

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

Editor (see page 8):

David C. Glick

April, 2009

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

April 15th meeting:

Coal Mine Fires

by
Dr. Dan Vice

Our April meeting will be held Wednesday the 15th 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. **Coal mine fires are an ongoing story in Pennsylvania. Come and learn more!** - - Editor*

In this presentation, Dan Vice will talk mostly about Centralia but will include some information about Laurel Run and some other coal fires.

The Centralia coal fire started in 1962 when the town burned a trash dump in an old stripping pit. The trash fire started the Buck Mountain coal bed on fire. The inability of local, state and federal officials to work together led to the fire being fought on a start-stop basis and eventually the fire got too deep to economically fight it. As the fire spread, four fronts developed. We will mostly talk about the cemetery front. Several minerals have been found on this front, including alunogen, hydrobasaluminite, voltaite, and quartz. This is the first recorded occurrence of hydrobasaluminite and voltaite in Pennsylvania coal fires. A earlier detailed study by Lapham et al. (1980) of burning coal culm banks and one coal mine fire (at Glen Lyon south and west of Wilkes-Barre) has found a number of other minerals associated with coal fires.

Continued on page 2

Junior Rockhounds Meeting April 30: **Minerals and Magnets**

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 rest of the series, **Basic Minerals for Juniors**, will cover these topics:

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

Regular Meeting on May 20:

"What's New in Minerals" video by Jeff Scovil

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 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 mineral and rock carved eggs. *

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. We hope to have over a dozen vendors and all of our usual talks, kids' activities, silent auctions, food, displays, a Pennsylvania mineral specimen contest, door prizes, etc. *



Minerals forming at coal mine fire site, cemetery front, Centralia, PA. Glenn Stracher photos, courtesy of Dan Vice.

Coal Mine Fires

Continued from page 1

Dan Vice says about his background: "I got a D.Ed. in Earth Sciences at Penn State in 1996 and have been teaching at Penn State Hazleton and Penn State Schuylkill since 1998. I had worked in industry for 17 years before coming to Penn State to get my doctorate. I got interested in Centralia and coal fires in northeastern Pennsylvania because one of my students at the Schuylkill campus wanted to do a paper on Centralia as an honors project for my Geosc. 20 class. About the same time, Dr. Glenn Stracher put together a symposium on coal fires at the AAAS meeting in Denver and was happy to have a student presenter when I contacted him. I have been working on coal fires ever since then."

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 provide these newsletter synopses in the hope of raising interest and having readers go and look at the entire issue.

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.

See the first page of the April issue on the web for color photographs of additional 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.

Mary Bateman reminds us to be safe on our field trips, which includes the courtesy of being aware of other participants when we are swinging hammers and breaking rocks. At meetings, assistance and courtesy to members and visitors who don't frequently attend will also encourage them and benefit the club.

As we read this, the spring Wildacres session is about to start, but there are still openings for the Fall session, September 7 - 13. Dr. Brenda Foreman will present the Speaker-in-Residence talks in Fall, about periods in the history of jewelry.

An update on the EFMLS Convention is provided. At the Show (Oct. 17 - 18), there will be exhibits of Connecticut's great variety of minerals, and "As a new idea for exhibits, we are inviting all visiting delegates to bring along mineral or fossil specimens from their home states so that we can all learn more about what each state has to offer the collector. We are setting aside a number of cases that will be used to show those specimens being brought in by you delegates. Our hope is that we can get half a case of material from each state in the federation so that we can see the differences in mineral and fossil specimens within our region. Please consider bringing 5 or 6 specimens from your home state to the convention to fill half a case for all to see. Think of them as an exhibit from your

own club to show off your own state."

On Sunday, a field trip is planned to western Connecticut to visit The Connecticut Mining Museum in Kent and to collect garnets at Green's Farm in Roxbury.

The safety article addresses mine safety training courses which may be available in various states.

A new series of mineral collecting field trips in Maine and the rest of New England is being planned by Maine Geological Survey (MGS). "With assistance from the Maine Mineral Symposium Association (MMSA), we are arranging with New England quarry operators to hold a series of collecting trips that will be open to the public. We plan to set up at least three field trips each year, starting in 2009 and continuing until funds are exhausted. Oversight for these arrangements will be provided by Woody Thompson (MGS and MMSA) and Duane Leavitt (MMSA)." See the article and the MGS web site ("announcements" section) listed in it; 2009 sites are Songo Pond (June 20) and Newry Mines (Sept. 12 and 19).

An article describes the history of competitive exhibits and introduces a program to fund attendance at a Wildacres Judges Training Course for one new judge per year.

News is also included from the Eastern Foundation Fund, Club Rockhound of the Year, Each One Teach One, AFMS Scholarship Fund, EFMLS officer nominations, and AFMS Endowment Fund. The calendar of shows reaches its annual peak, with almost two pages of listings [NMS's has just been submitted.]

The **AFMS Newsletter** is available by the same methods. The April issue starts with newly added prizes for the Endowment Fund drawing. The drawing will be held on August 1; tickets are available for \$5 each or 5 for \$20.

The article on the May 20-25 Interregional Rockhound Rendezvous in northeastern California has a nice photo of rainbow obsidian (see color photos in the on-line version). The event will include an exchange of maps for collecting localities and a knapping demonstration. Four field trips are announced (on August 3, 4, 6, and 7) for the AFMS/NFMS convention and show (July 28- Aug. 2). The legislation article addresses possible increased restrictions on importing gemstones from conflict areas of the world.

The Junior Activities article describes an Earth Resources Challenge display, in which juniors match up minerals with the products made from them in order to win a prize. Related materials from the Minerals Information Institute <www.mii.org>, such as "How Many Minerals Does it Take to Make a Light Bulb?" are also mentioned.

Fran Sick, Public Relations Chair, notes the benefits of volunteering for other organizations in our club's name, such as "adopt a highway" or local art and education events.

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

Another Successful Minerals Junior Ed. Day
A Note from the President

by David Glick

There was a great response from volunteers, and our thirteenth Minerals Junior Education Day went very smoothly. It takes a lot of effort but I think everyone agrees it's worth it. We had many happy "thank-you" comments from juniors and their parents on their way out. I sincerely thank everyone who was involved; obviously, we could not present this event without you.

We were happy to have photographers from both the Centre Daily Times and Penn State at the event. The Penn State photos can be seen at <<http://live.psu.edu/stilllife/2006>>. The headline there says it's an EMS (Penn State College of Earth and Mineral Sciences) event, although the text does properly credit Nittany Mineralogical Society. Considering that about half of the volunteers came from EMS, and EMS also provided the venue, we do owe many thanks to EMS for those major contributions.

We had 205 children come through, plus their parents, and about 30 volunteers. We don't have an obvious explanation for why the attendance was down from about 305 last year, because the publicity effort was quite similar overall. I'll conclude by repeating my comment from last year, that I believe this event fits perfectly in our mission of providing education and encouraging interest in minerals and the earth sciences, and we can be pleased and proud that we do it well.



Paul Zell and Shirley Fonda explain Ordovician fossils



John Passaneau distributes crystals and goniometers, and explains how geometry of crystals is controlled by their orderly atomic arrangement. **Photos on this page by A. Sicree**



Gary Mitchell (left) and Jim Garthe (background) talk about our local historical iron furnaces at the big iron ores and ironmaking station organized by Bob Altamura.



Sandy Sheasley and Mary Shoemaker staff the station organized by Andrew Sicree on fiber optic behavior in minerals.

Popular Mineralogy

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

Inclusions: Minerals Inside Minerals

by Andrew A. Sicree

Inclusions

Natural crystals of minerals are never “perfect.” Even an apparently flawless, water-clear crystal of quartz displays minute imperfections upon examination under a microscope. Inclusions are but one type of imperfection formed during the growth of a crystal – other types of imperfections include grain boundaries, crystal growth step dislocations, and trace impurities. Inclusions consist of small blebs of gas, liquid, and/or other, “foreign” crystals caught up (“included”) inside the crystal structure.

In the laboratory, crystals can be grown from ultra-pure starting materials at carefully controlled temperatures and pressures, so that the resulting crystals do not trap inclusions. Synthetic (man-made) crystals may have very few flaws, but natural mineral crystals can contain inclusions of gases, liquids such as salt water, and crystals of other minerals. Gemologists use the presence or lack of inclusions as an aid in determining whether or not a gemstone was cut from a natural or a synthetic crystal.

Solid inclusions

Solid inclusions (i.e., minerals within minerals) can be visible to the unaided eye or too small to see (microscopic). Solid inclusions can arise when a crystal envelops earlier, pre-existing mineral crystals. “Sand calcites” are an example of one mineral (calcite) encasing a pre-existing mineral (quartz in the form of sand grains). Similarly, when two minerals grow at the same time, one can encase the other, such as when small grains of pyrite are found scattered throughout a fluorite or calcite crystal. Alternatively, solid inclusions can be generated when a chemical reaction produces blebs of a daughter mineral within the pre-existing parent mineral. This can occur when one mineral “exsolves” another. Typically, an exsolution reaction occurs because the components of daughter mineral cannot remain dissolved within the parent mineral as temperature drops. Or it can occur because of a solid-state chemical reaction – reactant chemicals diffuse through the solid parent mineral to create blebs of the daughter mineral in the interior of the parent.

The famous “chalcopryite disease,” in which blebs of chalcopryite are found within sphalerite, was originally described as an exsolution reaction, but later researchers

recognized that, more often, it was a solid-state replacement reaction that created solid inclusions of chalcopryite within sphalerite parent crystals.

Red or orange hematites growing parallel to cleavage planes in mica are another example of solid inclusions. Additional examples include amazonite (in which streaks of albite occur with microcline – this “perthite” texture is created by an “unmixing” or exsolution reaction) and tourmaline within quartz (sometimes called “tourmalinated quartz”).

Everyone’s favorite inclusion

Rutilated quartz is perhaps the best-known example of a solid inclusion. In rutilated quartz, golden rutile (TiO₂, tetragonal) crystals are trapped within clear quartz. Usually, these rutile crystals appear as curved, whisker-thin crystals, arcing through the quartz host in no particular direction. When cabbed or faceted, rutilated quartz makes fascinating gemstones.

In some minerals, however, the orientation of rutile inclusions is controlled by the structure of the host crystal. Rutile “silk” inside of corundum crystals can be oriented parallel to the lateral axes of the hexagonal crystal. Thus, the fine silky rutile crystals are at 60° to each other. If a silk-laden corundum (typically as the ruby or sapphire variety) is cut so that the hexagonal axis points out of the center of a polished cabochon, the rutile inclusion generate a six-pointed “star” effect – creating the much desired star sapphire or star ruby.

Fluid inclusions

Within a mineral, cavities containing liquids and/or gases are known as fluid inclusions (sometimes abbreviated “FI”). Some fluid inclusions contain only liquid, most commonly salt water although petroleum-filled inclusions occur, while others hold both a liquid and a gas phase. Gases within fluid inclusions might be water vapor, carbon dioxide, methane, other gases, or mixtures of gases. Multi-phase inclusions contain two or more phases.

Fluid inclusions range from the macroscopic (big enough to see with the naked eye) down to microscopic inclusions smaller than 0.01 mm across. Crystals contain billions of

microscopic fluid inclusions per cubic centimeter. Thus, a quartz crystal that is only eight inches long and three across may hold more than a trillion microscopic fluid inclusions.

Long, thin, tube-like fluid inclusions are common in natural emeralds (a feature used by gemologists examining stones to determine if they are natural or synthetic emeralds). Typically, emerald fluid inclusions are filled with salt water; they may also enclose gas bubbles and solid salt crystals. This fluid is a remnant of the hydrothermal fluid that produced the emerald. The salt crystals do not dissolve in the inclusion's water because the water is saturated with respect to salt.

Uses of fluid inclusions

Many fluid inclusions are filled with salt water. This salt water is a trapped sample of the fluid from which the mineral precipitated.

We can determine how salty the water is because salt water freezes at a lower temperature than pure water does. Road crews take advantage of this fact when they spread salt on icy roads in wintertime; salt prevents the formation of ice even as the water temperature drops well below the normal freezing point of water. The depression of the freezing point depends upon the concentration of salt in the water. One can determine the "saltiness" of the water within a microscopic fluid inclusion without directly analyzing it. A small, thin slice of a mineral with fluid inclusions is examined via a microscope while it is being slowly cooled below 0°C (32°F). The microscopist watches for the point at which the fluid inclusions freeze – the freezing temperature can then be compared to data tables to determine the salinity of the inclusions.

In a similar manner, two-phase liquid-gas inclusions can be heated until the gas phase disappears and only one phase remains. This point is known as the "temperature of homogenization" and it represents the lowest possible temperature at which the host mineral could have formed.

Primary vs. secondary inclusions

If a fluid inclusion forms at the same time as the host mineral forms, the inclusion is called primary. In the determination of fluid inclusion salinity and temperature of homogenization, it is important to use inclusions that are primary. It is also important that the primary inclusion not leak. A leaky inclusion no longer has the same bulk composition it had when it formed – this can generate an inaccurate temperature of homogenization. In general, the larger an inclusion is, the more likely that it will have leaked. This is why large inclusions (i.e., those large enough to be

How Did We Get Names of Geologic Periods?

The geologic time scale is peppered with interesting names for the various time periods. Why do we call one period the Cambrian and the next the Ordovician? During the years 1820-1850, geologists began to organize rock strata in relative chronological order and give names to the various periods. Many of the period names have British origins simply because British geologists did the work. The "Cambrian" arises from the Roman name for Wales, and the subsequent two periods, the "Ordovician" and the "Silurian" are named for Welsh tribes. The county of Devon, in England, gave us the "Devonian."

The "Carboniferous" comes from the Coal Measures, the British term for the coal-rich rocks. (In North America, the Carboniferous is divided into the Mississippian and Pennsylvanian Periods – names derived from the river and the state.) A Scottish geologist, Roderick Murchison, named the "Permian" after strata found near Perm, in Russia. The "Triassic" comes from the Latin *trias*, meaning triad, because rocks of that period occurred in three distinct sections: red beds, chalk layers, and black shales. The Jura Mountains in the Alps, with extensive layers of marine limestones, gave us the name "Jurassic." The Latin word for chalk, *creta*, is the root of the name "Cretaceous," which was derived from the chalk-rich rocks of the Paris Basin in northern France.

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visible to the naked eye) are seldom used in scientific studies. Herkimer "diamonds" (really quartz) are well known for their large fluid inclusions. The walls of the inclusions tend to reflect light dramatically – hence the "diamond" moniker. Many of these inclusions may have leaked dry.

Not all fluid inclusions are "primary" in nature. Secondary fluid inclusions form after (often well after) the host mineral has been deposited. For instance, say that a crystal of quartz precipitated from a warm saline fluid. Thousands of years after the crystal formed, it cracks under stress. Then, a new warm saline fluid percolates into the crack, precipitating additional quartz to "heal" the crack. Any fluid inclusions in the healed crack are secondary in nature. Fluid inclusions in a healed crack only give you data about the second fluid. Care must be taken when studying fluid inclusions to assure that only primary inclusions are examined.

Ages of fluid inclusions

Fluid inclusions can be quite old. For instance, a study of minerals at the 2.2 billion-year-old natural nuclear fission reactors at Oklo in Gabon found hydrocarbon-bearing fluid inclusions that were trapped before, during, and after the time the reactors went critical.

Enhydros

The water-filled geodes sold at rock shows as “enhydros” are not proper examples of fluid inclusions *per se* although the idea is similar. Enhydros are chalcedony geodes with their inner cavities filled with water containing dissolved sodium, magnesium, calcium, chloride and sulphate ions. Chalcedony is cryptocrystalline (consisting of many very small crystals) and the fluid is not inside of a single crystal but rather trapped in the vug at the center of the geode. Careful cutting and polishing of the geode allows you to see the trapped fluid sloshing around inside the vug. The lapidary must be careful not to cut too close to the vug or the enhydro will leak water and dry up. Note that if your enhydro does dry up, it can often be restored by soaking it a bucket of water; water will seep back into the vug.

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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.*



The texture of a barite “rose” from Noble, Cleveland County, Oklahoma, is caused by sand inclusions. Photo ©J. Passaneau



The red color of this quartz from Morocco is caused by inclusions of hematite. Photo ©J. Passaneau



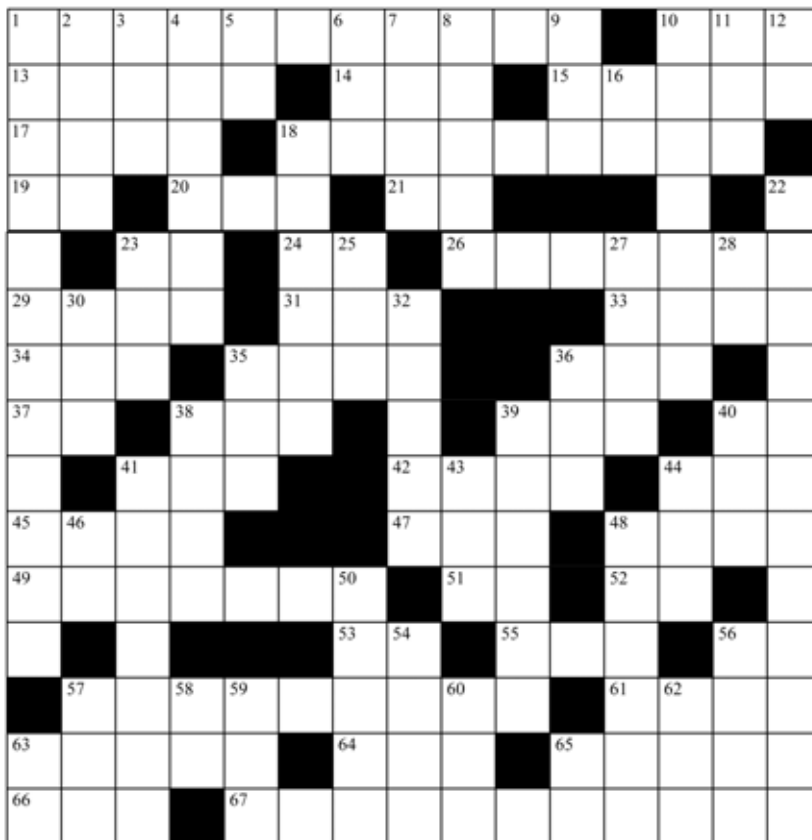
Rutilated quartz, as described on page 4, from Nova Horizonte, Bahia, Brazil. Photo ©J. Passaneau

Crystal Matrix Crossword

Franklin & Sterling Hill

ACROSS

- 1 a zinc manganate mineral
- 10 on the end of a rock drill
- 13 dynamite makes _____ noise
- 14 ____ Tin Tin
- 15 metamorphic shale
- 17 the alarm bell _____
- 18 albite, microcline, anorthoclase
- 19 not up (ab)
- 20 tribe in Africa
- 21 that is
- 23 the extraterrestrial
- 24 opposite northeast
- 26 a sweetener, a sugar
- 29 discounted minerals
- 31 used to cut rocks
- 33 ____ beri
- 34 electron microscope
- 35 sheet silicate group
- 36 not no
- 37 obsessive compulsive
- 38 one-thousandth
- 39 paid on mineral sales
- 40 south (ab)
- 41 man trip = mine ____
- 42 ____ the Red
- 44 what Scrooge said
- 45 used in building
- 47 pirate's favorite
- 48 used for streak test
- 49 not found in stream bank
- 51 deadly disease
- 52 place for native copper
- 53 Underwriter's Labs
- 55 Sinbad's bird
- 56 diamond state
- 57 a green zinc silicate
- 61 yes, yes in Spanish
- 63 Gold Rush town in AK
- 64 used to clean spills
- 65 in mine, pulls up cage
- 66 we're number ____
- 67 rare zinc spinel mineral



DOWN

- 1 calcium zinc silicate
- 2 enthusiastic and assured
- 3 2000 lbs of ore
- 4 a pyroxene mineral
- 5 just like Ted
- 6 rock with value
- 7 woman's name
- 8 _____ of refraction

- 9 extra senses
- 10 dense minerals
- 11 belonging to it
- 12 tellurium
- 16 city in California
- 18 ancient remnants
- 22 a calcium zinc silicate
- 23 stately tree
- 25 woman pilot
- 27 goat-like animal
- 28 northwest state
- 30 Atomic Energy Comm.
- 32 fills up mines
- 35 Russian diamond mine
- 36 hairy beast
- 38 lime-rich mudstone
- 39 not ones used in mines
- 40 ____ ammoniac
- 41 can be salmon-colored
- 43 left by heavy truck
- 44 small hit
- 46 beryllium
- 48 big gem show
- 50 Latin, highest
- 54 big cat

- 56 assistant (ab)
- 57 to get a victory
- 58 lake (ab)
- 59 different kind of laugh
- 60 turnpike (ab)
- 62 three
- 63 south
- 65 greeting

**LAST MONTH'S SOLUTION:
Phosphates**



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.

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. Featuring:

- * Dealers of minerals, fossils, rough and cut gems, jewelry, beads, and lapidary items..
 - * A faceting demonstration and displays
 - * Children's activities 11:00-2:00 each day
 - * Free mineral identification
 - * Food and beverages
 - * Door prizes & grand prize
- Sat. 10-6, Sun. 10-4. www.monogahelarockhounds.org

April 23 - 26: 36th Rochester Mineralogical Symposium, Rochester, NY. www.rasny.org/MineralSymp.htm

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

April 25 - 26: Gemboree Spring Show and Sale, by Akron Mineral Society and Summit Lapidary Club, Emidio & Sona Expo Center, 48 east Bath Rd., Cuyahoga Falls, OH. Sat. 10-6, Sun. 10-6. <http://www.lapidaryclubofohio.org/>

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. 1.

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

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

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. *

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!

For sale / trade: Equipment & Materials

Large mineral collection for sale. Will sell all or part. Also for sale **four** glass front and top **display cases**.

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

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

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

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

For sale: Very large **collection** of gemstone material, prefer to sell as one lot; including much jade in various types & colors; mostly rough, plus some slabs; some fine Coober Pedy opal. Also **equipment** and jewelry making supplies from jewelry studio and production shop. Contact Daniel G. Reinhold in Mill Hall, PA; phone 570 726-8091 after lunch every day, or e-mail: dreinhold@suscom.net *

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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.