



Volume 69 ◊ Number 08 ◊ August 2023 ◊ A monthly newsletter for and by the members of MAGS

You're Invited

MAGS Mid-Summer Indoor Picnic and Rock Swap



The annual MAGS Indoor Picnic and Rock Swap will take the place of the August 11 Membership Meeting. The picnic will be potluck. Please help us have a good variety of food. MAGS will provide cutlery, table decorations, and drinks.

MAGS Members, bring your best stuff to swap. If you're selling, bring your own table and donate a door prize.

There will also be games, prizes, and an auction/raffle. See the President's Message on P. 3 for more details.

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THERE'S NO BUSINESS ...

The Memphis Mineral, Fossil, Jewelry Show held at the Agricenter each April is a big show that requires a lot of work. We ask for volunteers, because we can't put on the Show without your help.

But it's worth it. Each year, after the dust has settled and all the bills have been paid, the Show writes the club a big check.



2024 Show: April 27 & 28

This money goes a long way toward paying the bills to rent space for meetings and for other club expenses.

The amount of this year's check is over \$4,500, a few hundred dollars more than last year. This helps MAGS keep dues low. So keep that in mind next year when the call for Show volunteers goes out.

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 Membership Meetings are at 7:00 P. M. on the second Friday of each month May-October, and 10:00 A.M. on Saturday after the second Friday November-April. 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>



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 lybanon@earthlink.net.

Go to <https://www.southeastfed.org/sfms-field-trips/dmc-field-trip-program> for the DMC field trip schedule and other information.

Links to Federation News

- ➔ AFMS: www.amfed.org/afms_news.htm
- ➔ SFMS: <https://www.southeastfed.org/>

President's Message

MAGS

Mid-Summer Indoor Rock Swap and Picnic

Friday, August 11,

7:00 pm

Shady Grove Church

The Picnic

- Potluck (changed since last information). We usually have about 60 Members.
- MAGS Members: provide your best and bragging stuff to eat, share and show off. Bring food that goes with summer and casual events.
- MAGS will provide cutlery, table decorations, and drinks.

The Swap

- If selling bring your own table and donate a nice prize for the door prizes.
- If buying bring your own money. Some sellers accept cards.
- If swapping bring your stuff.
- **Other things**
- Door prizes
- Games
- Auction/Raffle
- ✓ Slab of Polished Gemstone Dino Bone—donated by Robert Duncan
- ✓ Jewelry made from found items from the Pipkin Building floor (post show). Made and donated by Beth Day.
- Wear your most colorful summer attire or favorite Rock Theme outfit.
- Help set up and clean up after the swap/picnic.

W. C.

MAGS Labor Day Rock Sale

Monday, September 4, 9:00 am-2:00 pm

Lou White's, 3805 Melanie June Drive, Bartlett, Tennessee

From I-40: north on Whitten/Kirby Whitten, left on St. Elmo's, right on Melanie June.

- Rocks and minerals
- Fossils, geodes, petrified wood
- Jewelry and beads
- Open to Members and public
- Bring your tables and chairs
- Bring your drinks and snacks

Metal Museum Field Trip

Thanks for the pictures, Cornelia and W.C. McDaniel.





Iceland Volcanic Eruptions—Geology and Geophysics

Matthew Lybanon, Editor

Recently the news has been full of stories about volcanic eruptions and earthquakes in Iceland near the country's capital, Reykjavik—including a video from a commercial airliner that flew near the erupting volcano so passengers could get a better look (Here's one report: <https://abcnews.go.com/WNT/video/air-passengers-close-erupting-volcano-101188952>). What's going on? Let's dig a little deeper than the news reports.

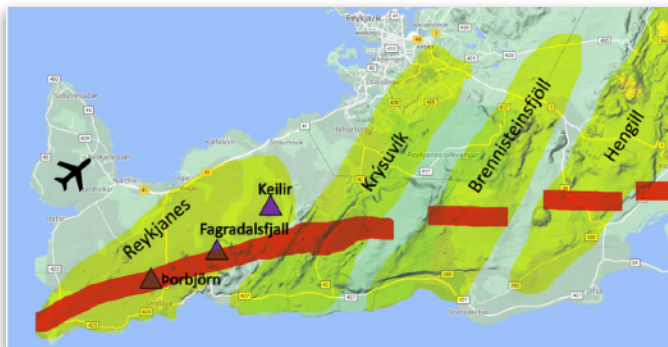
The Reykjanes Peninsula is a volcanic and seismic hotspot southwest of Reykjavik. The Reykjanes Peninsula has been in a state of constant formation and transformation for the past 6 million years. On the Reykjanes Peninsula, the Mid-Atlantic Ridge plate bound-

ary can be seen on land, traversing its way across the country to the northeast. It demarcates Iceland's active volcanic belts along with the hotspot that lies underneath the center of the country. The country's active volcanic systems and high-temperature areas are clustered along the volcanic belt.

The Reykjanes Peninsula is home to five volcanic systems. Each system contains fissure

swarms on a northeast-southwest axis, as well as high-temperature areas that are aligned with the Mid-Atlantic Ridge plate boundary. Most of these systems exclusively emit basalt magma when they erupt.

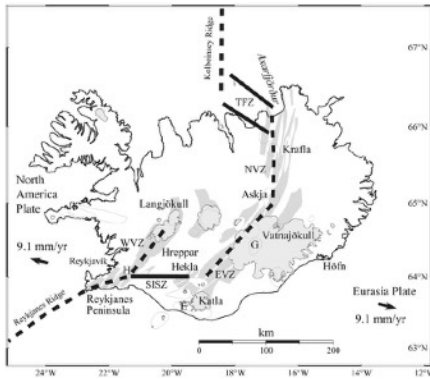
The Fagradalsfjall volcano, the one that's been in the news, is in an uninhabited area of the Reykjanes Peninsula, around 30 km from Reykjavik. The Fagradalsfjall volcanic system erupted on 19 March 2021, following more than a year of earthquake activity and inflation/deflation periods. This was the first volcanic activity from the system after about 6,000 years of quiescence. But suddenly it's active.



Reykjanes Peninsula Volcanic Zones

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*Iceland Volcanic Eruptions
Continued from P. 4*



Index map of Iceland showing place names, lithosphere plates, and plate boundary structures. Divergent plate boundaries are shown with fat, broken lines, seismic zones and transforms with fat lines. Fissure swarms are shown as gray stripes, central volcanoes with closed, thin lines. The divergent plate boundary zones are the Reykjanes Peninsula, the Western (WVZ), Eastern (EVZ), and Northern (NVZ) Volcanic Zones. Transform zones and ice caps are also shown.

The fissure eruption that started in March 2021 continued until mid-September 2021. There was more activity during October 2021-29 July 2022. Then the Iceland Meteorological Office reported an intense earthquake swarm that began around noon on 30 July. There were more than 4,000 earthquakes (mostly small) and a lava eruption that produced about 1.6 million m³ of lava, covering an area of 0.14 km².

Skipping ahead to 2023, a new fissure opened on 10 July. During 13-17 July the lava flow rate was an estimated 12.7 m³ per second, and by 18 July the total erupted volume was about 8.4 million m³.

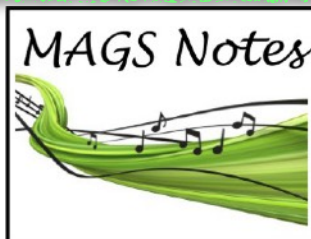
All this activity is related to the Mid-Atlantic Ridge plate boundary, which passes through Iceland. That's right—parts of Iceland are on two different tectonic plates. Along Iceland's rugged landscape, you can really see the rift between the active tectonic plates—above sea level! The two plates are moving apart. The North American plate is moving west and the Eurasian plate is moving east, each at about 9.1 mm/year.

One way to experience this is to visit Þingvellir National Park (The Icelandic alphabet has a few extra letters. Þ is pronounced “th,” more like the th in “the” than the th in “think.”). You can also step between the two plates on the Bridge Between Continents, a 15 m foot-bridge in the Reykjanes Peninsula spanning a gaping rift between the plates. It is also called the "Leif



the Lucky Bridge" and acts to symbolically connect the two land masses.

The rift is more dramatic in Þingvellir National Park. Major events in the history of Iceland have taken place at Þingvellir and today it's a protected national shrine. In 2004 Þingvellir was declared a UNESCO world heritage site. Þingvellir also has unique geology. The park sits in a rift valley caused by the separation of the two tectonic plates. The photo at the top of this article was taken in Þingvellir National Park. The gray rocky surface is the edge of the North American plate as seen from the rift valley. Does it look the way you expected?



Adult Programs

- August 11: Indoor Rock Swap and Picnic
- September 8: Jimmy McNeil, TBA
- October 13: Lapping & learning

Junior Programs

- August 11: Indoor Rock Swap and Picnic
- September 8: Painting ceramic tiles.
- October 13: TBA

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Fabulous Tennessee Fossils

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

FTF 102

Weston's *Idonearca*



A couple of months back I highlighted an *Exogyra* oyster that was found at the Coon Creek fossil site by Jim Roberts and discussed the array of interesting biotic interaction features preserved in the shell. This month I have another example of multiple organisms interacting with one another in such a way as to alter the shell construction of one of them. A couple of weeks ago, a youngster by the name of Weston Hurst from Bethel Springs participated in the UT Martin Coon Creek Science Center Summer STEM Camp. This is a week-long camp that exposes middle school kids to the many areas of the field sciences to help ground them in fundamental science principles and foster an interest in the sciences. On Fossil Day of the camp, Weston was walking the creek picking-up loose fossil material when he came across a broken left valve belonging to the “false arc” bivalve *Idonearca vulgaris* (you may know this common Coon Creek fossil by

its previous name of *Cucullaea vulgaris*).

Typically, *I. vulgaris* specimens are found (1) completely articulated with the valves closed tight with compact sediments (having died within their burrows and never exhumed until found by the collector), (2) articulated, but with a slight gape at the commissure, indicating that the animal died within the burrow and remained articulated, but there was enough looseness within the sediment for the ligament to contract and allow the shell to slightly open (gape) when the adductor muscles that keep the shell tightly closed relaxed, or (3) as isolated valves, indicating that these shells have been exhumed onto the seafloor (or onto the modern creek bed 76 million years later), and the two valves separated upon decay of the ligament. Most Coon Creek *I. vulgaris* specimens are large (5 to 7 cm from umbo to commissure), one of the largest of the Coon Creek bivalve taxa. The shells are thickest in the hinge area and on the umbo, becoming thinner toward the commissure growing edge and ornamented with fine concentric lines.

Figure 1 is a photograph of the exterior surface of Weston's specimen of *I. vulgaris*. There are several features to note. First, Weston's specimen is smaller than typical for the Coon Creek species (perhaps not fully mature). Sec-



Figure 1. Exterior view of the left valve of Weston Hurst's *Idonearca vulgaris* showing several boring pits from commensals and thickening of the commissure edge of the shell (photo by MAG, scale in mm).

ond, the specimen is missing a portion of the posterior commissure edge due to breakage, probably a result of being tumbled in the creek bed before Weston found it. The break is “fresh” and angular without any rounding associated with tumbling or abrading in the modern creek (thus this is a modern taphonomic feature). Thirdly, and more significantly, notice the distinct thickening of the shell, along with a deflection of the shell surface upward, near the commissure margin of the shell. Fourthly, there are tiny pinprick holes that occur from the position of the deflection to the commissure edge of the shell. These holes are a form of “bioero-

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Fabulous Tennessee Fossils sion”, produced by some very tiny boring organism(s). Fifthly, there are two larger oblong-shaped borings further up on the umbo of the shell that are also associated with a thickening of the growth lines and upward deflection of the shell surface at that this earlier point in the *I. vulgaris* growth.

Figure 2 is a photograph of the interior of the same specimen and sheds light onto the nature of the abnormalities of the specimen. Notice the large pits along the commissure edge. These were produced by several relatively large boring organisms that all began their excavations near the growing edge of the shell (based upon their concentrated distribution parallel to the curved commissure edge). The thickening of the shell near the commissure is a response to this infestation. Before continuing discussion of these pits, I should note that there is a slight thickening of the inner shell near the center of the valve and immediately opposite the two oblong pits mentioned as item five in the previous paragraph. It is unclear whether or not these pits are related to the pits exposed along the commissure, but there is the distinct possibility that they could have been

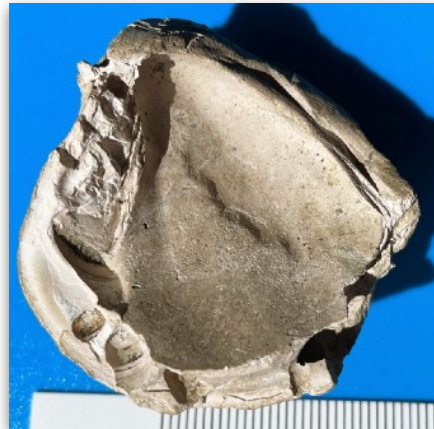


Figure 2.. Interior of the left valve of Weston Hurst’s *Idonearca vulgaris* showing the large boring pits from commensals and thickening of the commissure edge of the shell (photo by MAG, scale in mm).

produced by similar boring activity. Possibly this *I. vulgaris* underwent two episodes of infestation by boring commensals.

What I find as most interesting in this specimen is that the thickening of the shell is so pronounced near the commissure where the numerous edge-pits occur. I see this as clear evidence that the boring organisms infested the *I. vulgaris* during its lifetime and prompted the *I. vulgaris* to secrete up to three times more shell material than normal along its growing margin to sequester and isolate the commensals. These larger pits do not connect to the

very small pinprick holes on the exterior, so there may be more than one type of boring commensal that was attacking the *I. vulgaris*. Also of note is that one of the holes made by the boring organism was oriented elongate and parallel to the shell edge of the *I. vulgaris* and is coincident with where the modern breakage of the valve occurred noted above. Boring organisms reduce the integrity of shells and are thus a taphonomic process of destruction, or at least of not preservation.

I can only imagine how this diversion of energy and resources, and the resulting shape changes of the shell, affected the burrowing ability and the quality of life of the *I. vulgaris*? As I noted above, this specimen is somewhat smaller than most *I. vulgaris* that we find in the Coon Creek Formation, so perhaps the commensals ultimately reduced the fitness of this individual and contributed to its demise in some way. It is fun to speculate on the life history of individual fossils. Thank you, Weston Hurst, for donating the specimen to the UT Martin Coon Creek fossil collection housed at the site. We welcome all of you to visit the site and see this amazing fossil.

MAGS Notes

Continued from P. 5

Field Trips

August 19: Crow Creek

September & October: TBA

New Members

Kim Duran and Hunter Gore

August Birthdays

3	Mike Coulson	13	George Krasle
	Ricky Davis	14	Rommel Childress
4	Amy Anderson-Nance	16	George Loud
6	Marion Joni		Letitia Brister
	Lorrie Jackson	17	Christine Lemons
		18	Anna O’Hare
10	David New	19	Adele Dempsey
12	Ron Brister		Heidi Kitkowski
	David Murray	20	Jan Shivley

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MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

MAGS Notes

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- 22 Bishop Martin
- 23 Stephanie Blandin
- 25 Lenora Murray
- 27 Valencia Davis
- 28 Beth Day
Susan Cohn
- 30 Laura Sanford
Cyndi Bothwell



Christine McManus sent this picture of our July Membership Meeting program (Metal Museum) speaker. Thanks, Christine.

June Board Minutes

Josh Anderson

Zoom meeting called to order 8:02. Present: W.C. McDaniel, Christine McManus, Joshua Anderson, Nannett McDougal-Dykes, Melissa Koontz, Jim Butchko.

Secretary: Minutes submitted via email, presented to Board, and approved.

New Business:

1. Instagram discussion: ideas-2-3 people committee, initial survey to MAGS via email. Nannett offered to help.
2. Jill at Heritage Museum of Mississippi mentioned as a resource for field trip and/or adult presentation.
3. New dues schedule proposed by W.C.. Seconded and approved by Board. Motion approved and new dues schedule in effect.

Treasurer: Treasurer absent. Report emailed.

Membership: 5 new Members.

Field Trips: July 22, Metal Museum. August, Rock Tour -indoor and outdoor at W.C and Cornelia's. September, Hot Springs. October, Geodes-Dale Hollow.

Youth Programs: July, world tour of archaeological sites. August, Rock Swap.

Library: Two new books in Juniors Section-Dinos (1) and Crystals (2) Note-14 books currently checked out.

Rock Swaps: August, membership meeting. September, Labor Day Rock Swap/Sale-Lou White.

Adult Programs: July, Metal Museum. August, Midsummer Night Rock Swap. September, Josh Anderson-TBA. October, Jimmy O'Neil-TBA. November, Lapping and learning w/ MAGS.

Show: Website and social media platform review (see New Business).

Old Business:

1. December Holiday Party-Need to move hours to later, not 10pm-12am.
2. 2024 Show: W.C. proposed need to discuss location, expenses, planning options. Also, review marketing platforms (website, social media, flyers, postcards, etc.). Sent request for quote to Agricenter for 2024.

Adjourned 8:25.

Giant Hand Axes

Matthew Lybanon, Editor

Archaeologists have found unusually large stone handaxes from the Middle Pleistocene in two different European countries. An exceptionally high density of giant hand axes dated to 200,000-300,000 years ago has been uncovered at an archaeological site in Galicia, northwest Spain, by an international team from Spain and

Australia. And archaeologists from University London (UCL) have uncovered giant prehistoric (dated to around 300,000 years ago) stone handaxes during excavations of an Ice Age site in Kent, England.

The Spanish dig was at Porto Maior, near the town of As Neves (Pontevedra, Galicia) on a terrace 34 m above the current level of the Miño River, which borders northern Portugal and Spain. In total, 3,698 discarded artifacts were recovered from river-lain sediments at the site, with 290 of these making up the studied assemblage reported in the paper. The stone tool assemblage is composed of 101 large cutting tools in original position, on average 18 cm long, with a maximum length of 27 cm. These hand axe dimensions are exceptionally large by European Acheulean (the culture thought to exist at the time) standards. Typically Acheulean tools were only 8-15 cm long).



The UK specimens were found in Ice Age sediments preserved on a hillside above the Medway Valley in Kent, England. The researchers found 800 stone artifacts dated to around 300,000 years ago. Among the collection of finds are two "giant" hand axes made from flint, which according to a study published

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Giant Hand Axes in the journal *Continued from P. 8 Internet Archaeology*, are among the largest stone tools from the Palaeolithic period found in Britain. The largest of the two hand axes measures 29.5 cm in length, comparable to similar examples previously found in the Thames and Medway regions. Letty Ingreby from the UCL Institute of Archaeology, said: "These handaxes are so big that it's difficult to imagine how they could have been easily held and used. Perhaps they fulfilled a less practical or more symbolic function than other tools, a clear demonstration of strength and skill."



Laboratory analyses of the Spanish tools indicate that they were used to process hard materials such as wood and bone, in activities that could have included the breaking up of carcasses. The age of these unusually large Acheulean tools at Porto Maior was determined using two different dating methods—post-infrared infrared stimulated luminescence dating of potassium feldspar grains and electron spin resonance dating of quartz grains. Fossil records show that multiple human lineages lived in southwest Europe around the same time period.

The Spanish site of Porto Maior clearly resembles extensive accumulations of very large tools

previously only seen in Africa and the Near East. These similarities reinforce the idea of an African origin for the Acheulean tradition of southwest Europe. The Acheulean tool-making tradition originated in Africa about 1.7 million years ago, and disappeared on that continent by 500,000 years ago. The specific type of Acheulean tools described at Porto Maior is exclusive to southwest Europe, suggesting that the technology was brought into the region by an "intrusive" population.

The Medway Valley (Kent, UK) at the time the giant hand axes were made would have been a wild landscape of wooded hills and river valleys, inhabited by red deer and horses, as well as less familiar mammals such as the now-extinct straight-tusked elephant and lion. During this period, Neanderthal people were beginning to emerge in prehistoric Britain, and may have shared the landscape with other early human species.

The Spanish discovery was documented in a paper published in 2018 (Ref. 1). The UK discovery was published in 2023 (Ref. 2).

References:

1. Méndez-Quintas, E., Santonja, M., Pérez-González, A. et al. *First evidence of an extensive Acheulean large cutting tool accumulation in Europe from Porto Maior (Galicia, Spain)*. *Sci Rep* 8, 3082 (2018). <https://doi.org/10.1038/s41598-018-21320-1>
2. Ingreby, L., Duffy, SM., Bates, M., Shaw, A. and Pope, M. 2023 *On the Discovery of a Late Acheulean 'Giant' Handaxe from the Maritime Academy, Frindsbury, Kent*,

Internet Archaeology 61. <https://doi.org/10.11141/ia.61.6>

Jewelry Bench Tips by Brad Smith

SEPARATING DISCS



Separating Discs (also called Cutoff Wheels) are inexpensive and do a great job cutting or shaping steel. You can use them to sharpen tool points, cut piano wire to length, make slots, and sharpen worn drills. Other uses include modifying pliers and making your own design stamps.

My preference is the one inch diameter size. Be sure to hold the wheel firmly so nothing moves to break the disc, and definitely wear your safety glasses. Those are little flakes of steel coming off the disk.

BTW—Separating Discs are rather poor at soft metals like copper, silver and gold. Soft metals clog up the cutting edges.

Smart Solutions for Your Jewelry Making Problems

amazon.com/author/bradfordsmith



Mark your calendar for the MAGS Labor Day Rock Sale. See P. 3 for details.

MAGS At A Glance

August 2023

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
30	31	1	2	3 Zoom Board Meeting, 6:30 pm	4	5
6	7	8	9	10	11 MAGS Mid-Summer Indoor Picnic and Rock Swap, 7:00 pm	12
13	14	15	16	17	18	19 MAGS Field Trip, Crow Creek, Arkansas
20	21	22	23	24	25	26 DMC Field Trip
27	28	29	30	31	1	2

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