

Nittany Mineralogical Society Bulletin

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

State College PA 16805

August, 2013

Visit our web site: www.nittanymineral.org

Editor (see page 4):
David C. Glick

August 21st meeting:

Show and Tell by the Members and Guests

Our August meeting will be held Wednesday the 21st. We hope to meet as usual in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA., but **PLEASE CHECK THE WEB SITE <www.nittanymineral.org> FOR CONFIRMATION.** 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.: 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; **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 lapidary work, new specimens, 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 on their own are fine, too. 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.

-Editor

ATTENDING THE AUGUST MEETING?

Donations of labeled **door prize specimens** are invited.

Your donated snacks and drinks will be welcomed.

(Would you like to be Refreshments Coordinator?)

Bring a friend!

JuniorRockhounds: We hope to start meetings in September - please see the next article.

President’s Note

PLEASE Volunteer to Help

from David Glick

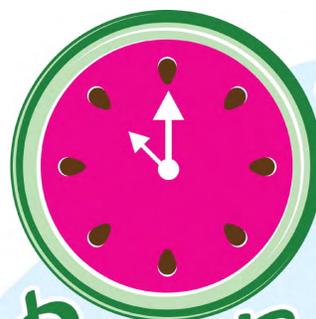
With a wide variety of job, family and medical situations occupying the Board members, your help would be especially appreciated this year. We need:

Junior Rockhounds presenter: someone to present one hands-on evening, late afternoon or weekend program per month to young enthusiasts and their parents. Dr. Andrew Sicree can provide materials and lessons ideas or plans, and others may be available to provide other assistance at the meetings. If you can take over, you can choose the day and time of the meetings for this season. This is an important part of NMS that we want to keep active and exciting! Please contact Andrew Sicree or Dave Glick (see page 8).

Meeting programs: Share your interest in any aspect of our hobby or science by presenting a program at our monthly meeting (September 18, October 16, November 20, or next year). It doesn’t need to be technical, and the audience is friendly! NMS will do its best to provide any help you might need. Please contact Program Chair Duff Gold, or Dave Glick (see page 8).

Refreshments coordinator: Bring or arrange for others to bring ice, drinks and snacks to the social hour before the monthly meeting. NMS will reimburse expenses.

Door Prize coordinator: Store a few of our best prizes to bring to the monthly meeting, along with labels and drawing tickets, and handle ticket distribution and the drawing.



Picnic Time

RSVP, and come
to the picnic on
Sunday, August
25th! See
page 3.

Members and guests and prospective members are all welcome - please come!
We look forward to seeing you!

NMS at Spring Creek Day

At Clearwater Conservancy's Spring Creek Family Festival on June 1, NMS vice-president Bob Altamura organized an educational booth on "Iron Ore Minerals and Iron & Steel Making." Bob Altamura and Gareth Mitchell were joined by Paul Fagley, Cultural Educator at Greenwood Furnace State Park. They showed samples of a wide variety of iron ores, and offered some local ones as souvenirs. A real cast iron ingot ("pig") from Greenwood Furnace was one of the highlights, impressing visitors with its weight.

- Editor



Left to right: Paul Fagley, Bob Altamura and Gareth Mitchell explain iron ores and historical local ironmaking to visitors.
D. Glick photos.



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 June-July issue starts with the nominees for office; the top three are Pennsylvanians: Hazel Remaley for President, Merrill Dickinson, Sr., for 1st VP, and Michael Kessler for 2nd VP. President Cheryl Neary reports on Wildacres experiences and asks for a "once upon a time" true story from each club. Steve Weinberger also writes about Wildacres; the September 2-8 session will feature Quintin and Willow Wight as Speakers-in-Residence. Descriptions of all the classes and a registration form are provided. Donations to the Eastern Foundation Fund and the Scholarship Fund have been slow; contributions are needed. Conservation and Legislation Chair Toni Donchak reports on free entrance days to National Parks and other federal lands, including August 25, October 13 (Fish & Wildlife Service only), and November 9-11. This is an opportunity to help with clean-up on our lands, and with some advance notice ALAA will provide ALAA trash bags to be used. Don Monroe writes about safety with simple tools.

The **AFMS Newsletter** is available by the same methods. The June issue's front page includes new contributions to the Endowment Fund drawing, with photos of many new prizes. The Junior Activities article is an overview of Future Rockhounds of America Badge programs. President Don Monroe writes about mentoring younger relatives or others starting out in the hobby. Honorary scholarship recipients, and the two students in each federation receiving the scholarships for 2013, are listed. In the Eastern Federation, the honorary recipient is Dr. Gilbert Hanson of Stony Brook University; the students are Courtney Melrose and Joseph Tamborski, both geology majors at Stony Brook. Obituaries for very accomplished members Billie Wright and Ruth Bailey are presented. News from the National Rockhound and Lapidary Hall of Fame is presented, including work on a new web site, and solicitation for candidates to be inducted into the Hall of Fame. ALAA seeks membership and support to keep public lands open to mineral collecting.

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

- Editor



**Nittany MINERALOGICAL
Society**

and

**Penn State GEOSCIENCES
Club**

Sunday, August 25th, 2013

4 PM – 8 PM Rain or Shine

145 Goddard Circle

Penna. Furnace, PA 16865

5 miles southwest of State College

RSVP:

Ellen Bingham 814-234-4532 emb22@psu.edu

Nate Stevens 215-983-9054 nts5045@psu.edu

Bring your own grill item (meat, etc.), and a hot or cold side dish to share

Electrical extension cords available

Iced tea, lemonade, and place setting provided

Campfire and sparklers to follow, weather permitting

More details will be posted on Facebook & the web site

For transport from town contact Nate Stevens



Secondary Minerals in Volcanic Rocks

by Robert Altamura

Volcanic rocks are those that form from molten rock that comes to the surface of the Earth (Fig. 1) where it cools and solidifies relatively rapidly. The rapid cooling produces much smaller mineral grains than when molten rock cools slowly below the surface. Collectible mineral specimens in volcanic rocks tend to be in the category of secondary minerals (formed later than the enclosing rock). Secondary minerals may be deposited either by sublimation (crystallization directly from hot gases) on the walls of a crater or a vent during volcanic activity (Fig. 2), or much later, by hydrothermal activity (from hot solutions of dissolved minerals, Fig. 3). The Nittany Mineralogical Society (NMS) display case in Penn State's Earth and Mineral Sciences Museum (Deike Building, University Park campus) currently includes specimens of volcanic rocks and the secondary minerals they contain (Fig. 4).

Lava or pyroclastic (explosively ejected) material from an eruption contains volatiles (gasses) which may be released, forming pockets or vertical pathways which are preserved as spherical or finger-like shapes or vesicles as the rock solidifies. These cavities are of different sizes in different rocks, and may



Figure 1. Incandescent lava eruption at Arenal Volcano, Costa Rica. *R. Altamura photo.*



Figure 2. Contemplating Poás Volcano, Costa Rica. Notice the yellow sulfur crystals near the crater vent. Sulfur crystals are believed to have sublimated from the vapors. *R. Altamura photo.*



Figure 3. Stibite and heulandite (zeolite group minerals) on calcite, Thomaston Dam locality, Connecticut.

J. Passaneau photo.

later be partially to completely filled with secondary minerals. Examples shown in the museum display case range in size from tiny pores filled with garnet (Colorado), through hand-specimen sized agate nodules (Germany, Mexico) and geodes (Mexico), to zeolites which had room to grow in larger voids in New Jersey pillow basalts and the Deccan Traps of India, and large plates of amethyst (Uruguay, Brazil) which can come from cavities of a meter or more.

Volcanic rocks themselves are classified based mostly on variations in their constituent minerals, but also on their textures (grain size, shape, and arrangement). Volcanic rocks are composed of microscopic-scale crystals or glass (which has no crystals). The most common volcanic rock is **basalt**, composed primarily of pyroxene and plagioclase feldspar. Basaltic rocks may show differing properties depending on the geologic settings in which they form. Among these settings are ocean floors forming at divergent lithospheric plate settings, flows that are emplaced episodically within lithospheric plates over mantle plumes (hot spots), as well as continental rift valleys and convergent plate margins. Minerals commonly collected from cavities in basalts include agate (Fig. 5) and amethyst (Fig. 6).

Another volcanic rock is **rhyolite**, consisting of quartz, plagioclase, and alkali feldspar. Rhyolite is the mineralogical equivalent of granite, which cooled more slowly allowing larger mineral grains to form. Rhyolite may possess pore space that forms from the degassing of erupted melt or pyroclastic (explosively ejected) material. Such was the case for a rhyolite that occurs at Sugarloaf Mountain near Boulder, Colorado. Pore spaces in this rhyolite are referred to as variolitic cavities (the word relates to the "pock-marked" appearance which they give to the rock) and may be lined or filled with exotic minerals including precious gem materials such as garnet (Fig. 7), topaz, and a red variety of beryl. The secondary minerals formed by sublimation of exotic gases during solidification, or after the eruption. Larger crystals of red beryl can be found in rhyolite of the Wah Wah Mountains of western Utah (Fig. 8). Sulfur from Agrigento, Italy (included in the museum display) is a well-known example of a sublimated mineral. The author has



Figure 4. Secondary Minerals and Volcanic Rocks display by NMS members Robert Altamura and John Passaneau at Penn State Earth & Mineral Sciences Museum. *D. Glick photo.*



Figure 5. Agate and calcite, Idar-Oberstein, Germany. *D. Glick photo.*



Figure 7. Garnet (approx. 0.5 to 1.5 mm) in variolitic cavities in rhyolite tuff from Sugarloaf Mountain near Boulder, Colorado. *D. Glick photo.*



Figure 6. Amethyst, Uruguay. *D. Glick photo.*



Figure 8. Red beryl on rhyolite, Wah Wah Mountains, Utah. *D. Glick photo.*

seen sulfur sublimated on the walls near active vents within the crater of the Poás Volcano (Fig. 2) near San Jose, Costa Rica.

Rhyolitic tuff (cemented pyroclastics) from the state of Chihuahua in northern Mexico is the source of quartz- and calcite-lined geodes. These are the geodes which Jeff Smith “The Geode Guy” opens at NMS’s annual Geode Night, revealing a wide variety of crystal morphologies (Fig. 9).



Figure 9. Chalcedony- and quartz-lined geode from Chihuahua, Mexico. 3 inches tall. *D. Glick photo.*

When molten rock erupts and cools extremely quickly, the result can be an amorphous rock without crystals: **volcanic glass**. Volcanic glass can form from basaltic or rhyolitic melts. One type of volcanic glass is called obsidian; it commonly has a composition similar to rhyolite. Obsidian has been prized for arrow heads and for lapidary. Especially popular for lapidary are snowflake obsidian and “Apache tears.” Snowflake obsidian forms by a late partial crystallization that chemists refer to as devitrification (crystallization of some minerals within the glass). In this case some of the silicon and oxygen combine to crystallize the mineral cristobalite (a high-temperature polymorph of quartz). This cristobalite can form white radiating spherical sprays reminiscent of snowflakes (Fig. 10).



Figure 10. Snowflake obsidian. *D. Glick photo.*

Under certain conditions, obsidian may hydrate to form a softer rock called perlite (Fig. 11). If the hydration process is incomplete, residual areas of obsidian may remain. Such residuals tend to be rounded and are known as Apache tears. Apache tears are commonly tumbled and polished to reveal their translucent beauty (Fig. 12). NMS has given Apache tears to juniors as souvenirs for those participating in our outreach activities.



Figure 11. Perlite (hydrated volcanic glass) from Costa Rica (notice small “Apache tears”).

D. Glick photo.



Figure 12. Tumble-polished obsidian (“Apache tears”) from Arizona.

D. Glick photo.

As discussed above, the timing of secondary mineral deposition in vugs, vesicles, or fractures is variable, from shortly after formation of the enclosing rock to a considerable time (perhaps a million years) after an eruption. In the case of the Deccan Traps of India, residual heat from the 6500-foot thick sequence of lavas (Fig. 13) resulted in beautiful secondary minerals. Heating caused by the lava flows circulated ground water that concentrated dissolved minerals which later precipitated in open spaces in the basalt.

The Deccan Traps and the New Jersey and Connecticut traps are famous to mineral collectors for their low-temperature secondary minerals, particularly those of the zeolite group. Pennsylvania has zeolites in the southeastern counties, including localities such as Valley (Teeter) Quarry, Adams



Figure 13. Deccan Traps (sequence of basalt flows) near Mahabaleshwar, India. Heating of ground water by the lava flows resulted in beautiful secondary mineral crystals that are prized by collectors worldwide. *Joe Zachs photo*, <http://www.flickr.com/photos/joezachs/>, used under Creative Commons Attribution 2.0 Generic license, retrieved August 9, 2013, from <http://www.flickr.com/photos/joezachs/165648152/>

County; Kibblehouse Quarry, Perkiomenville, Montgomery County; and Dyer Quarry, Birdsboro, Berks County. This special group of minerals is composed of hydrous aluminosilicates that share similarities in crystal structure. The general zeolite crystal structure is characterized by an open framework structure of interconnected silica-alumina tetrahedra with interchangeable cations (particularly calcium and sodium) and water molecules. Zeolites have long been known to occur as well-formed crystals (Fig. 14) in cavities in basalt, but can also form as secondary minerals in cavities of any rock since they form from hydrothermal solutions that can migrate far from a traprock or other molten rock heat source.



Figure 14. Natrolite, Nasik District, Maharashtra, India. *Didier Descouens photo*, retrieved August 10, 2013, from <http://en.wikipedia.org/wiki/File:Natroliteinde1.jpg>, used under Creative Commons Attribution 3.0 Unported license.

Geo-Sudoku

by David Glick

This puzzle contains the letters AEFKLNOSW, and one row or column spells the name for an obsidian with cristobalite inclusions. 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.

F					S	L	K
		K		S			W
		N	L			A	
		S		L		W	A
K		L					F
E			S	N		K	O
L	K	W	N		E		F
S	N	O					K
		F			O		

2013 Gem, Mineral, and Jewelry Show

Central Pennsylvania Rock and Mineral Club's
48th Annual Gem, Mineral, and Jewelry Show at
2801 N. 3rd Street
3rd & Division Streets
Harrisburg, PA 17110

Saturday, September 14, 2013 10 AM - 6 PM
Sunday, September 15, 2013 10 AM - 5 PM
Adults \$6 Kids 12 and under free

Directions, \$1 off coupon and more at
[http://www.rockandmineral.org/annual show.htm](http://www.rockandmineral.org/annual%20show.htm))

- Over 25 vendors to meet all your rock, gem, and jewelry needs
- Scouts in uniform are free
- Boy and Girl Scout merit badge booth
 - o Earn merit badges and activity pins for free
 - o Sessions are at 11 a.m. and 2 p.m. both days
 - o Scout leaders: [Click here for badge requirements covered at our show](#)
- Pennsylvania Geological Survey display with free publications
- Informative programs presented by Jeri Jones of Jones Geological Services
- Silent Auction and Wheel of Rocks*
 - o (*Proceeds Benefit CPRMC College Scholarships)
- Register for free prize drawing
- Enjoy educational mineral and fossils displays
- Kids can dig for rocks and gems for free in the kid's mini-mine
- Club Member Displays

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.

Sept. 14-15, 2013: Central Pennsylvania Rock & Mineral Club's 48th Annual Gem, Mineral, and Jewelry Show. Zembo Shrine Center, 2801 N 3rd St (3rd & Division Sts), Harrisburg PA 17110. Sat. 10-6, Sun 10-5. See details and print a coupon at <http://www.rockandmineral.org/annualshow.htm>

Sept. 18-22, 2013: American Federation and Southeast Federation Conventions and Jacksonville Gem & Mineral Society 25th Annual Gem & Mineral Show & Sale, Jacksonville, Florida. <http://www.amfed.org/show2013.htm>

Sept. 28-29, 2013: Franklin-Sterling Hill Mineral, Gem, and Jewelry Show by Franklin-Ogdensburg Mineralogical Society and the Franklin Mineral Museum. Franklin Borough School, 50 Washington Avenue, Franklin NJ.

Oct. 5, 2013: Autumn Mineralfest, by Penna. Earth Sciences Ass'n. Macungie Memorial Park, Poplar St., Macungie, PA.

Oct. 26, 2013: South Penn Fall Rock Swap, by Central PA & Franklin County R&M Clubs; South Mountain Fairgrounds, 1.5 miles West of Arendtsville, PA on Rte. 234.

Oct. 26, 2013: Ultraviolet All-Fluorescent Mineral show, by Rocks and Mineral Club of Lower Bucks County. First United Methodist Church, 840 Trenton Rd, Fairless Hills PA.

Nov. 2-3, 2013: Friends of Mineralogy - PA Chapter Symposium (Nov. 2, Lancaster, PA) and Field Trip (Nov. 3).

Nov. 2-3, 2013: Gemarama, "Shades of Red," The School at Church Farm, Exton, PA. Sat 10-6, Sun. 10-5.

April 18-19, 2014: First Gem, Mineral & Fossil Show for the non-profit **North Museum of Natural History and Science**. At Farm & Home Center, 1383 Arcadia Rd (off Manheim Pike), Lancaster, PA. Friday 10-6, Saturday 10-5. **VENDORS WANTED:** \$50.00 per table. Contact Alison Mallin, 717-358-7188 <amallin@northmuseum.org> for more information and to reserve a space

Geo-Sudoku Solution

F	A	E	O	W	N	S	L	K
O	L	K	A	E	S	F	N	W
W	S	N	L	K	F	E	A	O
N	O	S	F	L	K	W	E	A
K	W	L	E	O	A	N	S	F
E	F	A	S	N	W	K	O	L
L	K	W	N	A	E	O	F	S
S	N	O	W	F	L	A	K	E
A	E	F	K	S	O	L	W	N

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

David Glick (President) 814-237-1094 (h)
e-mail: xidg@verizon.net
Dr. Bob Altamura (Vice-President) 814-234-5011 (h)
e-mail: raltamura@comcast.net
John Passaneau (Treasurer) 814-231-0969 (h),
e-mail: jxp16@psu.edu
Ellen Bingham (Secretary) e-mail: emb22@psu.edu

OTHER CONTACTS

Field Trips: Ed Echler 814-222-2642
e-mail preferred: eechler@comcast.net
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!*
Refreshments: *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