



Eastern Indiana Gem & Geological Society

ROCK PICKINGS

April 2017

P.O. Box 1724 • Richmond, IN 47375 • eiggs.weebly.com • facebook.com/EasternIndianaGemGeologicalSocietyEIGGS

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Memberships:

Annual dues
\$15 Individuals
\$20 Families

Please send dues to:

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Richmond, IN 47375

4 Next meeting: Thursday, May 4, 6:30 p.m.

PRESIDENT'S MESSAGE

Hello, Rock Hounds:

Floor repair to the women's bathroom has turned into a repair of basically the entire space due to water damage. The closet directly above the women's bathroom has extensive water damage to the ceiling and the floor from a water leak in the roof.



This, in turn, then leaked into the women's bathroom. We are assessing the roof leak and the associated repairs. The leak is the number one priority right now. Nothing else can be renovated until the leak is resolved.

Club Clean-up Day is June 10, from 10 a.m. - 2 p.m.

We will have several tasks with varying degrees of physicality and skills. There will

be something for everyone to do. Please sign-up online for this event by clicking here: <http://eiggs.weebly.com/clean-up-day-june-10.html> The club will provide drinks and pizza for the workers.

Don't forget to bring your fluorescent rocks to the May meeting. If you don't know if your specimens or slabs or cabs fluoresce, bring them anyway. You may surprised by what fluoresces!

Mark

Try the Hot Links

The newsletter now incorporates new hot links, which you can click to go directly to web sites where you can explore further coverage.

Including them has been a learning process, but they have a lot of potential. Look for the blue links in the newsletter.

Try the links and let me know what you think. E-mail EIGGSnews@gmail.com

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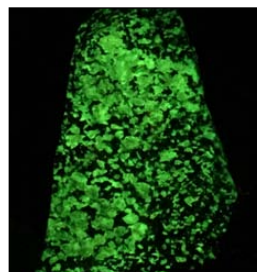
Club Clean-up Day, June 10



John Morse works during a Clean-up Day

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Fluorescent Night, May 4



Rocks will glow like lightsabers on May 4

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Fish "ear" bones



Learn about otoliths

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Flint Ridge Trip



Mark your calendars for May 20

Members present

Mary Ann Morse, John Morse, Mark Lisota, Erna Jacob, Danny Spurgeon, Mark Lisota, Angela Shaffer, Hailee Shafer, Marty Lucas, Jim Lucas, Mike Ragen, Joy Ingerman, Lisa Morris, Judy Burton, Lisa Nash, Melissa Killion, Matt Rudicil, Mona Jones, Scott Gibson, Nicole Siliven. Guest: Estel Jones

Meeting was called to order by President Mark Lisota.

Construction Update:

Mark gave an update on the women's bathroom remodel. Work has not been completed because of a roof leak and water damage to walls and ceiling. The board is considering how to address the issues.

May Meeting; Fluorescent Night:

Next month's program will be on fluorescent minerals. We have several new specimens and lights. Bring along any samples you think might be fluorescent, and we will check them out. A dark tour of the garage collection may be part of the activities.

Website Update:

Lisa has been working on the EIGGS web site. Newsletters have been posted. You need a password for the Members Portal. It was given at the meeting. If you need it, please e-mail EIGGSnews@gmail.com (It isn't printed here since we distribute this newsletter to several other clubs.)

Shop Update:

Wheels have been assessed and inventoried. Replacement will begin soon, and a log of replacement dates will be kept. Several current wheels show damage, and members were reminded of good practices to keep wheels in good condition – using plenty of water, not pushing hard, working across the whole wheel, etc.

Club Clean-up Day:

Work day – set for June 10, 10 a.m.-2 p.m. All are encouraged to attend, as there will be a variety of jobs for all talents and abilities. Watch upcoming newsletters for details.

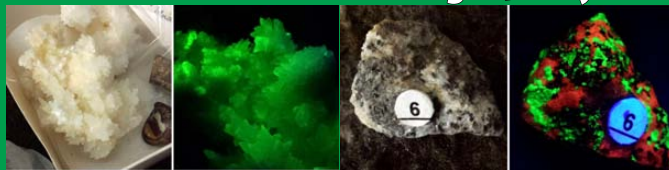
Archaeopteryx:

Lisa explained the Archaeopteryx project (see April newsletter). Club members generously contributed, and the Barbara Kuhlman creation was purchased for display in the clubhouse.

Treasurer's Report:

Since treasurer Dave Straw was absent, the March report will be read at the May meeting.

Don't Miss Fluorescent Night, May 4



RETURN OF THE ARCHAEOPTERYX

Prehistoric bird comes home to roost

Thanks to donations by generous club members, a ceramic sculpture of a prehistoric Archaeopteryx has become a part of the EIGGS clubhouse permanent collection. It was sold back to the club on the condition that it would stay at the club and not be resold at any future auction or sale.



Barbara Kuhlman

The one-of-a-kind piece was created by club member Barbara Kuhlman, who is also an award-winning, nationally-recognized ceramic and watercolor artist.

Kuhlman's birds and bird nests are always hot items at the rock and gem show silent auction, but in 2013 she wanted to create something special -- something that would combine her unique bird sculptures with her love of history, geology and fossils.

She came up with the perfect item: a sculpture of an Archaeopteryx, a bird-like dinosaur that is transitional between non-avian feathered dinosaurs and modern

birds. She added the ginkgo leaves, because the ginkgo trees were also diversifying by the mid-Jurassic period.

The item was purchased in the 2013 auction, but when it was offered for re-sale recently, club members donated funds to purchase it for display at the clubhouse. Thanks to all who donated!

🔧 CLUB CLEAN-UP DAY, JUNE 10

Mark your calendars & RSVP online soon

The first Clean-up Day of 2017 is Saturday, June 10. There will be a variety of jobs for all skill levels, so come on out and bring a friend or two! The workday will run 10 a.m. until 2 p.m. Refreshments will be provided.

Please **RSVP** online so that Mark knows how many people to expect. <http://eiggs.weebly.com/clean-up-day-june-10.html>

Suggested Projects

- Clean garage area & organize items
- Clean shop area & organize items
- Clean secondary garage
- Remove & discard all debris
- Clean up rock garden area
- Change saw oil
- Finish A/C trim work
- General yard work & weeding
- Remove granite headstone
- Work on grinder repair

(Joe, John, Jim?)

- Clean up area around new cellar door
- Reinstall basement stairs under new cellar door
- "Waterproof" basement area where stairs go

- Complete new upstairs door project (deadbolt, framing, etc.)
- Fix new door to outside saw room (caulk, framing, fix locks)
- Remove side door to detached garage; turn it to open outward; add steel theft plate and deadbolt

- Replace light fixtures in meeting room
- Gutter work
- Scrape 2nd floor hallway and re-paint upstairs hall
- Put tables back on trailer in garage
- Remove plastic and insulation from garage ceiling

(please wear appropriate clothing and bring gloves and a face mask)



■ Judy Burton, Jim Lucas and Joe Wirrig help with club clean-up.

RSVP online for Clean-up Day

Please RSVP online so that Mark knows how many people to expect. <http://eiggs.weebly.com/clean-up-day-june-10.html>

MOWING VOLUNTEERS NEEDED

Please don't make us buy a goat!

Like to work outdoors? Want to help out your rock club?

Now that "spring has sprung," we will soon need a volunteer (or a few volunteers? or a goat?) to mow the yard at the clubhouse.

The club has a nice riding mower for you to use, and you will be reimbursed for any gas you put in the mower.

Depending on the weather conditions, once the grass starts growing, it should be

mowed once a week.

We will post a monthly sign-up list to help distribute the workload. If you like to "weed whack," your services would be helpful, too!

If you would like to help out with these yard chores, please contact Dave Straw and he will show you the mower, property lines, and everything else you need to know. Strawdl@aol.com or 765-966-4249.





FLUORESCENT NIGHT

Well, if we can't have lightsabers, what better way to celebrate Star Wars Day than with glowing fluorescent minerals? Come to the club meeting Thursday, May 4 at 6:30 p.m. to see a wide variety of glowing gems and minerals and take a UV tour of the rock storage area in the garage. You will be amazed by what you find! If you have your own UV lights, bring them, as well as any fluorescent specimens or stones you wonder about. FYI, many jewelry pieces/gemstones glow, too. --Rubies, some sapphires, zircons, diamonds, amber, opal, Alexandrite, tremolite, etc.

FLUORESCENT INFORMATION

from the *Fluorescent Mineral Society* <http://uvminerals.org/fms/minerals>

Of the 3,600 identified mineral species, over 500 of them are known to fluoresce visibly in some specimens. About 90% of those glow under shortwave UV light, while about 10% glow under longwave UV.

Most minerals do not fluoresce when pure. It takes certain impurities in certain quantities to make the mineral fluoresce. Such impurities are called **activators**. Different activators can make the same mineral fluoresce in different colors. Different minerals require different activators, and in different quantities.

There are also impurities called **quenchers**, notably ferrous iron, that can prevent fluorescence despite the presence of an activator. Because activators and quenchers may or may not be present in any given specimen, different specimens of the same mineral (especially from different locales) may vary in color and degree of fluorescence.

There are a few minerals that will fluoresce when pure. These are called **self-activated** minerals, and include scheelite, powellite, and several uranium minerals. Others suspected of being self-activated include benitoite, cerussite, anglesite and perhaps many other lead minerals.

Scheelite, a major ore of tungsten, is often found by its brilliant sky-blue fluorescence. If it has a little molybdenum in it (which makes it troublesome to extract the tungsten), this color is modified to white or yellow, providing a quick way to assess the commercial value of a find.

Several secondary uranium minerals, such as autunite, are also characteristically fluorescent a bright yellowish green. This is due to the uranyl ion; this ion is so prone to fluorescence that trace amounts of it cause yellowish-green fluorescence in a very large number of minerals, including adamite, apophyllite, aragonite, calcite, quartz, and opal. Any yellowish-green fluorescence other than willemite is likely to be due to the uranyl ion.

A common fluorescent is calcite. It comes in just about all fluorescent colors due to different activators. Red and pink fluorescent calcites are often activated by a team of lead and manganese.



■ Calcite is white or clear under incandescent light, but it glows pink under longwave UV light, and orange (or sometimes colors) under shortwave UV.



INEXPENSIVE LIGHTS

Professional grade UV lights can cost hundreds, if not thousands of dollars. However, here are a couple inexpensive options to get you started!



\$35



\$5-15

Shortwave light

90% of all fluorescent minerals need a shortwave light source. This is not your standard "black light." HomeScienceTools.com offers a \$35 dual long/shortwave light that several of our members recommend. It is low light and works best in dark conditions, but it is about the least expensive shortwave light you can get.

Longwave light

About 10% of fluorescent minerals show up under longwave light. Inexpensive (\$5-12) longwave lights are readily available at a wide variety of locations such as Walmart, Meijer, Menards, Lowes, Amazon, etc. Be sure that they are labeled as UV lights and not just LED flashlights.

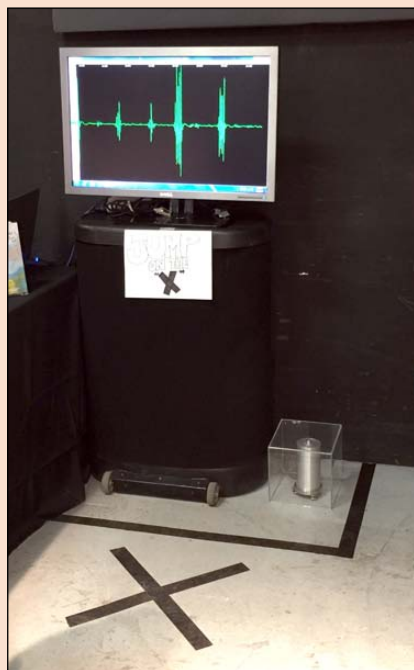


■ *Continued on page 5*

NEAT IDEAS



■ New club members Caleb and Henry Teagardin check out a fossil excavation activity at GeoFest, which was held at the Indiana State Museum in February. The event offered a wide variety of interesting hands-on activities for kids to explore.



■ The Ohio Geological Survey had a booth set up at the recent Columbus Gem and Mineral Show. They had a lot of information on the rock cycle and area rock formations, but a really neat feature of their booth was this interactive seismology exhibit. Kids (and adults) could stomp or jump on the X, and the seismometer (silver cylindrical object in lucite box) would record the shock waves which were then displayed on screen. I wonder if Earlham or the Joseph Moore Museum could do this at our show?



FLUORESCENT

■ *Continued on page 5*

Calcite may fluoresce green due to uranyl ion traces. Calcite from the mercury mines at Terlingua, Texas, and just across the border into Muzquiz, Coahuila, Mexico, is a favorite. It fluoresces pink under longwave UV and bright blue under shortwave UV, with a uniquely bright blue **phosphorescence** after the UV lamp is removed.

Fluorite gave its name to fluorescence, but that does not mean it is always fluorescent. Many fluorites fluoresce a blue-violet color due to traces of europium; this is usually best under longwave UV. Fluorite can show other colors, too.

Willemite, a zinc mineral, often fluoresces a bright yellow-green, due to traces of manganese.

Scapolite (wernerite) from Ontario and Quebec, Canada, fluoresces a vivid orange-yellow color under longwave UV, while shortwave UV inspires a long-lasting **phosphorescence** that can be markedly brightened by holding it under a running hot water faucet, illustrating **thermoluminescence**. Several other fluorescent minerals come from the same area, including sodalite (hackmanite),

cancrinite, diopside, fluoborite, and nepheline.

Franklin, New Jersey is rightly known as the "fluorescent mineral capital of the world." Together with nearby Ogdensburg, it is the source of at least 260 minerals, of which at least 56 are fluorescent. Many of these minerals are found nowhere else in the world. Many of the fluorescents are uncommonly bright. Only the Franklin mine provided specimens with five or more different colors of equally bright fluorescence from as many minerals in one specimen. Willemite and calcite specimens, glowing yellowish-green and orange-red, respectively, are the most common fluorescents from this area; sometimes these combine with hardystonite (fluorescing deep blue-violet), clinohedrite (fluorescing orange), and maybe even esperite (fluorescing yellow) for a truly unforgettable rainbow fluorescence.

Unfortunately, both the Franklin and Ogdensburg mines have been closed. The Sterling Hill mine at Ogdensburg, though the deep levels are flooded, has recently reopened as a museum. The surrounding marble formations still supply many fluorescent specimens, but no more of the rarest combinations are found.



TROY RAFFLE TIX AVAILABLE

Don't forget the Brukner Gem, Mineral, Fossil & Jewelry Show in Troy, OH is this weekend. (see flyer on pg 16).

Their grand prize raffle item is a large piece of carved ocean jasper that weighs in at 25-30 pounds. This unique piece measures about 15" tall at the highest.

Tickets are \$1 each or six tickets for \$5 and can be purchased at the door.

The winning ticket will be drawn at the end of the day on Sunday at the show.

You do not need to be present to win, although you must arrange to pick up the prize. (but since we have at least seven EIGGS members who are Troy members, too, that shouldn't be much of a problem!)



Updated EIGGS WEB SITE

The EIGGS web site has a new look and loads of new content. Please visit the updated site at EIGGS.weebly.com, and see what you think. Be sure to hit the "like on Facebook" link on the home page while you are there.



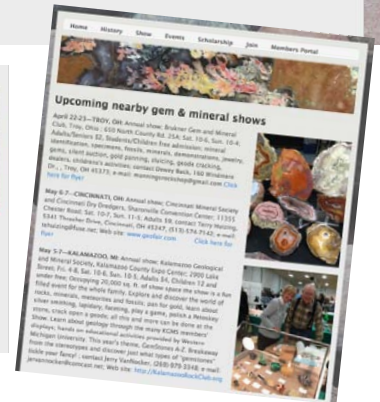
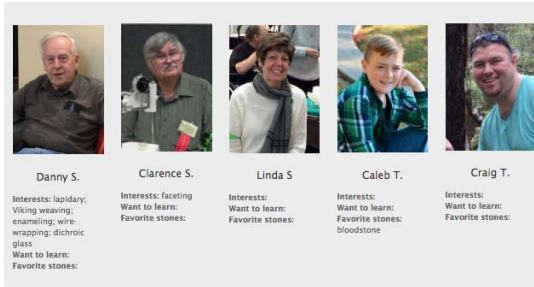
It is still a "work in progress," but all upcoming and many past events are posted, with more photos on the way.

Interested in rock shows in our area? Upcoming shows are listed, and there is already a promo for the 2018 Richmond show. Photos from past shows are there, as well.

The Members Portal has a great "who's who" section. If your information is incomplete, there is a link to click to submit your info. You can also update your e-mail address or address there, if you like. Home and e-mail addresses will not be posted on the site due to privacy and security concerns.

If you need the login for the Members Portal, e-mail Lisa to get it EIGGSnews@gmail.com. We can't post it here since other clubs receive this newsletter. We can't post it on the Facebook closed group because there are non-members in there as well.

Keep checking back since new content is added every week!



MAY 20 FIELD TRIP: FLINT RIDGE, OHIO

Mike Manning will lead a field trip to Flint Ridge, Ohio, Saturday, May 20. Flint Ridge is a nearly eight-mile-long vein of high-quality flint located in eastern Ohio.

If you want to go, please RSVP on the EIGGS web site <http://eiggs.weebly.com/flint-ridge-trip-may-20.html>

Mike says: To go to Flint Ridge, we will leave from the McDonalds on Rt. 202 (Huber Heights) near I-70 at 8 a.m.. If it is calling for some rain, I will still be going unless it is going to be thunderstorms all day.

We will travel to the Nether's farm. The drive time is about two hours from where we are meeting. It is just east of Columbus near Newark, Ohio. Maps can be given out the day of the trip.

The cost last year was 50 cents a pound plus a \$5 entrance fee. No minimum or maximum. You can make it in any vehicle. You just park the vehicle and get out to collect flint.

There will be some holes open to collect in or good flint can be picked up anywhere in the property. It is easy collecting unless you want to get in the holes and dig on one of the flint ledges. You won't go home empty-handed.

Wear long pants and sturdy shoes. Also, gloves are a must since the flint is sharp. If you have a rock hammer, you can bring it to chip the flint. Some people bring more heavy equipment if they plan to attack the ledge (ie. sledge hammers, chisels, shovel, pry bar etc.), but this is not necessary.

If you plan to chip the flint, MAKE SURE TO BRING AND WEAR SAFETY GLASSES OR GOGGLES. I will have extra hammers with me you can use, but I do not furnish goggles. Bring a bucket or pack to put your treasures in. Some people like to wrap their good crystals in newspaper or paper towels.

Bring water to drink and a sack lunch. If we have enough people going, we can set up a table and have a shared lunch.

You can leave any time you feel like it. Once you find out how to get there, you can figure out how to return back to the interstate. There is a portapotty on the premises.

If you have further questions, you can call me 937-681-0264 (cell) 937-552-4705 (home)





■ During a Tuesday night training session, new member Mona Jones checks whether her cab has cooled after applying dop wax. Her first cabochon turned out to be a "muddy" one, which left her fingers orange.



WELCOME, NEW MEMBER!

A warm welcome goes out to Mona Jones, EIGGS's newest member

Mona Jones

Occupation: nurse; semi-retired

Location: Liberty, IN

How did your interest in rocks, gems or minerals develop?

I saw some of Lisa Nash's stones and was interested. I never knew this place existed. After I saw her stones, I knew I had to come figure this out.

What do you hope to learn?

I want to learn to identify the gems and how to work the equipment. I want to create something fun and pretty.

What areas interest you most?

Making really pretty, interesting jewelry

What have you learned so far?

How much I love it!

What are a few of your other hobbies or interests?

I paint in oils and acrylics, I do glass etching, work with beads, and create beaded jewelry. I also do wire-wrapping and wire lacquering.



Anything else you want to share?

I have one daughter, who is a personal chef in Cincinnati, and three grandchildren. One is a hair designer with Aveda.

The biggest piece I ever made was a "netting" necklace that had 4,294 beads in it.

When I get an idea I draw on my walls at night in chalk, crayons or acrylics. It is all washable. I have a giant sunflower and a lighthouse on the wall. When I get tired of them I just wash them off. I have a cafe in Paris on one wall, too.

This is the sixth in a series of short articles from students or staff in the Earlham College Department of Geology.



PERMAFROST

by Gavin Curry, Earlham College senior

Permafrost is soil that has been frozen for two or more years. Usually found in the Arctic and Antarctic regions of the globe, permafrost plays a key role in the stability of ecosystems and even absorbs greenhouse gases (such as CO₂) from the atmosphere and contains them in the ice.

Every year, the very top layer of the permafrost thaws for a while before refreezing; this is called the active layer.

The layer beneath the active layer is constantly frozen. However, in recent years, rising global temperatures associated with climate change have increased the thawing rate of permafrost.

As permafrost thaws, the structural integrity of the surrounding land can be compromised and greenhouse gases like carbon dioxide and methane that were frozen in the soil can be released into the atmosphere. If temperatures continue to rise, permafrost may become a thing of the past.



http://www.johnshawphoto.com/wp-content/uploads/2013/04/120629_D8H_49122.jpg

Gavin Curry is an Earlham senior from Louisville, Kentucky, majoring in Geology. After college, Gavin plans to work as a park ranger in one of America's National Parks.



Joy Ingerman

Judith Echano Medina

Libby Adams

Marty Lucas

Emily Gibson

Nikki Merrill

Naomi Jones

Erna Jacob



CLUB MEMBERS BECOME WIRE-WEAVERS

Nine club members took part in EIGG's first-ever wire-weaving class, taught by Naomi Jones. By the end of the four-hour session on Saturday, April 15, all participants had learned the basics and most had completed a pendant to take home. A couple others had finishing touches left to add later at home.

Naomi suggests checking out YouTube wire-weaving videos and purchasing craft wire from www.RioGrande.com or www.Monsterslayer.com. They have

low prices and a variety of colors to choose from. She thinks the wire may also be available at Hobby Lobby or JoAnn Fabric.

Naomi suggests 18 or 20-gauge **soft round wire** for framing your piece & 26 or 28-gauge **soft round wire** for the weaving. Naomi says any type of wire will work, but she thinks copper is the easiest wire for beginners to work with.

If enough people are interested, Naomi may offer another class or two later this summer. -----> for more event photos, click [here](#).



The wire-weaving groupies



Jim & Marty Lucas



Naomi Jones & Joy Ingerman



Emily Gibson & Nikki Merrill



Judith Echano Medina



Libby Adams



Malessia Bowling & Naomi Jones



Erna Jacob



THREE LAB NIGHTS, EACH WITH A UNIQUE FEEL

Once club members are trained on the grinders and saws and have satisfactorily completed their 3 "starter cabs," they have the choice of three work nights: Tuesdays, Thursdays or Sundays.

Tuesdays are usually bustling and high-energy. It's a fun time to get to know the new folks, see what new treasures people have found and to learn new skills or master specific pieces of equipment.

Thursdays are quieter -- more low-key. It is a good chance to work independently on projects you have already started and to build the skills you already have.

Sundays have a "weekend feel." You can often find the Sunday Night Crew enjoying impromptu pitch-ins and working on a variety of crafts and skills, as well as their lapidary work.

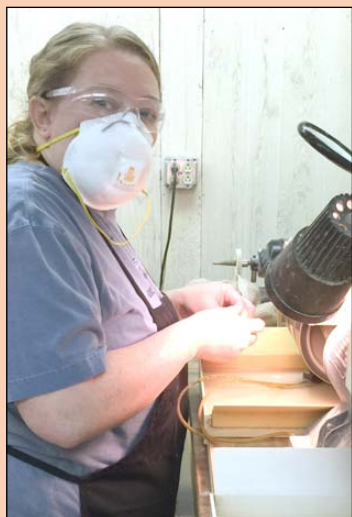
Feel free to try out all three groups; it's a great way to meet other club members who share your interests and who can teach you the skills you want to acquire. Check out the member page at eiggs.weebly.com to find who shares your interests.

Note: *The club is always open on Tuesdays; Be sure to call or text in advance to make sure someone will be there to open the club on Thursdays and Sundays. (see below for details)*

- | | |
|---------------------------|-------------------|
| 1 Erna Jacob | 6 Mona Jones |
| 2 Missy Killion | 7 Missy's pendant |
| 3 Lisa Nash | 8 Erna's pendant |
| 4 Malessia Bowling | 9 Lisa's pendant |
| 5 Erna Jacob & Mona Jones | |



■ The Sunday Night Crew recently spent part of an evening together sharing skills and practicing free-form wire-wrapping.



Angie Shaffer

REMINDER: LAPIDARY LAB USAGE & HOURS

*To use equipment you are required to attend at least **SIX** regular club meetings a year.*

Participants must be trained in proper equipment usage & re-certified when required.

There is a \$2 fee per lab session for equipment usage & maintenance.

Please remember to use the sign-in book.

Tuesdays 6-8 p.m.

Tuesday is the weekly training lab -- perfect for beginners and those with intermediate skill levels since there are experts on hand to help teach basic and advanced skills.

Thursdays 6-8 p.m.

For those who have satisfactorily completed their 3-cab training, the lab is usually open on Thursdays. Call or text Lisa Morris in advance to be sure someone will be there. Her number is 765-960-6474.

Sundays 6-9 p.m.

For those who have satisfactorily completed their 3-cab training, the lab is usually open on Sundays. Call or text Missy Killion in advance to be sure someone will be there. Her number is 765-960-7635.



LUCKY STONES: OTOLITH FACTS & LORE

by Christina Friedrichsen

I was scouring the beach for sea glass when two women walked by. "Not many lucky stones today," the taller one said to me. Hmmm. "What are lucky stones?" I wondered. The women were long gone before I could ask them.

When I got home I headed online to do some research. And I found bones.

The lucky stones I'm sure the two women were referring to that day over a year ago are otoliths, or ear bones from sheepshead fish. They are found along the shores of Lake Erie.

Apparently, indigenous people used them as amulets and fishermen put them in their pockets for good luck.

Whether you are superstitious or not, there's no denying that lucky stones or "ear stones" truly are remarkable. In fact, there are scientists who devote their entire working lives to studying them.



Otoliths provide a wealth of scientific data. In fact, they are referred to as the "black box" or "flight recorder" of a fish. Not only does an otolith tell a fish's

age (each year is represented by a ring, just like a tree), but also very detailed information about the fish's health, habitat and diet.

As D. Graham Burnett writes in *Cabinet Magazine*: (do check out the rest of this excellent article on otoliths here <http://cabinetmagazine.org/issues/31/burnett.php>) "... about 30 years ago a curious geologist, tinkering with an otolith (it was a rock, after all), made the truly shocking discovery that those annual layers can be further resolved, microscopically, down to daily layers, layers that contain, in their chemical composition and size, information about the temperature and the salinity of the water through which the fish moved, the food that it ate, and various environmental contaminants it encountered.

The result is a stratigraphy unprecedented in the organic world: the diligent



student can peruse the otolith of a long-lived deep sea fish, and reconstruct not merely its age, but (and I am barely exaggerating) what it had for breakfast on 6 March 1964, or roughly where it was on the occasion of a particular nuclear test."

Interestingly, each stone has either an "L" shape or a "J" (which stands for "Love and Joy", according to some collectors.) The "L" shaped bones are from the right side of the fish, while the "J" is from the left side.

Some collectors make jewelry out of Lucky Stones. Alison over at Lucky Stone Jewelry is a cancer survivor – and collecting and making jewelry from lucky stones is part of the healing process for her. Check out her story and her wonderful creations [here](#).

I had a nice collection of lucky stones – until this afternoon, when my collection blew into the wooden cracks of my front porch while I was trying to photograph them. (The photos above were snapped before the wind took them.) I have two left.

Yet another excuse to hit the beach this weekend.

Reprinted with permission from Christina Friedrichsen <http://seaglassrocks.com/lucky-stones-otoliths-are-awesome/>

THE INCREDIBLE 'EAR STONES' OF FISH

Graham Burnett wrote a fascinating essay in *Cabinet* about otolithic organs, the pair of sensors in our inner ears that help us stay balanced and maintain inertia. "Grossly speaking," writes Burnett, the otolithic organs consist of "a bunch of tiny pebbles (of the white rock known as calcium carbonate) embedded in a gooey wad that sits atop a carpet of delicate hairs." In humans, those "pebbles" are practically microscopic, but in fish, they can be as large as marbles:

There are several thousand researchers around the world who spend their whole working day looking at fish otoliths. This has nothing to do with their physiological functions, however, and everything to do with their structure and the staggering amount of information they contain. In the first place, each species of fish has a unique otolith shape. Couple this with the fact that they are stone (and



Joshua Foer, for Boing Boing <http://boingboing.net/2009/06/19/the-incredible-ear-s.html>

therefore comparatively resistant to decomposition), and their utility as a biological marker becomes clear. Interested in the food habits of bottlenose whales? Pump their stomachs and you will end up with relatively few bones but lots of otoliths. Find an otolith expert and he or she will be able to give you a menu...

But the true wonder of these peculiar pearls lies within. Should you have occasion to tonsure a snapper or sea-bass, slicing off the top of its skull just above the eyes, you might take a moment to remove the two largest otoliths (there are, as a rule, six in all, three on each side) from their velvet seats to the right and left of the brain stem. With the heel of a knife you should be able to snap one of them in two, and then, holding it to the light, you will discern a set of concentric bands. These are growth rings--annuli--which, properly counted, will give the age of your fish in years.

Trilobites: Denizens of Ancient Seas

Trilobites are extinct arthropods, distantly related to modern lobsters, horseshoe crabs, and spiders. They thrived on every continent on Earth from the Cambrian to Permian period, approximately 520–240 million years ago. Most were small, from 1/4 inch to about 3 inches in length; a few, from 19 to 30 inches in length, were giants.

Looking something like a hard-shelled bug, trilobites had multiple body segments, joined legs, and a shield-like head. Two grooves down its back divided it into three lobes; thus the name tri-lob-ite.

Trilobites were covered by a thick exoskeleton that molted as they grew; that exoskeleton is what is typically preserved as a fossil. Geologists believe that these animals were one of the first forms of life to develop complex eyes; some species had thousands of lenses in each eye. They were bottom-dwelling scavengers that ate organic detritus.

Over 200,000 species of trilobites have been scientifically recognized. Trilobites and other marine fossils help geologists to map ancient seaways and correlate rock strata.

UPDATE: TRILOBITE EGGS FOUND

from <http://www.ifscience.com/plants-and-animals/first-ever-fossil-of-trilobite-with-eggs-discovered-in-new-york/>

Trilobites are well known from an extensive fossil record. Due in part to their massive diversity – and their hard exoskeletons – some 17,000 fossilized species of the arthropods have been discovered and described. Yet despite this, how the creatures reproduced has remained somewhat of a mystery.

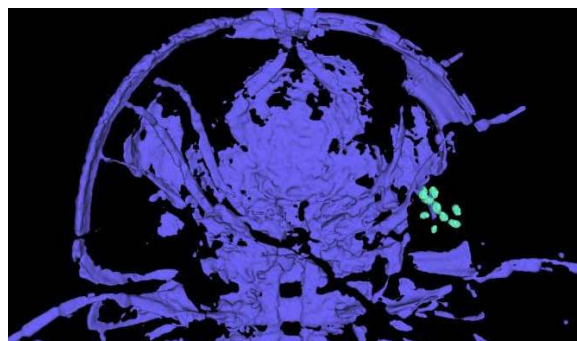
Now researchers have described how for the first time trilobite eggs have been found paired with a fossil of the creature itself.

Discovered in the Whetstone Gulf Formation in New York, the *Triarthrus eatoni* fossil is thought to be at least 450 million years old, and has been preserved by the mineral pyrite, meaning that the fossil is made from what is commonly called fool's gold.

This is not the first time that eggs of the animals are thought to have been found, but the importance of this fossil comes as they are still associated with the trilobite which was seemingly carrying them.

The eggs measure around 200 μm (micrometer) in size, meaning that they were too large to be preserved bacteria, while the location in the head of the critter meant they were unlikely to be fecal pellets. The only answer that seems to fit is that they are indeed eggs.

■ Read more at: <https://phys.org/news/2017-01-trilobite-eggs-paired-adult-fossil.html>



■ A false color, three dimensionally rendered image of a pyritized, egg-bearing specimen of *Triarthrus eatoni*, with a cluster of eggs on the right side. Credit: Western Illinois University



VIRTUAL TRIP: PLANETARY MUSEUM OF ANCIENT WONDERS

from <http://www.planetarymuseumproject.com/>

The Planetary Museum Project is a spectacular collection of 100 ancient planetary treasures gathered over a period of 35 years with the intention of creating an experiential museum designed to awaken a new love and appreciation for the magnificence of planet earth. These giant natural crystals and fossils have never before been seen in or out of museums.

In this technological age the we need more, not less, connection with the natural world. As each of us loses more and more connection with Nature itself, we are actually beginning to lose our world. We need places of inspiration where each of us can replenish our imagination and revitalize our spirit.

The Planetary Museum Project is intended to be the vital core of such a place...where visitors can journey into the heart of the earth, fall in love with the planet, and see it in its immense beauty, power, and fragility. And as Jacques Yves Cousteau wisely observed many years ago, "People protect what they love!"

Please join us on a journey to help us protect and find a permanent home for this world treasure where it can be viewed and experienced by all.

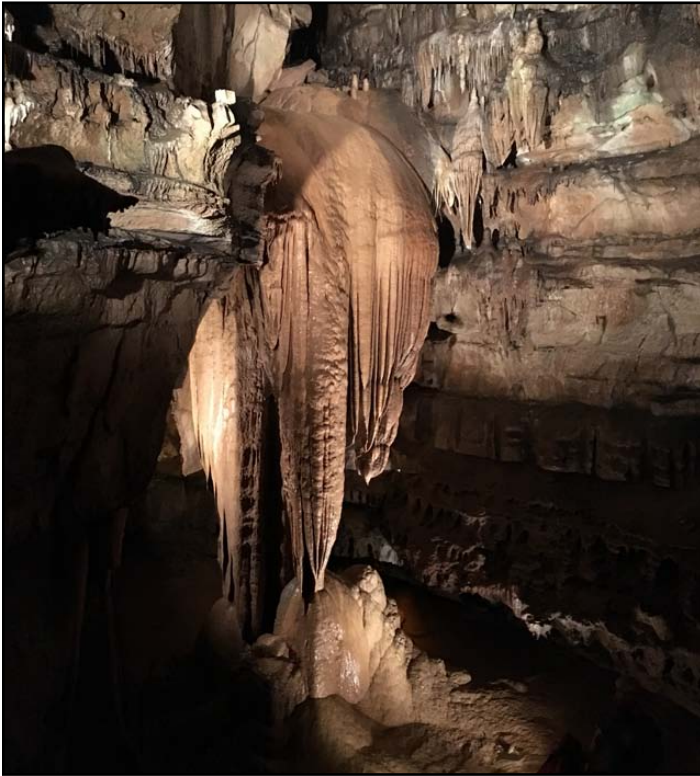
The CBS Sunday Morning transcript and video can be found here: <http://www.cbsnews.com/news/rock-stars-crystals-mined-masterpieces/>



Richard Berger has been collecting rocks and minerals for over 35 years. He is looking for a permanent home for his collection of large, museum-quality pieces. His collection and his hopes for a museum have been featured recently on NPR <http://knkx.org/post/man-who-quit-medical-school-hunt-earth-s-treasures> and on CBS Sunday Morning.



SPELEOTHEMS: STALCTITES & STALAGMITES



■ Stalactites hang from the "ceiling" of Squire Boone Cavern, while stalagmites build upward from the floor of the cave. *Judith Echano Medina photo*

<https://nature.nps.gov/geology/education/learncaveminerals.cfm>

Grade Level: All ages

Source: National Park Service

Caves are naturally occurring underground cavities large enough for human entry. Caves contain a large number of minerals, of which calcite is one of the most common minerals.

Speleothems, often called cave formations, are formed as rainwater passes through the soil and absorbs carbon dioxide. As water and carbon dioxide mix, it forms a weak acid called carbonic acid, which helps to dissolve underlying rock.

When water seeps into the air-filled cave, it loses carbon dioxide to the cave atmosphere, causing the water to precipitate calcite deposits in different forms. Calcite precipitates on ceilings, walls, and floors as speleothems.

There are many types of speleothems, but the most common that people are familiar with are stalactites and stalagmites. Stalactites are formed by mineral rich dripping water, and they grow down from the ceiling like icicles. Stalagmites are formed when mineral rich water drops from stalactites and accumulates on the cave floor, growing upward like a cone. Sometimes a stalactite and stalagmite grow together to form a column.

GROWING SPELEOTHEMS

Here's how you can construct a working model of mineral deposition and speleothem growth using a concentrated solution of salt.

Materials Needed

- 1 small plate/saucer, or piece of aluminum foil
- 1 spoon
- 2 paper clips
- 2 jars of the same volume/size
- Epsom salt
- Hot water
- Thick cotton string or yarn (natural fibers)

Procedures

1. Fill both jars with hot tap water 2/3 of the way full.
2. Add enough Epsom salt to each jar until the salt will no longer dissolve in the hot water (approximately 8 or more ounces per jar).
3. Place 2-5 drops of food coloring into each jar and stir.
4. Cut string between 12-18 inches in length. You want it long enough so that each end remains submerged close to the bottom.
5. Tie a paper clip to each end of the string, to act as a weight in the jar.
6. Place a small plate between the two jars to catch the water as it drops.
7. Wet the entire string in tap water.
8. Place the ends of the strings into each jar so that the clips rest on the bottom of the jar.



9. Leave enough slack between the jars so that the string sags in the middle (do not let the string touch the plate; you might need to cut the string if it is too long).
10. Place your experiment next to a window, in a safe location, with minimum sunlight. Direct sunlight can prevent crystallization; make sure to reduce exposure to sunlight. Make sure not to touch or move the experiment once the stalactites start to grow; any movement of the string could cause breakage of the formation.
11. Check your "cave" at least once a day. It will grow over time.

Note: Results may vary depending on the temperature & humidity of your area.

Download: Growing Speleothems Student Page

Includes background information, step-by-step photo instructions, and conclusion questions.

https://nature.nps.gov/geology/education/StudentPages_speleothems_New.pdf



GeoFair 2017

April 18, 2017

For Immediate Release

Contact: Greg Hand
GeoFairPublicity@Gmail.com
513-662-9171

See Treasures From Nine Outstanding Museums At GeoFair - May 6 & May 7 At Sharonville Convention Center

GeoFair's roster of outstanding museum collections expands this year with the addition of the Ben E. Clement Mineral Museum of Marion, Kentucky, displaying treasures from their world-renowned fluorite collection. Other museums showcasing breath-taking treasures at GeoFair this year include Carnegie Museum of Natural History, Cincinnati Museum Center, Cranbrook Institute of Science, Indiana State Museum, Limper Geology Museum of Miami University, Maine Mineral and Gem Museum, Wayne State University Geology Museum, and Wittenberg University.

GeoFair is Cincinnati's largest non-profit gem, mineral, fossil & jewelry show. The 52nd annual GeoFair will delight visitors over the first weekend in May.

10:00 a.m. to 6:00 p.m.
Saturday, May 6
Sharonville Convention Center
11355 Chester Road

11:00 a.m. to 5:00 p.m.
Sunday, May 7
Sharonville Convention Center
11355 Chester Road

GeoFair's themes this year are quartz minerals and invertebrate fossils, so visitors will find exceptional displays of Ohio's official state mineral, flint, as well as Ohio's official state fossil, the *Isotelus trilobite*.

Admission to GeoFair is \$9 for adults and \$3 for children. A two-day adult pass is available for \$12. Plentiful parking is free at the Sharonville Convention Center. Scouts in uniform get free admission, as do teachers with identification when accompanied by a paying adult. (A coupon for \$2 off adult admission is offered for download at GeoFair.com)

Since 1965, GeoFair has introduced thousands of families to the pleasures of the earth sciences including collecting minerals and fossils, making jewelry and studying geology. Experts at GeoFair will identify any fossil or mineral specimens or any items of jewelry. Dozens of displays showcase the rare "finds" of amateur collectors. GeoFair is produced by the Cincinnati Mineral Society and the Cincinnati Dry Dredgers, an association of amateur paleontologists.

For more information on GeoFair 2017, see our website at GeoFair.com

UPCOMING SHOWS

April 22-23—TROY, OH: Annual show; Brukner Gem and Mineral Club, Troy, Ohio ; 650 North County Rd. 25A; Sat. 10-6, Sun. 10-4; Adults/Seniors \$2, Students/Children free admission; mineral identification, specimens, fossils, minerals, demonstrations, jewelry, gems, silent auction, gold panning, sluicing, geode cracking, dealers, childrens's activities; contact Dewey Buck, 160 Windmere Dr., , Troy, OH 45373; e-mail: manningsrockshop@gmail.com

May 6-7—CINCINNATI, OH: Annual show; Cincinnati Mineral Society and Cincinnati Dry Dredgers, Sharonville Convention Center; 11355 Chester Road; Sat. 10-7, Sun. 11-5; Adults \$9; contact Terry Huizing, 5341 Thrasher Drive, Cincinnati, OH 45247, (513)-574-7142; e-mail: tehuizing@fuse.net; Web site: www.geofair.com

May 5-7—KALAMAZOO, MI: Annual show; Kalamazoo Geological and Mineral Society, Kalamazoo County Expo Center; 2900 Lake Street; Fri. 4-8, Sat. 10-6, Sun. 10-5; Adults \$4, Children 12 and under free; Occupying 20,000 sq. ft. of show space the show is a fun filled event for the whole family. Explore and discover the world of rocks, minerals, meteorites and fossils; pan for gold, learn about silver smithing, lapidary, faceting, play a game, polish a Petoskey stone, crack open a geode; all this and more can be done at the Show. Learn about geology through the many KGMS members' displays; hands on educational activities provided by Western Michigan University. This year's theme, GemStones A-Z. Breakaway from the stereotypes and discover just what types of "gemstones" tickle your fancy! ; contact Jerry VanNocker, (269)-979-3348; e-mail: jervannocker@comcast.net; Web site: KalamazooRockClub.org

May 20-21—ST. JOSEPH, MI: Annual show; Blossomland Gem & Mineral Society, Lake Michigan Catholic Elementary School; 3165 Washington Ave.; Sat. 9-6, Sun. -; Free Admission; This is a non-profit annual gem, mineral and fossil show. There will be children's activities, multiple artisans, demonstrations in polishing, silversmithing, wire-wrapping, located on the beautiful shores of Lake Michigan. Come and make a weekend of it!; contact Pam Kriegsmann, Stevensville, MI, (630)-779-8258; e-mail: kriegsmann@sbcglobal.net

June 23-25—BEDFORD, IN: Annual show; Lawrence County Rock Club, Lawrence County Fairgrounds; Hwy. 50 West; Fri. 10-6:30, Sat. 9-6:30, Sun. 10-4; Free Admission; 52nd Annual Gem, Mineral Fossil Show - Sponsored by the Lawrence County Rock Club. Free demonstrations, variety of gems, jewelry, minerals, fossils, beads, rocks, lapidary, rockhound and prospecting supplies. 4-H and science project materials. ; contact Michael Tweedale, (812)-675-6034; e-mail: imettweedy@yahoo.com; Web site: www.lawrencecounty-rockclub.org

Sept. 8-10—GREENFIELD, IN: Annual show; 500 Earth Sciences Club, Hancock County 4-H Fairgrounds; 620 N. Apple Street; Fri. 10 a.m-7 p.m, Sat. 10 a.m-7 p.m., Sun. 10 a.m.-4 p.m.; Free admission; Dealers and swappers in fossils, minerals, gems and jewelry and lapidary equipment plus silent auctions, door prizes and much more. Kids activities, demonstrations, educational



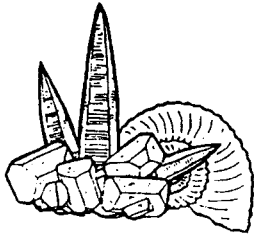
displays and programs for all. Contact Cheryl Hamilton, 3507 Luewan Dr., Indianapolis, IN 46235, (317)-897-3369; e-mail: chamilton1951@gmail.com

Sept. 29-Oct. 1—INDIANAPOLIS, IN: Annual show; Treasures Of The Earth Gem & Jewelry Shows, Indiana State Fairgrounds - Agriculture/Horticulture Building; 1202 East 38th Street; Fri. 10-6:00 pm, Sat. 10-6, Sun. 11-5; Adults \$5 (Good all 3 days), Children Free under age 16; Jewelry makers, goldsmiths and silversmiths from all over the U.S. who can reconstruct, repair, design or make original jewelry from customer-selected gems, stones, opals and crystals. Wire wrap, wire sculpture, stone beads, pearls, stone setting, amber, opal, mineral and fossil dealers. Hourly door prizes including a Ring with a precious stone that will be given as a Grand Prize. Demonstrations and classes.; contact Van Wimmer - Show Director, 5273 Bradshaw Road, Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

Sept. 30-Oct. 1—NASHVILLE, IN: Annual show; Brown County Rock & Mineral Club, Brown County History Center; 90 E. Gould Street; Sat. 10-6, Sun. 10-6; Free Admission; The 2nd Annual Brown County Rock & Mineral Show presented by the Brown County Rock & Mineral Club. There will be demonstrations of wire-wrapping, gold-panning, flint-knapping, etc. There will be vendors from all over the Midwest with everything from gems to geodes to fossils to healing stones. ; contact Rhonda Dunn, P. O. Box 2023, Nashville, IN 47448-2023, (812)-320-6237; e-mail: radunn1972@aol.com; Web site: <http://browncountyrocks.webs.com/>

October 20-22—FORT WAYNE, IN: Annual show; Three Rivers Gem & Mineral Society, Allen County Fairgrounds; 2726 Carroll Rd; Fri. 10-6; Adults \$5, Seniors \$3, Students \$1, Children under 12 free; Theme: "Crinoids: Indiana's Most Famous Fossil" Attractions: gem, fossil, mineral and jewelry dealers, lapidary arts demonstrations, Viking Knit classes, exhibits, geode cracker, gem sluice, kid's games, dinosaur models, door prizes, silent auction, fluorescent room, touch 'n feel table. ; contact Russell Greim, 7619 CR 68, Spencerville, IN 46788, (260)-403-0450; e-mail: 3riversshow@gmail.com; Web site: http://3riversgem_mineral.tripod.com/annualshow/

34th ANNUAL BRUKNER GEM, MINERAL, FOSSIL AND JEWELRY SHOW TROY, OHIO



MIAMI COUNTY FAIRGROUNDS
DUKE LUNDGARD BUILDING

North End – Heated & Air Conditioned
COUNTY ROAD 25-A • TROY, OHIO

SATURDAY, APRIL 22, 2017

10:00 a.m. to 6:00 p.m.

**FREE
DOOR
PRIZES**

SUNDAY, APRIL 23, 2017

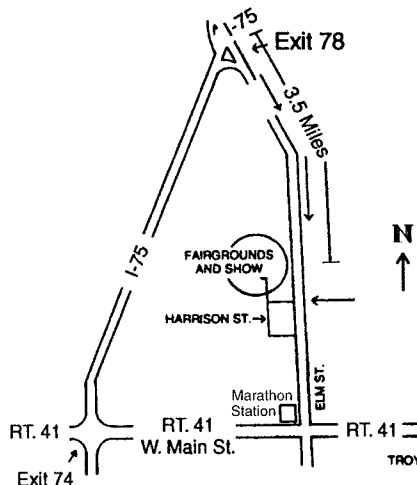
10:00 a.m. to 4:00 p.m.

Admission: Adults \$2.00 ~ Children Free ~ Free Parking

**FOOD
AVAILABLE**

**FREE ROCK
TO EACH
CHILD**

*Mineral Identification
by Club Members and Gary
Getz, an Ohio
Geological Consultant*



*See Gems in the Making
Specimens - Gems
Jewelry - Rough Stone
Demonstrations - Displays
Silent Auction
Dealers
Raffles*

Children's Activities:

Wheel of Fortune - Grab Bags - Sluice - Mystery Rock

North Recommended Route: I-75 to exit 78 south on County Rd. 25-A to Fairgrounds - North Entrance

Alternate Route from Troy: South exit 74 to Rt. 41 to Elm Street to Fairgrounds to North Entrance

SPONSORED BY BRUKNER GEM & MINERAL CLUB • 5995 HORSESHOE BEND RD. • TROY, OH 45373

Show Chairman: Dewey Buck 937-308-3012

Vendor Info: Mike Manning, 937-552-4705

Cincinnati GeoFair 2017

52nd Annual

**Gem, Mineral, Fossil & Jewelry
Show of Greater Cincinnati**

www.geofair.com

May 6

Saturday
10 am to 6 pm



May 7

Sunday
11 am to 5 pm

Featuring:

***Quartz – Crystals & Gems
Invertebrate Fossils***

Illustrated Earth Science Programs

Saturday, May 6

Quartz: Signature Mineral of Continents

Digging for Dinosaurs

Sunday, May 7

Quartz: A Multifaceted Mineral

Major Transitions in the History of Life

Sharonville

Convention Center

11355 Chester Road

Sharonville, Ohio 45246

www.geofair.com for directions

FREE PARKING

Cincinnati GeoFair 2017

Adults.....\$9

Two-day pass.....\$12

Children.....\$3

Uniformed Scouts free

Scout leaders pay adult rates

Teachers free with ID and paid adult companion

\$2 OFF ONE ADULT ADMISSION

GeoFair 2017

May 6 & May 7

Sharonville Convention Center

11355 Chester Road

Sharonville, Ohio 45246

FREE PARKING 2017.3

Gem, Mineral, Fossil, & Jewelry Dealers

50+ Retail • 4 Wholesale • 3 Publications

www.geofair.com for list

Educational Earth Science Programs

Dr. Carl Francis • Dr. Glenn Storrs

Mr. Jeff Scovil • Dr. Brenda Hunda

Gem, Mineral, Fossil & Jewelry Displays

70 museum, university, and private collections

Family Activities • Education Center • Games

Geode cracking • Demonstrations • Swap area

Free mineral, meteorite, fossil & gem

identification • Scout merit badge assistance

Free mineral or fossil collection - kids under 12

GeoFair 2017 is produced by the nonprofit

Dry Dredgers – an organization of amateur

paleontologists & fossil collectors.

www.drydredgers.org, and the

Cincinnati Mineral Society – an organization
of amateur mineralogists & mineral collectors.

www.mineralsociety.org

2017 SPRING Flint Ridge Knap-In

Friday, May 26th, 9 - 5
 Saturday, May 27th 9 - 5
 Sunday, May 28th 9 - 2

Held at the
 Flint Ridge Ancient Quarries
 & Nature Preserve
 7091 Brownsville Rd
 Glenford, OH 43739



Everyone is Invited!

Come and join us for a fun and educational weekend. Witness craftsmen and artisans demonstrate how to make arrowheads, spears, stone tools, bows, atl-atls, stone pipes, cordage as well as other items from hide and bone. Take a nature walk through the woods on the park trails and see the remains of the ancient quarry pits left behind by the native people. Then take a tour of the museum to learn about the the rich history and geology of Flint Ridge.

Roy Miller 330-473-7041 roy@RoyMillerFlintRidge.com

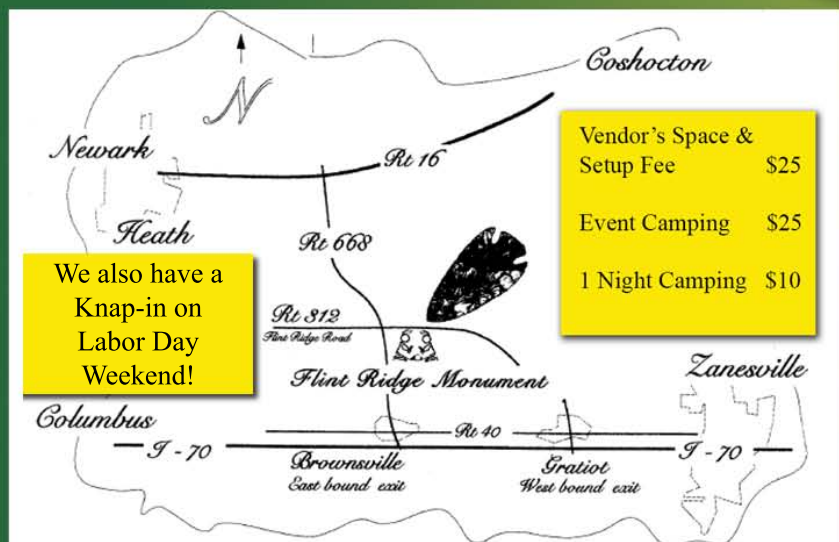
Phil Love 419-683-1024 PHLove@live.com

Glenn Witchey 330-329-7501 glenn_wit@yahoo.com

Carl Smith 330-340-4681 casmith7384@gmail.com

For more
 information contact
 one of our Board
 Members

Admission is \$5.00
 per vehicle which
 includes free
 Museum Admission



Hosted by: The Flint Ridge Lithic Society in conjunction with the Licking Valley Heritage Society.