Nittany Mineralogical Society Bulletin

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

January, 2012 **Visit our web site: www.nittanymineral.org** *Editor (see page 8): David C. Glick*

January 18th meeting:

Kimberlites and Lamproites: Windows to the Upper Mantle

by David (Duff) Gold
Emeritus Professor of Geology
Department of Geosciences
Penn State

(postponed from November 2011)

Our January meeting will be held Wednesday the 18th in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps 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.: Annual Meeting & Elections, announcements, questions, answers; door prize drawings
about 8:00 p.m.: featured program

The event has free admission, free parking, and free refreshments, and is open to all – ***Bring your friends and share an enjoyable evening.***

*tentative - if the room changes we'll post signs in the lobby.

Kimberlites interest us because they can contain not only diamonds, but other minerals and rock fragments from deeper than we can see by other methods. They erupt from narrow volcanic pipes and may leave less evidence on the surface than most volcanics. Dr. Gold has extensive experience researching kimberlites and will describe these complex rocks in his presentation. -Editor

Kimberlites in the broad sense are OH-rich ultramafic (silica deficient) rocks with a porphyritic texture that may contain phenocrysts and xenocrysts of pyrope-rich garnets, magnesian-rich ilmenite (picroilmenite), chrome-diopside, spinels, phlogopite and diamonds, as well as foreign inclusions (xenoliths) of exotic olivine-pyroxene-garnet-spinel assemblages. As certain minerals crystallize, the remaining melted rock tends to change or "evolve" toward being more silica-poor and carbonate-rich. Evolved varieties include phlogopite-rich (Type II) and highly potassic lamproites that may contain sanidine, feldspathoids (leucite) and unusual potassium-rich amphiboles (K-richterite), and a host of barium- and titanium-rich minerals (priderite, perovskite, wadeite). They occur in fissures or thin dikes and as "blow-outs" in diatreme breccia pipes, too far from the source to be "normal" quenched magma melts. Consistent with their high fluid content, outgassing took place at great depth, and emplacement was achieved rapidly along hydraulically driven cracks from depths of the order of 50 to

Continued on page 2

Junior Rockhounds
meet January 18th

Junior Rockhounds will continue to meet at 5:00 p.m. on the third Wednesday of the month, the same as last Fall. That's the same night as our regular meetings; this month it's January 18th. We expect to be in room 121 Earth & Engineering Sciences Building; if that changes we'll have a sign posted in the lobby.

Each month's Junior Rockhounds meeting has a new topic or topics with fun, hands-on learning for the kids. We encourage those who attend to become NMS members, but it's not required. Just $7.00 covers a whole year (through October 2012) of student membership. Parents may get a lot out of the meetings, too! Check the web site for news, or contact Dr. Andrew Sicree (see page 8). *- Editor*

3D Mineral Video Documentary Project
Accepted for Crowd Support

from John Adam Barwood

Adam was a State College resident as a teenager, and a member of NMS for its first few years before his family moved away. - Editor

"MineralCollecting.org Presents: Minerals - A 3D HD Journey" was recently approved by the team at Kickstarter.com, a crowd funding website, and we're offering some fun rewards in exchange for contributions toward getting this important project funded.

My name is John Adam Barwood and I'm a long time collector and enthusiast. I used to run MineralCollecting.org and I've started rebuilding the website to focus on creating a documentary video series about gems, minerals and mineral collecting.

We have **until March 6th** at 11:01 PM EST to raise $4000 for the project. Kickstarter is an all or nothing project funding site so we need to reach the mark to get funded. It's quick and easy and we're in dire need of backers! You can contribute toward this project by visiting the project page online by typing the URL address below into your browser's

Continued on page 2

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

Kimberlites *continued from page 1*

150 kilometers. Diatremes are essentially near surface structures, with both crater and vent facies preserved. No lava except for some lamproites has been verified. Outgassing fluids, with modeled velocities as high as Mach 2, plucked, entrained, rounded, polished and mixed samples of the upper mantle and lower crustal rocks, up to 60 cm across, with more angular upper crustal lithologies, and polished the walls of some of the diatreme vents. "Kimberlites" were emplaced periodically throughout geologic time with a peak during Cretaceous times (at the time of disruption of Gondwanaland, the southern supercontinent). The predominance of lamproites to the Tertiary may reflect erosion depth rather than temporal distribution.

"Kimberlites" are of interest economically as the primary source of diamonds, albeit as the dispersant rather than the concentrating agent. Of more than 9000 known kimberlitic bodies, only approximately 5% contain diamonds (mainly as "micros", <0.1 mm) and less than 10% of these are likely to be economic. Diamond exploration focuses on extensional settings in **"**OLD COLD CRATONS**."** **"**Finds" are evaluated mainly on the presence of (a) G-9 and G-10 garnets (low Ca, high Cr pyrope), (b) the absence of an oxidation trend (overgrowths) in the spinels, and (c) the P-T regime inferred from co-existing sets of minerals in the xenoliths and diamonds with respect to the diamond/graphite inversion boundary (54 kbar/1300ºC) and geothermal gradient. Diamonds are classified as "p-type" for peridotitic from "fertile" asthenospheric (pristine) mantle, or "e-type" for eclogitic from a depleted or lithospheric (recycled) mantle. The latter have implications on early subduction roots. ❄

Rockhound's H1N1

by Carl Wells, Arlington Gem & Mineral Club
From: *The Hound's Tale, 3/2010*
(7th Place – AFMS Poetry)

We'll get a new idea and try it
If we like it, we'll petrify it.
There's still no vaccine for the pox
That makes you start collecting rox.
There's no clear cause that seems apparent –
It's not just random-like, it's errant,
Since no one knows where it strikes or when –
And we just can't wait 'til it strikes again

3D Video Project *continued from page 1*

address bar and every dollar counts! A variety of payment methods are accepted and no charges are collected unless/until the project reaches its goal before March 6th.

Please check out our backer rewards and consider supporting a great project. All contributions are sincerely appreciated!

'"MineralCollecting.org Presents' is a comprehensive 3D HD documentary video series journeying across the globe and deep into the ground to discover and document gems and minerals. From the ground to the museum, viewers come along for the fun, laughs, beauty and breathtaking earthly creations."

Project page, more info, and to make donations:
Kickstarter.com/projects/1119735507/mineralcollectingorg-presents-minerals-a-3d-hd-jou
[*this link is on the NMS home page this month*]

Our project video submission on YouTube:
Youtube.com/watch?v=8KO5Q0TCMVI

Follow the project on Facebook:
Facebook.com/pages/MineralCollectingorg-Presents-Minerals-A-3D-HD-Journey/161332313969650

Follow the project on Twitter:
Twitter.com/#!/Minerals3DHD

Watch for the new launch: MineralCollecting.Org

Geo-Sudoku

by David Glick

This puzzle contains the letters EHILNOTSX, and one row or column spells the fragments of foreign rock which may be included in kimberlites. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 7.

				H	X			O
	E			L				
					E	X	L	
H		E	X		S			T
N					T	S	O	
	O				H	L		
	H			S				
		T						E
					N	I	X	

Getting to the Point

by Ellery Borow, EFMLS Safety Chair
from EFMLS Newsletter, January 2012

Getting to the point is important. Making a good point is important. Having the right point on a rock chisel is also important. In the November, 2011 issue of the EFMLS News there was a Safety Matters article about the mushroom – a mushroom head and a dull point on a rock chisel. A question has been raised about the best point to use for a rock splitting chisel.

As with many questions, there are several answers as to what is the best point shape for a rock chisel. When one uses a rock chisel on relatively soft and easily split specimens, one might find a sharper edge on their chisel to be beneficial. When one is hammering on stubbornly-refusing-to-split specimens, a shallower (blunter) chisel point may be more useful. It sometimes takes a bit of experimenting to find the best point angle to work with the material one most often encounters.

Rock chisel manufactures usually grind their factory-fresh chisels to a point that works well with the majority of commonly encountered rocks. They take into account the geometry (angle) of the cutting edges and the metallurgy of the steel used in the chisel's construction to fashion the best point for the most frequently encountered conditions.

Figure 1 shows a common configuration of primary and secondary grinds for a rock splitting chisel. Figure 2 shows a common angle for a wood cutting chisel. While the steel in both types of chisels is of high quality, the rock chisel's steel must be treated to a degree that makes it harder, tougher, and very durable for use on rocks. The angle used on a rock chisel is the best compromise of durability and usefulness.

The sharper angle on a wood chisel is made for use on wood. The wood chisel's angle is necessarily sharper to cleanly slice the fibers in the wood's structure. Sharpness is necessary for wood. Wood chisel sharpness has the disadvantage of being more easily damaged. Personally I have found that such extra sharp edges may be damaged when cutting through something as soft as a knot in a piece of hardwood. Taking a wood chisel and using it on rocks would most likely result in a severely damaged chisel and, more importantly, the possibility of steel shards in the eye.

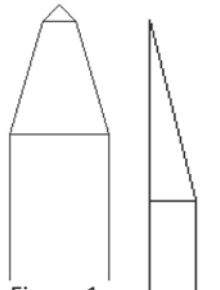


Figure 1

Figure 2

Different chiseling requirements mean different chisel point angels. One tip I use, after purchasing a new rock chisel, is to cut a small notch in a piece of cardboard, sheet plastic, or bit of sheet metal such that the notch is the same angle as that on the chisel. When I eventually need to regrind the point, I use the notch as a template or grinding guide for reshaping the point so it once again looks factory fresh. See Figure 3 for the notch guide template.

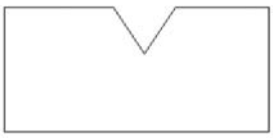


Figure 3

As with every tool reshaping effort, please observe all safety regulations and guidelines. Your safety matters.

NEWS FROM THE FEDERATIONS

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies. We present brief summaries here in order to encourage readers to see the entire newsletters.

The **EFMLS Newsletter** is available through the link on our web site **www.nittanymineral.org** or remind Dave Glick to bring a printed copy to a meeting for you to see.

The January issue provides information on the 2012 Wildacres Workshop sessions, including descriptions of the various classes and an application form. Registration for both April and September sessions is now open. Two scholarships are available for the first time this year. There's a new Wildacres web site at http://efmls-wildacres.org/ President RJ Harris introduces Pennsylvanian Toni Donchak as the newly appointed Chair of the Conservation and Legislation Committee. Ellery Borow's safety article (reprinted at left) once again addresses chisels, this time on sharpening. Darryl Powell's Junior Activities article encourages clubs to provide activities and good specimens for junior members: "please be extraordinarily generous to the children in your mineral club or society; it will pay off with great rewards for them and for you." Awards recognizing contributions of members to their clubs and to the hobby are described.

The **AFMS Newsletter** is available by the same methods. The December/January issue invites submissions for the Program Competition, and lists the classes for entries and the judging criteria. New prizes for the Endowment Drawing are illustrated; tickets are $5 each or 5 for $20. President Lauren Williams notes some aspects of keeping public lands available for collecting, and the ALAA column addresses the evaluation of land use plans. The Bulletin and Website contests are described. Specific ways to do well in the All American Club competition are explained. The Judges Training Seminar (Reno, Nevada, in May) is described; one person from each Federation will be selected to receive $300 reimbursement for the expense of attending (Applications are due April 16). In October 2011, the Micromounters Hall of Fame inducted Jim Hurlbut and Pete Richards.

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

15 YEARS AGO IN NMS

At the January 1997 meeting, John Passaneau presented a program on Photographing Micro-Minerals. We were starting to prepare for our third annual Minerals Junior Education Day.

GEODES 2

Geodes in Sedimentary Rocks

by Bob Carnein

Lake George Gem and Mineral Club, Colorado
from LGGMC Club News, April 2010
(2nd Place - AFMS Original Adult Articles Advanced)

Dr. Carnein was an active member of NMS when he lived near Lock Haven, PA. We thank him for permission to reprint this two-part article. - Editor

In [last month's] newsletter, we looked at geodes that occur in igneous rocks. This month, we will think about sedimentary geodes and the minerals that have been described in geodes of both types. As is usual with most scientific topics, explaining the origin of geodes isn't simple. But don't despair; bear with me while we explore some geology and a little bit of chemistry.

Although geodes are found in sedimentary rocks of various ages and types, by far the largest U.S. deposits occur in carbonate rocks (dolostone and limestone) of Mississippian age (about 350 million years). These are found in a broad band extending from eastern Iowa into adjacent Illinois and Missouri, and in similar-age rocks in Indiana, Kentucky, and Tennessee. There are even some occurrences in Georgia and Alabama.

The Mississippian geodes are concentrated in layers of the Warsaw Formation and other carbonate rocks of the same age. It and the Ramp Creek Fm. of south-central Indiana include geode-rich zones that have supplied literally millions of geodes to collectors. In some places, creek beds are clogged with "geodes", most of which are actually solid quartz nodules. Local residents sometimes even use them to construct walls and houses.

Good exposures of the Warsaw beds near Keokuk, Iowa, result in some collectors using the common name *Keokuk geodes*, or simply *Keokuks*. Quartz is the most abundant mineral, and the geodes range from an inch or so to nearly three feet across. Their shapes vary from nearly spherical to

www.providencehome.org/Grotto.htm

An "inverted" Keokuk geode, Henry Co., IA (author's collection)

irregular or flattened in the plane of layering in the enclosing carbonate rocks. Some resemble a head of cauliflower.

Commonly, rock layers immediately above the geode zone contain abundant fossils and fossil fragments, suggesting those rocks formed in an environment of shallow, turbulent, clear sea water with plenty of oxygen and nutrients. Fossils include mollusks (clams, snails, and cephalopods), echinoderms (sea urchins, crinoids, and blastoids), brachiopods, horn corals, and sponges. Most of these animals "filter" food particles suspended in the water. However, the geodes themselves typically occur in layers of finer grained dolostone with relatively few fossils. These rocks probably formed in somewhat deeper, quiet water lacking abundant oxygen.

Even today, controversy surrounds hypotheses on the origin of the Mississippian geodes of the midwest. I will summarize two hypotheses, but you need to realize that we have here a textbook case of multiple working hypotheses—a fundamental principle underlying most geological research. The idea is that several researchers come up with competing explanations for how a given feature (in this case geodes) forms. These researchers then "battle it out" in peer-reviewed publications and by presenting their results at meetings. Eventually, a consensus develops among researchers, and one or two hypotheses win approval. In the case of the origin of sedimentary geodes, the two "theories" summarized below may both be correct.

Theory 1. The first theory suggests that geodes form by replacement of anhydrite ($CaSO_4$, calcium sulfate) nodules by silica. It is well summarized in Barwood and Shaffer (see references below). Imagine a Mississippian shoreline area in what is now the midwest (and extending along the margin of the Illinois basin 350 million years ago). The climate is hot and dry, similar to that in parts of the Persian Gulf today. Near the shore, wave action keeps the water stirred up and provides abundant oxygen. Marine invertebrate animals (most of which depend on suspended food particles for sustenance) thrive in this environment. Intense evaporation raises the salt content of the water, and brines form. (A brine is a solution that is saltier than "normal" sea water.)

Outline of the Illinois basin, a major Midwestern sedimentary depression. aapg.org

Unusual small geodes in a "shell hash" bed, from near Bedford, IN (author's collection). Note resemblance of right-hand geode to a fossil "sea urchin".

In shoal (shallow) areas, waves break up shelly material, forming a coarse shell hash. The brines work their way downward through this coarse carbonate sediment and outward toward the center of the basin. As these oxygen-rich brines work their way out into the deeper, oxygen-starved water of the Illinois basin, they lose oxygen and encounter finer carbonate sediments deposited in deeper water. Here, a crucial chemical change occurs. The limestones, which are made of the mineral calcite [$CaCO_3$], are converted to dolostone, which is made of the mineral dolomite [$CaMg(CO_3)_2$]. Magnesium ions in the brines substitute for half of the calcium in the limestone. This process releases calcium ions into the brines, and this "extra" calcium causes the precipitation of anhydrite [$CaSO_4$] as nodules on the sea floor.

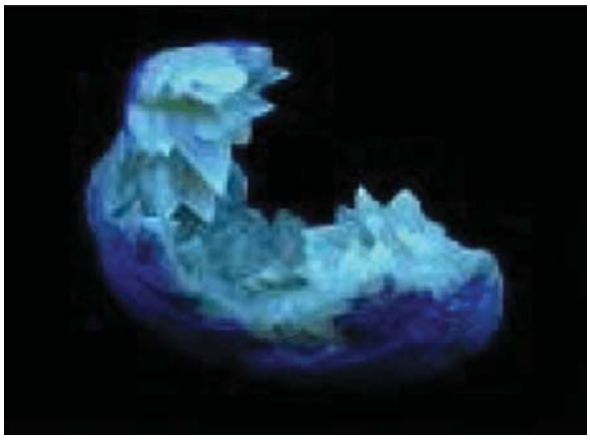
As this process proceeds, the lack of oxygen, combined with other features of the chemical environment, causes some of the anhydrite around the outsides of the nodules to break down. This does two things: it makes sulfur available to form sulfide minerals such as pyrite; and it raises the pH of the water (makes the water less acidic). Silica in sponge spicules, volcanic ash, or other sources is more soluble in water of higher pH, so, as the pH rises, silica dissolves into the water and becomes available to replace anhydrite and limestone. Deposition of silica on and in the rinds of anhydrite nodules forms a gelatinous layer that is the beginning of geode formation (it becomes the chalcedony layer that forms the outer shell of most Mississippian geodes). Over time, water seeping through the silica gel dissolves out the remaining anhydrite in the core of the nodule, at the same time depositing additional silica (forming a layer of coarser quartz crystals) and other geode minerals (including pyrite and other sulfides). Voila! You end up with a layer of fine grained dolostone peppered with geodes. In deeper water, the fine grained carbonate rocks are partly replaced by chert, and in shallower water, the carbonate rocks are coarse grained and contain little silica. As the environment shifts, geode and chert formation will shift too. As a result, the distribution of geodes is patchy, rather than continuous.

Theory 2. Some geodes are thought to be "geodized" fossils or "exploded" fossils. One hypothesis (see Smith, 2007) suggests that, instead of anhydrite nucleating to form a nodule (as above), it nucleates in a cavity inside of a dead invertebrate. This may occur because the decay of organic material uses up oxygen, producing local conditions like those described above. Quiet water is probably required for this to work. As the anhydrite grows, the host fossil "explodes," in some cases fragmenting to the point where it's barely recognizable. The anhydrite may even extrude through the side of the fossil. Then, silicification takes over, converting the anhydrite-filled fossil into a geode (again, as above). All gradations, from easily recognizable silicified fossils to badly distorted examples, are known from rocks in Indiana (Beanblossom Cr., Brown Co.), Iowa (near Keokuk), Kentucky (near Louisville), Illinois (near Hamilton), Ohio (near Hillsboro), and Tennessee (near Nashville).

In a slightly different category, I would be remiss not to mention the "geodized fossils" from near Tampa and Fort Drum, FL. Near Tampa, Miocene colonial corals have been replaced by chalcedony, forming the beautiful "agatized" geodes commonly seen at mineral shows.

Chalcedony-filled geode from near Tampa, FL. Author's collection

At Rucks Pit, near Fort Drum, clams of the genus *Mercenaria* and other fossils are filled with gold-colored calcite crystals that are very fluorescent. Finally, clams and other fossils of the Crimean peninsula are famous for rare fillings of anapaite, barite, rhodochrosite, and vivianite.



Fluorescent calcite in bivalve, Rucks Pit, FL. Appalachee-minerals.com

Anapaite in fossil bivalve. Kerch, Crimean peninsula, Crimea Oblast, Ukraine. Irocks.com

Rhodochrosite lining clam, Kerch, Crimean peninsula, Crimea Oblast, Ukraine. mindat.org

"Geodized" fossils (crinoid; horn coral) Heltonville, IN (author's collection; Jeff Smith collector)

At the end of this paper, I have listed some references that you can consult to read more about these hypotheses, plus several more. Some are readily available and nontechnical; others are relatively advanced.

Minerals of Geodes. If you are a mineral collector, you might be interested to know what minerals, besides quartz and chalcedony, are reported to have been found in geodes. In the list below, I haven't tried to separate the minerals of igneous geodes from those of sedimentary examples. Having originally thought that 20 or 25 minerals might be found, I was surprised at the number. Some of the examples are definitely identified, while others are reported but not confirmed. Here's the (by no means complete) list:

"Exploded" fossil brachiopod from the Ramp Cr. Fm., near Heltonville, IN (author's collection; Jeff Smith collector)

Anapaite	gypsum	ranciéite
Ankerite	hematite	retgersite
Apatite	hollandite	rhodochrosite
Aragonite	honessite	romanèchite
Aurichalcite	jamborite	rutile
Barite	jarosite	siderite
Beidellite	kaolinite	smithsonite
Birnessite	magnetite	smythite
Calcite	manganite	sphalerite
Celestine	marcasite	sulfur
Chalcedony	millerite	szomolnokite
Chalcopyrite	mordenite	tenorite
Copiapite	nontronite	todorokite
Cryptomelane	pyrite	violarite-polydymite
Dolomite	pyrolusite	vivianite
Fluorite	pyrrhotite	wurtzite
Galena	quartz	zaratite
Goethite	ramsdellite	

In addition, gas, mercury, opal, and water have been reported.

References and Additional Reading

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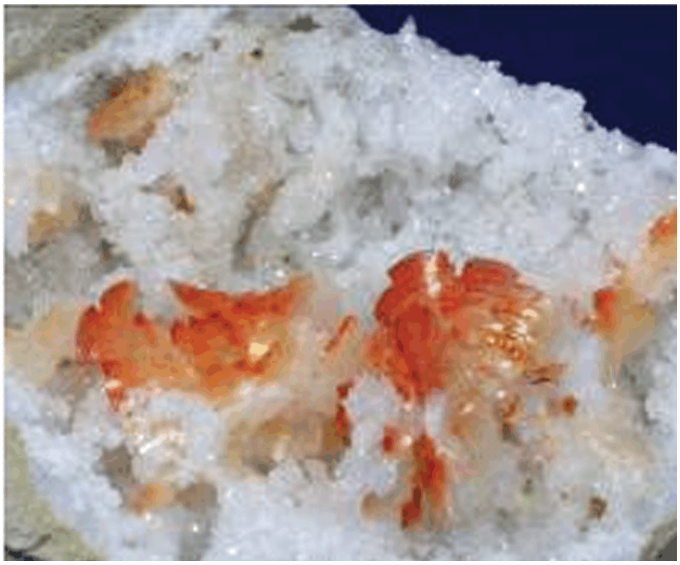
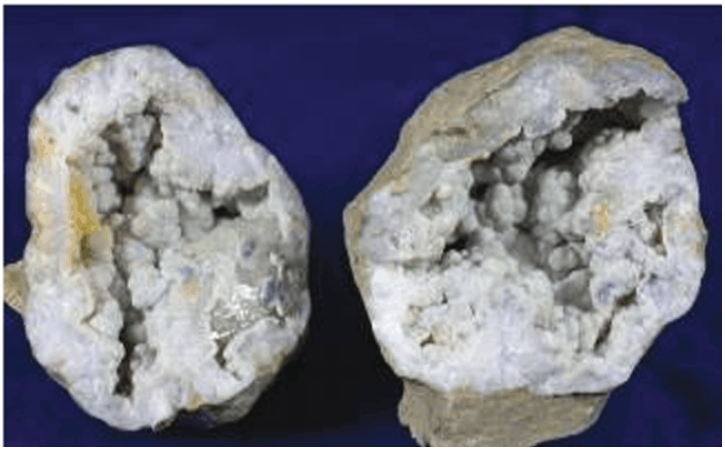


Ankerite in quartz geode, near Bedford, IN (Author's collection).



Chalcedony geode, near Bedford, IN (Author's collection).

Solution to Geo-Sudoku from page 3

S	I	L	T	H	X	E	N	O
X	**E**	**N**	**O**	**L**	**I**	**T**	**H**	**S**
O	T	H	S	N	E	X	L	I
H	L	E	X	O	S	N	I	T
N	X	I	L	E	T	S	O	H
T	O	S	N	I	H	L	E	X
I	H	X	E	S	L	O	T	N
L	N	T	I	X	O	H	S	E
E	S	O	H	T	N	I	X	L

Some Upcoming Shows and Meetings

Our web site http://www.nittanymineral.org has links to more complete lists and details on mineral shows and meetings around the country.

Jan. 22, 2012: Annual Auction, Mineralogical Soc. of NE PA, Moosic Presby. Church, 625 Main St, Moosic PA

Jan. 28, 2012: Rutgers Geology Museum Open House. Scott Hall (Room 123 & others), 43 College Ave., New Brunswick, NJ 08901. Four talks, mineral sale, mineral ID, make & take stations for kids (all ages), hands-on activity stations for kids (ages 8 and up). Free. Sat. 9-4.
http://geologymuseum.rutgers.edu/downloads/2012-open-house.pdf

March 3-4, 2012: Annual Gem, Mineral & Fossil Show by Delaware Mineralogical Society. Newark, DE

March 10-11, 2012: North Jersey Gem and Mineral Show by The North Jersey Mineralogical Society. Pope John Paul II Center, 775 Valley Rd., Clifton. Sat & Sun 10-5.
http://nojms.webs.com/annualspringshow.htm
http://nojms.webs.com/2012springflyer.jpg

March 24-25, 2012: Annual Gem & Mineral Show by Che-Hanna Rock & Mineral Club. Athens Twp. Volunteer Fire Hall, 211 Herrick Ave., Sayre PA. Sat 9-5, Sun 10-5.
http://www.chehannarocks.com/show.html

March 24-25, 2012: Gem, Mineral & Jewelry Show by Franklin County PA Rock & Mineral Club. NEW LOCATION: Hamilton Heights Elementary School, 1589 Johnson Rd., Chambersburg. Sat. 10-5, Sun. 10-4.

April 19-22, 2012: Rochester Mineralogical Symposium. Rochester, New York. www.rasny.org/MineralSymp.htm

April 28-29, 2012: New Jersey Earth Sci. Ass'n Gem & Mineral Show by FOMS, NJESA & Sterling Hill Mining Museum. Franklin Borough School, 50 Washington Av., Franklin, NJ.

May 12, 2012: South Penn Rock Swap - SPRING SWAP by Franklin County & Central PA Rock and Mineral Clubs. South Mountain Fairgrounds, 1.5 miles West of Arendtsville, PA on Route 234. Sat only, 8 a.m. to 3 p.m.

May 19-20, 2012: "World of Gems and Minerals" by Berks Mineralogical Society. Rt 61, 7 miles South of I-78, Leesport Farmers Market, Leesport PA. Sat 10-5, Sun 10-4.

June 2, 2012: Spring Mineralfest by Pennsylvania Earth Sciences Association. Macungie Memorial Park, Macungie, PA. Saturday only 8:30 - 3:00. Www.mineralfest.com

Sept 15-16, 2012, Eastern Federation of Mineralogical and Lapidary Societies Convention, and Central Pennsylvania Rock and Mineral Club Annual Show, Harrisburg

October 27, 2012: South Penn Rock Swap - AUTUMN SWAP by Franklin County & Central PA Rock and Mineral Clubs. South Mountain Fairgrounds, 1.5 miles West of Arendtsville, PA on Route 234. Sat only, 8 a.m. to 3 p.m.❄

For sale / trade: Equipment & Materials

For sale: Highland Park lapidary saw, Model E4, 8" diamond blade, mounted on a stand, ready to use. Contact Willard Truckenmiller, phone 814-625-2531 (9:00 a.m. to 9:00 p.m.) or e-mail jowilltruck@aol.com

For sale: Large mineral collection; will sell all or part. Tumble polisher with three 12-lb. and one 6-lb. drum plus grits, polishes and pellets. My phone number is (570) 672-2325. Leave a message if I'm not in.

For sale: Jade in various types & colors; mostly rough, plus some slabs; some fine Coober Pedy opal. Also equipment and jewelry making supplies from jewelry studio and production shop. Contact Daniel G. Reinhold in Mill Hall, PA; phone 570 726-8091 after lunch every day, or e-mail: dreinhold1@comcast.net ❄

INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having among the finest line-up of speakers of any earth sciences club in the nation. Everyone is welcome at our meetings. If you'd like to be part of our Society, dues are $20 (regular member), $7 (student rate), $15 (seniors), $30 (family of two or more members, names listed). Those joining in March or later may request pro-rated dues. Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available at www.nittanymineral.org), make checks payable to "Nittany Mineralogical Society, Inc." and send them to

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

or bring your form and dues to the next meeting.

We want to welcome you!

SOCIETY OFFICERS

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

OTHER CONTACTS

Field Trips: Ed Echler 814-222-2642
e-mail preferred: eechler@comcast.net
Junior Rockhounds: Dr. Andrew Sicree
814-867-6263 (h) e-mail: sicree@verizon.net
Membership Chair: David Glick (see above)
Programs: Dr. Duff Gold 865-7261(o), 238-3377(h)
e-mail: gold@ems.psu.edu
Door Prizes: *volunteer needed!*
Facebook: Mike Zelazny e-mail: maz166@psu.edu

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

David Glick E-mail: xidg@verizon.net
209 Spring Lea Dr. phone: (814) 237-1094 (h)
State College, PA 16801-7226

Newsletter submissions are appreciated by the first Wednesday of the month. If you include photographs or graphics, please do not embed them in word processor files; send them as separate graphics files (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and name of photographer or artist.

Visit us at **www.nittanymineral.org**