

# ***Nittany Mineralogical Society Bulletin***

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

February, 2009

[www.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/)

Editor: David C. Glick (see p. 8)

**February 18th meeting:**

## **The Marcellus Shale and its potential as a significant natural gas source**

presented by

Dr. Terry Engelder, Penn State Geosciences

*Our February meeting will be held Wednesday the 18th at 7:30 p.m., 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.: announcements; door prize drawings*

*about 8:00 p.m.: featured program*

*The event has free admission, free parking, free door prize drawings and free refreshments, and is open to all. This is geology in the news! If you've wondered about the science behind these stories in the news, come to this meeting and bring your friends! - - Editor*

Possibilities of huge production of natural gas from the Marcellus Shale have been in the news in Pennsylvania and adjacent NY, OH and WV for the last year. It started with research by Dr. Terry Engelder (Penn State) and Dr. Gary Lash (SUNY-Fredonia) concerning the existence and orientation of natural fractures in the layer of rock. The Marcellus is a thinner formation than many gas producers, and a vertical well through it generally doesn't produce much gas. Relatively new techniques for drilling wells horizontally within the layer of rock, and orienting the wells to intersect the series of fractures described by Engelder and Lash, greatly increase the production of gas. Many other geological factors will affect gas production from the Marcellus in a specific location. Come to the meeting and hear the full story from Dr. Engelder. -Editor

Our meetings are free and open to all - bring a friend!  
Donations of snacks or door prize specimens are invited.

### **REGULAR MEETING SCHEDULE**

Mar. 18: Geode Night

April 15: Coal Mine Fires

May 20: mineral videos (tentative)

We have no meetings in June or July, but please volunteer for, and attend, our Nittany Gem & Mineral Show, June 27-28. Please invite your friends to our events and meetings, and remind them that they can find up-to-date information at our web site: [www.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/)

**Junior Rockhounds Meeting Feb. 26:**

## ***Minerals and Light***

Junior Rockhounds meetings with hands-on, fun and educational activities will continue in room 117 EES Building, 7:00 p.m. on the last Thursday of the month this winter and spring. The series, **Basic Minerals for Juniors**, will cover these topics:

Feb. 26: Minerals and Light

Mar. 26: Minerals and Metals

Apr. 30: Minerals and Magnets

May 28: Fossil Fun

Check the web site for any updates, or call Dr. Andrew Sicree at 814-867-6263. - Editor

## **Minerals Junior Education Day Set for Saturday, March 28**

by David Glick

Our annual event for children and their parents is set for March 28<sup>th</sup> (registration will take place in March). We need volunteers for a successful event! If you have an idea for an interesting station concerning some aspect of minerals or earth science, please contact Dave Glick (see p. 8). Or just volunteer to help, for a couple of hours or all day, with an existing station or with set-up or clean-up. We do have a stock of material for the sales table, but donations of more identified specimens to be sold at child-friendly prices will also be welcomed. H

## **Nittany Gem & Mineral Show June 27 - 28, 2009**

by David Glick, Show Chair

Please plan to volunteer to help present our club's show, and keep the date open. We'll be back at Mt. Nittany Middle School this year (site of the 2006 and 2007 shows), with plenty of parking. Contracts were sent on Feb. 3 to the dealers who participated last year. Starting on Feb. 21, we'll invite other dealers to fill remaining spaces. More information is coming soon; we hope to have over a dozen vendors and all of our usual talks, kids' activities, silent auctions, food, displays, a Pennsylvania mineral specimen contest, door prizes, etc. - Editor

## 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.

The **EFMLS Newsletter** is available through the link on our web site [www.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/) or remind Dave Glick to bring a printed copy to a meeting for you to see.

In the February issue, the cover story about **Wildacres Workshops** for 2009 starts by discussing the Speakers in Residence for the two sessions; the story is reprinted on this page. Complete class lists and a registration form are provided on pages 8-10 of that issue.

President Mary Bateman's column notes the death of **Clyf Bourne**, and a memorial article is found on page 5 of the issue. He was one of several Pennsylvanians from the Che-Hanna Rock and Mineral Club who became active in EFMLS and AFMS; his wife Joy is the current AFMS President.

Prizes! Ellery Borow reports the return of the EFMLS Ways and Means drawing to benefit the Eastern Foundation Fund; tickets will be available for purchase soon. Several prizes are described and one is not; it's a "surprise prize."

The **EFMLS Convention** will be held October 16-18 in Bristol, CT, hosted by the Bristol Gem and Mineral Club in conjunction with their annual show. Activities will take place both at the show site (Bristol senior - community center) and the convention hotel (Clarion Hotel Bristol). The convention starts on Friday with the cracker barrel meeting and official Annual Meeting, and continues through the show on Saturday and Sunday.

AFMS Scholarships for the Eastern Federation were selected by Dr. Joseph T. Kelley of the University of Maine at Orono, the Scholarship Honoree. The two recipients he chose, both pursuing MS degrees in Earth Sciences, are: Meredith B. Petrie, whose research includes microstructure and deformation of minerals, and Eva R. Wadoski, who is researching and publishing on tourmaline chemistry and crystallography.

The **AFMS Newsletter** is available by the same methods. The February issue announces a Youth Poster Contest, with first through fourth place winners in each grade from first through eighth; entries must be postmarked by April 1. Tickets are available for the AFMS Endowment drawing, and donations are also welcome. The Omnibus Land Act, which would prohibit the public from collecting vertebrate fossils and some others on public land, is addressed [*it passed the Senate as S.22 and has been received in the House; see*

Please see the web sites for the rest of these articles and many others in both Newsletters. There's a lot there! - *Editor*

## WILDACRES: SPEAKERS IN RESIDENCE

by Steve Weinberger,

EFMLS Wildacres Functioning Committee Chair  
from the February 2009 EFMLS Newsletter

What a line-up Speaker Coordinator Bruce Gaber has given us for the 2009 EFMLS Wildacres Workshops. Whether you attend the April session or the September session, you're sure to be "wowed"!

Leading off in April (17-23) is Mike Wise, a research mineralogist and curator with the National Museum of Natural History, Smithsonian Institution. He is one of the world's leading authorities on the mineralogy of pegmatites, a Consulting Editor for *Rocks & Minerals Magazine* and an Adjunct Professor at the University of New Orleans.

Mike is an engaging speaker and will regale us with tales of adventures from mountains in Southern California to the back roads of Madagascar.

September (7 - 13) will feature Dr. Brenda Foreman, whose major interest is the history of jewelry. Brenda is a fantastic speaker who has given numerous talks at the Hillwood Museum, the San Antonio Museum of Art, and the National Association of Jewelry Appraisers. Her talks at Wildacres will highlight various periods of jewelry. Attendees are in for a treat!

Registration for the week long Wildacres session still remains a bargain at \$345. This includes the full week's activities plus room and board. The only "extra" added on to the tuition is a small charge for materials fees for the class or classes that you take during the week. Faceting for example, will be \$20 or \$25 while classes involving metals may be higher due to the higher cost of silver, goldfilled wire and PMC. Instructors are required to keep their materials fees "at cost" in order to keep them as low as possible. A week at Wildacres is fun, relaxing, and most enjoyable. If you've never been, seriously consider joining the group this year for one or both of the sessions.

A list of classes being offered along with a registration form are included in [the February] issue of EFMLS News. We encourage you to register as early as possible - class sizes are kept small so that you can get the maximum attention from your instructor so the earlier you register, the better your chance of being placed in your first choice. Once a class is filled, you will be assigned to your 2nd or perhaps 3rd or 4th choice, so please be sure to indicate all on the registration form.

I look forward to seeing you at an EFMLS Wildacres Workshop in 2009. I can guarantee you a wonderful week!

*Learn more about Wildacres, a mountaintop retreat in western North Carolina used for EFMLS classes, at <http://www.amfed.org/efmls/wildacres.htm>* - *Editor*

**EVENTS AND SHOWS****Sale of Bill Yocom Collection****March 7, 2009**

from Sue Maletsky

The late William Yocom was a Pennsylvania collector and curator of West Chester University's Mineral Museum. His daughter, Sue Maletsky, will be selling his collection on March 7 at her home, 25 Dean St., West Chester, PA 19382. The sale will start at 11:00 a.m.; there will no previews before that time and no pre-sales. There will be free food, and a fun atmosphere is planned. Bill's friends Roger Mitchell, David Saja, Arnold Mogel, and Ron Sloto, all well known among Pennsylvania collectors, are providing their expertise to help Sue with the specimens. A CD of photographs and lists of specimens can be viewed before the Feb. 18<sup>th</sup> NMS meeting.

**Franklin County Show at Chambersburg****April 4 - 5**

from their press release

The Franklin County Rock & Mineral Club presents its 31st Annual Mineral & Jewelry Show on April 4 and 5, 2009, at the Shalom Christian Academy, 126 Social Island Road, Chambersburg, PA 17201. Show hours are Saturday 10 a.m. to 5 p.m. and Sunday 10 a.m. to 4 p.m. Admission is \$4.00 for adults. Directions From I-81: take Exit 10 (Marion Exit) to State Route 914 W. Travel to US Route 11 N. Turn right onto US Route 11 N and continue for .9 of a mile. Turn left onto Social Island Road. The school is on the left. For information contact Show Committee Chairperson Mike Mowen at [mimo@innernet.net](mailto:mimo@innernet.net)

**Delaware Earth Science, Gem and Mineral Show****March 7 and 8, 2009**

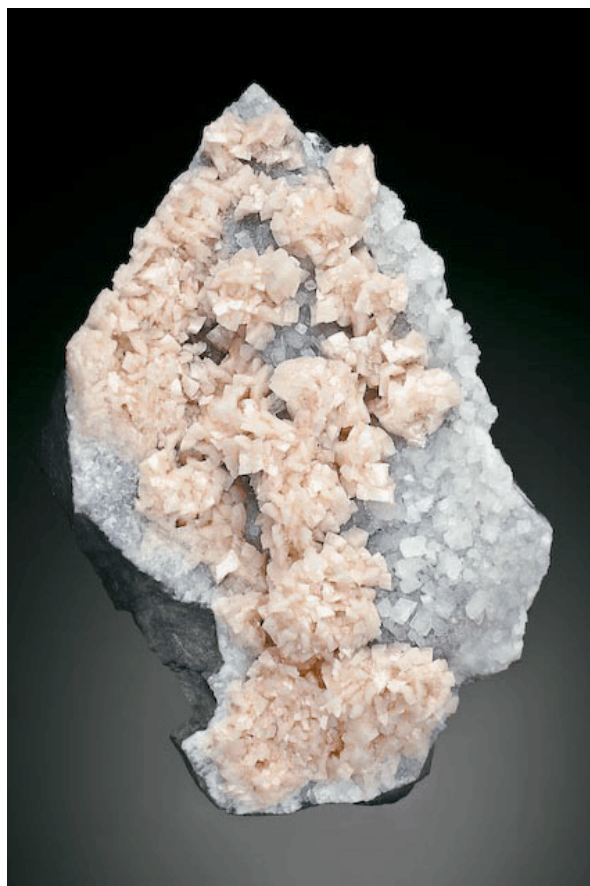
from their press release

The **Delaware Mineralogical Society, Inc.** will hold its 46th Annual Earth Science, Gem and Mineral Show at Delaware Technical and Community College, at I-95 Exit 4B, Churchmans Road (Rt. 58) Newark (Stanton), DE 19713. Hours Saturday are 10:00 a.m. to 6:00 p.m. and Sunday 11:00 a.m. till 5:00 p.m. The show features educational exhibits of mineral, lapidary and fossil specimens, displays from regional and university museums, an expanded roster of fine dealers of minerals, fossils, gems, jewelry and lapidary supplies, door prizes, demonstrations of gem cutting and polishing and a children's table, where youngsters may purchase inexpensive mineral and fossil specimens. Admission is \$5.00, \$4.00 for seniors, \$3.00 for youngsters between 12 and 16, and free for children under 12 accompanied by an adult. The Delaware Mineralogical Society is a non-profit organization, affiliated with the Eastern Federation of Mineralogical and Lapidary Societies, and dedicated to learning and teaching about the earth sciences, rocks, minerals, fossils and the lapidary arts. Membership is open to all who are interested in these areas. Info and coupons at [www.delminsociety.net](http://www.delminsociety.net) or contact [gene@fossilnut.com](mailto:gene@fossilnut.com).

**Dr. Peter Deines, 1936 - 2009**

by R.J. Altamura and D.P. Gold

Peter Deines, Penn State geochemist and mineralogist, died on Monday, Feb. 2, 2009. Dr. Deines was Professor Emeritus of Geochemistry in the College of Earth and Mineral Sciences and known internationally for efforts as editor for *Isotope Geoscience*. He had earned his Ph.D. at Penn State in 1967, and retired in 2004. His research involved careful measurements of natural isotopes in minerals, rocks and solutions in an effort to predict natural isotope distribution patterns as a tool to understand geological processes. During April of 2005 he gave a talk to the Nittany Mineralogical Society on his research on his isotopic study of diamonds. In line with his sense of humor, the title of that presentation was "Diamonds: Not Just a Girl's Best Friend." Locally Peter had done a unique study on the carbon and oxygen isotopic nature of the Dixonville, PA, kimberlite. Kimberlite is the key source rock of diamonds world-wide, although diamonds have not yet been found in the Dixonville kimberlite. He was a behind the scenes organizer and driving force for the Goldschmidt Conferences, premier international annual meetings in geochemistry. A detailed obituary and tribute from the Department of Geosciences may be found on their web site <[www.geosc.psu.edu/](http://www.geosc.psu.edu/)>.



Dolomite on calcite, Oak Hall, Centre County, PA.

*J. Passaneau photo.*

## *Popular Mineralogy*

*Interesting mineralogy and earth science for the amateur mineralogist and serious collector - #21*

# Murph the Surf and the Jewel Heist of the Century

by Andrew A. Sicree

## Murph the Surf

Diamonds are forever, but holding onto them that long can be challenging. In 1964, the American Museum of Natural History in New York City found this to be true when the famous jewel thief “Murph the Surf” plundered its gem and mineral collection.

Born Jack Roland Murphy in 1938, “Murph the Surf” picked up his unusual nickname because he’d won the 1963 National Hurricane Surfing Championship and several state contests in Florida. Murphy was an unusually talented young man. For instance, he was once offered a college tennis scholarship and he played the violin so well that he was invited to join the Pittsburgh Symphony while he was still a teen-ager. But, after falling in with the wrong crowd, Murphy took up a life of crime. Murphy’s reason for his descent into thievery was apparently the thrill he got from the crimes.

## The night of the crime

On the night of October 29<sup>th</sup>, 1964, along with two accomplices, Alan Kuhn and Roger Clark, Murphy climbed through an unlocked second-story window into the American Museum’s jewel room. Non-operational burglar alarms guarded the museum’s gems and the three thieves freely raided display cases featuring the J. P. Morgan Gem Collection and made good their escape.

The night’s haul included a number of uncut diamonds from North America and other, more famous gems including the *Star of India*, a star sapphire, and the *DeLong Star Ruby*. Labeled “The Jewel Heist of the Century,” the take was valued at more than \$400,000. Fortunately, Murphy and his co-conspirators were quickly apprehended.

## The stars of the heist

The *Star of India* is the largest star sapphire in the world, weighing in at 563 carats (113 grams) – about the size of a racquetball. This almost flawless blue-gray gem came from

Sri Lanka. The six-pointed star visible in the *Star of India* arises from fine fibrous inclusions of rutile within the stone.

The *DeLong Star Ruby* is a 100-carat (20 gram) cabochon-cut bright red ruby also displaying a six-pointed star. Discovered in Burma, it was sold for \$21,400 by the famous mineral dealer Martin Ehrmann to Edith Haggin DeLong. The stone was donated by DeLong to the American Museum in 1937.

After payment of a \$25,000 ransom, the DeLong ruby was recovered when the thieves left the stone in the coin-return slot of a pay phone in a telephone booth in Florida.

## The arrest of the Surf

Within three days of the robbery, police arrested Murphy and his accomplices, thanks to a tip from the bellhop of the Florida hotel in which the men had been staying. The *Star of India* was discovered in a locker at a Miami, Florida, bus station. Murphy and his accomplices received three-year prison sentences for the heist.

Released from prison, Murphy was later convicted of another robbery attempt and a separate murder and sentenced to two life prison terms. Murphy reformed himself in prison and, released in 1986, went on to become a prison evangelist.

Hollywood immortalized Murphy’s “Jewel Heist of the Century” when, in 1975, director Marvin Chomsky released *Murph the Surf*, a movie starring Don Stroud (as Murphy), Burt Young, and Robert Conrad.

## Recovered stones

Most of the gems from the heist were returned to the museum with the exception of nine stones that had already been fenced. Unfortunately, the nine unrecovered stones included the museum’s collection of uncut diamond specimens from the “Eastern” U.S. (here I’m including the Great Lakes Region glacial diamonds among the “Eastern” stones).

## The missing mineral specimens

The most famous of the missing diamonds was the Eagle Diamond, a yellowish 14-carat stone from the Eagle Moraine in Eagle, Wisconsin. Also missing were a 3.9-carat rhombic dodecahedral diamond from the Kettle Moraine near Oregon, Wisconsin; a yellow 4.5-carat octahedral diamond from Lee County, Alabama; and a yellowish-white hexoctahedral diamond found in the 1800s in Shelby County, about 30 miles south of Birmingham, Alabama.

Experts speculate that the Eagle Diamond has been cut into several smaller stones and thus no longer exists as a single stone. A similar fate may have met the other stones.

“Eastern” U. S. diamonds have an almost maddening habit of disappearing, whether through theft or by being sold to unknown persons. We are robbed of the opportunity to use modern analytical instruments to study the diamonds and gain clues about their origins. All we are left with are some photos, records, and a few fascinating stories about their discovery and their fate.

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*Dr. Andrew A. Sicree is a professional mineralogist and geochemist residing in Boalsburg, PA. This **Popular Mineralogy** newsletter supplement may not be copied in part or full without express permission of Andrew Sicree. **Popular Mineralogy** newsletter supplements are available on a subscription basis to help mineral clubs produce better newsletters. Write to Andrew A. Sicree, Ph.D., P. O. Box 10664, State College PA 16805, or call (814) 867-6263 or email [sicree@verizon.net](mailto:sicree@verizon.net) for more info.*

## A DISCOURSE ON GYPSUM

Gypsum, a common mineral, is hydrated calcium sulfate ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ , monoclinic). The name derives from the Greek word for “chalk,” *gypsos*, perhaps because chalk and gypsum were not well differentiated in ancient times. Varieties of gypsum include *selenite*, which usually refers to distinct crystals and clear plates of gypsum; *satin spar*, composed of thin parallel acicular crystals matted together; and *alabaster*, a fine-grained, massive material.

### Alabaster

Confusion surrounds the identity of alabaster. Is it gypsum or is it calcite? You will find alabaster used to refer to either mineral. In general, many of the “alabaster” carvings sold today to tourists are massive gypsum. But most ancient Egyptian alabaster vessels, such as *canopic jars* (used to store the internal organs of mummified people) and other sepulchral objects, were carved from massive granular calcites. Fine calcite-alabaster was mined near the Egyptian town of Alabastron – it supplied grave goods to many an ancient Egyptian burial.

One fascinating and unusual property of gypsum is the fact that some (but by no means all) samples of satin spar with straight, un-kinked acicular crystals will display fiber-optic properties. In other words, light hitting one end of a polished satin spar will be “piped” to the other end. Thus, if you place a fiber-optic satin spar directly on top of a piece of paper with words printed on it, the image of the words will be “piped” to the upper surface of the fiber-optic stain spar. This fiber optic effect is similar to the well-known behavior of ulexite, which is popularly known as “television stone.”

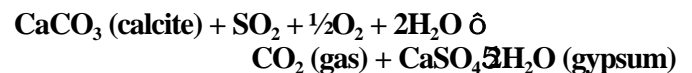
Gypsum is the critical component of plaster, which is widely used in the construction of interior walls and ceilings of houses and other buildings. Heating powdered gypsum drives off much of the water of hydration. Adding water to plaster powders allows the gypsum to re-precipitate, producing a solid mass

### Gypsum and acid rain

Although gypsum is common and plentiful, acid rain has undermined gypsum mining in much of the developed world. Why mine gypsum when you can make it for free?

Most bituminous coals include small amounts of sulfur – some in the form of pyrite ( $\text{FeS}_2$ ), some incorporated within the make-up of the coal. Burning coal oxidizes the sulfur, producing unwanted sulfur dioxide gas. If sulfur dioxide gas is allowed to escape to the atmosphere, it produces sulfuric acid, which drops into downwind lakes and streams in the form of “acid rain.”

Coal-fired power plants have “scrubbers” installed to prevent “acid rain.” The scrubbers remove the sulfur dioxide gas before it can cause a problem by reacting it with calcite (typically, they use high-grade limestone as the calcite source). The overall reaction for this process is:



Reaction of calcite ( $\text{CaCO}_3$ ), with sulfur dioxide ( $\text{SO}_2$ ), oxygen ( $\text{O}_2$ ), and water ( $\text{H}_2\text{O}$ ) produces carbon dioxide ( $\text{CO}_2$ ) and gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ). Gypsum generated by this process can be made into plaster for “gypsum board” or “wallboard” which is widely employed in the construction of houses.

### Giants in the earth

Gypsum is eminently collectible. Found in a variety of habits, well-formed crystals are common enough to be inexpensive. Gypsum also forms large, even giant, crystals. In a mine near Naica in Mexico, huge crystals of selenite occur. This remarkable pocket has gypsum mega-crystals that exceed 35 feet (11 meters) in length!

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## Opal: a Rainbow of Color

Diffraction breaks white light into its component colors: red, orange, yellow, green, blue, indigo, and violet. We are familiar with diffraction – we see it at work in the rainbow. Sunlight reflecting off the inside of raindrops high in the atmosphere breaks apart, producing the colors of the spectrum. A grating made up of many fine lines gives a similar effect. The rainbow-like iridescence appearing on a compact disk (CD) occurs because the spacings of the many data tracks on the disk are close enough to diffract light.

The “fire” of opal occurs through a similar diffraction mechanism. Opal is amorphous silica (SiO<sub>2</sub>). Glass is also amorphous silica but in opal the silica occurs in tiny spheres that also include a bit of water. These silica spheres are cemented together by more silica with a slightly different amount of water. Thus, the cement and the opal spheres possess slightly different indexes of refraction (i.e., they bend light slightly differently).

The tiny spheres of silica making up opals are about 250 nanometers (250 nm = approx. 0.00001 inch) across. (The wavelengths of visible light fall in a range of about 400 to 700 nm.) If you examine opal with an electron microscope, you’ll find these spheres are all about the same size and that they are arranged in a regular, three-dimensional array.

Light hitting the spheres breaks apart (diffracts) into the colors of the rainbow. Layer after layer of silica spheres, separated by cement with a slightly different index of refraction, acts as a three-dimensional diffraction grating, producing the characteristic fiery colors.

Water is critical for diffraction to occur. If an opal gets too dry, the differences in the indexes of refraction disappear, and its “fire” dies. Lapidaries who cut opals store their rough material in jars of water to prevent the dehydration of the stones.

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## 100 years ago in *The Mineral Collector*

The February, 1909, issue began with Part II of an article on the Colors of Minerals. Charles Pennypacker’s article was on baryte. The December meeting on the Philadelphia Mineral Club was covered, at which E.T. Wherry spoke about and demonstrated luminescence. The 15-year history of the magazine was briefly reviewed, and the final pages announced that it would cease publication with this issue.

-Editor

### INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having the finest line-up of speakers of any earth sciences club in the nation. 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). Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available on the web site), 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!

## Geo-Sudoku

by David Glick,

adapted from pdtreasures.com

This puzzle contains the letters AEFGMNRST, and one row or column spells out what’s left after stolen diamonds are recut. 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.

		M				S		E
	S			A				
	G		M				F	
F						N		
			T	S				
		T					M	F
	A				M			
		N	S	T			R	
	M		R			T	A	

## 15 years ago in the Nittany Mineralogical Society

After being organized in January, 1994, Nittany Mineralogical Society held its first educational program in February. Dr. Duff Gold gave a presentation on “How Do Diamonds Form?”

-Editor

# Crystal Matrix Crossword

## Opals

### ACROSS

- 1 the property of being opal-like
- 10 what I owe you
- 13 used in lamps
- 14 Chinese surname
- 15 long stories
- 17 not out of
- 18 a zeolite mineral
- 19 delirium tremens
- 20 short for until
- 21 original equipment (ab)
- 22 cerium
- 23 Anno Domini
- 25 did before the test
- 29 ancient Biblical city
- 31 not an ocean
- 33 a Euro car
- 34 worn by a priest
- 35 a genius
- 36 source of cash
- 37 tellurium
- 38 \_\_\_ what you want
- 39 city in India
- 40 hafnium
- 41 where crook puts jewels
- 42 not a fake gem
- 44 found on row boat
- 45 spherical silica
- 47 elephants have big ones
- 48 lion of the mountains
- 49 subatomic particle
- 51 volunteer state
- 52 lithium
- 53 a grapheme
- 55 period of time
- 56 extraterrestrial
- 57 shimmers with colors
- 62 city in Columbia
- 64 small little bits
- 65 Royal Ontario Museum
- 66 bigger than a violin
- 67 a transient mineral
- 68 time before the trilobites

### DOWN

- 1 how hematite forms
- 2 closed up, five
- 3 six-legged pest
- 4 steals treasure
- 5 in
- 6 Cuban terrorist
- 7 European money
- 8 nostrils
- 9 used 2 C
- 10 found at K T boundary
- 11 Ontario (ab)

- 12 to employ
- 16 diamond state
- 18 what opals are
- 22 a cabochon
- 24 of God
- 26 facts
- 27 Mr. \_\_\_, a horse
- 28 how opals get their color
- 30 said by a matador
- 32 color of azurite
- 35 a witty guy
- 36 America On Line
- 38 the mineral halite
- 39 hard red gem mineral
- 40 a radio buff
- 41 mineral ore of aluminum
- 43 chew
- 44 French yes
- 46 physical education
- 48 gold nugget location
- 50 Mother-of-Pearl
- 54 equality commission
- 56 \_\_\_ Fitzgerald
- 57 three
- 58 another rock
- 59 head prosecutor

- 60 special senses
- 61 Nat'l Mining Assoc.
- 63 Mohammed \_\_\_
- 66 Columbian = Niobium

### LAST MONTH'S SOLUTION: Quicksand

Q	U	I	C	K	S	A	N	D	S	G	A	P	S
U	N	C	U	T	G	A	E	A	A	G	A	U	A
I	T	E	M	F	O	U	N	D	E	R	I	N	G
C	O	B	B	L	T	S	T						
K	F	E	U	U	E	X	T	R	A	C	T		
S	T	A	R	I	R	S	I	T	C	H			
I	O	N	A	D	I	T	P	O	E	I			
L	N	F	P	S	E	H	A	T	A	X			
V	R	A	T	N	O	A	H	B	I	O			
E	Y	E	S	O	W	L	S	A	L	T			
R	O	S	T	I	T	E	N	I	T	R			
C	A	L	T	A	R	L	O						
P	A	U	L	I	N	G	I	T	E	A	T	O	P
A	R	E	A	A	L	M	A	U	T	E	R	I	
T	I	D	Y	B	E	N	T	O	N	I	T	I	C

### SOME UPCOMING SHOWS AND MEETINGS

Our web site <http://www.ems.psu.edu/nms/> has links to more complete lists and details on mineral shows and meetings around the country.

**March 7, 2009:** Sale of William Yocom collection in West Chester PA Starts at 11:00 a.m. See page 3.

**March 7 - 8, 2009:** Earth Science, Gem and Mineral Show, by Delaware Mineralogical Soc. Delaware Technical & Comm. College, at I-95 Exit 4B, Churchmans Road (Rt. 58) Newark (Stanton), DE 19713. Sat. 10:00 - 6:00, Sun. 11:00 - 5:00.

**March 28 - 29, 2009:** Che-Hanna Rock & Mineral Show, Che-Hanna Rock & Mineral Club. Athens Township Volunteer Fire Hall, 211 Herrick Ave., Sayre, PA.

**April 4 - 5, 2009:** Annual Mineral and Jewelry Show, Franklin County Rock & Mineral Club. Shalom Christian Academy, 126 Social Island Road, Chambersburg, PA. Sat. 10-5, Sun. 10-4. See page 2.

**April 4 - 5, 2009:** Philadelphia Mineral Treasures and Fossil Fair, by Phila. Mineralogical Soc. and Delaware Valley Paleontological Soc. LuLu Temple, 5140 Butler Pike, Plymouth Meeting, PA 19462 Sat. 10 - 5, Sun. 10 - 4.

**May 2 - 3, 2009:** Treasures of the Earth Show & Sale, by Mineralogical Society. of Northeastern Pennsylvania. Oblates of St. Joseph, 1880 Hwy 315, Pittston, PA 18640 Sat. 10 - 5, Sun. 10 - 4.

**May 16 - 17, 2009:** World of Gems & Minerals, by Berks Mineralogical Society. Leesport Farmers Market Banquet Hall, Rt. 61, Leesport, PA.

**May 20 - 25, 2009:** Inter-regional Rockhound Rendezvous (by NFMS and CFMS), to Davis Creek/ Lassen Creek, California, for obsidian. Information coming soon to [www.cfmsinc.org](http://www.cfmsinc.org)

**June 6, 2009:** Spring Mineralfest, by Penna. Earth Sciences Ass'n., Macungie Memorial Park, 8 miles SW of Allentown in Macungie, PA. Sat. only, 8:30 - 3:00. [www.mineralfest.com](http://www.mineralfest.com)

**June 27 - 28, 2009:** Nittany Gem & Mineral Show, Mt. Nittany Middle School, SE side of State College, PA. See p. 1

**July 30 - Aug. 2, 2009:** AFMS and Northwest Federation conventions, Billings, MT.

**Oct. 3, 2009:** Autumn Mineralfest, Penna. Earth Sciences Ass'n., Macungie Memorial Park, 8 miles SW of Allentown in Macungie, PA. Sat. only, 8:30 - 3:00. [www.mineralfest.com](http://www.mineralfest.com)

**Oct. 17 - 18, 2009:** EFMLS Convention, and Annual Gem & Mineral Show sponsored by the Bristol Gem & Mineral Club. Beals Community Center, Bristol, CT.

**Nov. 7 - 8, 2009:** Friends of Mineralogy - PA Chapter Symposium at Franklin & Marshall College, Lancaster, PA, on Saturday, field trip (paid members only) on Sunday. H

#### Geo-Sudoku solution

A	T	M	F	G	R	S	N	E
N	S	F	E	A	T	M	G	R
R	G	E	M	N	S	A	F	T
F	R	A	G	M	E	N	T	S
M	N	G	T	S	F	R	E	A
S	F	T	A	R	N	G	M	E
T	A	R	N	E	M	F	S	G
G	F	N	S	T	A	E	R	M
E	M	S	R	E	G	T	A	N

### For sale / trade: Equipment & Materials

**Large mineral collection** for sale. Will sell all or part.

Also for sale **four** glass front and top **display cases**.

2 are: 72" L x 19 1/2" W x 40" H

2 are: 72" L x 19 1/2" W x 36" H

Call 570-672-2325. If I'm not in, leave a message.

**For sale:** Very nice rock and mineral **collection** along with four display cases. Call Dale at 717-252-1363.

**For sale:** Very large **collection** of gemstone material, prefer to sell as one lot; including much 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 570 748-3201 after lunch every day, or e-mail: [dreinhold@suscom.net](mailto:dreinhold@suscom.net) H

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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 the name of the photographer or artist.