

Rocky Reader

The Monthly Newsletter Of The
Toledo Gem And Rockhound Club

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Going once... Going twice... SOLD!!!

The Club's auction is our November meeting's "program". It is on the usual third Wednesday of the month. Please bring those items you are willing to donate for the auction to the meeting on November 19th. Even if you have no items to donate, you can still participate in the fun by helping the club by bidding for (or bidding up) the donated items we received for "sale". This auction is our third largest source of income, only the show and memberships contribute more to club finances. The auction is lots of fun, so come on out and enjoy it with your friends.

Submitted by Jim Leslie

FALL OPEN HOUSE

The club is hosting its fall open house on Nov. 15 & 16 from 10-5. Anyone wishing to sell must contact Carla Burleson (419-533-7341) to reserve table space. Setup is Friday from 6-8pm.

HERALDING THE HOLIDAYS

December 5, 6 & 7 is Heralding the Holidays, Toledo Botanical Garden's holiday sales event. Tables are available in the metalcrafter and gemcrafter rooms. To inquire about prices, or to reserve space, contact Debby Hoffmaster (dhoffmaster1@verizon.net) for the metalcrafter room or Chet King (cljking@accesstoledo.com) for the gemcrafter room. You must have been a TG&RC member for at least 1 year to participate.

FIELD TRIPS

We had a good turnout at Graymont Inc. Quarry in Genoa, Ohio on October 4th, 2008 with 27 participating members.

ROCKY READER

Submissions for the December Rocky Reader must be received by noon on Monday, November 24th. All groups should be submitting monthly updates unless prior arrangements have been made directly with Suzanne. Notices for special events, classes, etc, must be received prior to the deadline. Member participation is greatly encouraged. I am interested in photos (field trips, club events, specimens), drawings, puzzles, articles, tips, etc. Submissions may be given **in writing** to Suzanne Shimatzki (or Steve) during the monthly meeting, emailed to editor@rockyreader.com, or via phone message at 419-861-0147.

TG&RC MEETING MINUTES - October 15, 2008

The **meeting began** at 7:05 PM with the Pledge of Allegiance

The minutes of the September meeting (prepared by Kathy Petersen with input from Jim Leslie) were published in the October Rocky Reader.

Steve Shimatzki presented the monthly report, indicating he had successfully complained about a fee charged for a deposit. The financial information for the show was still uncertain, but it appears to have been at least as successful as last year. Additionally, the scholarship raffle made enough to make a new donation of at least \$500 to each of our two scholarship funds.

Announcements:

The new attendance sheets reflect the status of renewals as of the change over to the new membership chairs (15 Sept 08). If you are not on the listing and you think you have renewed recently, you need to contact John or Sylvia to find out whether your membership renewal was received.

Larry Barrick introduced two friends who were visiting and are prospective members, Sandy Mathis and Jim Dowling.

In response to a general request, Tom Marok volunteered to provide refreshments at the next meeting (in November).

Old Business:

Chet King and Ed Reynolds will check with Ottawa National Wildlife Refuge to see when they want to change the exhibit. Refuge indicated an interest in a fossil exhibit.

The October meeting of RO presidents and TBG Board president and exec director was cancelled. A meeting of our club president with these TBG officials was tentatively arranged for the early evening of 17 Oct. The receptionist who was arranging the appointment indicated she would confirm the meeting if it was to occur (as of this date, it has not been). Jim Leslie asked Linn Petersen to drop by at 6 PM on October 17th in case there was a communications breakdown (he didn't want to drive a couple of hours of driving on the chance they might be there).

New Business:

Elections are next month. Carla Burleson will stand for re-election as Sgt at Arms; Lynda Kalinoski volunteered to run for Secretary; John Hull has agreed to run for the open three year at-large board position. Steve Shimatzki will stand for re-election as Treasurer. We still need to have candidates for the offices of President and Vice President.

Next month is the club auction, bring money and things to donate for auction.

Groups:

TBG: Chet King reported Patty Toneff (at TBG) indicated we should expect to have our meetings times and open house dates for 2009 confirmed at the club president's meeting with board president and exec director. Chet reminded president to mention the parking lot lighting problem (president indicated he has already reported the problem to the Garden, but has not yet heard back about the solution).

Gemcraft: Regular meetings are scheduled for the next month. We are looking at moving the meeting time to 6:30 pm rather than 7 pm next year. The group is buying two diamond flat laps; members will need to be careful when using them.

Beaders: Nancy Grove reported we will be meeting next Monday (20 Oct) at 6:30 pm and learn about Herring Bone pattern. The November meeting (third Monday) will be the last until spring.

Faceteers: Don Ault indicated they recently had their "June" picnic indoors with around nine attendees. The next group meeting will be at Don's, second Thurs of Nov at 7pm. Contact Don for directions if you don't know where to meet.

Rocky Reader: The deadline is 21 October, early in the day is better. The Reader has been converted to Word, but submissions can still be sent in WordPerfect format. Contact editor@rockyreader.com

Membership: Attendance: 35 members; 2 guests. Contact John or Sylvia Capuano if you have a problem with your membership.

Metalcraft: We will be meeting at our usual times, see the Rocky Reader for the times. We are also working on the class schedules for the future.

Sunshine: Lucille Burgy reported Larry Barrick is back with us, his surgery went well and he is healing well (Larry confirmed this himself and thanked everyone for their prayers and concern over his health issues). A former member, Gilbert Paren, died recently.

Field Trips: Harold Burlison indicated Joel Vicary has a trip to North Carolina planned for 4-9 Nov. Details are available at joelvicary.com. The club's early October trip to Graymont quarry was very successful with 27 members participating and lots of good material found.

No **Show 2008** report because everyone who knows anything is, at least, out of state. Next month is the plan.

Open House: It is scheduled for 15-16 Nov. Carla reported the last open table has been taken. Several new members will be participating as sellers for the first time.

Jim pulled the open house raffle drawing winners. Meeting ended at 7:55 PM. Socializing followed.

Submitted by Jim Leslie

CLASSES

The following schedule is a listing of upcoming classes. To enroll, please **send all fees to the instructor**. Fees must be received, at the latest, **two weeks prior to the class** however, many classes fill up well in advance of this deadline.

January 25, 10AM. Anticlastic forming. Instructor Debra Hoffmaster. Fee \$40.00. Learn to form sheet metal into "saddle" shapes using a hammer on a sinusoidal stake. See <http://www.midcoast.com/~mgood/page2.htm> for more details on the process.

February 22, 10AM. Hydraulic press workshop. Instructor, Debra Hoffmaster. Fee \$40.00. Learn to use our hydraulic press and its accessories. We will focus on the use of our dies and formers to create raised forms that can be incorporated into other designs.

May 16, 2008. 10AM. Celtic Visions bracelet. Instructor Kathy Petersen. Fee \$70.00. This is a modified Helm pattern and a good starting point for a number of other patterns.

METALCRAFTERS

The metalcrafters meet on the first and third Sundays at 1:30 and the second and fourth Thursdays at 6:30. There will **not be a meeting on Nov. 27th** due to the Thanksgiving Holiday.

We ask that **those members who have never attended**, please call or e-mail Debby to schedule a three meeting slot to complete their instructional pendant.

During the **open house** we invite all metalcrafters to two events: 1) a demonstration of the new Bronze PMC on Saturday afternoon, with firing on Sunday morning and 2) an open, freeform casting session on Sunday afternoon. Those interested in casting into pine needles, beans, etc must bring their own clean sterling silver scrap.

Deb Hoffmaster, moderator

Thelma Postlewaite's Family News

November Birthdays:

Brenda Hennig	11-8
Karen Snodgrass	11-22
John Maiani	11-24
Jeff Wheeler	11-28
Kathy Petersen	11-29
James Laine	11-30

GEMCRAFTERS

The gemcrafters meet on Wednesdays (except the third) at 7PM in the craft center. Chet can give classes on any lapidary topic. If there is something that you are interested in learning, contact him.

FACETEERS

Faceteers meet on the second Thursday of the month at members' houses. The next group meeting will be at Don Ault's on Nov 13 at 7pm. Contact Don for directions if you don't know where to meet.

BEADERS

The beadars meet on the third Monday of the month at 6:30 PM in the craft center. The November meeting will be the last meeting of the year. The beadars will take a break during winter and return to their regularly scheduled meetings in March.



**Crystals...Minerals
Cutting Stock.....Tools
New and Used
Equipment
Buying Used Equipment
and Mineral Collections**

R & E Rocks
**654 Culley Rd
Holland, OH 43528**

Owned and Operated by
Ed and Ruby Reynolds,
Club members
By Appointment Only:
419-382-1089 or 419-340-8801



COMING EVENTS from Chetty King's Flyer Table

November 1. Midwest Mineralogical and Lapidary Society 43rd Annual Auction. Democratic Club of Taylor, 23400 Wick Road, Taylor, MI. Sat. 6:00pm-10:00pm. Mineral sales from 6-7pm. Auction begins at 7pm. 75-80 items including mineral specimens, jewelry, books, fossils, and lapidary rough and equipment. Admission: FREE, plus FREE parking! Contact: Cindy & Lou Talley (734) 525-1684 or email cindylou0202@yahoo.com.

November 7-9. MICROMINERAL SYMPOSIUM. Cleveland Museum of Natural History, 1 Wade Oval., Cleveland, OH Fri. 3:00-10:00, Sat. 8:30-5:00, Sun. 9:30-3:30. Sponsored by the **Micromineral Society at the Cleveland Museum of Natural History**. Theme: "Focus on Micromounting." CONTACT: David Saja, Curator and Head of Mineralogy, (216) 231-4600, ext 4228, or e-mail David at dsaja@cmnh.org. For additional information, go to the symposium Web site, <http://www.cmnh.org/site/ResearchandCollections/Mineralogy/MicromineralSymposium.aspx>.

November 8-9. Northwest Illinois Rock Club Annual Gem, Fossil and Mineral Show. Highland Community College, Student Conference Center, 2998 West Pearl City Road, Freeport, IL. Sat. 9-5. Sun 10-4. The show features Midwest dealers showcasing gemstones, minerals, fossils, and jewelry for holiday shopping. There also will be lapidary demonstrations. Contact Sherry Maves (815) 536-4909 or email sherry.maves@highland.edu or visit www.stephenson-county-il.org.

NEW ENDANGERED SPECIES - "THE ROCKHOUND"

by John Martin, California Federation of Mineralogical Societies,
Public Lands Action Committee – South
from the MWF News, October 2008

The habitat of the Rockhound is diminishing at an astounding rate. More and more of its free roaming areas are being gobbled up each and every day by the changing legal environment. Soon, the range of the Rockhound and its offspring, the Pebble Pup, will become so diminished that extinction will be imminent.

As the environment changes, the ecosystem of the Rockhound is slowly being replaced by the ecosystem known as “Wilderness,” which is a poisonous dead zone for the Rockhound and its Pebble Pups. Soon they will go the way of the Smilodon, the California Grizzly Bear, and the now extinct Nauga, which was hunted late in the last century for their hides, which were used exclusively in the creation of the Bean Bag Chair.

What can be done to save the ecosystem and the free range habitat of the endangered Rockhounds and Pebble Pups? We can do a lot if we band together and take action now, before it is too late. We need to review all the facts, formulate a plan, distribute the plan, and then execute the plan by contacting all of our elected representatives with our facts, figures and recommendations for saving the ecosystem of the Rockhound.

Currently before Congress are four new wilderness bills, and one bill that will make some fossil collecting and ownership a federal crime.

The *California Wild Heritage Act* and the *Eastern Sierra and Northern San Gabriel Wild Heritage Act*, if passed by Congress, would reduce the ecosystem of the Rockhound, just in California, by around 3.26 million acres of new wilderness habitats.

The *Paleontological Resources Preservation Act*, when passed by Congress, will make the collecting and ownership of vertebrate fossils found on public land (BLM, USFS, and State land) a federal crime, punishable by fines and/or imprisonment.

There needs to be allowances for the collecting, ownership, and public display of these vertebrate fossils by the amateur collector without the fear of criminal prosecution or civil legal action. We all understand that significant finds, like “Sue,” need to be preserved for all to enjoy, but the collection, ownership, and public display of smaller finds of non-significant, nondescript vertebrate fossils should be allowed in the legislation.

If we do not get involved and take a proactive approach, the above legislation will become law, and the Rockhound and Pebble Pup will become extinct, just like their ecosystem and free range habitat.

So what can we do? First read the proposed legislation and determine the effect of the legislation in your collecting areas. Inform all of your club members of the urgency of this legislation. Formulate a response with recommendations that are attainable. Write letters to your elected officials and present your case and points. If we do not make our voices heard, we will lose the battle of the Rockhound and we will become extinct. We can make our voices heard in Washington by supporting and joining the American Lands Access Association (ALAA) as clubs or as individuals. Go to <http://www.amfed.org/ALAA.htm> for more information.

Below are the Bills and their authors, with links to the web sites where full information on their status can be obtained.

S. 493: *California Wild Heritage Act of 2007* Introduced by B. Boxer (D-CA)
<http://www.govtrack.us/congress/bill.xpd?bill=s110-493>

H.R. 860: *California Wild Heritage Act of 2007* Introduced by Hilda Solis (D-CA)
<http://www.govtrack.us/congress/bill.xpd?bill=h110-860>

S. 3069: *Eastern Sierra and Northern San Gabriel Wild Heritage Act* Introduced by B. Boxer (D-CA)
<http://www.govtrack.us/congress/bill.xpd?bill=s110-3069>

H.R. 6156: *Eastern Sierra and Northern San Gabriel Wild Heritage Act* Introduced by Howard McKeon (R-CA)
<http://www.govtrack.us/congress/bill.xpd?bill=h110-6156>

H.R. 554: *Paleontological Resources Preservation Act* Introduced by James McGovern (D-MA)
<http://www.govtrack.us/congress/bill.xpd?bill=h110-554>

I have copies of all the above bills in MS Word format. If you or your club would like copies please send me a note with your e-mail address and I will send them to you.

John Martin, California Federation of Mineralogical Societies, Public Lands Action Committee – South
smartin@antelecom.net

Palmdale Gem and Mineral Club, pgmc@antelecom.net

HOW SAFE ARE YOU?

By David Rich, MWF Safety/Field Trip Chair; MWF News, October 2008

There are plenty of safety devices in our world today. Some are relatively new and some have been around for a long time. Why? Because these devices are proven to work, and they keep you out of harm's way. My first safe practice, the one I harp on to the club, is wearing safety glasses. Something as simple as shielding your eyes from flying foreign objects has a great payoff in the end. Perhaps those caught working without safety glasses should have to donate a dollar to the club coffee I really hate to admit it, but field collecting is coming to the end of the season in our region. This is a great time to shift our safety awareness to indoors.

Take a good look at your work area, with an eye for safety (since you still have two good ones because you wear safety glasses). Look at your power sources. Water + Electricity = Ground Fault! Addon Ground Fault Interrupters (GFI's) can be purchased at any good hardware store. These plug into your electrical sockets. You then plug your tool or grinder into the GFI. In case of a short circuit, the GFI cuts power before you get electrocuted!

Take a good look at your chemicals! Are they properly labeled? What shape are your containers in? Do not store any chemical in a recycled food container. This is bad practice that should never get started! Look for any flammable liquids and keep them away from all heat sources. If you're into lapidary work, don't forget to take a look at your grinding wheels. Order new wheels and equipment now. By the time they get here, winter will have arrived, and you can get started on new projects.

Safety is an ATTITUDE!. Get with it, or you will be injured!

Diseases of Minerals

by Andrew A. Sicree

Can a mineral get sick?

Almost every mineral collector or geologist has experienced it: metastability. Fresh out of the mine, that newly-collected pyrite looks bright and shiny – as good as gold. But take it home, put it in a cardboard box in the garage, and check on it again in six months and you can see why it's called "Fool's Gold" – the pyrite has become dull, crumbly, and covered with a fine powder. Leave it in place longer and a stain develops on the cardboard below the specimen. Open the box and you notice a distinct sulfurous odor. What's up? Why is the pyrite falling apart? Pyrite is just one of many minerals that can be described as "metastable."

Metastability is the condition in which a mineral is unchanging (that is, "stable") with respect to small "disturbances" but is capable of reacting and releasing energy if "disturbed" to a great enough degree. In other words, the mineral wants to be some other mineral, but needs a small push to get there. The "disturbances" that can undo a metastable mineral can be temperature changes, increases in

humidity, exposure to light, growth of bacteria, or even just the passage of time.

Diamonds aren't forever

The classic case of a metastable mineral is diamond. Diamond, a mineral composed only of carbon, is stable *where it is formed*. Diamond forms at high temperatures and terrific pressures deep within the Earth's mantle. But diamond isn't the only pure carbon mineral. Graphite is also pure carbon. The major difference between the two minerals is that diamond is cubic carbon while graphite belongs to the hexagonal crystal system. You can change graphite into diamond by putting it in a huge press and subjecting it to high enough temperatures and pressures. But, if you then lower the temperature and pressure slowly enough, the diamond you have just made will revert back to graphite. The change from diamond to graphite is known as a phase change. At room temperature and normal atmospheric pressure, graphite, not diamond, is the stable form for pure carbon. Diamond is metastable under these conditions. Some scientists

speculate that, given enough time (a billion years or so), the diamond in an engagement ring will revert back to graphite. You can greatly speed up the rate of the phase change by heating up the diamond – not an experiment I recommend. “A diamond is forever,” says the DeBeers ad campaign, but it might not be so. Sorry, guys and gals!

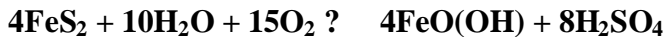
Glaciers are metastable, too

Ice, of course, is also metastable on the Earth’s surface. Heat up a glacier and it melts. One may note that it is possible that glacier-covered planet could exist where ice is stable rather than metastable because it is always too cold to melt the ice. This emphasizes the point that metastability depends upon the local conditions. A mineral that is stable deep in the Earth’s mantle may be metastable on the Earth’s surface and vice versa (graphite is stable on the surface but would be metastable in the mantle).

The real question to ask about a metastable mineral is not “why is it decomposing?” but rather “why hasn’t it decomposed already?” Those pyrite crystals have been underground, exposed to water for millennia, and they wait until you take them home and put them in your nice dry garage before they fall apart?

Pyrite “disease”

Even when stored in a dry mineral cabinet, some specimens of pyrite develop what is loosely called “pyrite disease.” The decomposition of pyrite is hard to predict, but some pyrite crystals become dull and powdery, emit a sulfurous odor, and will stain cardboard and corrode nearby metals. Certainly, pyrite is metastable at room temperatures in the presence of oxygen and moisture. One way to write the reaction for the decomposition of pyrite is:



In this reaction pyrite, FeS_2 , is altered to goethite, $\text{FeO}(\text{OH})$, and sulfuric acid, H_2SO_4 , is released. The crumbly, powdery appearance is due to the alteration of pyrite to goethite and the sulfurous, acrid smell is due the production of sulfuric acid. This acid escapes from the mineral and attacks nearby cardboard, paper, and metal. Note that water, H_2O , and oxygen, O_2 , are required for the reaction to proceed. The

question arises: “If pyrite is metastable, then why doesn’t all pyrite decompose rapidly?”

When a pyrite crystal is unearthed, it is exposed to oxygen and moisture. Even the small amount of water available in mostly dry air is sufficient to allow pyrite disease to proceed. Higher humidity air helps to decompose pyrite more readily. Some pyrite specimens are more susceptible than others to decomposition due to naturally-occurring flaws in the crystal lattice. Bacteria can also play an important role. Some bacteria make their living, so to speak, on the energy they get from the oxidation of pyrite. As the bacteria multiply, they will accelerate the decomposition of the pyrite.

Underground, in its host rock, pyrite is in a different environment. Even though the pyrite is exposed to water, the groundwater doesn’t have much oxygen in it. Pyrite is stable when oxygen is unavailable, rather than metastable. The conditions under which pyrite is stable are found in what geochemists call the “reduced zone.” This is the region underground where there is very little free oxygen. [By free oxygen, we mean oxygen present as a gas or dissolved in water – oxygen atoms can still be present if they are bound up in minerals such as calcite, $\text{Ca}(\text{CO}_3)$, or quartz, SiO_2 , etc.] When groundwater that carries dissolved oxygen penetrates to rocks containing pyrite, the water and oxygen will oxidize the pyrite to an iron oxide mineral such as hematite, Fe_2O_3 , or goethite, $\text{FeO}(\text{OH})$. The zone of rocks affected by oxygen-rich groundwater is referred to as the “oxidized zone.” Pyrite is stable in the reduced zone and metastable (or unstable) in the oxidized zone.

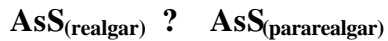
Realgar dies under the lights

The metastability of realgar presents a preservation headache for the mineralogist. Upon exposure to light (for a matter of days or months) bright-red realgar crystals will alter to an orangish-yellow powder. The traditional explanation for this decomposition was that realgar (which is arsenic sulfide, AsS) was changing to a mixture of orpiment (As_2S_3) and arsenolite (As_2O_3). Note that any such reaction would require the addition of oxygen and (presumably) the evolution of sulfur dioxide gas:



This equation implies that realgar could be preserved by placing it in an oxygen-free environment in a sealed glass ampoule.

But more recent investigations have shown that the photodecomposition of realgar does not produce orpiment. Careful experiments have shown that upon exposure to light in the 500 to 670 nm range, realgar alters to the mineral pararealgar. Pararealgar is the dimorph of realgar, which means that it has the same chemical composition: arsenic sulfide (AsS). Note that this reaction does not involve oxygen:



This equation implies that placing realgar in an oxygen-free environment in a sealed glass ampoule will do no good. If light hits the realgar, it will decompose. Thus, realgar is metastable with respect to pararealgar – all it takes is light to make the change.

Interestingly, light under 500 nm or over 670 nm does not alter realgar. Thus, purple and ultraviolet light will not cause photo-decomposition, nor will red or infrared light.

Summary

Metastability is a relative term – it depends upon the environment of a mineral. If a mineral is exposed into conditions where it is unstable (that is, where it would react to produce other minerals and release energy) but doesn't react promptly, then we say that the mineral is metastable. A metastable mineral will begin to react if it is given a small "push" in the form of a temperature increase, exposure to light, contamination with bacteria, exposure to oxygen, etc.

Ref.: Douglass, D. L., Shing, C., Wang, G., 1992, "Light induced alteration of realgar to pararealgar," *American Mineralogist*, v. 77, pp. 1266-1274.

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The Meaning of Metamict

The principal characteristic of a crystal is *order*. A crystal's atoms are arranged in a regular three-dimensional pattern called a *crystal lattice*. It is possible, however, to destroy this ordered arrangement of atoms.

Naturally-occurring radiation, particularly *alpha particles*, will knock atoms out of their proper places within the crystal lattice. Alpha particles are hefty, consisting of two protons and two neutrons (the same as the nuclei of helium), so when they hit a crystal at high speeds they cause a fair amount of damage.

Knocked about by alpha radiation, the atoms that make up a crystal are still in the crystal, but their order has been destroyed. This process is called *metamictization* or *metamiction* and a crystal subjected to it is said to be *metamict*. The term *amorphous* is a general term for a mineral without crystallographic order (i.e., without any interior order); metamict is applied to minerals that originally had order, but lost it due to bombardment by radioactivity.

Metamictization lowers a mineral's hardness, density, and index of refraction. It often changes the mineral's color, too. Metamict minerals are often brown, tan, or greenish. The external form of the crystal (its crystal faces and habit) may be preserved even though, on an atomic level, the crystal has become completely disordered.

Minerals that contain uranium or thorium – elements that are always radioactive – are subject to metamictization. In these cases, internal bombardment occurs as uranium or thorium atoms within the crystal decay and release alpha particles. Minerals that do not contain radioactive elements, but occur in deposits that contain uranium or thorium, can also become metamict by external radioactive bombardment.

Zircon (ZrSiO₄) is an example of a mineral that is often found in metamict form. Zircon does not contain uranium or thorium, but it is susceptible to metamictization when bombarded by alpha particles from nearby radioactive minerals. Not all zircon is metamict, however. The terms *low zircon* and *high zircon* are used to differentiate, respectively, zircon metamict and non-metamict zircons. Other minerals that are often found to be metamict include *titanite* (CaTiSiO₅) and *ekinite* (ThCa₂S₁₈O₂₀).

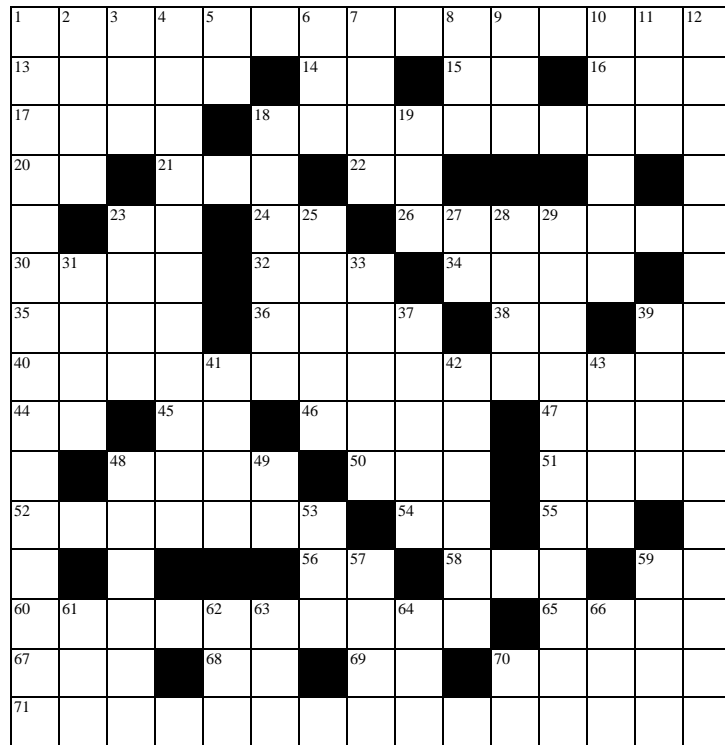
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Dr. Andrew A. Sicree is a professional mineralogist and geochemist residing in Boalsburg, PA. This **Popular Mineralogy** newsletter supplement may not be copied in part or full without express permission of Andrew Sicree. Write P. O. Box 10664, State College PA 16805 (814) 867-6263 or email sicree@verizon.net for more info.

Some Long Words

ACROSS

- 1 digs fossils
- 13 African laughter
- 14 exclamation
- 15 not she
- 16 feel my ____
- 17 another Olaf
- 18 record of shaking
- 20 selenium
- 21 companies are this
- 22 operation
- 23 element used in bumpers
- 24 Her Majesty (ab.)
- 26 element used by poisoners
- 30 in Hawaii
- 32 flightless bird
- 34 Bachelor Officer Quarters
- 35 hot spot
- 36 my treat
- 38 not old
- 39 famous baseball player
- 40 nickel arsenide minerals
- 44 prefix meaning in
- 45 east and north
- 46 having to do with air
- 47 a helper
- 48 to take apart
- 50 how the Hillbilly wrote
- 51 where space cadets are
- 52 invisible line around hills
- 54 each (ab.)
- 55 green (ab.)
- 56 every one
- 58 ____ luv
- 59 state nearest Cuba
- 60 acid will ____ base
- 65 first lion Pope
- 67 big on the West Coast
- 68 artificial intelligence
- 69 long play
- 70 former rooster
- 71 potassium iron chloride



DOWN

- 1 lingering fluorescence
- 2 not an aisle
- 3 girl's name
- 4 what we live in
- 5 Order of the Arrow
- 6 heel and ____
- 7 land between the waters
- 8 unit of resistance
- 9 of the Earth
- 10 beautiful rock ladies
- 11 ____ la la la la, la la la
- 12 not completely crystal
- 18 black tourmaline
- 19 hot spring resort
- 23 My Darling
- 25 wise guys
- 27 rubidium
- 28 the old ____ and dance
- 29 angles btwn. faces are ____
- 31 Russian John
- 33 fossil tree sap
- 37 scarier
- 39 what goes in your pool
- 41 under
- 42 to spin on an axis
- 43 Russian king
- 48 without constraint
- 49 another ooh
- 53 relative (ab.)
- 57 good for what ____ you
- 59 non-metric unit
- 61 holds up your glasses
- 62 cheering
- 63 into thin ____
- 64 zero percent interest
- 66 near the surface
- 70 cerium

SOLUTION: In the next Rocky Reader.

November

2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2 Metalcraft 1:30p	3	4	5 Gemcraft 7:00p	6	7	8
9	10	11	12 Gemcraft 7:00p	13 Metalcraft 6:30p Faceteers 7:00p	14	15 OPEN HOUSE 10-5 Chaining class 10
16 Metalcraft 1:30p OPEN HOUSE 10-5	17 Beaders 6:30p	18	19 Meeting 7:00p *Club Auction*	20	21	22
23 30	24	25	26 Gemcraft 7:00p	27 Thanksgiving NO METALCRAFT	28	29

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