Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.
P.O. Box 10664
State College PA 16805

May, 2011 **Visit our web site: www.nittanymineral.org** *Editor (see page 4): David C. Glick*

May 18th meeting:

Geological and Geophysical Aspects of Siting and Safety of Nuclear Power Plants

by Shelton Alexander
Emeritus Professor of Geophysics
Geosciences Department, Penn State

Our May meeting will be held Wednesday the 18th in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps may be found on our web site.
6:30 to 7:30 p.m.: Social hour, refreshments in the lobby
7:30 to 8:00 p.m.: announcements, questions, answers; 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 learn more about this timely topic.*** *-Editor*

The role that geology and geophysics plays in the siting and safety of new nuclear power plants starts with site selection and initial design and continues through the licensing required to construct an approved facility. Issues addressed include the local and regional geology at the site, soil-structure interactions, hydrological conditions affecting the plant site, active faults in the region, past seismicity in the surrounding region and predicted annual probabilities of various levels of earthquake-generated ground motions. An approved plant must be designed to withstand earthquake ground motions that would be expected only once in several thousand years.

Examples of such geological and geophysical assessments for existing nuclear plants in eastern North America will be given. The recent relicensing of Penn State's Breazeale Nuclear Reactor on campus included reassessment of the geological and geophysical conditions affecting the site. Examples of these latest assessments that led to the successful relicensing of the reactor will be presented.

ATTENDING THE MAY MEETING?
Donations of door prize specimens are invited.
NMS will provide ice, soft drinks, and water;
your donated snacks will be welcomed.
Bring a friend!

Junior Rockhounds Meet May 18th, 6:30 p.m.

The May 18th meeting of Junior Rockhounds id scheduled for 6:30 p.m. in room 116 Earth & Engineering Sciences Building. That's during the social hour for the regular NMS meeting, so juniors and their parents can choose to come to the main meeting afterwards as well.

This is the last meeting for the spring. We will break for the summer, and plan to resume in August or (more likely) September. Watch this Bulletin and our web site for news on the meeting time and place for the Fall.

Each month's 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 2011) 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 4). *- Editor*

NMS Summer Schedule

There are no meetings in June or July, and no gem & mineral show this year (see page 4 for other shows).

Field Trips: to be announced to those members who have signed up for field trip notification. None have been announced so far.

Saturday, June 18: NMS at ClearWater Conservancy **Spring Creek Family Festival**, 10:00 a.m. to 3:00 p.m.; see article on page 2.

Wednesday, August 17: regular meetings resume for autumn; the planned topic for August is **Show and Tell**. Guests, visitors, juniors are welcome. Come and speak for 15 seconds or 15 minutes, sharing specimens, books, photographs, stories; anything related to our areas of interest in mineral collecting, lapidary, earth science, etc. is fair game. It's always interesting!

Sunday, Aug. 21: NMS **Picni**c, Pennsylvania Furnace. Mark your calendars now! Details to be announced in the August Bulletin.

The *Popular Mineralogy* section will return to this Bulletin in our next issue in August.

NMS to Exhibit at June 18 Spring Creek Family Festival

by Bob Altamura

NMS will present a booth and exhibit titled "**Minerals versus Rocks with a Special Emphasis on Centre County**" at ClearWater Conservancy's 2011 Spring Creek Family Festival on Saturday, June 18. At this outdoor event, various organizations from the community operate educational and informative stations concerning our natural environment. The location is Millbrook Marsh Nature Center, 548 Puddintown Road, on the east side of State College. The Festival will be open from 10:00 a.m. to 3:00 p.m.; admission and parking are free. Local foods, live music, and a 5K road race are also part of the event. As many as 500 people have attended the festival during past years. More information can be found at <www.clearwaterconservancy.org/springcreekday.htm>.

NMS members Bob Altamura and John Passaneau will spearhead the NMS effort which will involve a considerable display of hand samples of common rock-forming minerals and the three rock types (igneous, sedimentary, and metamorphic). Minerals and rocks from central Pennsylvania will be highlighted.

Friendly and expert discussion on the relationship of minerals versus rocks, and characterization of samples (NMS's or visitor's), will be offered, as well as discussion of the general geology of the region. Specimens on exhibit will be available for inspection using a magnifying glass and microscope. Visitors are invited to bring mineral or rock samples to Bob and John for identification. Both a mineral and a rock sample souvenir will be given out.

Please stop by to say hi, see the exhibit, and participate in the discussion and the fun of the day.

A cavity in limestone rock shows crystals of the minerals strontianite (strontium carbonate, the aligned bundles of long crystals), and calcite (calcium carbonate, the small crystals at the back of the cavity). The specimen is from near Oak Hall, Centre County, Pennsylvania. The area shown is approximately 2.5 inches across. *R. Altamura photo.*

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 May issue presents many reasons to come to the EFMLS and AFMS **conventions** July 6-10 in Syracuse, NY, and enjoy other attractions in the region. The Schedule and advance registration forms are included. Betsy Oberheim notes the many useful and informative sections of the EFMLS Directory. Cathy Paterson continues her series on creating an All American Club Yearbook. The International Thumbnail Mineral Collectors Association has disbanded and donated the remaining balance in its treasury to the Eastern Foundation Fund. The 2011 EFMLS Scholarship Honoree is Dr. William Blewett of Shippensburg University.

The **AFMS Newsletter** is available by the same methods. The May issue has photographs of thirteen more prizes in the Endowment Fund Drawing; tickets are $5 each or 5 for $20 and winners will be announced at the Syracuse convention. Doug True reports on new rules (still being interpreted) for groups collecting on Bureau of Land Management or Forest Service lands, involving applying for a recreation permit with a plan, insurance, a fee, and waiting for approval or rejection. John Martin reports on New Mexico government efforts to make collecting illegal in Rockhound State Park; the name is being changed to Florida Mountains State Park. He also reports on the Congressional hearing in March concerning the BLM "Wild Lands" policy.

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

Geo-Sudoku

by David Glick

This puzzle contains the letters AEFILSTVX, and one row or column includes a June 18th event. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 4.

			F	L	X			
				S		I	X	T
		X			T			V
		E		T	I			
	V					E	T	
		S			L	X		
			X		V		L	
A		T	L	I	S			X
L	X		T		A			I

Petrified Wood

by Bob Altamura

Petro means "rock" or "stone." Petrified wood is "wood turned into stone." The process of petrification involves the filling of open cells in the wood with minerals from aqueous solutions, and also replacement of woody tissue by minerals and later recrystallization. The process begins when a tree dies, becomes waterlogged, and is buried by sediment or volcanoclastic materials. Over time, minerals are deposited by ground-water solutions while organic matter is decaying and being replaced cell by cell.

The most common mineralization process in creating petrified wood is silicification, which yields varieties of quartz. Calcite, pyrite, marcasite and other minerals may also petrify wood. For wood to become silicified, the pH of the mineralizing solution must be approximately neutral to limit the destruction of the wood until petrification can occur. Silica solutions initially form amorphous (non-crystalline) silica, also known as common opal. Opal is unstable and will slowly undergo the process of polymerization, in which water is lost and the remaining silica joins to gain more structured organization in crystals. Precious opal and then more stable varieties of quartz such as chalcedony, quartzine, and microcrystalline quartz can form in sequential order. The quality of wood preservation usually degrades with increasing polymerization.

Replacement of woody tissue with minerals can occur so that fine details of cell walls are preserved. The microscopic structure of wood can be preserved even after all the cellulose is gone. This cell structure can be used in identifying the type of wood. Tree rings can be preserved and reveal the age of the tree and the nature of the climate when it was growing.

How Long Does It Take Wood To Petrify?

The rate of petrification of wood in nature is not entirely understood, and is conditional on many factors including: type of tree and the type of tissue it contains, age of the tree, the abundance and composition of mineralizing fluid, temperature, pressure, pH, and rates of the specific chemical reactions involved. For example, if the water that infiltrates the tree deposits calcite from solution, petrification will be faster than for deposition of silica. Some geologists believe natural petrification is possible in a few hundred years. Timbers used in copper and silver mines in the Mediterranean region (some more than a thousand years old), Mexico, and Montana appear on the surface to have turned in to copper or silver.

Petrified Forest National Park in the badlands of the Painted Desert of Arizona, shown in the photo below, has one of the largest and most colorful concentrations of petrified wood in the world. Petrified wood occurs at many other places in the western U.S., and many examples are included in the current NMS display at Penn State's Earth & Mineral Sciences Museum (photo below).

Scene in Petrified Forest National Park in Arizona; distant people above the log at center show the scale and extent of the deposit. *W. Truckenmiller photo*

References

Mustoe, G.E., 2003, Microscopy of silicified wood: Microscopy Today, vol.11, no.6, p. 34-37.

Stein, C.L., 1982, Silica recrystallization in petrified wood: Journal of Sedimentary Petrology, vol. 52, no. 4, p 1277-1282.

Current NMS display of petrified wood at Penn State's Earth & Mineral Sciences Museum. *D. Glick photo & digital editing*

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.

May 14-15, 2010: "World of Gems and Minerals" by Berks Mineralogical Society. Sat 10-5, Sun 10-4. Rt 61, 7 miles South of I-78, Leesport Farmers Market, Leesport PA.

June 4, 2010: Spring Mineralfest by PESA, Sat. only 8:30 - 3:00, Macungie, PA. www.mineralfest.com

July 6-10, 2011: EFMLS & AFMS Conventions, Syracuse, NY. Conventions July 6-10 (EFMLS Annual Meeting Friday July 8), show July 9-10.

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

For sale / trade: Equipment & Materials

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 ❄

GeoSudoku solution from page 2

V	T	I	F	L	X	A	S	E
F	L	A	V	S	E	I	X	T
E	S	X	I	A	T	L	F	V
X	**F**	**E**	**S**	**T**	**I**	**V**	**A**	**L**
I	V	L	A	X	F	E	T	S
T	A	S	E	V	L	X	I	F
S	I	F	X	E	V	T	L	A
A	E	T	L	I	S	F	V	X
L	X	V	T	F	A	S	E	I

Visit our web site: 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 to

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or bring your dues to the next meeting.

We want to welcome you!

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The **Bulletin Editor** will welcome your submissions of articles, photos, drawings, cartoons, etc., on minerals, fossils, collecting, lapidary, and club activity topics of interest to the members. Please contact:

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Newsletter submissions are appreciated by the first Wednesday of the month. 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.