunately, we're probably too late in the season for the yard-sale type event which was mentioned last month. The Board took no action on that at its October meeting, and it seems best to work on that idea in the spring. ✱

Geology 101

by Mary Hanjes, Contra Costa Mineral & Gem Society

From: *Diablo Diggins*, 9/2010

(5th Place – AFMS Poetry)

I took this class with gladdened heart
To learn to tell my rocks apart

But now I'm wond'ring why I thought
I'd gain the knowledge I had sought

Oh, you rocks, and minerals, too
How I wish I understood you

Learning cleavage, streak, and luster
Could be more than I can muster

Olivine, pyroxene, , , what's next?
Bowen's Reaction has me vexed

On to silicates; now I'm worried
I wish this class was not so hurried

Gabbro, granite: phaneritic
What the heck is porphyritic?

I'm so lost now; and what comes next?
Maybe I should have read the text

I get the rock types, they're no sweat
Maybe this class won't beat me yet

Quartz and silica are the same
I get it now; it's just a name

I'm done, I learned, I'm proud to say
I did my best and got an A

I've just one question left unknown
Why don't I know the rocks I own?

Concretions

by Dr. Charles E. Miller, Jr.

Whereas geodes are the darlings of most hobbyists, concretions are less familiar and generate less interest. Exceptions to this may be septarian nodules and fossil-bearing concretions such as those at Mazon Creek, Illinois and Kremmling, Colorado.

When discussing concretions, it is usually necessary to distinguish them from geodes and nodules. However, distinction between geodes and concretions is not always clear. The American Geological Institute (AGI) defines a geode as being hollow or partly hollow. This definition precludes solid “geodes.” Instead, those would be considered concretions. However, one of the AGI’s definitions of a concretion is: “A collective term applied loosely to various primary and secondary mineral segregations of diverse origin, including irregular nodules, spherulites, crystalline aggregates, geodes, septaria, and related bodies.” Note this definition includes geodes and irregular nodules. To simplify this confusion, one distinction between concretions and geodes is that in the former, crystals grow outward; in the latter, they grow inward. Similarly, an important distinction between concretions and nodules is that the former contain nuclei around which mineral precipitation has occurred whereas nodules are replacement bodies without nuclei. Some obfuscation is added when one considers that septarian nodules are generally considered concretions and, in Mazon Creek (Illinois), one finds fossil-bearing rounded nodules of rock. These nodules are concretions.

Examples are shown in the photographs, which are all by the author except for the Mazon Creek nodule.



Photos above: two concretions from the Ordovician Rockdale Run Formation in a Valley Quarries, Inc. quarry at New Franklin, near Chambersburg, PA.



Concretion in the Ledger Member of the Ludlow Formation at Brockport, New York.



Fossil seed fern frond from the Pennsylvanian Carbondale Formation at Mazon Creek, Illinois. *Photo by milesizz (Dan Mullen) <http://www.flickr.com/photos/8583446@N05/> used under Creative Commons license CC BY-NC-ND .*



Iron-pyrite concretions from the Cretaceous Hell Creek Formation at Jordan, Montana.



Concretion in the Chattanooga Shale, TN.



Ammonite-bearing concretions in the Cretaceous Pierre Shale at Kremmling, CO.



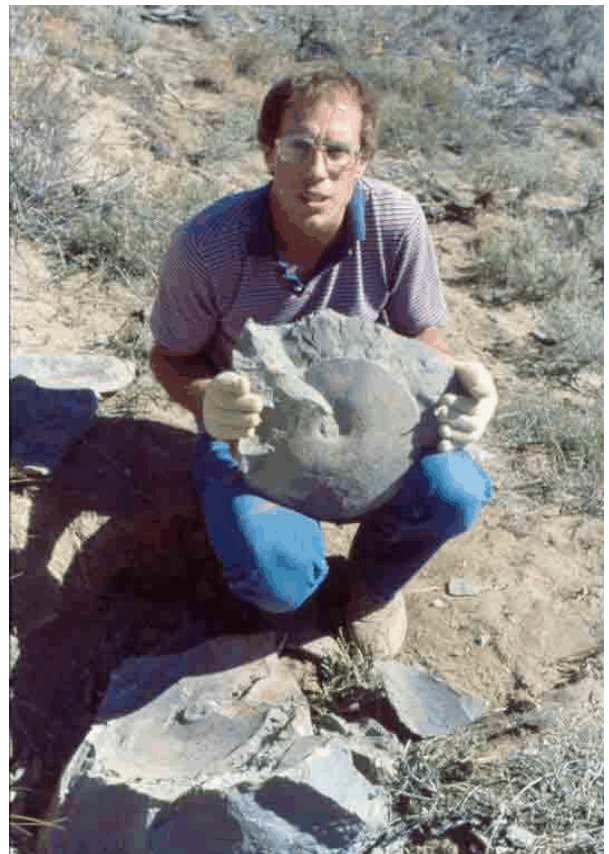
Two concretions from West Virginia.



Extricated *Placentiaceras* sp. ammonite, originally 22 inches in diameter. After extrication, the ammonite was 12 inches in diameter due to loss of whorls.



Large concretion in Devonian Marcellus Shale; Snook Quarry; Old Fort Road; Antes Fort, PA; 8-30-11. Note the blue-handled geology hammer (color enhanced) approximately two feet to the right of the concretion's lower edge.



Of special note are the images of the Kremmling, Colorado ammonite locality in the Cretaceous Pierre Shale at Kremmling, Colorado. This is on Bureau of Land Management land about two hours from Denver. Large ammonites (up to 22 inches in diameter) of *Placentiaceras* sp. are found here along with many other taxa of marine invertebrates, including nautiloids, bivalves and gastropods that lived in the Great Interior Cretaceous Seaway of 70 million years ago. This seaway stretched from the Arctic Ocean to the Gulf of Mexico in the south and to the Appalachians in the east. Collecting here is now prohibited at all times without proper permits. The ammonites are found in concretions weighing 200 pounds or more (two photos, top right). These must be dug out of the ground, a task that takes more than an hour. The ammonite is then stood upright and beat upon using a large sledgehammer. One hopes the concretion breaks longitudinally, is fossil-bearing, and exposes an ammonite (middle right). In extricating the ammonite, some whorls of the cephalopod are lost, as in this case. The photo at bottom right shows the author in 1987 with one extricated ammonite. ❁

Stromer's Riddle: The Predatory Dinosaurs of Morocco

by Bob Farrar, Maryland Geological Society

From: *The Rostrum*, 5/2010

(3rd Place – AFMS Original Adult Articles)

Many of those members of MG5 who know me know that over the last dozen or so years I have made several trips to Morocco to see and collect fossils and minerals. When I go to someplace like Morocco, I like to learn all I can about its minerals and fossils before I go, as well as after I get back. To that end, I was recently at the U. S. Geological Survey Library in Reston, VA, perusing recent articles on the fossils of Morocco. There I came across an article by Alistair McGowan and Gareth Dyke (of Germany and Ireland, respectively), in the journal *Geology*. In this article, McGowan and Dyke address a question that has bothered me for a long time: Why do we see so many fossils of theropod dinosaurs, which were predators, from Taouz, Morocco, but so few fossils of potential prey from the same site? They dubbed this question "Stromer's Riddle" after Ernst Stromer, who studied North African theropods, and who described *Spinosaurus*.

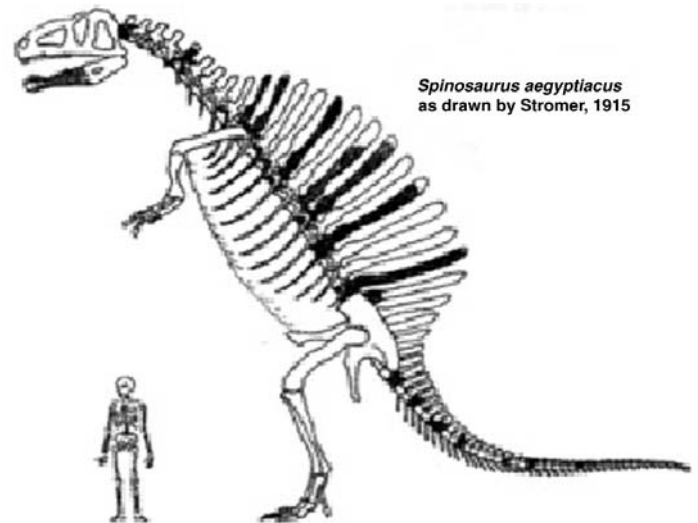
Taouz is located in eastern Morocco, on the edge of the Sahara Desert, and not far from the Algerian border. Collectors who are familiar with Moroccan fossils will know that the most common theropod dinosaur from Taouz is *Spinosaurus*, which had conical teeth, similar to some crocodiles. Also found at Taouz is *Carcharodontosaurus saharicus*, which was a predator similar in size to *Tyrannosaurus rex*. Teeth of smaller theropods, sometimes attributed to *Deltadromeus*, or simply "raptors", are found there as well.

The main hypothesis put forth by McGowan and Dyke to explain the abundance of theropods at Taouz is collector bias. Much of what we know about the fauna of that locality is based on material purchased from fossil dealers. Likewise, what we collectors own has been obtained almost entirely from dealers. And, dealers always know that what sells best are fossils of large, rare, and spectacular species. The same pattern can be seen in many museum collections of fossils in general, where "trophy specimens" are often favored over more common ones.

To test this hypothesis, McGowan and Dyke surveyed fossil shops in Morocco (but did not buy any fossils), and compared those findings with those from their own collections made in the Kern Kem Formation near Taouz. They found that their collections contained fewer theropods and more turtles than did those of the fossil dealers. They also found fewer sauropods than at the dealers, and about the same number of crocodiles. However, the differences were not huge; their collections contained 15% theropods versus 24.5% in the dealers'. Add in crocodiles, and more than half of both samples were predators. This compares to some 7% predators and 93% herbivores found in the well-studied Cretaceous Hell Creek Formation of North America. McGowan and Dyke thus concluded that collection bias can explain only part of the abundance of theropods at Taouz. They suggest several other factors that may be involved. One

factor is the abundance of *Spinosaurus*. This dinosaur probably fed on fish, which were not represented in either McGowan and Dyke's collection or dealers' stock. Another is the rate at which theropods shed their teeth, which are common dinosaur fossils at Taouz, compared to the rates at which herbivores shed theirs. Differential rates of preservation could also be involved.

So did McGowan and Dyke solve Stromer's Riddle? Clearly only partially, if that. While they did show a collector bias, much of the difference was due to turtles, and they do not suggest that the theropods were preying on turtles (though perhaps crocodiles did). They also found fewer sauropods, a potential prey item, in their collections. The other potential explanations that they put forth are largely speculative. It is tempting, also, to speculate that *Spinosaurus* ate fish, and other theropods ate *Spinosaurus*, at least when it was young. (When mature, *Spinosaurus* was over 50 feet long, larger than any other known theropod.) However, recent work on oxygen isotope ratios in fossil teeth suggest that *Spinosaurus* spent much of its time in or near the water (consistent with a fish diet), while *Carcharodontosaurus* spent more of its time on land, and so the two would have avoided each other. How then do we solve this puzzle? Like so many others in paleontology, WE NEED MORE FOSSILS!



References

- Amoit, R, et al. 2010. Oxygen isotope evidence for semiaquatic habits for spinosaurid theropods. *Geology*. February 2010, Vol. 38, pages 139 - 140.
- Dal Sasso, C. et al. 2005. New information on the skull of the enigmatic theropod *Spinosaurus*, with remarks on its size and affinities. *Journal of Vertebrate Paleontology*, Vo. 25, pages 888 - 896.
- McGowan, A. J. And G. J. Dyke. 2009. A surfeit of theropods in the Moroccan Late Cretaceous? Comparing diversity estimates from field data and fossil shops. *Geology*, September 2009, Vol. 37, pages 843 - 846.
- The U. S. Geological Survey Library, 12201 Sunrise Valley Dr., Reston, VA 20192, is open to the public, weekdays, 8:00 a.m. to 4:00 p.m. (<http://library.usgs.gov/>)

Mineral Portraits

by
John Passaneau

Quartz
Brandberg Area
Brandberg District
Erongo Region
Namibia

This is a 4 x 8 x 3.3 cm quartz crystal cluster. It's a very busy specimen as it's smoky in parts, it shows hopper growth, and has a very hard-to-explain thin streak of amethyst running up through center of the crystal to the termination. I've never seen anything quite like it. The smoky and amethyst color can be explained by aluminum or iron ions in place of a small number of the silicon atoms and a subsequent exposure to natural radiation. But how the narrow strip of amethyst got there takes some thought to explain. This photo was taken with a digital focus stacking technique to increase depth of field, with 17 images used.



Quartz, Brandberg Area, Brandberg District, Erongo Region, Namibia.

John Passaneau specimen (Q-78) and photo.

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.

Oct. 29, 2011: South Penn Rock Swap, by Franklin County and the Central Pennsylvania Rock and Mineral Clubs. South Mountain Fairgrounds, 1.5 miles West of Arendtsville, PA on Rt.234. General Admission: \$1.00; Tables for swappers: \$10.00

Oct. 29, 2011: "Ultraviolation" all Fluorescent Mineral Show, by The Rock and Mineral Club of Lower Bucks County, PA. First United Methodist Church, 840 Trenton Road, Fairless Hills, PA., 9:00 AM – 5:00 PM, Cost \$2.00 Donation, Children 12 years old and younger FREE.

Nov. 5, 2011: Gemarama, theme "Out of Africa," by Tuscarora Lapidary Society. At CFS: The School at Church Farm, Exton, PA. www.lapidary.org/gemarama.htm See page 2.

Nov. 19-20, 2011: Gem Miner's Holiday Festival, by Mid-Atlantic Gem & Mineral Association. Lebanon Expo & Fairgrounds. Sat 10-5, Sun. 11-4. www.gem-show.com

2012: EFMLS Sept.15-16, Harrisburg, PA *

For sale / trade: Equipment & Materials

For sale: Rock cutting oil for sale. Food grade clear mineral oil. Up to 10 gallons available. \$12 / gal. Contact Jim Garthe at jwg10@psu.edu or call 814-667-2409.

For sale: Highland Park lapidary saw, Model E4, 8" diamond blade, mounted on a stand, ready to use. Contact Willard Truckenmiller, phone 814-625-2531 (9:00 a.m. to 9:00 p.m.) or e-mail jowilltruck@aol.com

For sale: Large mineral collection; will sell all or part. Tumble polisher with three 12-lb. and one 6-lb. drum plus grits, polishes and pellets. My phone number is (570) 672-2325. Leave a message if I'm not in.

For sale: Jade in various types & colors; mostly rough, plus some slabs; some fine Coober Pedy opal. Also equipment and jewelry making supplies from jewelry studio and production shop. Contact Daniel G. Reinhold in Mill Hall, PA; phone 570 726-8091 after lunch every day, or e-mail: dreinhold1@comcast.net *

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 to

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College, PA 16805

or bring your dues to the next meeting.

We want to welcome you!

SOCIETY OFFICERS

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John Passaneau (Treasurer) 814-231-0969 (h),

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Ellen Bingham (Secretary)

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Junior Rockhounds: Dr. Andrew Sicree

814-867-6263 (h) e-mail: sicree@verizon.net

Membership Chair: David Glick (see above)

Programs: Dr. Duff Gold 865-7261(o), 238-3377(h)

e-mail: gold@ems.psu.edu

Door Prizes: *volunteer needed!*

Facebook: Mike Zelazny e-mail: maz166@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. If you include photographs or graphics, 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.

Visit us at www.nittanymineral.org