

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

Editor (see page 8):

David C. Glick

March, 2009

Visit our web site: www.ems.psu.edu/nms/

March 18th meeting, 6:00 p.m.:

GEODE NIGHT! with An Update on the Geodes of Las Choyas

presented by
Jeff Smith, "The Geode Guy"

Our March meeting will be held Wednesday the 18th at a special starting time of 6:00 p.m., in the Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps and directions are available through our web site, www.ems.psu.edu/nms/

6:00 to ~ 7:30 p.m.: Buying & cracking geodes in the lobby about 7:30 p.m.: featured program on geodes

*The event has free admission and free parking,, and is open to all. No purchase is necessary; you can just watch geode cracking and attend the program. We don't plan to have refreshments or door prize drawings this month, but they will resume in April. **Geode Night is great fun for "kids of all ages," as they say. Don't be late!** - - Editor*

NMS is very happy to welcome back Jeff Smith, "the Geode Guy," to present Geode Night to our club again. In the lobby, several sizes of whole geodes will be available for purchase at \$5 and up. After you buy, Jeff will crack them open for you and you'll be the first person ever to see the crystals inside. If yours turns out to be solid, you can pick another at no charge. Jeff will have Mexican geodes from three locations: Las Choyas and Trancas, which he has had before, as well as some which just arrived from a different locality. These are slightly different and can have some good crystals. In addition, there will be polished halves for just \$3.00, and larger opened geodes from Indiana at prices up to \$15.00.

If you finish early with buying, cracking, and watching, you can watch mineral videos in the 114 auditorium until around 7:30 (whenever the geode cracking is finished). Then Jeff Smith will present a program on geodes in that room. He and his family have visited the geode mine in Mexico, and he has slides,



good stories and video of the long trip out to the mine and then going underground to mine a few geodes themselves. It's fascinating! The program is family friendly and very interesting, even if you've seen parts of it before. -Editor

Junior Rockhounds Meeting March 26: **Minerals and Metals**

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 spring. Parents may get a lot out of it too! The series, **Basic Minerals for Juniors**, will cover these topics:

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

Co-sponsored by NMS and

Bald Eagle Chapter of Gold Prospectors Assoc.

Junior Museum of Central Pennsylvania

Penn State Earth & Mineral Sciences Museum

Earth & Engineering Sciences Building
at Penn State (White Course Dr., west of Atherton St.)
Directions & maps at www.ems.psu.edu/nms/

Starting times every half-hour 9 a.m to 1:30 p.m.

Registered students \$4 (see below)

Our annual Minerals Junior Education Day is fun and rewarding for kids and parents who attend, as well as NMS participants. Volunteers are needed (see p. 2)!

Students in grades 1 -8 and their parents are invited to come and learn about minerals, crystals, metals, and fossils. At this event, kids get an empty egg carton when they check in, then go to a series of stations, each concerning a different aspect of mineral properties, rocks or fossils. They learn about the topic from a demonstration or discussion, and receive a properly labeled specimen related to the topic, so they gather a whole collection in their egg carton. Current plans include:

Gemstone properties

Iron ore and ironmaking

Gold panning

Fossils - shells and bones

Crystal measurements

at least one more...

- plus a sales table at kid-friendly prices.

Tell your friends and relatives and their kids!

Please register by March 22: continued on page 2

Minerals Junior Education Day, continued**Please register by March 22:**

Call Bob Altamura at (814) 234-5011 between 9 a.m. and 5 p.m. to reserve a starting time slot of your choice at the event (each half-hour from 9:00 a.m. to 1:30 p.m. on March 28). He will ask for names and addresses of the students so that checking in on-site will go quickly (we will also enter then in our door prize drawing and send them an announcement next year). Then send \$4.00 per student (check payable to "Nittany Mineral. Soc." or simply NMS) to:

Nittany Mineral. Soc.
2231 W. Whitehall Rd.
State College PA 16801

Registration is limited so that we may provide a collection of specimens for each student. Parents come along for free, but don't get the specimens. If there are spots open after March 22 (there might not be any!), the price will be \$6.

For updates, directions and maps, see
www.ems.psu.edu/nms/



At the 2008 Minerals Junior Education Day, Steve Poterala explains the atomic arrangement inside crystals to interested students and parents.
R. Altamura photo.

Junior Ed. Day Volunteers Needed: A few hours of your volunteered time are needed on Saturday, March 28, to ensure that this year's program is a success for interested and enthusiastic youngsters. You can help with activity stations, rock and mineral sales, admissions, clean-up, and more. See Dave Glick at the March 18th meeting, or call (814) 237-1094 or e-mail xidg@verizon.net

...And Donations Requested for Junior Ed Day Sales

Our Minerals Junior Education Day will be here in just two weeks! Donations of items which can be sold at kid-friendly prices will provide additional interest for those attending and will help us raise funds. Mineral specimens, tumbled or polished stones, fossils, books, tools, etc., are all welcomed. If you have items to donate, please bring them to the March 18th meeting, or contact Dave Glick at 814-237-1094 or xidg@verizon.net. One emphasis at Junior Ed Day is having specimens labeled, so if needed, Dave will be glad to make labels if you give him the information. *-Editor*

**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 first to the dealers who participated last year, and then to all past dealers unless they have told us they weren't interested. This week we'll send contracts to others who have expressed interest. We hope to have over a dozen vendors and all of our usual talks, kids' activities, silent auctions, food (unless new regulations cause complications), displays, a Pennsylvania mineral specimen contest, door prizes, etc. H

**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 H

**Philadelphia Mineral Treasures & Fossil Fair
April 4 - 5**

from Tuscarora Bulletin, March 2009

The Philadelphia Mineralogical Society and the Delaware Valley Paleontological Society present the 2009 Philadelphia Mineral Treasures & Fossil Fair show & sale, April 4-5, LuLu Shriners Temple, 5140 Butler Pike, Plymouth Meeting, PA.

There will be exhibits of outstanding specimens from personal collections, displays of local and regional material, a mineral identification table, educational materials, and learning activities (including a fossil dig) for children. In addition, there will be speakers, door prizes, a raffle of a special item, lapidary and jewelry displays, a Kid's Corner with free mineral specimens, a free raffle for a fossil or mineral specimen, merit badge information for Scouts, a food concession, and ample free parking. Select dealers will offer fossils, minerals, crystals, and finished jewelry from all over the world as well as books and decorative items.

Show hours are 10 a.m. to 5 p.m. Saturday and 10 a.m. to 4 p.m. Sunday. Admission is \$5 for adults; \$1 for children under 12, and free for Scouts in uniform. Contact Karenne Snow, Show Chair, at 609-953-1987.

See directions and map at

<http://pms.moonfruit.com/#/mineralshow/4527879809> H

A very brief**Note from the President**

by David Glick

Plans are set for Geode Night on the 18th; we're looking forward to another fascinating visit by Jeff Smith "The Geode Guy." Fast and furious is the best description for Minerals Junior Education Day preparations; several members of the Board of Directors had a good meeting on the 12th and are working hard along with other volunteers to make the event a success on the 28th. By the time most of you read this, an ad will be running in the CDT, over 500 postcards will have been received by kids in several counties, and Bob Altamura will be busy accepting telephone registrations (thank you, Bob!). Members, **please contact me now** (814-237-1094 or xidg@verizon.net) **and volunteer to help** on the 28th! It's a wonderful event and service to the community, and a few more volunteers will make it easier for everyone.

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

In the March issue, there are photographs of the prizes in the EFMLS Ways and Means drawing to benefit the Eastern Foundation Fund. Tickets will be available for purchase soon at \$1.00 each. One prize is not shown or described; it's a "surprise prize."

The column by EFMLS President Mary Bateman discusses the great importance of volunteers in our clubs. She notes that volunteers are needed to fill the EFMLS chairmanships of Junior Activities, Uniform Rules, Club Rockhound of the Year, and Conservation & Legislation.

Dr. Michael Brown, Professor and Chair of the Department of Geology at the University of Maryland, has been chosen as the EFMLS Scholarship Honoree for the 2009-2010 year. His research has concentrated on metamorphic rocks and minerals, and his teaching includes petrology and tectonics. He will have the responsibility of choosing graduate students to receive the two AFMS scholarships for the EFMLS region.

Jim Doran's safety article is titled, "You Can Always Reschedule," and covers the dangers arising from winter weather and ice and snow at collecting sites. The smartest solution when winter weather is approaching on a field trip date may be to postpone the trip.

Nominations for the each One Teach One award should be submitted to Hazel Remaley by July 1. Nominees can be an individual or a couple

Wildacres video on YouTube: "Several years ago, Bruce and

Cathy Gaber produced a short (8 minute) video highlighting the EFMLS Wildacres experience." View that video at <www.youtube.com/watch?v=kac0qhJG00M&feature=channel_page>. [NMS also has a copy of this video - Editor]

Natalie Darling has some ideas for winter newsletters. Members - of any age - can pick one of their specimens, do some research on it, and write it up as a contribution to their newsletter. A drawing could accompany the article, or just a drawing would be a fine contribution. [This editor agrees! Has anyone written a poem about their favorite specimen? You could be the first!]

The Federation Box Swap has continued to grow. One club boxes up good specimens from their area, sends them off, and receives a box from a club in another area in return.

More information on the EFMLS insurance is provided, as are the class lists and schedules and the registration form for the April and September Wildacres sessions.

The **AFMS Newsletter** is available by the same methods. The March issue starts with the prizes and new drawing methods for the Endowment Fund drawing. Tickets are available for \$5 each or 5 for \$20.

President Joy Bourne notes the beginning of Show season, and the fun of learning and meeting people at shows.

This year, the Northwest Federation will host the AFMS Convention, July 30 - August 2 in Billings, Montana. An article outlines some of the many attractions of the show, including exhibits of many Montana and other northwest gems and agates.

The AFMS Scholarship Honorees from the various federations are introduced.

Linda Jaeger's column for editors references a fun web site about helping writers (young and old) "Tell the Story of a Rock" by thinking of it in the first person. For example, after covering igneous rocks, the sedimentary section includes:

"II. Sedimentary Rocks

You are being beaten into smaller pieces and carried away. ...

e. Where do you end up?

f. You are surrounded by other rock fragments.

Are all of you the same size and type?

g. Are more rock fragments piling above you?"

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

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/

Popular Mineralogy

Interesting mineralogy and earth science for the amateur mineralogist and serious collector - #22

The Phosphate Mineral from the Grave

by Andrew A. Sicree

Out of the grunge

If you've ever had the pleasure of poking your nose into an old sewer, you may have noticed thin crusts of minerals clinging to the inside of sewage drain pipes. Perhaps you've even gone so far as to sample the grungy stuff and add it to your collection. But what do name you write on the label? Among the various candidates to consider is struvite, a less-known ammonium magnesium phosphate ($\text{NH}_4\text{MgPO}_4 \cdot 6\text{H}_2\text{O}$) mineral.

First described from crusts recovered in 1845 from a medieval sewer encountered during construction of the Nikolai Church in Hamburg, Germany, struvite was named for the geologist Heinrich Christian Gottfried von Struve (1772-1851), the Russian minister of mining, who was born in Hamburg.

Struvite tends to occur as yellow to brownish pyramidal crystals. If white when found, crystals tend to yellow upon exposure to light. It is also found as platy, almost mica-like, crystals. Belonging to the orthorhombic crystal system, it is of low density and soft. (Mohs hardness = 1.5-2, similar to gypsum.)

Clogging up the system

Struvite is an annoying mineral. It may be found in tinned seafood in sliver-like crystals that look like shards of glass. It doesn't present a health hazard, but who wants to eat a bunch of crystals with one's sardines? In wastewater treatment systems it presents a bigger problem. When anaerobic digesters process sewage, phosphate and ammonia are produced. Struvite will then form as a scale on the inside of outlet or transfer pipes, and may even clog the lines. Struvite can be recovered and used as a fertilizer.

Struvite is soluble under acidic conditions, but only sparingly soluble in alkaline (basic) solutions. This chemical behavior can cause the formation of struvite stones in the urinary tract. Most urinary tract stones in dogs are struvite, and struvite may also make up urinary tract stones in humans and cats. These "uroliths" block the passage of urine and can lead to extremely painful conditions necessitating surgery to remove the crystals. (If you have to undergo this, ask the

surgeon if you can keep the crystals and add them to your collection.) Struvite forms when urinary tract bacterial infections raise the pH of urine, making it alkaline. Some bacteria hydrolyze (split) urea to release ammonium ions, which then facilitate the precipitation of struvite stones. Intestinal stones (enteroliths) in horses are also made up of struvite.

Struvite from the grave

Struvite shows up in other odd places. It has been found on the surface of old ivory and on the fossilized teeth of a mammoth. It occurs in dung. And it shows up in decomposed dead bodies, including, reportedly, in the beard of ancient Viking. Struvite thus has some importance as a forensic tool because it can be used to determine the approximate date of a burial.

Is struvite a mineral?

Some critics might claim that because struvite frequently has somewhat dubious anthropogenic origins, as described above, it fails to meet the "sniff test" (i.e., the strict definition) for a mineral. But struvite is found in non-anthropogenic settings, too. For instance, it has been reported from the Skipton lava caves, in Corangmire Shire, Victoria, Australia. It should be noted that these lava caves were once inhabited by colonies of bats, and the phosphate that makes up the struvite most probably came originally from bat guano. In these caves it is also possible to find newberyite ($\text{MgHPO}_4 \cdot 3\text{H}_2\text{O}$) formed from the alteration of struvite. Another struvite-related mineral, struvite-K ($\text{KMgPO}_4 \cdot 6\text{H}_2\text{O}$), the potassium analog of struvite, is found in Austria and Switzerland.

Ref: Bridge, P. J., 1971, "Analyses of altered struvite from Skipton, Victoria," *Mineralogical Magazine*, vol. 38, p. 381-382.

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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 for more info.*

Wine Stone: “Der Stein im Wein”

Wine stone is a solid, anthropogenic (“generated by man”) substance – a quasi-mineral – that forms as crusts inside wooden wine casks during the fermentation and maturation of wine. Crystals of wine stone can also be found in bottled wine, either clinging to the cork or in the wine sediments.

Mineralogists at the University of Bonn, Germany, analyzed 158 wine stones (“der stein im wein” in German) and encountered at least four different compounds. (Did they get to collect the wine stone personally, perhaps sampling the wine as they worked? Wouldn’t you love to do this type of research?) Potassium hydrogen tartrate ($\text{KHC}_4\text{H}_4\text{O}_6$) occurred in 58 wine stones; calcium tartrate tetrahydrate ($\text{CaC}_4\text{H}_4\text{O}_6 \cdot 2\text{H}_2\text{O}$) was found in 62 stones; and 22 stones contained both compounds. Another twelve stones were composed of calcium galactarate tetrahydrate ($\text{CaC}_6\text{H}_8\text{O}_8 \cdot 4\text{H}_2\text{O}$), possibly due to the addition of sugar during winemaking. X-ray diffractometry also revealed that four stones were composed of a more unusual compound: dicalcium malate tartrate octahydrate, which is $\text{Ca}_2(\text{C}_4\text{H}_4\text{O}_5)(\text{C}_4\text{H}_4\text{O}_6) \cdot 8\text{H}_2\text{O}$. Because these tartrate compounds have a biological origin and are formed as a direct result of human enterprise, they are not properly classified as true minerals.

Wine stone may be colored by the wine from which it forms. Thus, a red wine will produce red wine stone, while lighter, creamy or white stones will precipitate in barrels used for white wine. Wine stone crusts may even display banding. If a barrel is used to make white wine, then red wine, then white wine again, wine stone from that barrel will have layers that are white, red, and white again.

Glass-like fragments of wine stone show up in the dregs at the bottom of a bottle of wine. Wine stone should not be confused with the “sediment” found in some wines (very common in port). Sediment is mostly tannin, too much of which can impart a bitter or astringent taste to wine (and tea, too) and plant pigments. Sediment is usually darker in color than wine stone, although both may occur in the same bottle. Wine stone is perhaps more common in better wines, ones that are “unfiltered.”

Some use is made from wine stone. Crude potassium hydrogen tartrate, called “beeswing,” is collected and refined. Refined potassium hydrogen tartrate, also known as “cream of tartar,” is a white powder and, mixed with sodium bicarbonate, it makes up baking powder.

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A Fleet-Footed Mineral

In spite of the fact that textbook definitions of “mineral” call for minerals to be solids with a crystalline structure, most mineral lists include at least one non-solid mineral: mercury (Hg).

Although the mercury makes up minerals such as cinnabar (HgS), corderoite ($\text{Hg}_3\text{S}_2\text{Cl}_2$), or livingstonite (HgSb_4S_8), it also occurs in nature as a pure native metal. But with a melting point of -39°C (-38°F), it is a *liquid* native metal. (OK, on *really* cold winter days it crystallizes, but when was the last time it was forty-below in your collection?)

A rare mineral, liquid native mercury is reported from a variety of mercury-mining regions, including sites in Germany, Hungary, Sonoma County, California, and specific sites such as the Levigliani Mine, in Lucca Province, Tuscany, Italy. Mercury appears as tiny (millimeter scale) silver droplets clinging to mercury ore samples.

The chemical symbol for the element mercury is “Hg” which is derived from the Latinized Greek term *hydrargyrum*, meaning “watery silver.” Mercury is also called “quicksilver” in reference to its silver color and its fluid or watery behavior. The name mercury is taken after the Roman god Mercury (equivalent to the Greek god Hermes, often depicted with a winged cap and winged feet). As the gods’ messenger, Mercury was agile and speedy, zipping all over the sky and the Earth. Anyone watching the behavior of a mercury droplet on a plate, tabletop, or other flat surface can readily appreciate how mercury earned its name.

The mineral collector should be aware that native mercury poses some hazards. Liquid mercury has a high vapor pressure, thus mercury vapors rise up from native mercury specimens. Mercury vapors can be inhaled, leading to mercury poisoning. Admittedly, the amount of mercury vapor produced from a mineral specimen in your collection may be quite small, but it will be present. Storing your specimens in an air-tight plastic box such as a Tupperware container is a good idea. Mercury vapor pressure will increase with temperature, so don’t roast, or do any flame tests, on a specimen without the benefit of good ventilation. Do not wrap mercury specimens in aluminum foil or store them in an aluminum container. Mercury droplets will amalgamate with aluminum and progressively eat their way through a large amount of aluminum.

Significantly less mercury vapor is produced from mercury minerals such as cinnabar. (Indeed, one way to clean up a mercury spill is to dust the area with powdered sulfur. Sulfur reacts with the mercury to produce mercury sulfide – essentially cinnabar – and drastically decreases the mercury vapors produced.)

Another difficulty arises because mercury can “travel.” Because the mercury droplets on a specimen are liquid, they can be dislodged, scattering the mercury throughout your collection. Care must be taken when trimming or handling a specimen with native mercury. Washing your hands after touching it is probably a good idea. Sulfur powder can be dusted over spilled mercury droplets to cut off mercury vapor production. A vacuum cleaner can then be used to suck up mercury sulfide, excess sulfur, scraps of ore, and minor stray droplets of mercury, but you will want to dispose of the vacuum cleaner bag promptly afterward.

Weird Geology: Rocks that Explode

Researchers from the Scripps Institution of Oceanography rediscovered the source area for “popping rocks” in two-mile deep ocean waters off the coast of Mexico. Originally discovered in 1960 by Scripps oceanographer Dale Krause, the exact site of these unusual rocks was uncertain. In 2005, using sonar and deep ocean dredging techniques, scientists were able to relocate a small volcanic mound on the ocean floor and dredge up samples. When the rocks were hauled up onto the research vessel’s deck, they popped and hissed evilly. These volcanic rocks formed at great pressures on the bottom of a two-mile deep ocean. Gases escaping from the Earth’s mantle became trapped as bubbles in volcanic lava when it froze solid. As the rocks are brought to the surface, the tremendous exterior pressure of the ocean water is removed and excessive pressures inside the gas bubbles in the rocks cause some of the bubbles to burst. Gases that escape include water vapor, carbon dioxide, argon, and helium. Scientists are eager to study these gases because they are thought to be unaltered samples of gases found in the Earth’s mantle. ©2009 A. A. Sicree

110 years ago in *The Mineral Collector*

The March, 1899, issue began with an article on A Collector’s Paradise, Saint Lawrence County, New York. Tourmaline (brown, reddish brown and yellow), tremolite, pyroxene, nephrite, titanite, serpentine, pink orthoclase, apatite, graphite, and a conglomerate composed of calcite crystals were mentioned. At the January meeting of the Students’ Mineralogical Club of Philadelphia, the past year’s collecting at the old Wheatley Mine dumps showed they were “far from being exhausted.” Finds included “Good specimens of yellow and red wulfenite in octahedral crystals... Pyromorphite in abundance, the sheaf-like forms of crystals predominating. One specimen of calamine 10 x 12 x 4.5”, well crystallized and fairly good... About eighty specimens of quartz, including doubly terminated crystals up to five inches long.” -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 ACDEINOTU, and one row or column spells out the purpose of our kids’ day, in addition to fun. 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.

		T	E		O			D
O	A				N		U	
					A			
N		A						T
T	D	O	A					I
	U	I				D		N
			I		D			U
		D					N	E
	C	U				O		

Crystal Matrix Crossword

Phosphates & Vanadates

ACROSS

- 1 for plants from phosphate minerals
- 10 to squelch
- 13 what you should do to your minerals
- 14 the color of vanadinite
- 15 done to your enemies
- 17 Leon __ author of Exodus
- 18 uranium vanadate mineral
- 19 not off
- 20 another latrine
- 21 Order of the Arrow (Boy Scouts)
- 23 element discovered by Marie Curie
- 24 plumber's element
- 26 gypsum is a ___ mineral
- 29 Rock of ___ granite quarry
- 31 where you can get a pint
- 33 French state
- 34 large lenticular ore body
- 35 ___zoic = mid life time
- 36 mineral worth something
- 37 abbreviation (ab)
- 38 evergreen tree
- 39 long time
- 40 anti-aircraft
- 41 stratigraphic body
- 42 natural nuclear reactor
- 44 British thermal unit
- 45 used in construction
- 47 not the way horse says it
- 48 Scottish menswear
- 49 whirlwind
- 51 element in rutile
- 52 where it's __
- 53 Galilean moon of Jupiter
- 55 one more than one
- 56 element in cassiterite
- 57 green phosphate mineral
- 61 sites of earthquakes
- 63 seed standard for carat
- 64 man's name
- 65 the hinge point
- 66 recommended daily amt.
- 67 beryllium phosphate

DOWN

- 1 common phosphate
- 2 to achieve
- 3 runs batted in
- 4 units of magnetic field
- 5 fluorite state
- 6 terrorist group
- 7 Japanese fighter

- 8 belonging to Edna
- 9 SuperSonic Transport
- 10 nitre is potassium ___
- 11 mineral ending
- 12 xenon
- 16 home of Upper Peninsula
- 18 native red metal mineral
- 22 U phosphate mineral
- 23 color of native copper
- 25 get on the ___, Gus
- 27 fossil found in coal
- 28 tantalum
- 30 fill in coal mine
- 32 element in ulexite
- 35 ___ Ocean Ridge
- 36 ___ steel wool
- 38 St. Clair fossil
- 39 Pb copper sulfate mineral
- 40 __atl, spear thrower
- 41 patron saint of miners
- 43 Katherine
- 44 a small piece
- 46 name
- 48 clay
- 50 greasy football team
- 54 what oil well is

- 56 lives in Scotland
- 57 manganese oxide mineral
- 58 Vietnamese name
- 59 to recede
- 60 until
- 62 of an egg
- 63 element in crocoite
- 65 polonium

LAST MONTH'S SOLUTION: Opals

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

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 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. See p. 2.

April 18 - 19, 2009: Gem, Mineral & Fossil Show, by Monongahela Rockhounds. West Mifflin Volunteer Fire Co. #4, Skyview Hall, 640 Noble Drive, West Mifflin, PA, in the Pittsburgh area (near Century III Mall and the Allegheny Co. Airport). Free Admission. Sat. 10-6, Sun. 10-4. www.momogahelarockhounds.org

April 25 - 26: Franklin, NJ, Gem & Mineral Show; by Franklin-Ogdensburg Mineralogical Society and others. Franklin School, Washington Ave., Franklin.

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

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

June 27 - 28, 2009: Nittany Gem & Mineral Show, Mt. Nittany Middle School, SE side of State College, PA. See p. 2.

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

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

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

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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 H

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Geo-Sudoku Solution

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E	O	N	I	A	D	C	T	U
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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.