Nittany Mineralogical Society Bulletin

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

May, 2009 **Visit our web site: www.ems.psu.edu/nms/** *Editor (see page 8): David C. Glick*

May 20th meeting:

What's New in Minerals video

video by Jeff Scovil

Our May meeting will be held Wednesday the 20th 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. ***Bring your friends and enjoy!*** *- - Editor*

Our May meeting program will be the newly available video from the 2008 Rochester Mineral Symposium, "What's New in Minerals." It features nearly an hour of color photographs of outstanding or interesting new specimens by renowned photographer Jeff Scovil, with brief comments. It is followed by a brief photo show from another meeting attendee, of a collection of fluorescent minerals and rocks carved into egg shapes.

Jeff Scovil is the author of *Photographing Minerals, Fossils and Lapidary Arts* (1996, Geoscience Press). In 1996, as the keynote speaker at NMS's first official symposium, his slide show and accompanying stories about specimens were very popular. On the same visit he presented a talk to Penn State's Geosciences Department in which he explained the details of his process for preparing and lighting specimens for photography. He travels to photograph fine mineral specimens, including some long sessions at the top shows. His photographs appear in *Mineralogical Record* and other publications for the mineral collecting community. Each year he presents some of his latest work at the Rochester Mineralogical Symposium. During 2007-8, he was in the process of switching from film to digital photography.

ATTENDING THE MAY MEETING?
This event is free and open to all - bring a friend!
Donations of door prize specimens are invited.
Your additional snacks will be welcomed.

Inside this issue

Junior Rockhounds Meeting May 28:

Fossil Fun

Junior Rockhounds will have their final meeting of Spring with hands-on, fun and educational activities in room 117 EES Building, 7:00 p.m. on Thursday, May 28. Parents may get a lot out of it too! The topic is Fossil Fun!

Check the web site for any updates, or contact Dr. Andrew Sicree (see page 8). - *Editor*

Nittany Gem & Mineral Show
June 27 - 28, 2009

by David Glick, Show Chair

Volunteers Needed -
See the Note from the President on page 3

Please plan to volunteer to help present our club's show, tell your friends, and keep the date open to attend. Volunteers enter free! We'll be back at Mt. Nittany Middle School this year (site of the 2006 and 2007 shows), with plenty of parking. We hope to have over a dozen vendors and all of our usual talks, kids' activities, silent auctions, food, displays, the new "Best of PA" Pennsylvania mineral specimen competition, door prizes, etc.

Some **dealer spaces** are still available; dealers may contact David Glick (see p. 8)

"Best of PA" specimen competition

We are working out the details of an exciting new attraction for the Show, to promote a better understanding of Pennsylvania minerals and geology through collecting. It's a competition for "bragging rights" to the best specimen recently collected in Pennsylvania, in two categories, self-collected and purchased. A collector may enter no more than one specimen in each category; each winning specimen will receive a label-sized plaque, and publicity for itself and its owner. Watch our web site www.ems.psu.edu/nms/ for details coming ***very*** soon.

Mini-mine donations

One of the main attractions for children at the Show is the Mini-mine. If you can donate at least a dozen (or preferably a lot more) small pieces of a particular mineral, rock, fossil, or tumbled gem for the mini-mine, please contact Bob Altamura (see p. 8) soon, no later than June 12. Specimen sizes should be between 3/8" and 1". If the pieces are really outstanding, then any number would be happily accepted; a dozen are not required.

Food Booth

If you can coordinate the food booth (we have a good plan available) or help with it for a couple of hours at a time, please contact David Glick, Show Chair (see p. 8).

Silent Auction & Consignments

Donations of a few good items for the Silent Auction fundraiser would be welcomed. Last year we did not have many participants for the consignment table, so this year we plan to operate it in combination with the silent auction. Contact Dave Glick concerning either section.

Displays invited

If you would like to set up a display of your minerals, fossils, gems, or jewelry in one of the club's cases at the Show, please contact Dave Glick (see p. 8). ❄

NMS Picnic Planned for August

The annual NMS picnic is set for Saturday, August 15, from 3:00 pm to dusk at Holmes-Foster Park in State College. It's on Westerly Parkway near W. Fairmount Ave., across from Our Lady of Victory Catholic Church, and we have reserved the "lower" pavilion which is next to the paved parking lot. We plan to have the club supply and cook hot dogs and corn on the cob, while those attending can bring a dish (salad, side dish, dessert, etc.) to share and their own plates and utensils (and tablecloths if desired). - *Editor*

Field Trip News

Nittany Mineralogical Society held an official field trip to Middleburg Quarry and Mt. Pleasant Mills Quarry, both owned by National Limestone Co., on Saturday, May 9. Materials collected included travertine at Middleburg and calcite crystals at Mt. Pleasant Mills. As always, NMS is grateful to Mr. Eric Stahl, owner of the quarries, for permission to collect and for his assistance.

Every member who is interested in attending field trips should be on the e-mail nofitication list (or, if you don't have e-mail, we can notify you by telephone). If you're not on the list, please contact Ed Echler (see p. 8) if you would like to sign up. - *Editor*

Minerals for Teacher - May Meeting

Would you like to donate some study specimens for fifth grade students? Tim Holtz's mother works with a teacher in New York state who is looking for some new specimens. The materials needed are: quartz, sulfur, feldspar, calcite, magnetite, graphite, gypsum, hematite, talc, pyrite; basalt, rhyolite, pumice, granite, obsidian; sandstone, limestone, conglomerate; quartzite, marble, slate. For each of these, the teacher could use two or three larger pieces for the front of the classroom and 6-12 smaller ones for the students to share at their desks. If you have some samples, please bring them to the May 20th meeting, or coordinate in advance with Dave Glick (see p. 8) if you'd like. Tim will take them and he'll be driving to New York, so no one needs to pay for shipping. - *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/** or remind Dave Glick to bring a printed copy to a meeting for you to see. The May issue discusses advertising brochures, encouraging members and non-members to participate in club activities, and "Be Prepared" for safety issues with first aid kits and training. An additional prize in the Eastern Foundation Fund drawing is illustrated (see article on p. 3 concerning tickets available at the May NMS meeting). Wildacres workshops are described, and the Fall (Sept. 7-13, 2009) session classes are listed. The AFMS Endowment drawing is described and prizes are illustrated; tickets are available for $5 each from EFMLS Editor Carolyn Weinberger. Three mineral collecting field trips in the recently announced Maine Geological Survey / Maine Mineral Symposium Association series are listed (Songo Pond June 20, and Newry Mines Sept. 12 and Sept. 19).

The June-July issue covers a proposed EFMLS bylaws change, the Eastern Foundation Fund prize drawing, regional vice-presidents, and details on the 2009 EFMLS Convention in Bristol, Connecticut, October 16 - 18 (Show on Sat. & Sun., Oct. 17-18). Steve Weinberger provides a brief summary of the Spring Wildacres sessions, and an invitation and detailed descriptions of classes for the Fall session, with Speaker-in-Residence jewelry historian Brenda Foreman. The safety article concerns various types of hammers and their safe use. New legislation in the Senate to revoke new and increased Forest Service fees is described.

The issue also contains the first announcement that the **2010 EFMLS Convention** will be hosted by the **Delaware Mineralogical Society**. Their show is scheduled for March 6-7, 2010, in Stanton, a suburb of Wilmington, Delaware.

The **AFMS Newsletter** is available by the same methods. The May Newsletter discusses club web site materials, the webmaster contest, inviting and encouraging participation in club activities, and submitting programs for the AFMS Program Competition. For the AFMS/NFMS Show and Convention, the possibilities for kids' competitive displays are reviewed, more after-show field trips (Aug. 4 and Aug. 8) are added to the list previously announced, and schedules and other information for the Convention are included. AFMS Club Rockhounds of the Year are presented, and some aspects of home safety are reviewed.

A version of the **Paleontological Resources Preservation Act** was recently passed as part of the Omnibus Public Land Management Act of 2009, HR 146. The full text is currently available via http://thomas.loc.gov/ A summary from the LA-Rocks@yahoogroups.com is printed in the Newsletter; it explains that the scope of the new law is primarily vertebrate fossils. [The law defines and allows "casual" "collecting of a reasonable amount of common invertebrate and plant paleontological resources for non-commercial personal use..."]

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

Show Volunteers Needed

A Note from the President

by David Glick

Some of our most enthusiastic volunteers from last year are unable to help this year because of job and family commitments. We need new volunteers more than ever this year! We had a great response at Junior Ed Day, which spread out the work load and made the event more manageable and enjoyable for everyone. Please, let's do the same for the Show. It has activities for children and adults alike, introduces us to the public in an attractive way, and makes some money for our projects.

In addition to a coordinator and helpers for the food booth as noted on page 1, we could use volunteers for set-up (Friday), clean-up (Sunday 5-9), registration, the mini-mine, and silent auction/ consignments. A couple of hours of your time (or more) would make a big difference. Please feel free to contact me at 814-237-1094 days and evenings, or <xidg@verizon.net>, and we will figure out the best place for you to help.

EFMLS Prize Drawing Tickets

At the May meeting, we will have for sale prize drawing tickets at $1 each or 5 for $4 to support the EFMLS Eastern Foundation Fund, which is used for projects such as the video program library. Ellery Borow says, "...I urge folks to check out the color images on the EFMLS website in the March, April and May issues of the News." (Three images of prizes are reproduced here.) If we run out of tickets, we can arrange to get more, and tickets will still be available in the fall. The drawing will be held at the EFMLS Convention in October.

- *Editor*

Dr. Robert E. Newnham, 1929 - 2009

We regret to report that long-time NMS member, mineral collector and crystallographer Dr. Bob Newnham died on April 16, 2009. An article about his life, inventions and interests appeared in the Centre Daily Times newspaper (State College, PA) on April 23, and is currently on their web site at <www.centredaily.com/news/local/story/1245476.html>. More information may be found on his own web site, <www.personal.psu.edu/ren1/>. A memorial service is planned for May 30 in Kern Building on the Penn State campus.

The NMS extends its sincerest sympathy to the family. Bob and Patricia attended NMS meetings and many of our special events through the years, always bringing friendship and good humor. He was Alcoa Professor Emeritus of Solid State Science at Penn State, having been at the University since 1966 and retiring in 1998 from his positions with the Materials Research Laboratory and Department of Materials Science and Engineering. Among his many inventions, the one most often noted is the design for the original piezoelectric transducer used in medical ultrasound imaging. Others include sonar transducers used by the Navy to track vessels or find hidden explosives. - *Editor*

Spring Mineralfest Show June 6 at Macungie

The Pennsylvania Earth Sciences Association will hold its Mineralfest Mineral, Fossil and Gem Show at Macungie on Saturday, June 6. The show is indoors at the Macungie Memorial Park, 8 miles southwest of Allentown, PA; from I-78 at Fogelsville, take Route 100 south 6 miles to Macungie, turn left onto Poplar Street across from the Bear Swamp Diner.

As usual, there will be over 100 tables of minerals, fossils gems, geodes, and crystals, plus fluorescent displays, gold panning, food, and free specimens and special activities for children. See their illustrated web site at www.mineralfest.com *-Editor*

Central Pennsylvania Rock & Mineral Club's Gem, Mineral & Jewelry Show Sept. 12 - 13, 2009 at the Zembo

from their flyer

The Central Pennsylvania Rock & Mineral Club will hold their 44th annual show at the Zembo Shrine, Third and Division Streets, in Harrisburg, PA. Hours are Saturday, Sept. 12, 10 a.m. -6 p.m. and Sunday, Sept. 13, 10 a.m. - 5 p.m. In addition to vendors of jewelry, beads, gemstones, minerals and fossils, there will be children's activities, free prizes, and educational exhibits. Children 12 and under and scouts in uniform are free with an adult; regular admission is $5.00 and discount flyers are available. ❄

Popular Mineralogy

Interesting mineralogy and earth science for the amateur mineralogist and serious collector - #24

Mineralogy of Eruptions

by Andrew A. Sicree

Sticky or runny lava

Mauna Loa, on Hawaii, erupts and a river of crimson lava wells up and out of the caldera on the summit of the volcano. Flowing briskly and smoothly, the incandescent river pours down the side of the mountain and stretches toward the sea. The landscape is covered with acres of black *basalt*; some is smooth and ropey, some is rough with jagged edges.

Two thousand miles east of Hawaii, in the Cascade Mountain Range, Mt. St. Helens erupts violently. Ash and dust are blown out of the volcano with terrific force. The side of the volcano, built of the volcanic rock known as *dacite*, is blasted open. A cubic mile of rock is blasted into the air and traces of the dust rain down a thousand miles away. As the eruption ceases, dacitic lava piles up on the steep side of the volcano once again. The volcano sleeps, fitfully. Another major explosion will occur, perhaps even bigger than the last, but we do not know when.

Two volcanoes. Two very different styles of eruptions. The differences arise from the different mineralogies of each volcano's lava.

Magma and lava

Molten rock beneath the surface of the Earth is called magma. Magma varies with factors such as the source material (i.e., the rocks that were melted to form the magma), the depth of melting, and how the magma changes as it moves toward the surface (e.g., olivine crystals might form and settle out of the magma). Also, magmas are not always fully melted – they may entrain unmelted rock fragments or mineral crystals. These unmelted fragments are called *xenoliths* ("strange stones").

When magma flows out onto the surface, it is known as lava. Lava applies to the pools, rivers, and fountains of molten rock that flow from volcanic vents. In addition, when the melt "freezes" solid, the resulting rock may be commonly called "lava" or "lava rock." Lava from Mauna Loa produces basalt, a dense black volcanic rock, while Mt. St. Helens produces a volcanic rock called dacite.

Lava on Mauna Loa

A wide variety of volcanic rocks make up the Hawaiian Islands. This is not meant to be an exhaustive discussion of their types. Rather, our purpose is to compare how mineralogy affects the drastically different styles of eruptions that we observe between Mauna Loa and Mt. St. Helens.

Much of Hawaiian "lava rock" is basalt while lava from Mt. St. Helens solidifies to produce mostly dacite. Technically, basalt is an extrusive (i.e., volcanic) igneous rock that is "silica-poor" compared to dacite. Note that silica-poor means relatively low in silica, not that silica is absent. Hawaiian basalts are typically about 48.4% SiO_2 compared to about 63.5% SiO_2 for dacite from Mt. St. Helens.

Basalts are richer in iron and magnesium than dacite. Chemical analyses show Hawaiian basalts to be about 11.2% FeO and 9.7% MgO, compared to about 4.2% FeO and 2.0% MgO for Mt. St. Helens dacite. Hawaiian basalts are also lower in alumina than are Mt. St. Helens dacites (13.2% vs. 17.6% Al_2O_3). Due in part to higher iron content, basalt tends to be black in color while dacite is more often light gray or tan. Color, however, is not very useful in differentiating the two rocks because dacite can also be dark gray, red, or even black. Basalts are also denser than dacites, but the apparent density of a volcanic rock can be deceptive because many eruptive rocks contain open space – vugs and vesicles formed from gas bubbles during cooling.

Basaltic lavas erupt with substantially higher temperatures than dacitic lavas. The normal temperature range for basaltic lavas is about 1100-1250˚C (2012-2282˚F), versus that of dacitic lavas at about 800-950˚C (1472-1742˚F).

Mineralogy of a lava

If we look into the crystal structures of the above silicate minerals, we can see why basaltic lavas behave so differently from dacitic lavas.

Mineralogically, basalt is composed mostly of calcium-plagioclase and pyroxene minerals with additional minor amounts of olivine. The principal minerals in dacite are quartz, feldspar, pyroxenes, and hornblende. The pyroxenes are a group of related minerals that include augite, diopside,

and enstatite. Hornblende (more properly ferro-hornblende or magnesium-hornblende) is an amphibole mineral. Note that both dacite and basalt have pyroxenes, but only dacite has quartz.

Silicate minerals are built of silica tetrahedrons – each silicon atom is surrounded by four oxygen atoms. In framework silicates (also called tectosilicates) like quartz, each silica tetrahedron attaches to four other silicon atoms, which are themselves surrounded tetrahedrally by four oxygen atoms. Thus, quartz's structure is much like a tetrahedral jungle-gym. Inter-connectedness of the silica tetrahedrons gives the quartz structure great strength and rigidity.

In olivine, each silica tetrahedron is by itself, unattached to any other silicon atoms. The silica tetrahedra are surrounded by a sea of magnesium or iron ions. This is why olivine belongs to the class of nesosilicates, or "island silicates."

Pyroxenes and amphiboles are composed of chains of silica tetrahedra (chain silicates are called inosilicates). In these minerals, the tetrahedra are linked at their corners to build long chains of tetrahedra. The principal structural difference between pyroxenes and amphiboles are that the former are built of single chains, while the latter have double chains (two chains linked side-by-side).

The behavior of a lava is related to the mineralogy of the rocks that it will eventually form. A molten lava is not simply a soup of unattached atoms. Rather, within the molten lava, silicon and oxygen atoms are already bonded together, and to a certain extent the silica tetrahedrons are also beginning to connect (or "polymerize"). A lava with a higher content of silica will have a higher degree of interconnectedness.

When silica tetrahedra are linked together, they make the lava "sticky" and less fluid. Molten lavas in which the silica tetrahedra are not well connected tend to flow readily. Basaltic lavas, which will form chain silicate crystals (pyroxenes and olivine), are less "sticky" than lavas such as dacitic lavas, from which framework silicates like quartz will form. Dacitic lavas, with substantially higher silica contents, are less fluid than basaltic lavas, which have lower silica contents.

Characteristics of eruptions

In silica-rich magmas such as those that produce the dacitic lavas of Mt. St. Helens, the "stickiness" of the lava prevents gases from escaping easily. As dacitic magma rises upward within the volcano, the confining pressure (from the weight of the overlying lava and rock) decreases. Dissolved gases begin separating from the magma as bubbles, but the "stickiness" of the magma prevents the resulting gases from escaping easily. When the confining pressure decreases sufficiently, the pressure exerted by the confined gases grows greater than the confining pressure, the gases expand rapidly, and the overlying lava and rock is blown upward. This, in turn, decreases the confining pressure of deeper magma, and it too releases gas, which expands and is also blown upward. Thus, the eruption takes off violently.

When it erupts, Mt. St. Helens kicks out a great amount of ash and dust. Lavas that escape being blasted sky-high tend to pile up in sticky masses near the lava vents. Dacitic lava does not flow well. This is why stratovolcanoes (volcanoes made of alternating layers of lava and ash) like Mt. St. Helens have steep sides compared to those of Mauna Loa.

Contrariwise, fluidity of Hawaiian basaltic magmas allows dissolved gases to escape from the molten magma before an eruption occurs. The resulting lava flows quite readily and smoothly. Hawaiian basaltic lavas have been clocked at flow speeds up to 6 mph (9.6 kph). Fluidity allows basaltic lavas to flow great distances and the resulting pile of volcanic rock can be quite broad – more than one hundred miles across at its base. These large broad volcanoes are called shield volcanoes because they resemble a giant round shield lying on the ground.

The fluidity of Hawaiian basalts allows the volcanoes to create lava caves. The lava caves found in Hawaii are actually the tubes through which molten lava flowed during an eruption. Rock is a good insulator. During an eruption, the exterior (exposed to air or water) of a lava flow will cool and solidify forming a rock crust. This crust then insulates the remaining molten lava, which continues to flow. Lava flows can create their own "pipes" or tubes. The walls of these tubes form from solidified lava, and molten lava flows downhill through the tubes for considerable distances (many miles). Some tubes extend into the sea. When the eruption ceases, the tubes may drain completely, leaving a lava tube cave behind. The last bits of lava in an otherwise empty tube solidify as dagger-like "icicles" of basalt hanging downward from the ceiling.

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.*

Greisens, Granites, and Tin

Greisen is an altered granitic rock of interest to mineral collectors and prospectors alike. A greisen is composed principally of quartz, mica, and topaz. The mica is usually either muscovite or lepidolite (lithium-bearing mica).

Associated minerals formed in greisens during the alteration process include tourmaline, wolframite, rutile, and fluorite. The presence of cassiterite (SnO_2, tetragonal tin oxide) is characteristic of greisen, to the extent that greisen has been defined by some as a tin-bearing rock.

Solid-Solution Series

Mineral formulas represent an effort to write down, in "chemical shorthand," the composition of a mineral. You may see more than one mineral formula for a mineral because it is sometimes difficult to pin down the exact composition of a mineral. Olivine is an example of a mineral that occurs as a solid solution series. Mineral species lists usually report that olivine is not an accepted mineral species and they will refer you to forsterite and fayalite.

Olivine does exist, however. It is a mineral with the formula $(Mg,Fe)_2SiO_4$. The difficulty arises from the fact that magnesium (Mg) and iron (Fe) substitute completely for each other. This means that the (Mg,Fe) portion of the olivine formula could represent 80% Fe and 20% Mg, or 100% Fe and 0% Mg, or 0% Fe and 100% Mg, or any other possible ratio of the two elements. We call the magnesium-rich (>50 mole% Mg) side of the solid solution series *forsterite*, while the iron-rich olivines (>50 mole% Fe) are called *fayalite*. The "end-member" composition for fosterite is represented by Mg_2SiO_4, while the formula for the magnesium-free end-member fayalite is Fe_2SiO_4.

Geo-Sudoku

by David Glick,
adapted from pdtreasures.com

This puzzle contains the letters EHOPRSUYZ, and one row or column spells out the kind of light breeze you might enjoy while collecting "Z" minerals. 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.

			Z	R				O
		S						R
		Z				U	H	Y
Y				E			Z	
	O			P			R	
		P			O	Y	U	
H	P		O	Z		S		
	Z			Y			E	
U	R		S			P		

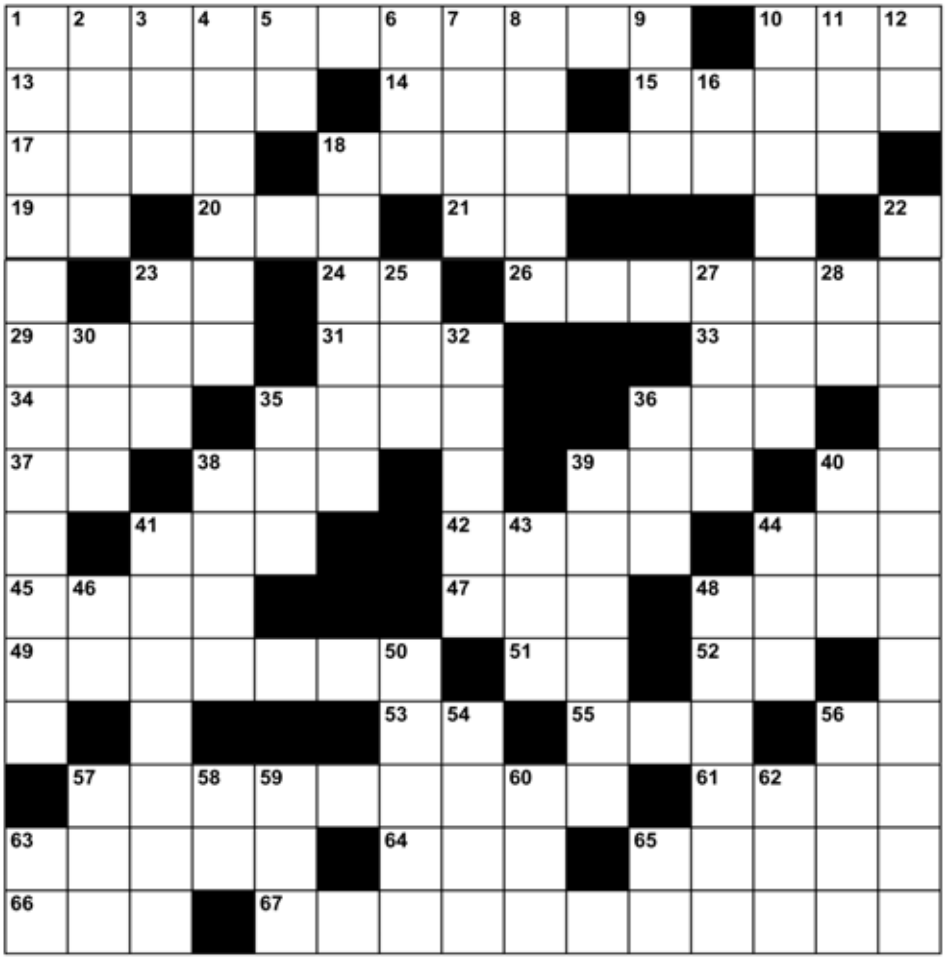
Photo Gallery

Goethite, Blair County, PA. *J. Passaneau photo.*

Gossan minerals, Skytop, Centre County, PA.
J. Passaneau photo.

Crystal Matrix Crossword

Z Minerals



ACROSS

1 Z mica
10 opposite of zag
13 what gold comes in
14 long, long time
15 not experts, not priests
17 large crucifix
18 white wash
19 bumper element
20 maybe a flying saucer?
21 lanthanum
23 very common in Earth's crust
24 element used in sun block
26 more than one nautilus
29 Kemo ___, the Lone Ranger
31 International Monetary Fund
33 college in England
34 Indians in Utah
35 great enthusiasm with Z
36 African Methodist Episc.
37 French article
38 ___ annum
39 what Z does to bugs
40 state with Z
41 another Zero
42 said to a horse, of course
44 day to thank God for
45 length times width
47 South to the Spanish
48 found in road to mine
49 element in Zirkelite
51 element in Pepto-Bismol
52 by-product of U decay
53 feather-weight element
55 letter 19 Greek alphabet
56 not found in selenite
57 lead antimony Z mineral
61 Southeast Asian
63 dug by mineral collectors
64 Geological Soc. America
65 where earthquakes move
66 big primate
67 Z phyllosilicate mineral

DOWN

1 zircon sulfate mineral
2 Ethiopian language
3 Non-Governmental Org.
4 lump of mineral
5 weight (ab)
6 girl's name
7 girl's toy
8 South American culture
9 killed by Dutch disease
10 red Z oxide mineral
11 the end of a mineral
12 giga-year (ab)
16 artificial intelligence
18 more comfortable
22 zinc uranium mineral
23 Honest ___
25 National Mining Assoc.
27 what thermometer gives
28 not too hi
30 did to a sandwich
32 lava beds
35 yet another zero
36 car-crazy group
38 wood for crystal models
39 rose-color titanium min
40 connected to hand
41 group of trap minerals
43 in center of wheel
44 what minerals are
46 factor in blood
48 how Caesar died
50 tropical fruit
54 problem with Z and S
56 a halide mineral
57 what a zipper does
58 emerald state
59 kilohertz (ab)
60 Tahitian (ab)
62 Chinese ethic group
63 prosecutor
65 fluorescence (ab)

LAST MONTH'S SOLUTION: Franklin

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

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.

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. 1.

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

Sept. 12 -13, 2009: Gem, Mineral & Jewelry Show by Central Pennsylvania Rock & Mineral Club. Zembo Shrine, Third and Division Streets, Harrisburg, PA

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.

Oct. 31, 2009: South Penn Rock Swap, by Central Penn. and Franklin Cty. Rock & Mineral Clubs. South Mountain Fairgrounds, on Rt 234, 1.5 mi W of Arendtsville PA.

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.

Nov. 7 - 8, 2009: 40th Gemarama Gem Jewelry and Lapidary Show, "Gems of Myth, Legend, and Lore," by Tuscarora Lapidary Society. Founder's Pavilion, CFS/The School at Church Farm, Exton, PA

March 6 - 7, 2010: EFMLS Convention & Delaware Mineralogical Society Show, Stanton, DE. ❄

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 would like to join, dues forms and instructions are available on our web site <www.ems.psu.edu/nms/>.

We want to welcome you!

Geo-Sudoku solution from page 6

P	U	H	**Z**	R	Y	E	S	O
O	Y	S	**E**	U	H	Z	P	R
R	E	Z	**P**	**O**	S	U	H	Y
Y	S	R	**H**	E	U	O	Z	P
E	O	U	**Y**	P	Z	H	R	S
Z	H	P	**R**	S	O	Y	U	E
H	P	E	**O**	Z	R	S	Y	U
S	Z	O	**U**	Y	P	R	E	H
U	R	Y	**S**	H	E	P	O	Z

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 ½" W x 40" H
2 are: 72" L x 19 ½" 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: 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(notenewcontactinformation) ❄

SOCIETY OFFICERS

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Publicity: *Volunteer Needed!*

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.