



Volume 68 ♦ Number 08 ♦ August 2022 ♦ A monthly newsletter for and by the members of MAGS

Summer Fun

MAGS Summer 2022 Picnic and Rock Swap



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Stay cool and trade your collection with us INDOORS at our August 12 Membership Meeting. Load up selections from your collection to sell and trade, pile your friends and family in the car, bring along a food dish to share, and join us as we swap some rocks, miner-

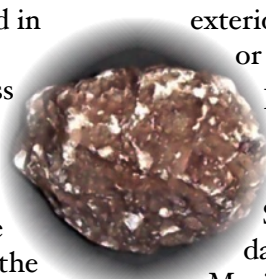
als, and knowledge.

Members and non-members welcome! If you know someone who is a "closet" rockhound, bring them along. This event is free and a great opportunity to show everyone what we do. See P. 3 for details.

MYSTERY SOLVED...BY USING AN ULTRAVIOLET LIGHT

J. MICHAEL HOWARD

Recently I have become very interested in fluorescent minerals, and in the process of buying and trading specimens I came across a bit of a mystery. One dealer on eBay had several barite nodules for sale that fluoresced. So I purchased one, and sure enough it had decent fluorescence...see the picture on this page and Fig. 1. They show the



exterior of the nodule, the interior, and the interior fluorescent pattern.

But what bothered me was the vagueness of the location...Mexico. That is like saying Quartz...USA.

So I went to my primary web source, Mindat.org, and looked for barite— Mexico. Well, barite is a common *Continued, P. 4*

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ◊ A monthly newsletter for and by the members of MAGS

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MAGS AND FEDERATION NOTES

Memphis Archaeological and Geological Society,
Memphis, Tennessee

The objectives of this society shall be as set out in the Charter of Incorporation issued by the State of Tennessee on September 29, 1958, as follows: for the purpose of promoting an active interest in the geological finds and data by scientific methods; to offer possible assistance to any archaeologist or geologist in the general area covered by the work and purposes of this society; to discourage commercialization of archaeology and work to its elimination and to assist in the younger members of the society; to publicize and create further public interest in the archaeological and geological field in the general area of the Mid-South and conduct means of displaying, publishing and conducting public forums for scientific and educational purposes.

MAGS General Membership Meetings and MAGS Youth Meetings are held at 7:00 P. M. on the second Friday of every month, year round. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, Tennessee.

MAGS Website: memphisgeology.org

MAGS Show Website: <https://earthwideopen.wixsite.com/rocks>

We aren't kidding when we say this is a newsletter for and by the members of MAGS. An article with a byline was written by a MAGS Member, unless explicitly stated otherwise. If there is no byline, the article was written or compiled by the Editor. Please contribute articles or pictures on any subject of interest to rockhounds. If it interests you it probably interests others. The 20th of the month is the deadline for next month's issue. Send material to lybanon@earthlink.net.

August DMC Field Trip

WHERE: Hogg Mine, LaGrange, GA (fee site)

WHEN: Saturday, August 13, 9:00 A.M.-5:00 P.M.

COLLECTING: Aquamarine Beryl, Rose Quartz, more

CONTACT: Anthony Zwilling, (256) 541-8894,
afzwillling@gmail.com

Links to Federation News

- ➔ AFMS: www.amfed.org/afms_news.htm
- ➔ SFMS: www.amfed.org/sfms/
- ➔ DMC: www.amfed.org/sfms/dmc/dmc.htm

President's Message



The Rock Swap

- Bring all things rocks and hobby related to sell, trade , swap, or just give away.
- If selling, please donate a door prize for Rock Bingo and door prizes.
- Bring your own table, sharing OK.
- Bring your own money.
- Accuweather forecasts a high of 93° so it's good time to stay indoors with MAGS and rocks.

The Picnic

- MAGS provides the tables, cutlery, and drinks.
- Members bring food, snacks.
- Make something special and show off. We will help you take home an empty bowl.

Rock Bingo

- A MAGS original.
- Played in the format of traditional bingo.
- Instead of numbers, rock- and fossil-related words are used. We use the Christmas version to stay cool.
- Prizes awarded for those who win the designated game.

How you can help

- Come early to help set up and stay late to help clean up.
- Bring food items to share.
- Donate a prize.
- Have fun with rocks, food, and rockhounds.

W. C.

MAGS FIELD TRIPS				
Quartz	Fluorite	Tennessee	Black Rock	Blue Springs
Bryozoans	Crow Creek	Fossils	Brachiopods	Druse
Chalcopyrite	Cove Creek	Crinoids	Trilobites	Pyrite
Birmingham Ridge	Crystals	Sugar Creek	Gravel pits	Limonite
Selenite	Richardson Landing	Mississippi	Barite	Vulcan Quarry

MAGS FIELD TRIPS				
Petrified Wood	Bryozoans	Mt Ida	Turkey creek	Birmingham Ridge
Coral	Clams	Limonite	Geodes	Parsons
Trilobites	Calcite	Druse	Barite	Mississippi
Ice age	Agates	Vulcan Quarry	Cove Creek	Gravel bars
Crystals	Chalcopyrite	Dolomite	Sugar Creek	Crinoids

Sample Rock Bingo Cards

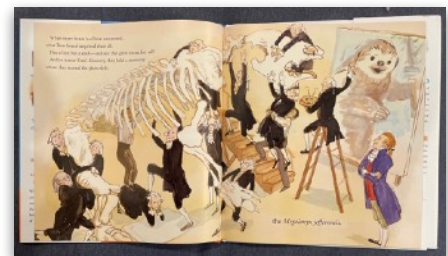
MAGS Member Publishes Scientific Paper

MAGS Member Dr. Nina L. Baghai-Riding (Division of Mathematics and Sciences, College of Arts and Sciences, Delta State University) has a paper in the October 2021 issue (Vol. 66, No. 3) of the *Journal of the Mississippi Academy of Sciences*. (She says the issue was late in coming out and was published just a few weeks ago.) The article describes work done under a Paleontological Outreach and Education Grant received from the Paleontological Society. The work taught K-12 students, teachers, Delta State University students, and educators about the diversity, abundance, and preservation of fossil resources throughout northern Mississippi.

Here is a link to the journal issue. The paper begins on P. 199 (the issue starts with P. 182).

https://msacad.org/wp-content/uploads/2022/06/October-vol-66-no-3_2021.pdf

Mammoth Hunt



I'm not sure what our third president would have thought about the internet, but a review of a lighthearted children's book about some of his contributions to early developments in American paleontology popped up. *Thomas Jefferson and the Mammoth Hunt* [Carrie Clickard (Author), Nancy Carpenter (Illustrator)] is written in rhyming prose that makes it very fun to read aloud, augmented by the bright, colorful illustrations. I didn't know that Jefferson had a collection of fossils, but he did. The review points out that he had fossils of mastodons; the differences between mammoths and mastodons had yet to be sufficiently nailed down. The book has five stars on Amazon.

Mystery Solved...
Continued from P. 1

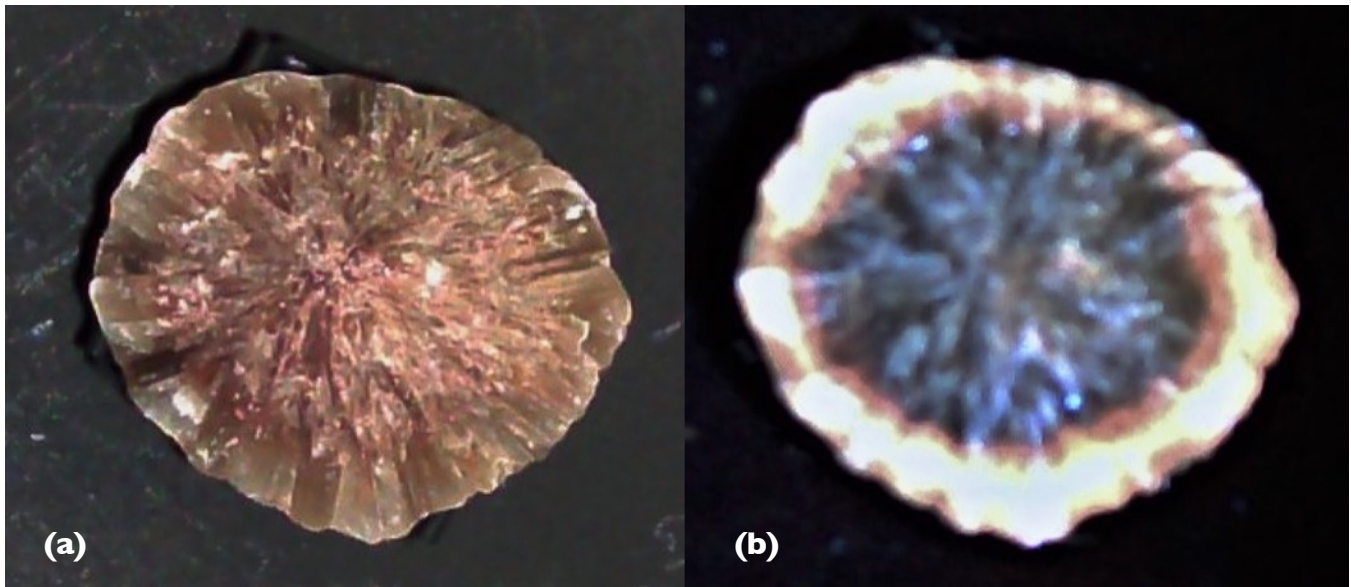


Fig. 1. Barite, nodular, near Lawton, Comanche Co., OK. FOV 1.5 in, interior. (a) natural light (b) LWUV 365nm

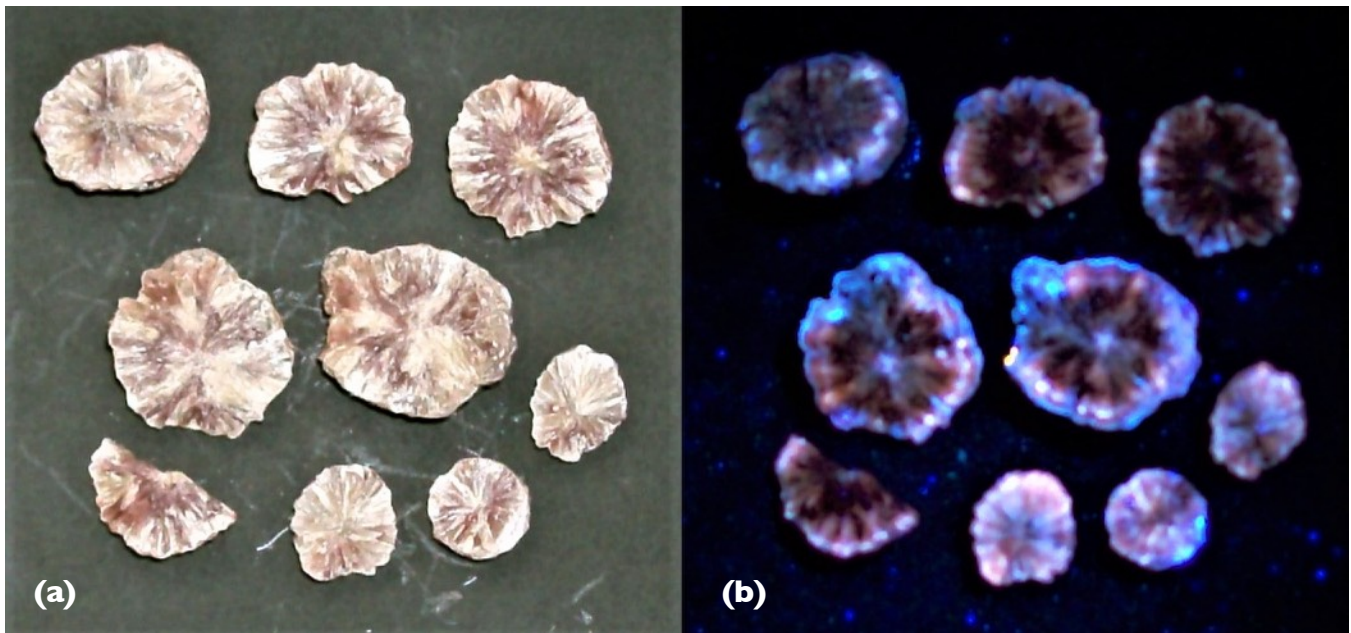


Fig. 2. Barite nodules near Lawton, Cherokee Co., OK. FOV = 3.5 in. (a) natural light (b) LWUV 365nm
mineral and there were many locations in Mexico. After looking for an hour, I came across one locality in Mexico that had nodular barite, but when I looked at the picture of that material it looked nothing like the sample I bought! Then I began to think about a trip I made years ago, when I visited a fellow I had done some trading with, who lived in far southwest Oklahoma, and I remembered that he took me to a location and we collected some similar looking barite nodules, like the one from "Mexico." I looked for rock shops in southwest Oklahoma, and found one in Lawton in Cherokee County. They were advertising locally collected barite nodules, not the well known barite roses from near Norman, and I

Continued, P. 5

Mystery Solved... ordered a few. *Continued from P. 4* Finally they arrived, and when I checked them with my LWUV 365 lamp, they fluoresced exactly like the one I purchased from eBay. So I am now convinced either the eBay seller did not know where these were from—which happens a lot—and just guessed at Mexico as a source, or he just did not want people to know where they were from, which sometimes happens.

Anyway, compare for yourself the first pair of pictures (Fig. 1), and the second pair of pictures (Fig. 2) and you will likely agree with me. Another location mystery resolved!

www.mags.org

Heat-Related Illnesses

The July issue of *SFMS Lodestar*, the Southeast Federation’s newsletter, reprinted the CDC poster shown at right. It’s particularly timely. Memphis is suffering through a substantial number of unusually hot days. And get ready. “The best-case scenario is still that this is the coolest summer you’ll experience in the rest of your life,” says Ben Zaitchik, a professor in the earth and planetary sciences department at Johns Hopkins University.

MAGS Members like to get outdoors for field trips, and for other activities. So it’s important to know how to deal with the heat.

For people who want or have to be outside, take steps to protect yourself from the heat. Dress in loose, lightweight, light-colored clothing and shield yourself from

HEAT-RELATED ILLNESSES

WHAT TO LOOK FOR	WHAT TO DO
HEAT STROKE	
<ul style="list-style-type: none"> High body temperature (103°F or higher) Hot, red, dry, or damp skin Fast, strong pulse Headache Dizziness Nausea Confusion Losing consciousness (passing out) 	<ul style="list-style-type: none"> Call 911 right away—heat stroke is a medical emergency Move the person to a cooler place Help lower the person's temperature with cool cloths or a cool bath Do not give the person anything to drink
HEAT EXHAUSTION	
<ul style="list-style-type: none"> Heavy sweating Cold, pale, and clammy skin Fast, weak pulse Nausea or vomiting Muscle cramps Tiredness or weakness Dizziness Headache Fainting (passing out) 	<ul style="list-style-type: none"> Move to a cool place Loosen your clothes Put cool, wet cloths on your body or take a cool bath Sip water <p>Get medical help right away if:</p> <ul style="list-style-type: none"> You are throwing up Your symptoms get worse Your symptoms last longer than 1 hour
HEAT CRAMPS	
<ul style="list-style-type: none"> Heavy sweating during intense exercise Muscle pain or spasms 	<ul style="list-style-type: none"> Stop physical activity and move to a cool place Drink water or a sports drink Wait for cramps to go away before you do any more physical activity <p>Get medical help right away if:</p> <ul style="list-style-type: none"> Cramps last longer than 1 hour You're on a low-sodium diet You have heart problems
SUNBURN	
<ul style="list-style-type: none"> Painful, red, and warm skin Blisters on the skin 	<ul style="list-style-type: none"> Stay out of the sun until your sunburn heals Put cool cloths on sunburned areas or take a cool bath Put moisturizing lotion on sunburned areas Do not break blisters
HEAT RASH	
<ul style="list-style-type: none"> Red clusters of small blisters that look like pimples on the skin (usually on the neck, chest, groin, or in elbow creases) 	<ul style="list-style-type: none"> Stay in a cool, dry place Keep the rash dry Use powder (like baby powder) to soothe the rash

the sun with hats, sunglasses, and sunscreen. The hotter it is, the more frequently you should be taking breaks. You can also try to stay cool by soaking your head and

shirt in water.

And it’s particularly important to learn the symptoms of heat-related illnesses. The chart is a good place to start. Try to stay cool.

Fabulous Tennessee Fossils

Dr. Michael A. Gibson,
University of Tennessee at Martin

FTF 90

Nathan's Squattered Fossil



In FTF 78 I summarized the types of biotic interactions that fossils can preserve in their skeletons and shells, which provide paleoecologists with great insight into the ecological relationships among past organisms, and I refer you back to that article if you do not remember all of the possible interactions that can be preserved. In this essay, I want to highlight one specimen from the Late Cretaceous Coon Creek Formation that was discovered by one of our very young patrons, 10 year-old Nathan Rubio from Selmer, who visited the site on a very hot July Saturday recently. We thank Nathan for donating his find to the UT Martin collections for research. Nathan's fossil is an excellent example of a non-interactive biotic association called "squattering" or "squatting"; however, it has additional features that make it even more significant taphonomically. Recall from FTF 78 that non-interactive associations mean there is a lack of direct behavioral interaction between physically contacted species or individuals of fossil. When a noninteractive association between two organisms is such that one organism lives on (epitaphism) or within (endotaphism) another organism such that the host organism was not living at the time of the physical association, then we call this "taphism" (living on a dead thing). One specific variety of epitaphism (or endotaphism) is called "squat-

tering" or "squatting". Squattering is defined as an association where a living organism occupies an abandoned or unoccupied shell of another dead organism. One very familiar example of this to beachcombers is hermit crabs inhabiting abandoned gastropod shells.

Figure 1 is a view of the interior of the bivalve clam *Crassatella* that contains a specimen of the jingle shell bivalve *Anomia* nestled within it. Nathan was surprised when he found a second fossils nestled inside the *Crassatella* as he slowly and meticulously removed the matrix from the shell announcing that he had two fossils in one. It is common to find various fossils within the valves of other fossils in the Coon Creek deposit where currents have washed the smaller fossils into the protective covering of the larger fossils during burial, so I was not surprised at first. As I looked at his find a little closer, however, I realized that Nathan's fossil was not the typical nestling of multiple shells by current activity. Notice in Figure 1 that the *Anomia* shell is perfectly molded to the interior shape of the *Crassatella*. You can even see where the exterior shell surface of the *Anomia* is molded over the palial line (arrow) of the *Crassatella* and where the commissure edge of the *Anomia* shell thins out in the muscle scar of the *Crassatella*. This relationship indicates to me that the *Anomia* was living throughout

its entire lifetime within the concave interior of the disarticulated *Crassatella* valve and "xenomorphically" molded its shell shape according to the shape of the interior of the *Crassatella*. This also meant that the *Crassatella* was dead, disarticulated, and flipped concave-up on the seafloor at the time of the *Anomia* growth. This was thus a great example of squattering by the *Anomia* within the reworked *Crassatella*. I was very excited by this specimen as it is the first and only of its kind reported from the Coon Creek Formation at our site.

After negotiating with Nathan to trade his fossil for a few other fossils, including a nice specimen of the State Fossil of Tennessee, so we could put his fossil into our biotic interaction collection, I worked on conserving the specimen. This required carefully separating the *Anomia* from the *Crassatella* to add preservative to both shells. That is when I made the next discovery and one that took my breath away. There was no matching valve for the *Anomia*, which is a bivalve! The *Anomia* should have had two valves, but this specimen evidently only secreted one valve! Figure 2A shows the interior of the *Crassatella* with the *Anomia* removed and flipped over to show the interior of the *Anomia*. The black arrow marks the deflection within the *Anomia* where it changed its

Continued, P. 7

Fabulous Tennessee Fossils
Continued from . 6



Figure 1. Nathans squatting fossil. The jingle shell *Anomia* is nestled within the valve of a *Crassatella* and has molded its shell shape to match the microtopography of the *Crassatella*. (Shell 4cm across, MAG Photo).

shell shape to grow over the pallial line within the *Crassatella*. Again, this is also an example of xenomorphism where the shape of one shell molds itself to the surface of the host shell. Notice the muscle scars for the *Anomia* are also visible (open arrows); however, the muscle scars for the *Anomia* are not typical as they appear to be in a set of three overlapping

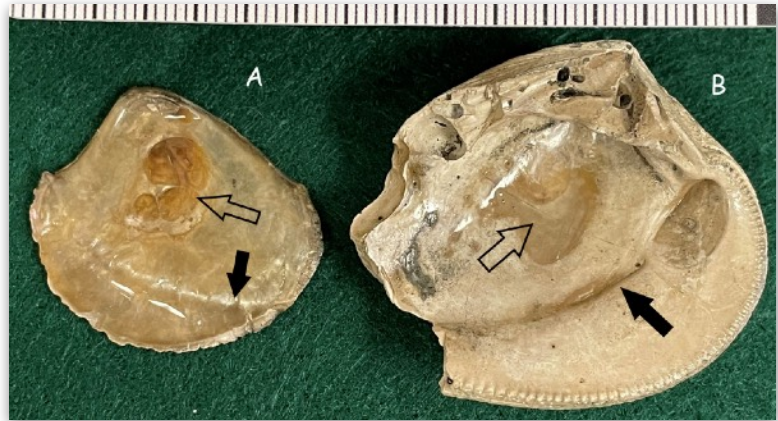


Figure 2. A. Inside surface of the *Anomia* shell removed to show the overlapping muscle scars (open arrow) and xenomorphic change of shape as the *Anomia* overgrew the pallial line of the *Crassatella* (black arrow). B. Corresponding inner surface of the *Crassatella* valve with *Anomia* removed showing the pallial line (black arrow) and *Anomia* muscle attachment scars directly inside the umbo region of the *Crassatella* (scale in mm, MAG Photo).

muscles, not the single muscle scar attachment site that is typical. Figure 2B shows the interior of the *Crassatella* valve with the corresponding overlapping muscle scars of the *Anomia* within the concave portion of the *Crassatella* near the hinge area (open arrow), as well as the thick pallial line of the *Crassatella* (dark arrow). The

muscle of the *Anomia* attached directly to the *Crassatella*, instead of its own (missing) valve! This *Anomia* lived by using the squattered *Crassatella* its lower valve and attachment point for its muscles, thus conserving the resources and energy it would have expended to grow that half of its shell. This is truly an unusual find!

No Rocks, But ...

Matthew Lybanon, Editor

Florida is lacking in rocks, but it does have mineral resources. Phosphate mining began in Florida in 1883 near Hawthorne in Alachua County. This hard-rock phosphate was mined in a region extending from Alachua to Citrus counties. The mining of pebble phosphate began in 1888 in central Florida and in the 1960s in Hamilton County. Today Florida has 27 phosphate mines, covering more than 450,000 acres.

Phosphate includes several

naturally occurring minerals that contain phosphorus as well as other elements. It is primarily used to produce fertilizers for food production. It may also be used in animal feed supplements, food preservatives, and many industrial products. Aside from the phosphate industry's other economic effects (phosphate fertilizer is one of Florida's leading export commodities, with a 2020 value totaling \$1.4 billion), shipping of phosphate products accounts for the majority of the Port of Tampa's economic activity.

Mulberry, a little south of the interstate connecting the Tampa Bay area and Orlando, was the center of phosphate mining in Florida's "Bone Valley" for some time. And now (finally) the point. The **Mulberry Phosphate Museum** tells the story of the town as well as the mining industry in the state.

It's a small museum but interesting to visit. The theme of the museum is "Fossils to Food." Located in the city's original railroad depot, the museum was established in 1986. Exhibitions include fossils, memorabilia, *Continued, P. 8*

No Rocks, But ... and exhibits
Continued from P. 7 about the phosphate mining industry. In 2013 it added a recently discovered 1880s-vintage phosphate locomotive. The fossil remains of a 10 million year old Baleen whale are displayed. A time capsule is buried on the front lawn of the museum, under a mulberry bush (of course), to be opened in 2076. Kids—including big ones—can dig for shark teeth and other fossils in an outdoor pile.

The Mulberry Phosphate Museum is only about an hour away from Walt Disney World, and it's a lot lower-key. 101 SE 1st Street, Mulberry, is a good destination for rockhounds.



Adult Programs

August 12: Indoor Rock Swap
September 9: Dr. Jennifer Gifford, (U. Mississippi), title TBD
October 14: TBD

Junior Programs

Resuming. Juniors will join the adults in August.

New Members

Jennifer & Robert Houck, and sons Jacob & Joshua

August Birthdays

- 3 Jane Brandon
Mike Coulson
- 4 Amy Anderson-Nance
- 5 Roland Conner
- 6 Marion Joni
Chris Leppanen
- 12 Ron Brister
David Murray
Eli Dessinger
Hendrix Dessinger
- 13 George Krasle
- 14 Rommel Childress
- 15 David Rea
- 16 George Loud
Letitia Brister
- 17 Sophia Coulson
Christine Lemons
- 18 Anita O'Hare
- 19 Adele Dempsey
Heidi Kitkowski
- 23 Stephanie Blandin
- 24 Katelyn Rea
- 25 Lenora Murray
- 28 Beth Day
Susan Cohn
- 30 Laura Sanford

Want to Be a Member?

To become a MAGS Member, just go to our website at www.memphisgeology.org and print out an application form. There is a prorated fee schedule for new Members only. Mail the completed application along with the dues payment to the Membership Director shown on the form. If you are unable to print the application, you can pick one up at the sign-in desk at any of our Friday night Membership Meetings, or simply join at the meeting. Visitors are always welcome at our Member-

ship Meetings but membership is required to attend our field trips.

The most important benefit of being a MAGS Member is getting to know and make friends with other Members who have similar interest in rocks, minerals, fossils, and archaeology. All new Members will receive a New Member Packet, a MAGS ID card, and a monthly newsletter via email. Members are entitled to go on our monthly field trips and get free admission to our annual Show.

Jewelry Bench Tips by Brad Smith



SMALL PARTS CONTAINERS

I'm always on the lookout for small containers to use for holding all those little parts and tools we deal with in making jewelry, especially since I'm always traveling to classes and workshops.

My latest find are some plastic vials about 15 mm in diameter and 75 mm long. Best part is they are free. The vials are used in the doctor's office to draw blood samples. They cannot be used after their expiration date and are thrown out. On my last doctor's visit, I asked the nurse if they had any expired vials. She replied "How many do you want?" and tried to give me 400 of them. (We settled on 200).

Continued, P. 9

Jewelry Bench Tips The ones shown Continued from P. 8 above are called "Vacutainers", but there are probably many other names. They're clear plastic with a rubber stopper and a paper label all ready to write on. I find them really handy for small parts like jump rings, prong settings, small drills, nuts and bolts, faceted stones, and precious metal filings.



FINISHING PIERCED PATTERNS

After sawing patterns there's always a little cleanup to do, and the smaller cutouts can be a challenge. Needle files (7-8 inches) can get into the larger areas, and escapement files (4 inches) can get into some of the corners.

But I often find myself wanting even smaller files. I couldn't find them, even at a watchmaker tools supply company, so I had to try something else. I ended up grinding down the tip of a small 4-inch barrette file using a separating disk (or cutoff wheel) in your Dremel or Foredom.

Be sure to wear your safety glasses when using this tool. A flake of steel in your eye makes for a bad day.

Smart Solutions for Your Jewelry Making Problems

[amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)

Editor's Note: In June the Membership Meeting was on June two weeks later than usual, and the June and July Board Meetings were combined into one meeting held on June 15. Those minutes will be approved at the August 4 Board Meeting; MAGS Rockhound News only publishes minutes after they have been approved, so there are no Board Meeting minutes in this issue. The June Membership Meeting's program was the hands-on program featuring table activities, displays, demonstrations, and more.

New Look Into the Past

Matthew Lybanon, Editor

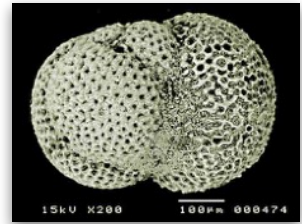
Georgia Tech is one of the top research universities in the U.S. A recent National Science Foundation survey puts Tech in the top 20 in higher education research and development spending—remarkable for an institution without a medical school (nationally, medical schools account for a quarter of all research expenditures).

And they have a brand-new area of expertise, with a brand-new graduate. Minda Monteagudo is the first Ph.D. to graduate in Georgia Tech's ocean sciences and engineering program. She analyzed the chemistry of fossil shells in ocean sediment cores to reconstruct ocean temperatures across earth's geological history.

<https://news.gatech.edu/news/2021/12/16/ocean-sciences-and-engineering-celebrates-first-graduate>

How does that work? The oceans swarm with tiny plankton, including countless foraminifera

(nick-named "forams"), single-celled animals that scavenge with pseudopods wiggling through holes in their shells. When forams die, their tiny shells drift down into the ooze of the seabed and there endure for ages, so numerous in some places that they form thick deposits of chalk or limestone. Different species can be identified under the microscope.



In the 1950s, the nuclear chemist Harold Urey devised another way to use the shells to measure ancient temperatures. He found he could take the temperature of an ancient ocean by measuring the oxygen that forams built into their shells. The rare isotope oxygen-18 is a bit heavier than normal oxygen-16, and biologists had shown that the amount of each isotope that a foram takes up varies with the temperature of the water. The isotopes were fossilized with the shells, and the ratio of isotopes (¹⁸O to ¹⁶O) could be determined with the (then) new techniques of mass spectrometry. Urey and his team at the University of Chicago refined these tools, developed for nuclear studies, and applied them to calcite in fossils. They found plausible temperatures clear back to the Cretaceous era, more than 100 million years ago.

A number of practical problems had to be solved, but now the technique is one more tool in the belt of scientists looking into Earth's past.

MAGS At A Glance

August 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
31	1	2	3	4 Zoom Board Meeting, 6:30 pm	5	6
7	8	9	10	11	12 Membership Meeting, 7:00 pm, Indoor Picnic/Rock Swap	13 DMC Field Trip, Hogg Mine, LaGrange, GA
14	15	16	17	18	19	20 MAGS Field Trip, Blanchard Springs, AR
21 MAGS Field Trip, Blanchard Springs, AR	22	23	24	25	26	27
28	29	30	31	1	2	3

Memphis Archaeological and Geological Society
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Memphis, TN 38016

