

# ***Nittany Mineralogical Society Bulletin***

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

*Editor (see page 8):*

*February, 2010*

**Visit our web site: [www.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/)**

*David C. Glick*

**February 17th meeting:**

## ***The Working Life of a Retired Geologist***

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

*Our February meeting will be held Wed. the 17th 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, 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 – please come, bring your family and guests, and share an enjoyable evening! -Editor*

I feel blessed in choosing a career that matched my temperament as an explorer in the physical world, a job that required interaction with young minds, and being at the right place at the right time to participate in interesting programs and initiatives. Some of these initiatives have blossomed since my retirement from Penn State in 1998; an event that enabled me to start a second career as a Professional Geologist, without the time-consuming duties of the academy.

My main activities include (a) establishing a Professional Mapping Company (Geologic Mapping and Resource Evaluation, Inc.) with one of my students, Arnold Doden, to a tailored fit into the STATEMAP program, a Federal/State initiative ushering in new mapping techniques, (b) detailed mapping (in places using every outcrop to identify and characterize stratigraphic units, marker horizons and formations), (c) economic evaluation of bedrock and surficial gravel deposits for commercial use, (d) quality control in local aggregate quarries, and (e) development of sampling strategies for potentially toxic minerals.

The skills required include an attention for detail (hands and knees geology at times) and a willingness to walk and climb, as well as a mind-set to go digital.

I will review some of the missions that include (a) fascination with geological maps, (b) hydrogeological studies at an ancient archaeological site in Southern Egypt, (c) development of courses for a new Mining School in Nigeria, (d) consult on alkaline rocks in the USA, Canada, and South Africa for economic potential in diamonds and rare earth elements, (e) evaluation of gravel deposits in east-central Pennsylvania, and Maryland, (f) aggregate source rocks in Pennsylvania, and (g) highway projects with PennDOT. Side excursions include trips to Cyprus (Trudos massif), the Greek Islands, and a short course on Carbonate Reservoirs for PetroChina and site evaluations for carbon dioxide sequestration. ✧

**Junior Rockhounds, Thursday Feb. 25th:**

## ***Meteorites***

by Dr. Andrew Sicree

Junior Rockhounds meetings are scheduled for 7:00 p.m. on the fourth Thursday of the month, January through May. The location is room 118 of Earth & Engineering Sciences Building, Penn State's University Park "West Campus." This is just down the hall from our room for the last couple of years, and the same building as our regular meetings, with free parking. See the winter weather policy below.

Each month's meeting has a new topic or topics with fun, hands-on learning. Youngsters who have not yet received their collection storage boxes courtesy of NMS should come to the meetings and pick one up. Those who already have them should bring them to the meetings to hold the specimens which will be given out. For the rest of this season the topics we're planning on are:

**Feb. 25: Meteorites**

**Mar. 25: Lapidary (gem cutting)**

**Apr. 22 & May 27: to be determined.**

We encourage those who attend to become NMS members, but it's not required. Just \$7.00 covers a whole year (through October 2010) 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).

## ***Weather Cancellation Policy***

In case we experience active winter weather on a meeting date, our policy is to cancel the meeting (regular or Juniors) only if evening classes at Penn State have been cancelled. That cancellation is publicized in the usual radio and TV service announcements.

Penn State reports that WPSU-FM and Penn State Live <<http://live.psu.edu/>> are "the official sources for weather-related delay or cancellation advisories at Penn State's University Park campus." - Editor

## ***NMS is on Facebook!***

Thanks to member Mike Zelazny, everyone can now find NMS on a public Facebook page at <<http://www.facebook.com/group.php?gid=293993550756>> (there's a link to it on the NMS home page, left side). Facebook members can exchange messages, post photographs, etc. We look forward to reaching some new rockhounds through this medium. - Editor

### **ATTENDING THE FEBRUARY MEETING?**

Donations of door prize specimens are invited.

NMS will provide ice and soft drinks;  
your donated snacks will be welcomed.

**Refreshments Coordinator Needed!**

## 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.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/) or remind Dave Glick to bring a printed copy to a meeting for you to see.

The February issue begins with full information on the **2010 EFMLS Convention**, held March 5-7 in conjunction with the Delaware Mineralogical Society's 47<sup>th</sup> annual Delaware Gem, Mineral and Fossil Show in Stanton. It includes the show, exhibits, convention hotel, convention activities, and the deadlines for signing up. The deadline for discounted room reservations has passed, and the deadline for registrations including meals at the convention meetings is Feb. 17. There is information on other things to do in the area, including Longwood Gardens, Brandywine River Museum, Chadds Ford Winery, Hagley Museum and Library, Olde New Castle, Delaware Park Casino, and Christiana Mall. See <[www.delminsociety.net/marchshow2010.htm](http://www.delminsociety.net/marchshow2010.htm)>.

Loren Patterson encourages club members to attend the Convention, and volunteer for EFMLS committee positions. Spring and Fall Wildacres sessions are covered in detail, including the full list of classes with descriptions. Editors in the Decade Club are listed. Several articles cover the Each One Teach One award, Club Rockhound of the Year award, and the All American Club (scrapbook) award. Ken Tudor, EFMLS Librarian, describes 14 new programs which have been added to the DVD library from which clubs can borrow. Jim Doran's safety article addresses the need for safety training programs and refreshers.

The March issue is also available now. It includes the Nominating Committee report in advance of the Convention. There will be an auction of mineral and lapidary related items at the Awards Banquet on the evening of Saturday, March 6. Jim Doran's safety article points out that "you can always reschedule" field trips which have become risky because of winter weather or other changing conditions; consult with the landowner and consider all the facts. Matt Charsky reports on an update of the problem of lead in children's jewelry from China and elsewhere; now very high cadmium levels are being found.

The **AFMS Newsletter** is available by the same methods. The February issue begins with coverage of the AFMS/California Federation Show, June 18-20 in Whittier, CA. Updated AFMS Uniform Rules are now available. Nominations for the National Rockhound and Lapidary Hall of Fame are invited. The tax advisor's columns cover retention of club records and yearly audits, and the levels of lobbying and contributions to lobbying organizations which are allowed for tax-exempt clubs. The safety article points out the importance of Materials Safety Data Sheets for the chemicals we use in preparing specimens or making jewelry. The Juniors column describes Diamond Dan's Mini Miners Monthly for young collectors, which the Midwest and California Federations help to provide to their clubs having junior members. Quick tips for editors are provided. Conservation and Legislation issues in California and elsewhere. Several Club Rockhounds of the Year in the various regional Federations are presented. Tips on Promoting Your Society are presented from the California Federation Newsletter. There's an illustrated article on coal which won an AFMS award. American Land Access Association president Dick Pankey asks for more people to get involved in the Association and be involved rockhounds.

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

### Planning for Minerals Junior Education Day and Nittany Gem and Mineral Show

By David Glick

Plans are progressing for our 14<sup>th</sup> annual **Minerals Junior Education Day** on Saturday, April 10, 2010. We are seeking volunteers for all aspects including publicity and telephone registration (about March 18 - April 9) personnel. We welcome donations of minerals or fossils which can be sold at child-friendly prices.

For the **Show on June 26-27**, we need donations for the silent auction, and volunteers for a wide variety of activities including table set-up on Friday morning, June 25, and food service. Please plan to enter the Best of PA specimen contest; details will be coming soon.

Please contact Dave Glick to volunteer or to get more information. - *Editor*

### Tumbling grit and polish for members

NMS is running out of the coarser silicon carbide grit which we provide as a benefit of membership. We expect to buy more, but what sizes should we buy, and should we include polish, and plastic pellets? Are members using a 4-step cycle including polish as on the RockTumblingHobby.com site, or more steps? Please contact Dave Glick soon with your comments. - *Editor*

## Mexican Minerals on Display at Penn State's E&MS Museum

NMS recently installed a display of Mexican minerals in the Earth and Mineral Sciences Museum on the ground floor of Deike Building on Penn State's University Park campus. The specimens are on loan from members. Watch for more information and photographs in a future issue. The museum gallery is generally open during business hours on weekdays when the University is in session.

Mineral specimen photographs by NMS member John Passaneau are also on display in the hallway outside the museum galleries. - *Editor*

## Rochester Mineralogical Symposium April 15-18, 2010

The 37<sup>th</sup> Rochester Mineralogical Symposium will be held at the **Radisson Hotel Rochester Airport**, Thursday April 15- Sunday April 18. The Early Registration deadline for discounted registration, and all dinner reservations, is March 15, 2010.

The preliminary schedule includes talks on classic European localities, minerals of Maryland, pegmatites of New York, specimen mineralogy, crystal shapes, what's new in minerals, gold crystallinity, collecting in Brazil, and Glastonbury, Connecticut.

Information is available on the web at:

[http://www.rasny.org/MinSymposium/Registration Ltr 10.pdf](http://www.rasny.org/MinSymposium/Registration%20Ltr%2010.pdf)

[http://www.rasny.org/MinSymposium/Registration 10.pdf](http://www.rasny.org/MinSymposium/Registration%2010.pdf)

If Firefox has trouble with the main page

<http://www.rasny.org/MinSymposium/MineralSymp.htm>

try Internet Explorer. - *Editor*

## Ordovician Fossils in New Book on Ontario

*South Central Ontario Fossils: A Guide to Ancient Marine Life of the Region* was recently published. It covers Ordovician fossils, and should be useful in other Ordovician sediments as well. The author, paleontologist William Hessin, has worked for the Royal Ontario Museum, including a study of the Burgess Shale. A web site for the book <http://www.eagle.ca/~ontariofossils/> lists fossil groups covered, and similar formations elsewhere (such as the Martinsburg in Pennsylvania). - *Editor*

## New Web Site Covers PA Minerals

Well-known Pennsylvania mineral and fossil collector and author Kerry Matt has announced his new web site, <http://stonemans-rock-mineral-fossil-heap.com/>

It includes many photographs of mineral and fossil specimens and collecting sites, information on books and specimens for sale, and much more.

As announced by Kerry Matt in *The Franklin County Rockhounder*, February 2010.

## Topics at Upcoming NMS Meetings:

March 17: Geode Night, by Jeff Smith

April 21: Tourmalines, by Bruce Fry

May 19: Seismic Exploration for the Marcellus Shale,  
by John Peeples

June: no meeting, please help prepare for Show

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## Notable Pennsylvania Specimens on Display:

A Special Announcement from  
Philadelphia Mineralogical Society  
and

Delaware Valley Paleontological Society

Announcing an event of special interest for all those who enjoy mineralogy: The PMS and the DVPS will present an exhibit of exceptional mineral specimens from the William S. Vaux collection at The Academy of Natural Sciences of Philadelphia. The minerals will be exhibited at the 2010 **Mineral Treasures and Fossil Fair**, March 27 (10:00 a.m. to 5:00 p.m.) and March 28 (10:00 a.m. to 4:00 p.m.) at the Lulu Temple, 5140 Butler Pike, Plymouth Meeting, PA.

The Vaux collection at the Academy totals some 6,000 items, and according to Ted Daeschler, Ph.D., Interim President of the Academy of Natural Sciences, "plans are being made to share knowledge of these specimens in a variety of ways."

These specimens are from classic southeastern Pennsylvania locations, and many date from the early 1800s. Almost all are superb examples, and some have not been viewed by the public for more than 150 years.

The list of these exceptional minerals includes ten Chester County items:

Ankerite from the Phoenixville Tunnel

Anglesite

Apophyllite from the Falls of French Creek

Cerussite from Phoenixville

Chalcopyrite from St. Peters (French Cr. Mine)

Clinocllore from West Chester

Pyromorphite from Phoenixville

Rutile from Sadsbury

Sphalerite from Phoenixville

Wavellite from East Whiteland

There are also five specimens from Delaware County:

Almandine garnet from Avondale;

Beryl from Leiperville;

Andalusite from Upper Providence;

Kyanite from Ridley Park;

Tourmaline (schorl) from Leiperville.

For information on the 2010 Mineral Treasures and Fossil Fair show go to <[www.philamineralsociety.org](http://www.philamineralsociety.org)> or contact Doug Klieger at <[dklieger@verizon.net](mailto:dklieger@verizon.net)>.

From *Pennsylvania Earth Science Association Rock News*, February 2010.

# ***POPULAR MINERALOGY***

*Fascinating mineralogy and earth science for the amateur mineralogist and serious collector - #31*

## ***A Hell of a Mine: The Kinkaseki Copper Mine***

*by Andrew A. Sicree*

### **Mining on Formosa and WWII**

At the onset of World War II in the Pacific, Japan had controlled the Chinese island of Formosa (now Taiwan) for nearly fifty years. The Kinkaseki Copper Mine, the largest copper mine in the Japanese Empire, was located on the northeast coast of Formosa near Jiufen in what is now Taipei County, Taiwan Province, Taiwan. The mine is also variously called the Kinkaseki or Chinkuashi or Jinguashih ("Pumpkin Rock" after an unusually-shaped nearby mountain-top). As a source of copper ore, Kinkaseki was vital to the Japanese economy and to the Japanese war effort. Kinkaseki was also one of the Japanese Empire's most notorious "hell mines."

The Jiufen area became the site of a late-1800s gold rush when alluvial gold was found nearby by Chinese miners returning from the American gold fields. The discovery of vein gold followed the alluvial gold finds and Jiufen boomed. The boom turned bust when the gold mines dried up, but copper mineralization was discovered nearby and copper mining began in earnest in the 1930s.

Soon after Japan's surprise attack on Pearl Harbor, the Japanese overran the Philippines, the Dutch East Indies, and most of the South Pacific. Manila, Hong Kong, and Singapore fell and tens of thousands of British and American soldiers and civilians were imprisoned by the Japanese.

Labor shortages in Japan led to the Japanese forcing many POWs to work as slave labor for the military and for private companies such as Mitsubishi and Kawasaki (companies that, incidentally, were never forced after the war to pay those they had exploited and killed). POWs taken in Singapore or the Philippines were shipped (at great hazard – many unmarked POW transports were torpedoed *en route*) to Formosa and the Japanese home islands. The healthier POWs were forced to work as slaves in factories and in many cases, mines.

Japanese POW camps were horrible places and the treatment of POWs by the Japanese is one of the great crimes of the World War II era. It is not our purpose here to document the atrocities committed, but one must note that unlike in Nazi Germany, few Japanese leaders were prosecuted for the atrocities they ordered. One of the worst of the Japanese slave labor POW camps was at the Kinkaseki Copper Mine on Formosa.

### **Mining by POWs**

One of the British prisoners of war at the Kinkaseki Mine, Sgt. Jack Edwards, preserved his recollections of life as a POW miner in his book, *Banzai, You Bastards!* Edwards recalled that at Kinkaseki "we were issued black cardboard helmets, canvas shoes, a threadbare short-sleeve green shirt and shorts - these were to be our 'mining clothes'." Between the prison camp and the mine lay a mountain that had to be climbed each morning on the way to the mine, and then again in the evening by the exhausted returning miners. Some prisoners were so weak that they had to be assisted in the morning on the trail to the mine by their fellow POWs.

As they approached the mine, Edwards recalled that the POWs "were marched to the mine entrance and forced to stop at a small Japanese shrine to pray for our safety in the mine." He described the descent in to the mine, saying that "for forty-five minutes we trudged on and then turning off to the left, climbed down very rough steps under a low ceiling for several levels...warm air hit us...water dripped down, quite warm...down we went, getting hotter and hotter...there were cries of pain all around as we caught our backs...on the jagged walls and low ceiling...I thought we were descending into hell."

The POW miners were only given rudimentary tools to work the ore. Edwards described using "a chunkel and a two-handled bamboo basket...our task was to scrape the ore into the basket, and then carry it to the trolley (ore cart) which we called 'bogies'." POW

miners faced extraordinary dangers down below because timbering was used only in entranceways to the mine. Rockfalls killed a number of prisoners. Temperatures underground could reach as high as 130°F in the deepest portions of the mine. Chinese laborers who also worked (for pay) at the mine refused to venture into the hottest depths, so the British POWs were forced to work at these extreme temperatures in spite of their weakened states. Many collapsed from overwork and heat prostration. Carbide lamps provided the only lighting and at times the lamps went out due to lack of oxygen underground. POW miners who escaped serious injury were plagued by bronchitis and stained blue from constant exposure to copper sulfate (formed by acidic water reacting with the copper ore). Their sore, cracked feet never healed.

Edwards recounts that even the return trip was a tremendous struggle: "at the end of the day we had to climb those terrible stairs to get out of the mine, and then still face that long climb back up over the mountain to the camp...no-one spoke during those climbs - you needed all your breath." Supposedly, a POW miner who worked 50 straight days without getting sick, was given a day off, but very few achieved this "reward."

### Deaths and injuries in the mine

Another former Kinkaseki POW, Jack Butterworth, recalled that the mining "was extremely dangerous because we dug up rather than in, and as the roof went up we had to raise the floor with rubble. Debris often came crashing down, and many men were injured. You had to bring out 24 bogeys of good cooper ore per day for a four-man team. If you didn't get that you were lined up and beaten." For failing to meet their quotas the POW miners were beaten "six or eight strokes with a stick, a hammer shaft, and it was called 'getting the hammer.' You'd look at the rock at the beginning of the day, decide whether to go for the 24 or not. Sometimes it was better to get the beating." He reports that he saw the guards "murder a man, hit on the head with a sword scabbard...he died that night..."

Exact numbers of POWs forced to work at Kinkaseki are unclear because the Japanese moved sick prisoners out to other camps and brought in additional prisoners from time to time. Between 500 and 1,100 prisoners may have worked at the mine, and hundreds died there of beatings, rockfalls, disease, and starvation. Only about 100 Kinkaseki POWs are believed to have survived the war.

### The spirit of POW miners

In spite of the incredible conditions and the constant beatings, degradations, and killings, many of the British POWs kept their dignity and spirit. Kinkaseki POW miner Maurice Rooney reported that a fellow miner named Arthur Smith became known as the "Robbie Burns of Kinkaseki" because of the poetry and songs he wrote while a prisoner. The song most popular among the POWs and most hated by the Japanese guards was a ditty Smith wrote titled "Down the Mine" which became the signature tune of the camp. The lyrics are:

There's a song in old Formosa,  
that the nips they loudly sing,  
in the billets every evening,  
you should hear the music ring.  
Now they sing to British soldiers,  
who've traveled from afar,  
to fight for King and country,  
now they're prisoners of war.  
But they know they'll see  
their homeland in the future once again,  
listen while I sing to you,  
the Nipponese refrain.

*Refrain:* Down the mine bonny laddies,  
down the mine you go,  
though your feet are lacerated,  
you dare not answer no,  
though the rice is insufficient  
and we treat you all like swines,  
down the mine bonny laddies,  
down the mine.

Now the boys were fairly happy,  
till one cold and cloudy day,  
when the buggers said oh no,  
he came out and he to them did say,  
Now I expect you all are wondering,  
why you're out on this parade,  
the reason is you must be taught,  
the Taiwan serenade.

*Refrain:* Down the mine bonny laddies,  
down the mine you go,  
though your feet are lacerated,  
you dare not answer no,  
though the rice is insufficient  
and we treat you all like swines,  
down the mine bonny laddies,  
down the mine.

You should see us work with chunkels,  
and we work with baskets too,  
though the method is old fashioned,  
to the boys it's something new,  
and we'll work away with patience  
till the dawn of freedom's day  
but until then the Nippon men  
will all be heard to say,

*Refrain:* Down the mine bonny laddies,  
down the mine you go,  
though your feet are lacerated,  
you dare not answer no,  
though the rice is insufficient  
and we treat you all like swines,  
down the mine bonny laddies,  
down the mine.

## The end of the war

Late in the war, a “short-cut” tunnel was excavated through the mountain between the POW camp and the Kinkaseki Mine. The Japanese camp commander said that the tunnel had been dug out of concern for the well-being of the miners, but closer inspection of the short-cut tunnel revealed heavy steel doors at both ends. Jack Edwards was told by guards that they had been ordered to kill all of the POWs should the Americans invade Formosa (after the war, documents were found at Kinkaseki that confirmed these orders), and he suspected that the “short-cut” tunnel was meant to be their death trap. Butterworth reported that plans were being made to kill the POWs on August 18<sup>th</sup>, 1945, but the atomic bombings of Japan and the August 16<sup>th</sup> surrender by the Emperor forestalled the killings.

After the war the Kinkaseki Mine was operated by the Taiwan Metal Mining Company. In the 1970s, metal deposits began to run out and the copper processing plant was shut down in 1987 after an accidental spill of sulfuric acid. Today, the Museum of Gold at Chinguashi (which the Japanese called Kinkaseki) has an exhibit commemorating the sacrifices of the British POW miners. The site of the former POW camp is now a park and a memorial has been erected in honor of those held prisoner there.

Mineral specimens from Kinkaseki are very rare, but the University Museum at the University of Tokyo reports two specimens (I-56 & I-57) from the “Kinkaseki Mine, Formosa” in which gold occurs as

small grains in chalcedonic quartz of epithermal origin – one wonders if these specimens were mined during the war. Few of the miners at Kinkaseki would have had the strength or will to carry mineral specimens out of the mine.

*Ref.:* Edwards, Jack, and Jimmy Walter, *Banzai, You Bastards!*. Souvenir Press Ltd. U.K., 1991, 336 pp.

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## Old New-Gate Prison

Kinkaseki wasn't the first copper mine to be connected with POWs. Copper was mined at New-Gate in Connecticut from 1705 to approximately 1750, then the abandoned mine was used as a prison from 1773 to 1827. During the American War for Independence, the British used New-Gate Prison to hold political prisoners – the prisoners were actually held underground in the old mine workings, in miserable and highly unhealthy surroundings.

## Damned to the Mines

In the days of the Roman Empire, mines and quarries were worked by condemned criminals and, in the first centuries after Christ, by Romans convicted of being Christians. Under the Empire, the sentencing of a prisoner to be *damnatio ad metalla* (condemned to the mines) was considered the most severe punishment, second only to execution. Like execution, it was preceded by scourging, and entailed the loss of liberty, property, and other rights. It was a life sentence, although it might be a brief sentence: conditions in the mines were terrible and life expectancy was short. The sentence of *damnatio ad opus metalli* (condemnation to mine labor) was a distinct and somewhat less severe form of punishment.

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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.*

# Crystal Matrix Crossword

## Geoscience Miscellany

**ACROSS**

- 1 mineral collector (ab)
- 3 aluminosilicate from Monte Somma, Italy
- 12 of the wind
- 14 \_\_\_-fold axis in hexagonal or cubic system
- 15 meaning new
- 16 formed in a cirque by a glacier
- 17 goethite belongs to this group
- 18 very abundant element in rocks
- 19 ante meridiem
- 20 element named for the country of Fries
- 21 cuprite sometimes has this ten-sided form
- 27 work (Latin)
- 29 12 inches (ab)
- 30 a shinbone of a mammoth
- 31 river in Germany running into the Meuse
- 32 Cantonese swear word
- 34 info tech
- 36 long times
- 37 big, mean and dead
- 40 laugh
- 42 element in carrolite
- 43 crazy about crystals
- 44 irreducible (ab)
- 46 He, Ne, Ar, are \_\_\_
- 48 element found in the Merensky Reef, S.A.
- 50 of the air we breathe
- 51 extensive chain of mtns.
- 53 element named 4 Germany
- 54 amplitude modulation
- 55 measure of acidity
- 56 site of big mineral show
- 60 resident of Bangkok
- 62 Salt Lake City (ab)
- 63 to regret
- 64 what acid does with calcite
- 65 color-change chrysoberyl
- 66 element that can combine with gold to form minerals

**DOWN**

- 1 changed in form
- 2 plant fossil fuel
- 3 keep the lights on
- 4 integrated circuit
- 5 has the same ending
- 6 line on quartz crystal

- 7 Peruvian soft drink
- 8 blended together
- 9 Ca, Mg borate
- 10 don't drink it, golf it
- 11 Earth Observing System
- 13 left to right
- 17 built wall in Britain
- 20 pushing something forward
- 22 element named 4 California
- 23 space alien
- 24 Mon \_\_\_!
- 25 Norse dwarf
- 26 Sr, Ba, Na phosphate
- 28 bomb element
- 32 drive
- 33 done with a uniplaner
- 35 "harbor wave" in Japanese
- 38 little more than a yard
- 39 where its \_\_\_
- 41 \_\_\_ Domini
- 45 room (ab)
- 47 element found in rutile
- 49 tellurium
- 50 banded silicate gems
- 52 more than one ratio
- 55 the Warsaw \_\_\_

- 56 Confederate States of America
- 57 not well
- 58 Irish Republican Army
- 59 wears a whimple
- 61 half a laugh
- 64 element number 75

**LAST MONTH'S SOLUTION: Places**

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

**March 5 - 7, 2010:** EFMLS Convention & Delaware Mineralogical Society Show, Stanton, DE. See p. 2.

**March 27-28, 2010:** 41st Annual Che-Hanna Rock & Mineral Club Show sponsored by the Che-Hanna Rock & Mineral Club. Athens Twp. Volunteer Fire Hall, Sayre, PA

**March 27- 28, 2010:** Philadelphia Mineral Treasures and Fossil Fair sponsored by the Philadelphia Mineralogical Society. Lulu Temple, Plymouth Meeting, PA. See p. 3.

**March 27-28, 2010:** 32nd Annual Gem-Mineral & Jewelry Show sponsored by the Franklin County Rock & Mineral Club. Shalom Christian Academy, Chambersburg, PA.

**April 15-18, 2010:** Rochester Mineralogical Symposium. See p. 3.

**April 17 - 18, 2010:** Monongahela Rockhounds Gem Mineral and Fossil Show. West Mifflin Volunteer Fire Company #4 Skyview Hall, 640 Noble Drive, West Mifflin PA 15122. Sat. 10:00 am to 6:00 pm, Sunday 10:00 am to 4:00 pm. <[www.monongahelarockhounds.org](http://www.monongahelarockhounds.org)>

**April 24-25, 2010:** 38th Annual NJ Earth Science Gem & Mineral Show (with Outdoor Swap) Co-sponsored by the Franklin-Ogdensburg Mineralogical Society, New Jersey Earth Science Association and Sterling Hill Mining Museum. Franklin School, Franklin, NJ

**May 1 - 2, 2010:** "Treasures of the Earth" show and sale by Mineralogical Soc. of Northeastern PA; Oblates of St. Joseph, 1880 Hwy. 315, Pittston, PA. Sat. 10-5, Sun. 10-4.

**June: 5, 2010:** Spring Mineralfest sponsored by the Pennsylvania Earth Sciences Association. Macungie Memorial Park Building, Macungie, PA.

**June 26 - 27, 2010: Nittany Gem & Mineral Show**, State College, PA. <[www.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/)> ✱

## For sale / trade: Equipment & Materials

**For sale by NMS:** 27 issues of Mineralogical Record from 1977-1983. Includes special issues: Tsumeb, Europe, California, Colorado-II, Arizona I - V, Ontario, Gold. \$260 plus tax for all. Contact us before March. D. Glick, 814-237-1094.

**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). Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available on the web site), make checks payable to "Nittany Mineralogical Society, Inc." and send them to

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or bring your dues to the next meeting.

We want to welcome you!

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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 name of photographer or artist.