MAGE Seckhound News

Volume 71 & Number 04 & April 2025 & A monthly newsletter for and by the members of MAGS

Gemology 101

April 2025 Program

Jane Coop



Jane Coop got her BA in Art/Art History at Denison University in Ohio. She then got her MBA at Vanderbilt and her MD at the University of Tennessee. She has her Boards in Anatomic and Clinical Pathology and practiced at the VA Memphis for 26 years.

In retirement, she started taking Gemological Institute of America courses to become a certified gemologist. She got her Applied Jewelry Professional, but COVID delayed the travel required to take the lab courses...so that is next year's goal.

April's talk will be basic gemology of colored stones, diamonds, and pearls. This will include photos of some rarer stones including colored diamonds and color-change stones. There will be a small display of rough crystals of the less precious stones.

Please join Jane at our meeting on April 12th at 10:00 a.m.

In this issue:

Gemology 101	Р. 1
MAGS And Federatio Notes	on P. 2
Fabulous Tennessee Fossils	P. 3
Field Trips	P. 5
Bench Tips	P. 6
2025 Meeting Dates.	P. 7
MAGS Notes	P. 7
February Board Minutes	P. 7
Matthew Lybanon	
Retires	P. 7
MAGS At A Glance.	P. 8

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

2025 MAGS BOARD	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 in- terest 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 archaeo- logical 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 Membership Meetings are at 7:00 P. M. on the second Friday of each month May-October, and 10:00 Am on the 2nd Saturday of each month November-April. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, Tennessee.				
	MAGS Website: <u>memphisgeology.com</u> MAGS Show Website: <u>https://earthwideopen.wixsite.com/</u> <u>rocks</u>				
	Find us on Facebook. The Memphis Archaeological And Geological Society Page is where you will see accurate information about MAGS events and about the Memphis Mineral, Fossil, Jewelry Show.				
	Please contribute articles or pictures on any subject of interest to Rockhounds. The 20th of the month is the deadline for next month's issue. Send material to <u>davidkitkowski@yahoo.com</u> .				
	Go to <u>https://www.southeastfed.org/sfms-field-trips/dmc-field-trip-program</u> for the DMC field trip schedule and other information.				
	Links to Federation News				
	➡ SFMS: <u>https://www.southeastfed.org/</u>				

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

Fabulous Tennessee Fossils Dr. Michael A. Gibson University of Tennessee at Martin FTF 121 Maclurites and Ceratopea Opercula



Maclurites belongs to the invertebrate Class Gastropoda, which were once considered the Univalvia (see FTF 119 and 120). Unlike their cousin the bivalve, gastropods do not possess two separatable shells. While this statement seems unequivocal, it is not completely true in the strictest sense. Many gastropods have a weakly calcified "trap door" that covers the aperture of the shell when the animal retracts into the shell. This "operculum" (plural = opercula) is usually thin, often flexible, corneous, and is not attached directly to the rest of the gastropod shell, so it easily detaches upon the death of the snail and is usually lost. When viewed separately, many of these opercula resemble guitar pics with a coiled pattern. The weak calcification of the operculum generally results in nonpreservation as fossils; however, there are some robustly calcified opercula that do occur as fossils (especially if they can become replaced with silica) - our friend Maclurites being one of them. There is another similar operculate genus, Ceratopea, common to East Tennessee Ordovician.

There are several articles in the literature figuring

Kingdom Animalia Phylum Mollusca Class Gastropoda Order Archaeogastropoda or Euomphalina Family Macluritidae Genus *Maclurites* LeSueur, 1818 Species *magnus* LeSueur, 1818

Family Raphistomatidae Genus *Ceratopea* Ulrich, 1911 Species *keithi* Ulrich, 1911

> complete "operculated" gastropod specimens, mostly of the Lower Ordovician genus Ceratopea (whose shells are common to East Tennessee), Maclurites (more rarely), and a few other taxa (e.g., Pondia named after former Tennessee State Geologist Walter Pond). There is also a long literature trail concerning the morphology and identity of isolated opercula of these (and other similar) genera. For example, in one article, ten species of Ceratopea were described from East Tennessee alone, based upon opercula! Imagine, naming a species based upon a part of an organism, not the entire organism, and not the most conspicuous part of the organism. In the case of Ceratopea and Maclurites, the operculum is somewhat conical shaped with some form of a depression in the center; not flat like most gastropod

opercula. Ceratopora opercula are somewhat curved (spiraled), and distinctly bullet-shaped or horn-shaped; whereas, Maclurites opercula possess a noticeable concavity ("opercular muscle cavity") that is less regular in form when compared to Ceratopea. It can be very difficult to tell the differences between opercula at either the species or genus level. When I first encountered the opercula in the laboratory setting at UTK, I as told they were the opercula of the gastropod Maclurites (however, the tag in the box had the genus Ceratopea). When I asked about two genus names being used, I was (mistakenly) informed by the graduate teaching assistant for that lab that the operculum had its own genus separate from the actual gastropod (much like multiple genera for different plant parts in paleobotany).

Over my career, many amateur collectors have brought me isolated opercula for identification, with many of the collectors wondering if they were deformed Civil War bullets (due to their shape). It is easy enough to identify them as gastropod opercula (by composition and morphology), but to which genus and species of gastropod do these specimens belong?

Continued on next page

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

If the operculum becomes disassociated from the rest of the shell, how does one determine which gastropod taxon any isolated operculum belonged to?

With living gastropods, it is an easy task to find living animals with both intact, but Ceratopea and Maclurites are early Paleozoic gastropods, extinct for hundreds of millions of years. So, I delved into the literature to track the history of these opercula.

There are two reliable (one more reliable than the other) ways to associate specific gastropod species with their disassociated opercula. First, if one can find specimens of the fossil gastropod with the operculum still "in-place" (especially within the same unit being studied), then the ideal preservation situation exists. There can be little doubt of the owner of the operculum. Admittedly, such preservation requires nearly immediate burial of the intact snail animal soon after death, with no further disturbance for the entire time of the burial (hundreds of millions of years). Unlikely as it seems, this is exactly what has occasionally occurred, and several instances of in-place opercula in the apertures of Ceratopea and Maclurites have been reported in the fossil record, especially with Ceratopea. Maclurites specimens with opercula inplace are less common.

The second method of determining if associated of

gastropod shells and opercula co-occurring in the same strata belong to the same taxon can be referred to as "guilt by exclusive association". For example, in some outcrops, abundant Maclurites is the only gastropod preserved (none with opercula in-place) and the same strata contain numerous opercula, all of which have the same basic morphology (hence, one species). The association of a single gastropod species within the same strata as a single operculum type (also known to occur in that genus and species of gastropod from other strata in different localities) is sufficient to allow one to conclude that those opercula belonged to the species of gastropod within the same strata. Where more than one operculate species of gastropod shell co-occur, then this method becomes less reliable, for sure.

Figure 1 shows the opercula from the Neyland Drive Lenoir Formation from the UTK campus of East Tennessee that I discussed in FTF 119.



Figure 1

What is interesting to note is that these specimens show the distinct morphology of the Ceratopea operculum, but were collected from a unit that

contained only Maclurites shells (abundantly) and no Ceratopea shells. Again, in 185 I was told that these opercular belonged to Maclurites. How does one reconcile this fossil conundrum? Yes, great question! It is precisely the question posed by Dr. Ken Walker to our paleoecology class while on that outcrop. I would like to report a clear discernible answer to the problem, but alas, we students could not develop a hypothesis that did not involve lots of speculative and unlikely circumstances (with little corroborating evidence). Dr. Walker agreed, as the same question had plagued him for years, and he had no answer either. The best take-home lesson: lower taxonomic level (genus and species) identification solely based upon isolated parts (especially only one part) that show great morphological plasticity and variability can be questionable, especially when using a detachable morphological feature. Also, individual morphological features can show a gradation of characteristics that may overlap within taxa. Morphology is in the eye of the beholder sometimes.

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

One last personal note about Maclurites, Ceratopea, and their opercula. One of the authors of several papers that I ultimately consulted over the years as I wrestled with identifying opercula like these was paleontologist David Rohr. Rohr is a well-known and highly respected gastropod paleontologist. I had always thought that his name sounded familiar when I first read it but could not place why. After some time, it hit me, David Rohr was one of the first graduates from the then newly established geology program at my alma mater of William and Mary in the early 1960s! During my years at W&M (1975-1979), I used to see his name on one of the bulletin boards in the hallway that depicted that inaugural class of graduates. He had been the artist who drew the first caricature emblem for the department. I do love serendipity!

As the last several essays have explored, Maclurites is an easily recognizable Cambrian – Ordovician gastropod in East Tennessee. It has a somewhat common morphology that seems dull and uninteresting, at first glance. However, Maclurites, and its associated taxa, demonstrate many interesting geological lessons related to a variety of questions raised in paleontological study.

FIELD TRIPS CHARLES HILL FIELD TRIP DIRECTOR

Fun in the Sun - March Field Trip

Today we went to Crow Creek, Forest City, AR for our first field trip. The weather was amazing. It was sunny all day with very little wind, and the temperature was just right. All nine participants gathered at the meeting place, and from there we drove about three miles to Crow Creek. We had a short safety/ meet-and-greet. Everyone put on their boots, and we got started.

While we were hunting, I got to speak to everybody. I must say we had a happy, enthusiastic crowd. At this site, we found some petrified wood, lots of banded chert, river agate of various colors, and shells from an ancient oyster bed. Robin Ownby found a beautiful agate that was perfect for tumbling, and another person found a piece of amber.

Crow Creek Satellite Map



OpenStreetMap, Mapbox and Maxar

Click on pictures to learn more...



Crow Creek is an interesting site. Not only does it flow for miles, but it also contains ancient oyster beds. Shells often wash out and can be picked up easily. These oyster beds were formed in an ocean that stretched from Alaska to the Gulf of Mexico. Two tectonic



plates collided, pushing the oysters to the surface in the same collision that formed the Rocky Mountains. It's been my dream to find a pearl from an oyster bed this ancient, but I am still looking.

It was a perfect day with wonderful people. I wish you could have been there!

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

Bench Tips for April From Brad Smith

See More of my Smart Solutions for Jewelry Making Series http://amazon.com/dp/BoBQ8YVLTI

PROBLEMS WITH SMALL DRILLS

Drilling small holes can be a problem. With drills that are less than 1 mm (18 gauge or .040 inches), some chucks will not tighten down well enough to hold the drill securely.

The problem is easily solved in either of two ways with a chuck adapter or by buying your small drills with a 3/32 inch shank size. Either way you have a large shank to be gripped in your drill press, Foredom or Dremel, so changing bits is fast and easy.



MIXING EPOXY

When mixing epoxy, it's very important to have the same amount of each component. If the ratio is not 50:50, the mixture will not develop the best strength or may not harden at all.

If the amounts are small, I can generally eye-ball the two components correctly. But I have trouble getting the proper mixture for larger quantities. The easiest way I've found is to use a gram scale.

> Put a bottle lid or piece of scrap paper on the scale.

- > Zero out the scale.
- > Squeeze out the epoxy Part A.
- > Note the gram weight.
- > Zero out the scale again.
- > Squeeze out the same amount of Part B.
- > Mix thoroughly for use.

It's a trick I had to use when mixing resins for mold making where the ratio is usually 1 to 10.



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

2025 Meeting Dates

Bob Cooper

- April 12th—Saturday at 10:00 A.M.
- May 9th—Friday at 7:00 P.M.
- June 13th—Friday at 7:00 P.M.
- July 11th—Friday at 7:00 P.M.
- August 8th—Friday at 7:00 P.M. (Annual indoor rock swap/potluck dinner)
- September 12th—Friday at 7:00 P.M.
- October 10th—Friday at 7:00 P.M.
- November 8th—Saturday at 10:00 A.M.
- December 12th—Friday at 7:00 P.M. (Annual holiday party)



Adult Programs

April 12: Jane Coop, "Gemology 101" (rescheduled from January)

May 9: Alan/ & Debbie Schaeffer, "Israel trip"

June 13: Mike Howard, "UV Minerals"

Junior Programs

April - June: TBD.

🎵 Field Trips

May: Jonesboro Quarry

April: Sugar Creek

🎵 April Birthdays

Pam Papich

II

27 Kathy Bullard

February Board Minutes Josh Anderson

Zoom meeting called to order 6:32 P.M. Present: Christine Anderson, Joshua Anderson, Bonnie Cooper, Nannett McDougal-Dykes, Matthew Lybanon. Visitors: Alan Parks, Carol Lybanon

Secretary: Presented January 2025 Board meeting minutes. Minutes approved.

Treasurer: Report approved.

Membership: Bob Cooper elected as Membership Chairman. Work continues on getting renewals in place.

Adult Programs: Need presenters for July and November 2025 meetings. March, Dr. Keith Riding, possibly Mt. Everest Adventures. April, Jane Coop, Gemology 101.

Field Trips: Elected were Charles Hill as Field Trip Director, and Dave Clark as Field Trip Asst. Director. Pompeii visit is under development.

Youth Programs: No report. Library: Book honoring W.C. Mc-Daniel is being researched.

Editor: Requests three months of advanced material and events .The last date to submit materials is the 20th of each month.

Show 2025: Amended show dates: 12/4-12/8 2025. Working to secure Dealers. Beginning work on the advertising plan, show organization and floor map.

Old Business: Need to update Board Members on accounts for club. Nanett updated the Church on suspicious parking lot activities during the 2024 Holiday Party.

New Business: Work with Church to firm up the Saturday meeting schedule. Address the election of officers to the Board.

Adjourned 8:47 P.M.

Thank You Matthew Lybanon!



Matthew, your dedication and effort in managing the newsletter over the years have been truly remarkable. Your thoughtful contributions, consistency, and creativity have made a lasting impact, and your work has always been appreciated by all who read it. Thank you for your service and commitment; you've set a high standard that will be remembered for years to come!



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

MAGS At A Glance April 2025

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
30	31	1	2	3	4	5
				Board Meeting		DMC Field Trip Bayou Pierre, Hazlehurst MS 8 a.m. Gem, Mineral, & Fossil Festival Hendersonville 9 a.m. to 4 p.m.
6	7	8	9	10	11	12
Palm Sunday						Member Meeting 10 a.m. Gemology 101 - Jane Coop
13	14	15	16	17	18	19
20	21	22	23	24	25	26
Easter		Earth Day				
27	28	29	30	1	2	3
						TN Valley Rock & Mineral Society Show Hixson, TN 10a-4p

March Member Meeting - Everest!

Reminders:

SFMS William Holland Workshops

The 2025 SFMS William Holland Workshop website is up and running! Everything you need in order to register is at <u>SFMS - SFMS Workshops</u>.

April DMC Field Trip

Saturday, April 5, 2025 See specific email to register.

