

# Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College PA 16805

August, 2009

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

Editor (see page 8):

David C. Glick

**August 19th meeting:**

## The Geology and Early History of Petroleum in Pennsylvania

by John A. Harper  
Pennsylvania Geological Survey

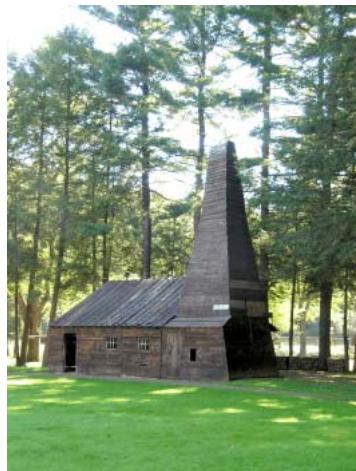
*Our August meeting will be held Wednesday the 19th in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available through our web site.*

*6:30 to 7:30 p.m.: Social hour, refreshments in the lobby  
7:30 to 8:00 p.m.: announcements; door prize drawings  
about 8:00 p.m.: featured program*

*The event has free admission, free parking, free door prize drawings and free refreshments, and is open to all. Bring your friends and learn more about how 150 years of petroleum production began in Pennsylvania! - Editor*

History tries to tell us that "Colonel" Edwin L. Drake discovered oil by drilling the first oil well in Titusville in 1859. In reality, crude oil and its products were already well-known and commonly used commodities thousands of years before Drake was born. Even in North America the natives were very familiar with crude oil and its uses centuries before European settlers first set foot on the continent. The Native Americans skimmed it from springs and seeps along Oil Creek and western Pennsylvania's rivers for use in waterproofing canoes and clothing, as a liniment, and even as a medicine taken internally for a variety of ailments. The Indians then taught the settlers where to find it and how to collect and use it. Before long, the settlers found other uses. By mixing it with flour, it became an excellent axle grease. It was also used for lighting in place of the far

*Continued on page 2*



Replica derrick and engine house buildings on the grounds of the Drake Well Museum. Photo by J. Harper.

**Junior Rockhounds:**

## Meetings Start in September

Junior Rockhounds meetings are expected to resume in September; we are planning for the second Monday of the month, September through December. Watch for any updates and for a list of topics. 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

**September 16<sup>th</sup> regular meeting:**

## Show and Tell

Our popular meeting program of short presentations by the members will take place at our September meeting. Bring your latest projects, specimens, lapidary creations, books, etc.

## Elections and Annual Meeting: NMS Seeks Candidate for Secretary

Elections of officers will be held at the October meeting, which is the Annual Meeting of the members of the corporation. The Bylaws specify that the report of the Nominating Committee shall be announced and provided to all members at or before the regular September meeting. If you want to **volunteer or nominate** someone for office, please contact a Board member **before the end of August** if at all possible.

In particular, Secretary Frank Kowalczyk would prefer not to run again, so we are seeking a candidate for **Secretary**. The duties of that office are in two parts. The first is to record the Minutes of the Board of Directors at its meetings, then present them for corrections and approval by the Board. The second part, as a Board member, is to participate (by discussing and voting) in conducting the business of the corporation. The Bulletin falls under the office of Secretary, but it is currently being produced by a Bulletin Editor.

Volunteering and nominating may also take place at the regular meeting in September or even at the Annual Meeting in October when the elections are held, but having the candidate appear in the Nominating Committee's report helps everyone to know what's going on.

We also seek volunteers for the appointed positions of Publicity Chair and Refreshments Coordinator, and volunteers to help with a variety of specific duties.

## ATTENDING THE AUGUST MEETING?

This event is free and open to all - bring a friend!

Donations of door prize specimens are invited.

Your additional snacks will be welcomed.

**Going to Titusville for Oil 150 events?**

**Get together for a picnic! See page 2.**

**Petroleum***continued**from page 1*

more expensive whale oil, but since it burned with a thick, acrid smoke it was not highly prized. In the first half of the 19th century, crude oil was most highly regarded as medicine.

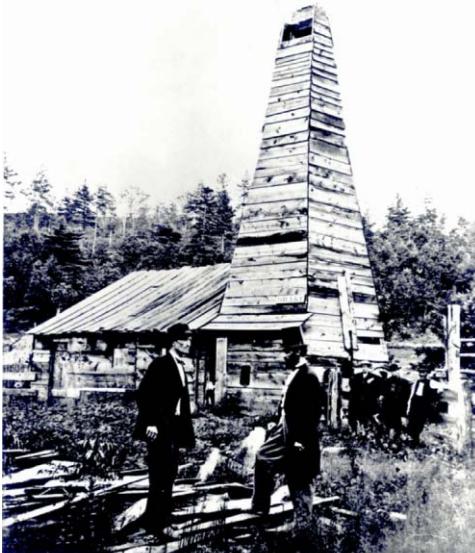
Early salt well drillers often encountered crude oil in their salt wells.

It was a major nuisance, fouling the brine and the nearby ground and creeks when they discarded it. But one enterprising business man named Samuel Kier found a way to distill it into a usable lamp oil. That, and a new type of burner that Kier invented, made oil a valuable commodity. Then, by a serendipitous series of circumstances, Drake showed up in Titusville bound and determined to produce oil in commercial quantities. He almost didn't succeed. But, as the saying goes, "almost" only counts in horseshoes. Succeed he did, beyond history's wildest expectations, and thus began one of the world's most important industries.

Pennsylvania eventually became the world's largest oil producer, providing more than half of the world's supply in the 1880s. But production soon declined and other parts of the country quickly took over as world's leading producers. Today, Pennsylvania produces only about 1% of the nation's supply of oil and natural gas. Its glory days might be over, but, considering the current furor over the Marcellus shale natural gas play, Penn's Woods still has a contribution to make to the world's oil and gas industry. H

**EFMLS Prize Drawing Tickets**

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



Edwin Drake (on right) and friend Peter Wilson at the well, prior to Drake leaving Titusville in 1864.

Photo by John Mather, provided by J. Harper.

## **Picnic Get-Together at Oil Creek State Park August 27, 2009 150<sup>th</sup> Anniversary of the Drake Well**

An invitation from Bob Altamura

The first successful commercial oil well was drilled near Titusville, Pennsylvania – and on August 27<sup>th</sup> the 150<sup>th</sup> anniversary of that event will be celebrated at the Drake Well and in the area (see other articles in this issue). A series of celebration events called "Titusville Oil 150" is being planned by the local communities for August 27-28, 2009; see <[www.titusvilleoil150.org/](http://www.titusvilleoil150.org/)>.

If you plan to come to this neck of the woods to learn about Pennsylvania's oil history on the 27th, consider hooking up for lunch with NMS members who also might be in on the fun for that day. This is an informal get together and not an official club activity. NMS members Bob and Brett Altamura & family plan to be at the picnic area (Blood Farm Day Use Area) on the southern side of Oil Creek State Park at about 10:00 a.m. on August 27<sup>th</sup>. The picnic area offers picnic tables, charcoal grills, drinking fountains, restrooms, play fields, and picnic pavilions, all on a first come first served basis, although the picnic pavilions can be reserved for a fee (so the pavilions may not be available if reserved). Bob plans to arrive about 10:00 a.m. and will scope things out for those who might attend.

Contact Bob Altamura (see page 8) for more information. I hope to see you at the Park and enjoy a nice day together.



**DIRECTIONS to the Picnic Area at Oil Creek State Park, Blood Farm Day Use Area (map from DCNR web site):**

Between Drake Well Museum and Titusville to the north, and Oil City four miles to the south, the main entrance to the park is off of PA 8, one mile north of the Borough of Rouseville.

For using MapQuest or GPS units, the address for Oil Creek State Park is: 305 State Park Road, Oil City, PA 16031. Oil Creek State Park information can be obtained at <<http://www.dcnr.state.pa.us/stateparks/parks/oilcreek.aspx>> or 1-888 PA-PARKS. H

**Field Trip News**

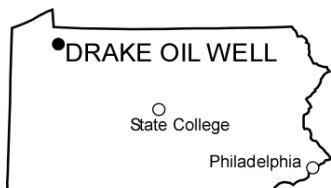
Nittany Mineralogical Society held an official field trip to Hanson Aggregates' Oak Hall Quarry on June 20, 2009. There was some rain but the trip went ahead, and some reasonable specimens were found. We were glad to see some new members attending. As always, NMS is grateful to Hanson and its personnel for their cooperation.

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

## Sesquicentennial of the Drilling of the First Commercial Oil Well (1859-2009)

By Bob Altamura

*The first successful oil well was drilled in western Pennsylvania*



The oil and gas industry essentially began in Pennsylvania during 1859 when Edwin Laurentine Drake drilled the first successful commercial oil well. Up until that time people sought oil and asphalt from places where it seeped out of the ground. The first oil miners in western Pennsylvania were Native Americans who, at least as far back as 1410 AD, had been harvesting oil for medicinal purposes. Seneca Indians of western New York traded in oil as early as the 18<sup>th</sup> century. An early name for petroleum was "Seneca Oil" after this trading. Following the American Revolution, colonists discovered the oil resources of Oil Creek in northwestern Pennsylvania and began skimming petroleum from small springs on the banks of the creek. Greatest demand continued to be for medicinal uses. Oil, also referred to as "rock oil," had been used for lighting and lubrication, but unrefined oil is rather smelly and also smoky when burned.

During 1850, Samuel M. Kier built a small still near Pittsburgh and began distilling crude oil into kerosene. Kerosene was cheaper to make, safer, and better for lighting than other fuels on the market, such as whale oil. Kerosene came into use in western Pennsylvania and New York – and its price nearly doubled. Kier expanded his refinery and immediately sought an abundant and reliable source of oil. The hope was that rock oil could be recovered from the ground in large enough quantities to be used commercially as a fuel for lamps. George Bissell, a New York lawyer, hatched a plan to try to produce rock oil commercially. His vision was to try to extract the oil from the ground by drilling.

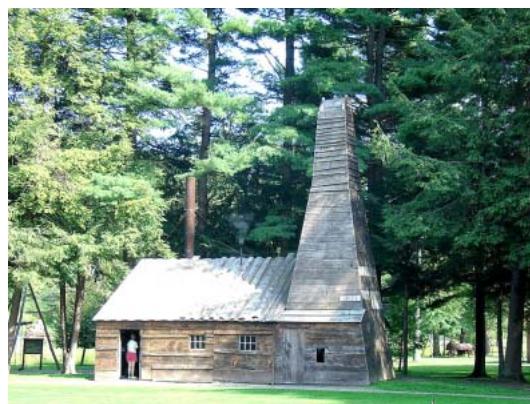


Edwin Drake  
Photo credit: Ohio DNR web site

Bissell led in the formation of the Pennsylvania Rock Oil Company, which financed Edwin Drake to survey the situation near Oil Creek with regard to the potential of establishing a commercially producing oil well. Drake set off for Titusville during

1857 and it was not until 1859 that he met with success. The now-historic well was drilled to a depth of approximately 68 feet and is reported to have produced approximately 20 barrels of oil per day.

The well that started it all became known as the "Drake Well," after Drake, the man responsible for it. The Drake well is considered to be the first successful oil well that was drilled for the sole purpose of finding oil. The news of a significant producing oil well changed the region. Almost overnight, the quiet region went through



Drake Well replica near Titusville, PA  
Photo credit: Zamoose, made available under Creative Commons Attribution- ShareAlike 2.5 License.

extremely rapid development due to people coming from all over to make their fortunes. Drake's success led to an international search for petroleum, and in so many ways eventually changed the way we live.

The Drake well building has been replicated and can be visited as part of the Drake Well Museum. The Museum is celebrating the sesquicentennial by holding an event they call the "150<sup>th</sup> Anniversary Drake Well Extravaganza"; see <<http://www.drakewell.org/>> for details.

### References

Ohio Department of Natural Resources, Division of Oil and Gas. Colonel Edwin Drake, retrieved from <[http://www.dnr.state.oh.us/odnr/oil+gas/colonel\\_drake.html](http://www.dnr.state.oh.us/odnr/oil+gas/colonel_drake.html)>, August 1, 2009

Paleontological Research Institution. The Story of Oil in Pennsylvania, retrieved from <<http://www.priweb.org/ed/pgws/history/pennsylvania/pennsylvania2.html>>, August 1, 2009.

Zamoose (user name). Drake Well. Photograph available at <[http://en.wikipedia.org/wiki/Drake\\_Well\\_Museum](http://en.wikipedia.org/wiki/Drake_Well_Museum)>

**A Note from the President**

by David Glick

Welcome to another season of NMS meetings, activities and events. We hope to make it enjoyable, educational and productive, and the Board of Directors and I welcome your suggestions and assistance in making that happen.

This is our first Bulletin since our **4<sup>th</sup> annual Show** in June, so I owe you a report. Things went smoothly, for which I, as Show Chair, was very grateful. I think that the event "shows" the public what NMS and the various aspects of our hobby are about in a very pleasant and enjoyable way.

There was a great turn-out of volunteers to run the mini-mine and other activities. **Thank you, volunteers!** You were also patient with my lack of thorough planning on where some of you might help; thank you for that, too, and next year we'll "plan" to have better plans.

Attendance was up a tiny bit from other years, 530 by our count. We made almost \$500; that's down from other years because we didn't have as many vendors to pay table fees. NMS had to use some of the money from admissions to cover the expenses for advertising, security and the venue, which we would like to have covered with the table fees. Next year, we will start earlier to get more vendors to commit to our show instead of somewhere else.

We held our first Best of PA specimen competition, although we didn't have much advance publicity so there were not as many entries as we would have liked. The winners in the two categories were Joe Dague and Jeanne Dague; we'll have a more complete report in the future. Here again, next year will bring the opportunity for expansion. We will need more displays of all types next year as well; start thinking now about what display you would like to set up in one of our six cases at the show.

H

### **Autumn Mineralfest Show October 3 at Macungie**

The Pennsylvania Earth Sciences Association will hold its Mineralfest Mineral, Fossil and Gem Show at Macungie on Saturday, October 3. The show is indoors at the Macungie Memorial Park, 8 miles southwest of Allentown, PA; from I-78 at Fogelsville, take Route 100 south 6 miles to Macungie, turn left onto Poplar Street across from the Bear Swamp Diner.

As usual, there will be over 100 tables of minerals, fossils, gems, geodes, and crystals, plus fluorescent displays, gold panning, food, and free specimens and special activities for children. See their illustrated web site at [www.mineralfest.com](http://www.mineralfest.com)

-Editor

**NEWS FROM THE FEDERATIONS**

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies.

The **EFMLS Newsletter** is available through the link on our web site [www.ems.psu.edu/nms/](http://www.ems.psu.edu/nms/) or remind Dave Glick to bring a printed copy to a meeting for you to see.

They have no issue in August, so we're caught up until September on relaying their news. The 2009 EFMLS Convention will be held in Bristol, Connecticut, October 16-18 (Show on Sat. & Sun., Oct. 17-18). The Fall session of Wildacres workshops will be held September 7-13; the Speaker-in-Residence will be jewelry historian Brenda Foreman.

The **AFMS Newsletter** is available by the same methods. The June-July Newsletter discusses additional prizes in the AFMS Endowment Fund drawing to be held in July, and more on field trips after the convention in Billings, MT. Joy Bourne tells the story of how she became a rockhound. The safety corner article deals with cleaning mineral specimens, in particular with acids. For teaching juniors and the public, a few key collections can be used, such as the rock cycle & rock types; mineral identification; products from earth resources; and fossils. Legislation-related articles report on the U.S. Forest Service in Georgia arresting a couple for collecting minerals, and on the ALAA meeting at the California federation convention.

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

- Editor

### **Central Pennsylvania Rock & Mineral Club's Gem, Mineral & Jewelry Show September 12 - 13 2009 at the Zembo from their flyer**

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

H

## ***Popular Mineralogy***

*Interesting mineralogy and earth science for the amateur mineralogist and serious collector - #26*

# Bridging the Gap Between Geologists and Collectors

*by Andrew A. Sicree*

## Remembering Allen Heyl

Both geology and mineral collecting are fields filled with colorful characters, but all too often, there is a chasm between mineral collectors and their professional counterparts.

Dr. Allen Van Heyl, formerly the U. S. Geological Survey's zinc mineral expert, died at a hospice near his home in Evergreen, Colorado, on October 24th, 2008, at the age of 90. Allen Heyl was a remarkable geologist, combining an expert's knowledge of ore geology with a keen eye for mineral specimens. While many professionals avoid or barely tolerate the questions of amateurs, Dr. Heyl was always willing to spend hours talking with mineral collectors, explaining the science to those of us who were less knowledgeable than he. He'd worked for years in the Illinois-Wisconsin area (the Upper Mississippi Valley zinc-lead district) and in Leadville, Colorado. But he was originally from the East and he was an expert in the minerals of Pennsylvania, New Jersey, and the surrounding states. His long career spanned the second half of the 20th Century, and he knew almost all of the important mineralogists, geologists, and mineral collectors of that epoch. I, along with many other mineral collectors, will miss him.

The following is a brief account of an episode that occurred when I was collecting minerals with Allen Heyl a few years before his death.

## The day I almost killed Allen Heyl

I had the honor of getting to know Allen over a dozen years. We first met when I was working on my Ph.D. thesis, studying sphalerite and galena from the Upper Mississippi Valley district in Illinois, Wisconsin, and Iowa. Allen, of course, wrote the seminal paper on the UMV district for the U.S. Geological Survey. He'd been the Survey's leading zinc mineral expert for decades and knew and understood just about every economic occurrence of zinc mineralization in the U.S. You might say that sphalerite was his friend. I met him when he came to speak at Penn State and he and I became friends. I learned a lot about economic geology and mineralogy from him.

After Allen retired from the Survey, I had the opportunity to spend time with him in the field on numerous occasions when he came to Pennsylvania. When I went to Denver for the Denver Mineral Show, I always tried to stay on for a day or two after the show. Then Allen and I would spend the days driving up and down the Colorado mountains he knew them intimately.

In particular, I recall spending two days in Leadville, cruising the dumps for minerals. Allen had been the USGS Leadville expert for a number of years and was familiar with every mine in the district. At the time, the EPA was "cleaning up" the old mine dumps - the place had been designated a superfund site - and in the process destroying much of our mining history heritage. The irony was, as Allen pointed out, that the "remediators" were attacking piles of rock that were really old stockpiles of oxide ores - these stockpiles weren't releasing much in the way of toxins - and ignoring the old dumps of sulfide-laced waste rock that were the real problem. Be that as it may, they did us the courtesy of ripping open the well-picked-over stockpiles and exposing many new specimens, including interesting crystals of chalcophanite (a zinc manganese oxide mineral).

Allen had a sturdy four-wheel drive and would go charging up hills, down roads and crashing through the brush, driving off-road with a confidence I never had. I'd peer down into deep gullies and hang out the window to see if all of our tires were still on the road. At times, I was sure we'd flip upside down into some brush-filled gulch, but we never did. When we stopped at a dump, I could always rely on Allen's keen eye to pick out (and identify) some unusual mineral.

On one of these September trips to Colorado, Allen wanted to show me an abandoned rare-earth pegmatite mine. I've always been interested in pegmatites - one of the curses of living in central Pennsylvania is a definite lack of pegmatites. Allen and I packed up his four-wheel drive with tools and lunch and headed off into the mountains. It was one of those pleasant, warm fall days in Colorado - beautiful. Allen had had a heart attack about a year before, but you wouldn't know it to watch him. It was, however, something I kept in the back of my mind.

Allen wasn't sure exactly where the mine was - about thirty years had passed since the last time he'd visited it - but he found a low hill that looked right and told me he thought that the mine was near its top. We parked just off the main road, but it was several miles from the nearest house. Allen locked up his four-wheel drive and we trekked up the pine-covered hill. We were a few yards apart as we climbed and a huge boulder loomed up among the trees. I misjudged the size of the boulder. Allen went around one side while I headed around the other. I thought we'd meet up on top.

But when I climbed to the top of the boulder, Allen wasn't there. I scrambled down his side of the boulder. No Allen. Then I went back up again. Still no Allen. Yelled his name nothing but the trees answered. Yelled louder. Nothing but trees. Yelled even louder. Nothing. Amazing! In a few

minutes time, I'd managed to lose him in the woods. I could see all around me - the woods weren't that thick, but I couldn't understand why he didn't hear me yelling.

Starting to get worried, I went up to the top of the hill. No Allen and no pegmatite mine, either. I started a spiraling outward search pattern, stopping from time to time to yell his name and listen. After about forty minutes of this I stopped, took out my GPS and took a location reading to help the rescue crews find their way to the spot. The only thing I could think was that Allen had had another heart attack and had fallen unconscious behind a bush somewhere on that hillside. I pictured myself going down in history as the guy who killed Allen Heyl.

Now I was in a predicament. Allen had the keys to the four-wheel drive and I was locked out. I'd have to hike down to the road and then a couple of miles back to the nearest house in order to call for help. If he was having a heart attack, time was of the essence.

Then, just as I was hitching up my backpack to push off, when he walks out from behind some rocks. Boy, was I glad to see him. He'd actually gone over the first hill and onto the next, looking for the pegmatite mine - it wasn't there, either. He moved much more quickly than I thought. But by that time, I wasn't disappointed that we didn't find the mine. I was glad to have Allen back in one piece. I never did understand why he didn't hear me yelling, and I never told Allen about my worried hour.

About a month later Allen called me and said me that he'd finally located the mine and told me that he'd take me there the following year. Unfortunately, that never came to pass, although we did continue to collect minerals and visit mines together. He was a great guy and a great geologist. Always willing to teach, always willing to be a friend.

He will be missed.

©2009, Andrew A. Sicree, Ph.D

## **HOW DO YOU MELT A ROCK?**

National Geographic regularly depicts glowing rivers of molten rock streaming downhill from the craters on Mauna Loa in Hawaii. This molten rock is called lava, and lava is magma (underground molten rock) that has escaped to the Earth's surface. But how do you produce a magma in the first place?

A common misconception is that the interior of the Earth is molten. Although parts of the Earth's interior are indeed molten (the outer core is molten nickel-iron), the bulk of the Earth's mantle and crust is not molten.

### **How do magmas form?**

In Jules Verne's novel, Journey to the Center of the Earth, adventurers descend to the Earth's center and return to tell their tale. In reality, they would've been toast long before they got anywhere near the Earth's core. Temperature

increases dramatically as one descends into the Earth. For instance, I once went underground at the Homestake Gold Mine in Lead, South Dakota. After descending nearly 8000 feet, I noted that the mine temperature was about 130°F (54°C). The only way miners can survive in such heat is through air-conditioning. The mining company blew chilled air underground to make work bearable. If we could have continued to descend (and survived the rising temperatures), we would have, in theory, eventually reached a point where rocks began melting.

Every mineral has a melting point, and so too do rocks made up of mineral grains. Because rocks are mixtures of minerals, rocks will not display a nice crisp melting point. Granite, for instance, is composed of quartz, feldspars, micas, and other minerals. The melting temperature of any given granite varies as a function of the minerals present, their compositions, and their relative amounts. But, in general, a granite near the Earth's surface will melt below approximately 1440°F (780°C). Other rocks have different melting temperatures. For comparison, a typical basalt might melt at approximately 1830°F (1000°C) at the surface of the Earth.

The story gets more complicated. For instance, depth in the Earth matters because the pressure on the rocks goes up as one descends into the Earth. Melting increases the volume of a rock, so increases in pressure tend to force the melt back to a solid state. Thus, one typically needs a higher temperature to melt a rock when the pressure increases. The melting point of a rock like granite increases with depth.

This leads to one mechanism for creating a magma. A solid rock, deep within the Earth, at a high temperature will remain solid. But if that rock is thrust upward without cooling, the confining pressure decreases and it may melt even though the temperature of the rock has not changed. This is called decompression melting.

Water complicates the story even more. If one has a "wet" granite (i.e., a system that has both water and granite present), the melting temperature decreases, rather than increases, as pressure goes up (i.e., as one descends into the Earth). This is counterintuitive, but a typical granite that melts at approximately 1440°F (780°C) near the Earth's surface could have its melting temperature drop to approximately 1180°F (640°C) at depths of about 12 miles (19 km). In the absence of water, a "dry" granite at the same depth melts at about 1760°F (960°C). A big difference!

Thus, magmas can be formed by three different mechanisms: (1) heat may be added to melt the rock, (2) a decrease in pressure can cause decompression melting, or (3) the addition of water to the "system" can lower the melting temperature of the rock.

©2009 A. A. Sicree

*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

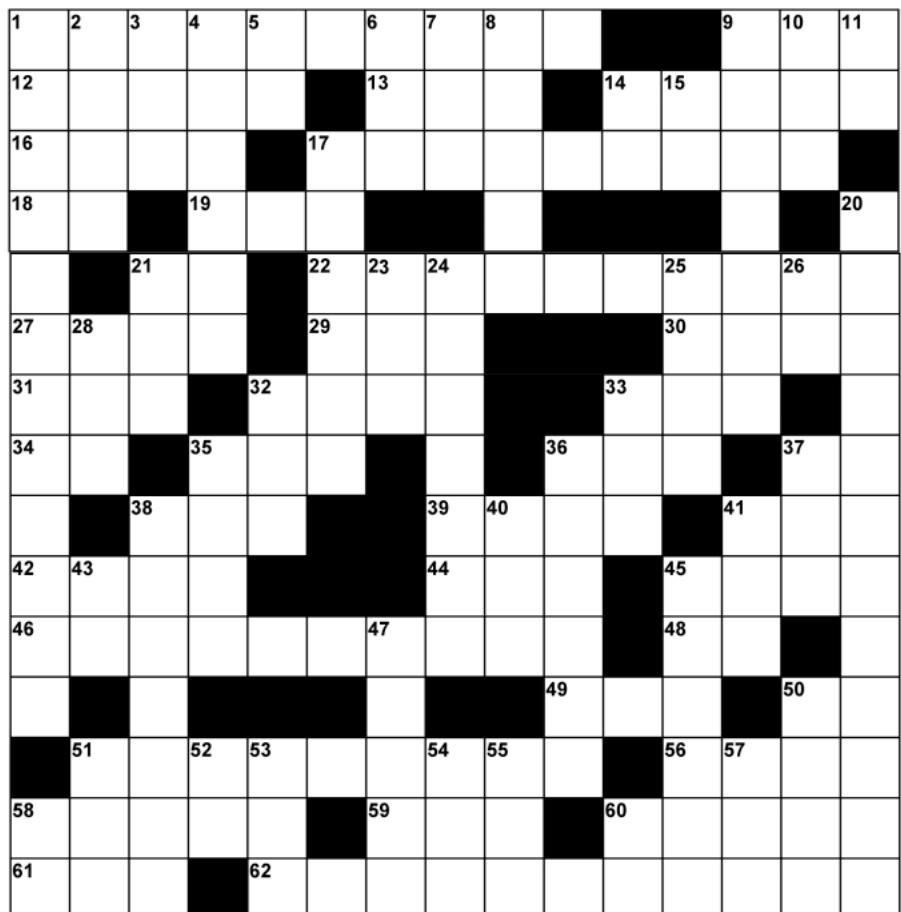
## Variety in Minerals

### ACROSS

- 1 black copper sulfide mineral
- 9 me
- 12 in the center of the Earth
- 13 less than two
- 14 father of crystallography
- 16 to get attention
- 17 a silver sulfide
- 18 Los Angeles
- 19 used for TV
- 21 a halogen in seaweed
- 22 made with fine limestone
- 27 heavy crude, light crude, etc.
- 29 spy guys
- 30 had room full of gold
- 31 an English coal mine
- 32 volcanic island
- 33 one or better than a king
- 34 said by bandit
- 35 had condo made of stone
- 36 a lady T. Rex
- 37 not D.C.
- 38 former soldier
- 39 out of a battery
- 41 space walk (ab)
- 42 not the Bronze Age
- 44 famous for scratching
- 45 Egyptian god
- 46 copper iron nickel sulfide
- 48 biggest US emerald here
- 49 city and river
- 50 oxidation scale
- 51 always green
- 56 one tenth
- 58 piece of money
- 59 Aristotle
- 60 storage area
- 61 goldo
- 62 another chalcosite

### DOWN

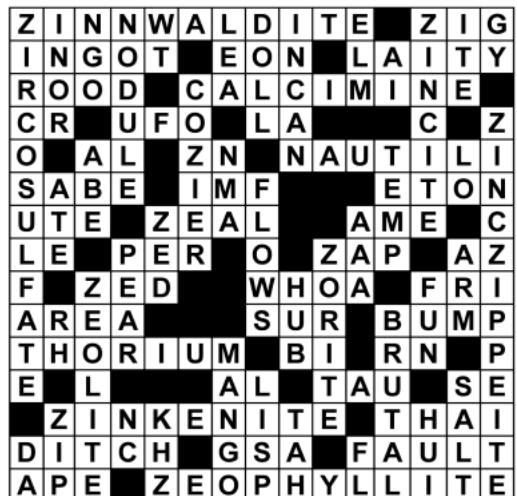
- 1 major copper ore mineral
- 2 what clown says
- 3 follows lemon
- 4 from Madagascar
- 5 cesium
- 6 \_\_\_ ad \_\_\_ loquitor
- 7 gerund ending
- 8 made of an apatite
- 9 simplest fossil fuel
- 10 the loneliest number
- 11 used to determine "c"
- 14 saint
- 15 titanium
- 17 not the Titanic



- 20 blue copper sulfate
- 21 a sandwich
- 23 wishy-washy ending
- 24 made by undersea quake
- 25 thrown at weddings
- 26 politically correct
- 28 three
- 30 easy melting mineral
- 31 gold for a fool
- 32 where the door leads
- 33 Australia (ab)
- 35 good sphalerite state
- 36 shape of geode
- 37 \_\_\_ atque vale
- 38 spews out magma (lava)
- 40 little something
- 41 and so on...
- 43 element found by Curie
- 45 copper accumulates here
- 46 tellurium
- 47 said by Evil Overlord
- 48 non-vibrating points
- 49 rhenium
- 50 economics
- 51 Russian peace

- 52 lanthanum
- 53 diamondiferous state
- 54 Irish Republican Army
- 55 until
- 57 on the surface
- 58 just \_\_\_ it
- 60 \_\_\_ it again

### May Puzzle Solution: Z Minerals



## 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.

**Sept. 12 -13, 2009:** Gem, Mineral & Jewelry Show by Central Pennsylvania Rock & Mineral Club. Zembo Shrine, Third and Division Streets, Harrisburg, PA (see page 4).

**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 (see page 4). [www.mineralfest.com](http://www.mineralfest.com)

**Oct. 17 - 18, 2009: EFMLS Convention, and Annual Gem & Mineral Show sponsored by the Bristol Gem & Mineral Club. Beals Community Center, Bristol, CT.**

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

**Nov. 7 - 8, 2009:** Friends of Mineralogy - PA Chapter Symposium at Franklin & Marshall College, Lancaster, PA, on Saturday, field trip (paid members only) on Sunday.

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

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

## 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/](http://www.ems.psu.edu/nms/)>.

We want to welcome you!

## Display case for sale by the NMS

A retail store type display case and cabinet. 48"W x 40"H x 22" front-to-back. The top section, 11" high, is display case with glass on top and front, mirror on sides, sliding doors at back, metal frame. The base is black laminate with sliding doors in back. Holes in both sections for locking bar, but no locks included. Reasonable condition. Photograph available as soon as Dave makes enough space to walk through his garage. \$80., or make an offer. [xidg@verizon.net](mailto:xidg@verizon.net), or 814-237-1094

## For sale / trade: Equipment & Materials

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

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

## SOCIETY OFFICERS

### David Glick (President)

814-237-1094 (h) [xidg@verizon.net](mailto:xidg@verizon.net)

### Dr. Bob Altamura (Vice-President) 814-234-5011 (h)

e-mail: [raltamur@fccj.edu](mailto:raltamur@fccj.edu)

### John Passaneau (Treasurer) 814-863-4297 (o),

e-mail: [jxp16@psu.edu](mailto:jxp16@psu.edu)

### Frank Kowalczyk (Secretary) 238-8874 (h, 8-9 p.m.)

e-mail: [fjk12@scasd.org](mailto:fjk12@scasd.org)

## OTHER CONTACTS

### Field Trips: Ed Echler 814-222-2642

e-mail preferred: [eechler@comcast.net](mailto:eechler@comcast.net)

### Junior Rockhounds: Dr. Andrew Sicree 867-6263 (h)

e-mail: [sicree@verizon.net](mailto: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](mailto:gold@ems.psu.edu)

### 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:

David Glick E-mail: [xidg@verizon.net](mailto: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 the name of the photographer or artist.