MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News

Volume 67 ◊ Number 06 ◊ June 2021 ◊ A monthly newsletter for and by the members of MAGS

The Greenbrier Site (3IN1)

Juliet E. Morrow, Arkansas State University *June Program*

This presentation summarizes past research on the Greenbrier Site (3IN1), an exceptionally well-preserved Mississippian town in the White River Valley, and presents results of research geophysical survey at the site. In 1999, Arkansas Archeological Society (AAS) Training Program test excavations were conducted in four different loci across the site. A block excavation in Locus 3 during the 2000 field season partially excavated a burned domestic structure which measured 6 m east-west x 6 m north-south. Attribute analysis of approximately 8,540 ceramic sherds, predominantly from Locus 3, suggests similarity with Parkin complex sites. This spring we conducted a 2.5-hectare gradiometer survey

Continued, P. 3

In this issue

The Greenbrier Site	P. 1
Precious Metals From The Sky	P. 1
MAGS And Federation Notes	P. 2
Scribbling Rings?	P. 4
Roadcut	P. 4
Fabulous Tennessee Fossils	P. 5
New Library Books	P. 8
MAGS Cookbook	P. 8
May Meeting Pictures	P. 8
Jewelry Bench Tips	P. 9
Pictures From Mars?	P. 9
June Field Trip	P. 9
May Rock Swap	P. 10
MAGS Notes	P.10
April Board Minutes	P. 10
April Meeting Minutes	P. 11
Neanderthals In Europe	P. 11
MAGS At A Glance	P. 12

PRECIOUS METALS FROM THE SKY

MATTHEW LYBANON, EDITOR

The ancient Aztecs believed gold was in fact "the sweat of the sun." They weren't far wrong. The precious metals that we see on Earth today may be largely heavenly in nature, coming from the sky billions of years ago.

Back when the Earth was just forming, 4.5 billion years ago, the materials that make up the planet were combining and differentiating into layers by weight—lighter materials floated to the surface and now make up Earth's crust, while heavier materials such as iron sank to the planet's interior.

Our understanding of planet formation suggested that precious metals such as gold and tungsten should have

Continued, P. 3

2019-2020 MAGS BOARD

President–W. C. McDaniel
(901) 274-7706 ◊ w.c.mcd@att.net

1st VP (Field Trips)– James Butchko
(901) 743-0058 ◊

2nd VP (Adult Programs)–Dave Clarke
(901) 308-0334 ◊ dclarke@fieldmuseum.org

Secretary–Mike Coulson
(901) 907-9441 ◊ mike.coulson@comcast.net

Treasurer–Bonnie Cooper
(901) 444-0967 ◊ rocks4us@hotmail.com

Director (Asst. Field Trips)–Vacant

Director (Asst. Adult Prog.)–Matthew Lybanon
(901) 757-2144 ◊ lybanon@earthlink.net

Director (Youth Programs)–Mike Baldwin
(901) 853-3603 ◊ mbaldwin05@gmail.com

Director (Asst. Youth Prog.)–James Butchko
(901) 743-0058 ◊ butch513j@yahoo.com

Director (Librarian)–Nannett McDougal-Dykes
(901) 634-9388 ◊ redchesty@yahoo.com

Director (Asst. Librarian)—Kay MacLaughlin
(901) 465-6343 ◊ celticcatssilver@att.net

Director (Membership Services)–Bob Cooper
(901) 444-0967 ◊ rocks4us@hotmail.com

Director (Historian)–Jane Coop
(901) 685-8103 ◊ dogsandrocks3@gmail.com

Newsletter Editor–Matthew Lybanon
(901) 757-2144 ◊ lybanon@earthlink.net

Assistant Newsletter Editor–Carol Lybanon
(901) 757-2144 ◊ sgcarol@earthlink.net

Webmaster–Mike Baldwin
(901) 853-3603 ◊ mbaldwin05@gmail.com

Assistant Webmaster–Mike Coulson
(901) 907-9441 ◊ mike.coulson@comcast.net

Show Chairman–James Butchko
(901) 743-0058 ◊ butch513j@yahoo.com

Past President–Charles Hill
(901) 626-4232 ◊ hunter3006@aol.com

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: www.theearthwideopen.com or 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 15th of the month is the deadline for next month's issue. Send material to lybanon@earthlink.net.

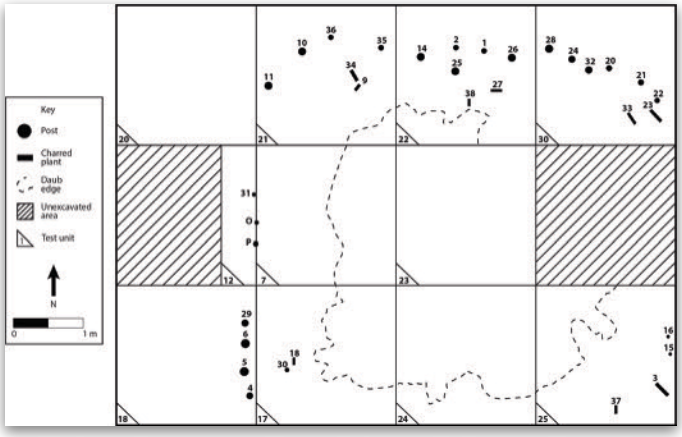
All 2021 DMC field trips have been cancelled and rescheduled to 2022. The next MAGS-sponsored trip is currently scheduled for October 2024.

Links to Federation News

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

The Greenbrier Site (3IN1)
Continued from P. 1

of approximately 25 percent of what appears to be an enclosure or palisade. To date, interpretations include more than 75 prehistoric structures and a plaza. Two separate fortification alignments indicate a probable site enlargement based on apparent feature superimposition.



Precious Metals From The Sky
Continued from P. 1

moved into Earth's iron core long ago, due to the affinity they have for bonding with iron. (It's estimated that Earth's core contains enough precious metals to cover the Earth's surface with a layer 4m thick.).

Not all of Earth's iron—and other heavy materials—sank to the core. Some iron (and other heavy materials) remain in the mantle and the crust. Surprisingly, precious metals appear relatively abundant on the planet's surface and in the underlying mantle layer. Precious metals are tens to thousands of times more abundant in the mantle than anticipated.

Scientists in the University of Bristol (UK) School of Earth Sciences may have found the reason. Matthias Willbold and Tim Elliott took modern day rocks and nearly 4 billion-year-old rocks from Isua, Greenland, and measured their chemical compositions. Their analysis revealed that the composition of the Earth changed dramatically about 3.9 billion years ago. This violent era was known as the Late Heavy Bombardment (LHB), when hordes of asteroids smashed into Earth and the other inner planets—the aftermath of this onslaught is still evident in the many craters on the surface of the Moon (evidence for the LHB derives from lunar samples brought back by the Apollo astronauts). These asteroids brought precious metals with them.

Willbold and his colleagues concentrated on investigating the ancient Greenland rocks for isotopes of tungsten, a metal that, like gold, has an affinity for bonding with iron. Isotopes of tungsten each have 74 protons but different numbers of neutrons. Tungsten-182 has 108 neutrons, while tungsten-184 has 110.

When the scientists compared modern rocks with Greenland samples that predated the Late Heavy Bombardment, they discovered the ratio of tungsten-182 to tungsten-184 is 13 parts-per-million lower in modern rocks. Willbold and his colleagues say this difference suggests that much of the tungsten and precious metals seen in modern rocks came from meteor strikes. Primitive meteorites are known to have significantly depleted levels of tungsten-182 compared to tungsten-184. Alternative explanations do not explain the isotope data well.

"Our work shows that most of the precious metals on which our economies and many key industrial processes are based have been added to our planet by lucky coincidence when the Earth was hit by about 20 billion billion tonnes of asteroidal material," Willbold says.

The scientists postulate that these meteor strikes may also have triggered the flow of hot rock in the upper layer of the mantle right below the Earth's crust that is seen up to the present day.

Ref: *Willbold, M., Elliott, T. & Moorbath, S. The tungsten isotopic composition of the Earth's mantle before the terminal bombardment. Nature 477, 195–198 (2011). https://doi.org/10.1038/nature10399*

Scribbling Rings?

Stephanie Blandin

The scribbling ring was popular during the 16th century. Usually scribblers were thought to be rich people. One reason is that the messages were scribbled on window glass, which was very expensive. Another reason was that the ring used for scribbling was an uncut diamond! The ring had a sharp point on it, unlike the facet cuts of today. It was exchanged by lovers such as Queen Elizabeth I and Sir Walter Raleigh. He was said to have scribbled upon his Queen's window: "Fain would I rise but that I fear to fall." Her reply was: "If thy heart fail thee, do not rise at all." Mary Queen of Scots was also a scribbler.

A scribbling ring that was discovered in Leicestershire, England, has been dated back to the early medieval period, maybe even as far back as the 11th century. A reporter from "The Times" newspaper on August 21, 2008 ,reports that a Mr. Stevens, who was using a metal detector, found a black diamond scribbling ring in a local field. It is believed to have belonged to either the Church or Royalty. As history has proven, what goes out, comes back in, such as the scribbling ring...

Note: Please limit all love notes to me on paper but diamonds (Cognac preferred) would be welcome!! I might even scribble a "Thank You!"

The Colors Of Petrified Wood

W. C. McDaniel

Color	Mineral(s)
Red, Orange	iron
Yellow, Brown	iron, uranium
Green	iron, copper, cobalt, chromium, uranium, and nickel
Blue	copper, manganese, cobalt, and chromium
Violet and Purple	manganese and iron
Black	manganese, carbon, and iron
White and Gray	silicon dioxide

Walk into a paint store and you will see rows and rows of paint samples of many colors. Multiple choices of browns or reds! A little overwhelmed, you take a break and go next door to the petrified wood store (I wish). There you are really "whelmed." Petrified wood of all shapes, sizes, types, and colors lining the shelves. Many shades of brown/red and a variety of other colors are in full display of these millions and millions of years old specimens. Two questions :how the petrified wood moved from a piece of wood/part of tree to a hard rock, and second, how it got those colors?

Petrified wood is a type of fossil. It forms when organic wood is rapidly buried in sediments that protect it from decay. Groundwater rich in dissolved minerals then replaces the original plant material with minerals such as silica (quartz) in a process called permineralization This not an overnight event, rather taking millions of years. ***[Editor's Note:*** *A great deal of petrified wood is millions of years old, but in some cases the natural process can be faster. There are laboratory techniques that are much faster.]*

Nature was tie dying long before t-shirts were invented. The colors we see in petrified wood were determined by the mineral types found in the area. Plus, the nature forces of time, location, and movement will determine the petrified wood you collect and see in the petrified wood store.

Photos on P. 8

Fabulous Tennessee Fossils

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

FTF 76

Heliolites—Pelmatozoan—*Enterolasma* Epibiosis

I have three goals for this essay: (1) to introduce you to a fossiliferous rock unit that I have not written much about in these essays, but which I think you will find fascinating—the Lobelville member of the Silurian Brownsport Formation; (2) to demonstrate the complexities that can occur with biotic interaction analyses of fossils; and (3) to demonstrate how the Principle of Superposition is as useful a tool in biotic interaction analyses as it is in stratigraphy. I will be describing a single specimen that I collected nearly 20 years ago from an abundantly fossiliferous outcrop just north of the town of Lobelville, on the east side of the Tennessee River, and the outcrop which William F. Pate and Ray S. Bassler erected to member status in 1908 in an article in the U.S. National Museum Proceedings (*The Late Niagaran strata of West Tennessee, U.S.N.P. 34(1621):407-423*).

The Lobelville is a distinctive discontinuously thin-bedded to laminated, highly fossiliferous, bioclastic limestone with thin discontinuous shale interbeds and partings that are also fossiliferous. The shale causes the unit to quickly weather when exposed, leaving behind a plethora of fossils, predominantly corals, bryozoans, echinoderms, and brachiopods. This mixed carbonate-siliciclastic nature has been interpreted to represent a shallow, level bottom seafloor that was sediment-starved, except for slight influxes of mud that were never so great as to blanket the seafloor to any great degree, but accumulated locally. Corals and bryozoans, being clonal in nature, were able to easily overgrow other skeletal debris and thin dewatered muds to dominate the seafloor, effectively making it more of a hardground. The colonial corals are always wide and flat colonies ("snowshoe" adaptation) and rugosan horn corals were generally small with attachments to hard substrata, rather than semi-infaunal "iceberg" sinking more typical of larger rugosan horn corals.

Figure 1 is a sideview of a specimen of the colonial coral *Heliolites* with an unusual elongate and rounded growth shape of the corallum (colony) that includes a bulbous end (right) and a right-angle upward growth protrusion (left). *Heliolites* usually grows as a flatted to domical corallum.Figure 2, depicting the lower surface of the specimen, sheds more insight into the odd *Heliolites* growth form by revealing that the coral is part of an intergrowth of several fossil groups. The lower surface of the specimen shows a distinct pecking order of organism and sediment interlayering that involved the stem of a pelmatozoan echinoderm anchoring in sediment and subsequently being used as an attachment substrate for the coral *Heliolites* colonization phase and later growth shape influenced by the shape of the pelmatozoan, and a coeval colonization by a rugosoan coral *Enterolasma* that also inhabited the post-morten pelmatozoan substrate, but eventually was forced to biologically interact with *Heliolites*. We can borrow stratigraphy's Principle of Superposition to unravel the sequence of events in my interpretation of the relationships between these three fossil organisms.

Superposition states that in a layered sequence, strata (or in this case layered fossils) on the "bottom" were formed before those on the "top" (also inside to outside). The pelmatozoan cannot be identified to a particular taxon as it is only the stem that is visible. The pelmatozoan stem shows many small tubercles for short "arm-like" extensions called cerri. The cerri are more prominent on one side of the stem, the visible side, indicating that this portion of the stem was probably lower on the column, closer to the seafloor, and may have even been reptant (grew along the seafloor). Cerri of this style were used as secondary attachment structures for the lower part of the pelmatozoan stem to provide anchorage and stability. Our stem is only a fragment as is indicated by the fact that the stem does not taper to a point, that the *Heliolites* coral completely engulfs the specimen on one end (larger end), including the underside, and that the other end is exposed and bro-

Continued, P. 6

Fabulous Tennessee Fossils Continued from P. 5

ken. Also visible inside the recess of the fossil showing the stem is a thin layer (~1mm) of sediment still adhering to stem. The *Heliolites* is growing downward over the sediment layer, thus binding it between the stem and the coral skeleton. The sediment layer becomes more extensive near one end of the stem fragment, but it too is covered by a growth layer of *Heliolites* coral that extends downward only as far as the thickness of the stem. Successive layers of coral are thicker and begin to wrap around the lower surface of the stem in overlapping fashion, suggesting that the current scouring around the base of the coral opened-up space to form a cryptic overhang around this end of the pelmatozoan stem for the coral to completely engulf the end and grow in a bulbous fashion. This could only happen in a sediment-starved situation, post-deposition and pre-cementation of the sediment. Growth continued such that it resulted in the *Heliolites* colony becoming a large bulbous rounded protrusion, thus adding mass that would have stabilized the colony on the seafloor. Much later, probably during the more recent exhumation of the specimen, the lowermost sediment that adhered to the underside of the pelmatozoan stem, which had mostly sediment unprotected by coral growth, eroded away, leaving the large depression (which would have been a raised sediment substrate in life) visible in Figure 2. This also fortuitously for our analysis exposed the edges of the coral colony layers (at least three growth surfaces are visible) and exposed the undersurface of the pelmatozoan to continued weathering (note that some of the coral ossicles are eroded through). The end of the specimen shows coral growth all the way around the stem indicating that scouring had exposed enough undersurface on that end to become a full overhang allowing the *Heliolites* to grow "pendant" from the stem undersurface. The opposite end shows a similar relationship except that the distal end is broken off.

What type of interactions are represented by the physical relationships between the *Heliolites* and the pelmatozoan? No growth response is indicated from the "host" pelmatozoan at any point along the stem. Applying parsimony, the relationship is best characterized as non-interactive, meaning the pelmatozoan was most likely a dead broken fragment of skeletal substrate on the seafloor at the time that the *Heliolites* began its growth.

The thinner end of the specimen (Figures 2, 3) is broken to reveal a cross-section that shows that the stem is broken as well, so this is only a part of the original elongate corallum, with the rest lost modern erosion. I suggest, however, that there probably was not too much more of the *Heliolites* coral growing in that direction. First, the *Heliolites* colony is only a single layer thick at this end, indicating growth had only progressed a little past what we see. Additionally, there is a very small extension of *Heliolites* growing out from the pelmatozoan, but it does not grow onto the surface. Instead it overhangs like an awning, suggesting very weak attachment to the pre-broken pelmatozoan stem. Also, on the underside of the specimen, the thin growth edge of the *Heliolites* colony is visible. Of course, it could be argued that the only reason this fragment of the stem has survived from a much longer specimen is that it was thicker and heavier due to the overgrowth and that the rest of the stem was longer, but broken away or never collected. The entire stem, or a longer section of it, could have been *in situ* with this recovered portion, just not collected as it did not stand out as unusual or part of this specimen. When I collected the specimen 20 years ago from the sloped outcrop surface, enough specimen creep had occurred that the exact original position of each fossil could not be determined with certainty. This could be an example of collector bias by me and I simply incompletely collected the entire specimen.

In Figures 1 and 3, note the upward extending growth in the *Heliolites*. Here the *Heliolites* is preserving another interaction with a different coral and superposition helps us to unravel that relationship. The upward extension was produced by a single attached rugosan horn coral, *Enterolasma*, that was growing upward from the surface of the pelmatozoan to which it is attached. This growth is one of the "up" indicators for orienting the overall specimen–rugosan corals grew upward off the substrate to orient their corallite and tentacles up into the water column for feading. The relationship between the pelmato-

Continued, P. 7

Fabulous Tennessee Fossils Continued from P. 6

zoan and the *Enterolasma* is therefore the same as we saw earlier; the pelamtozoan was just a fragmented hard substrate on which to grow. Our *Heliolites* colony grew upward around the lower epitheca of the *Enterolasma* all of the way up to the top of the corallite, more on one side than the other, but not into it. This indicates that they two corals were growing simultaneously, hence symbiotically as commensals. For most of the growth time, both corals would have benefited from the intergrowth (or better, overgrowth) of skeletons: *Enterolasma* received a protective covering and more rigid growth form, *Heliolites* received more surface area and upward growth off the substrate. The *Heliolites* probably benefited the most.Thus, this commensalism could also be considered an example of mutualistic symbiosis, or mutualism, at least for a while during the relationship.

Closer examination, however, indicates that the mutualistic biotic relationship between the *Heliolites* and *Enterolasma* changed near the end of their coexistence. Figure 3 shows the upper part of the *Enterolasma* corallite, partially broken away. Notice that it is best preserved on the side that has the most extensive and thickest *Heliolites* coral overgrowth, demonstrating the positive role epibiosis plays in taphonomy. Not only did the *Heliolites* never overgrew the *Enteorolasma* down into the corrallite suggesting that the intergrowth relationship was occurring during the life of both corals, with the *Enterolasma* inhabiting its corallite and preventing any overgrowth into the corallite itself, but note that the *Enterolasma* corallite begins a turn to one side, away from the leading edge of the *Heliolites* colony, probably as it sensed the *Heliolites* growing toward the interface with the coral tissue and its skeleton, as a defense move. The growth of the *Heliolites* is not even on all sides. *Heliolites* is thicker on the side mentioned above and thinner to non-existent on the side that the *Heliolites* moved its growth toward.

If my interpretation of the growth timing is correct, then this becomes a prime example of an antagonistic form of symbiosis at this time of the interaction, demonstrating that interactions between organisms evolve and that evolution can be preserved. It could be interpreted as parasitic at this point of the intergrowth as one is benefiting at the expense of another. A better interpretation would be that the relationship begins mutualistic to become a one-sided commensalistic relationship. There is no indication that the *Enterolasma* ever was at much of a disadvantage, at least not what is typically expected of true parasitism, only that it did expend energy to change growth direction slightly (which could have had benefits?) and that the *Heliolites* would have gained a bit more space on that side.

Organisms interact in dynamic ways that change during their lifetime. Biotic interaction analyses of preserved fossil behavior is often very complex and involves many steps of reasoning that can often must rely on scant or equivocal physical evidence. In the end, the paleontologist is often left with a Rudyard Kipling style "just so" story that sounds good, makes sense, seems logical, fits the observations, but remains elusive to testing to obtain the degree of certainty that scientists like in their hypotheses. Still, it may be less certain, and it may not be considered "big science", but it does add colorful detail to the reconstructions of the daily life of fossil organisms.

Figure 1. Unusual growth shape of the colonial coral *Heliolites* from the Silurian Lobelville Member of the Brownsport Formation. (UTM Silurian Fossil Collections; Photo by MAG, centimeter scale).

Figure 2. Undersurface of specimen in Figure 1 showing that the bulbous *Heliolites* colony is overgrowing a fragment of pelmatozoan stem. The hole is interpreted to be where less resistant seafloor sediment was removed during exposure of the fossil to modern weathering and erosion allowing access to the undersurface of the specimen where the coral could not grow. See essay for more details and explanation. (Photo by MAG, centimeter scale).

Continued, P. 7

Fabulous Tennessee Fossils
Continued from P. 7

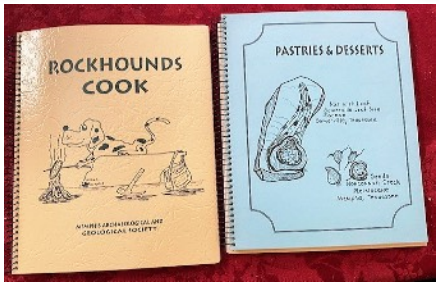
Figure 3. Opposite end of specimen showing upward growth of the solitary rugosan coral *Enterolasma* and coeval encrusting of a colony *Heliolites*. See essay for more details and explanation (Photo by MAG).

New Library Books

National Geography Society, *SCIENCE*

Lark Books, 500 *Gemstone Jewels*

Hugh Tait, *700 Years of Jewelry*



Lavender Cookies

(Stephanie Blandin)

INGREDIENTS

- 1 cup margarine, softened
- 1 cup sugar
- 1 cup brown sugar, packed
- 1 egg
- ¾ cup shortening
- 1 tsp vanilla
- 3½ cups flour
- 1 tsp soda
- 1 tsp cream of tartar
- 1 cup Rice Krispies®
- 1 cup oatmeal
- 4 tsp Lavender buds, rounded

INSTRUCTIONS

Beat together margarine, sugars, and shortening. Add egg. Beat until fluffy. Sift together flour, soda, and cream of tartar. Add to mixture. Stir in Rice Krispies, oatmeal, and lavender. Mix well. Drop by teaspoonfuls on ungreased baking sheet Bake at 350° for 12 minutes. Makes about 95 cookies.

Roadcut: The Colors Of Petrified Wood, Photos

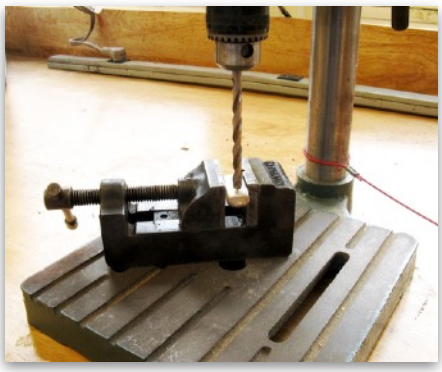
May Meeting Pictures

Jewelry Bench Tips by *Brad Smith*

DRILL PRESS VISE

A drill press vise is a versatile tool to hold a workpiece securely and in precise alignment. It reduces the of risks of working with high power motors, using larger drill bits, and dealing with heat generated in the operation. The vise can be clamped to the drill press table if needed and is quite handy for use at the bench to hold things for sawing or riveting.

You can find them at stores that carry machine tool supplies. My feeling is that the best ones are made from steel. In particular, I like the ones with V grooves cut into the jaw plates. That lets me hold a punch straight upright or hold a rod horizontal. To find a supplier, search on "drill press vise" at sites like micromark.com, mscdirect.com/enco, smallparts.-com, grizzly.com.



DENTAL GOLD

You might think that a couple pieces of dental gold would be valuable, but if you only have a small amount, it can be a problem. Sending it to a refiner is expensive for small lots.

I made the mistake of thinking I could melt it and roll out my own sheet. It turns out the trace metals in dental gold make it a good material in your mouth but cause it to crack if you try to forge it or roll it out as a sheet. They ruined my whole ingot.

So what to do with a couple gold crowns? A reasonable alternative is to try incorporating the metal into your jewelry. If you have enough material to do a casting, that's probably the best use for dental gold.

If you're not into casting, try melting it on a solder pad and while molten, divide it into small pieces with your solder pick. Then re-flow each piece to make little gold balls for use for accents on your designs. The balls can also be planished a bit to make small discs or struck with a design stamp to add texture.

Discover Smart Solutions for Your Jewelry Making Problems:

amazon.com/author/bradfordsmith

Pictures From Mars?

Thanks, Jim Butchko, for these pictures from the field trip to Melba Cole's property.

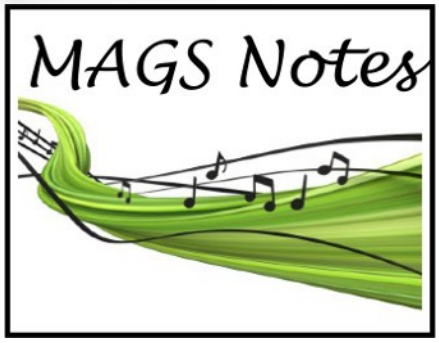
June Field Trip

Jim Butchko

We are going to Hot Springs to look for quartz crystals on June 19. MAGS and the Central Arkansas Gem and Mineral Society will have a joint trip to Coleman's mine. We will meet at the mine at 9:00 A. M. on Saturday. The fee is $25.00 per person and it's easy digging. There are restrooms and water available on site. Then on Sunday, if the weather is still good, we will go to another mine like maybe Wegner's, which will have a similar fee. To sign up call, email, or text Jim Butchko at (901) 921–3096 or j.butchko@yahoo.com.

May Rock Swap

The May 29 rock swap at Lou White's house was a big success. Here are a few pictures.



🎵Meetings

Some presentations may be Zoom.

June 11: Julie Morrow, "The Greenbrier Site"

July 9: Paul Edson-Lahm, "Geology of the Portland Basin"

August 13: Indoor Rock Swap (tentative)

🎵Field Trips

June 19: Hot Springs (quartz mine)

July & August: TBD

🎵June Birthdays

1 Pat Judd
6 Amanda Nalley
14 Jan Harris Koulogianes
15 Samuel Bartram
16 Ann Williams
John Cloer
18 Debbie Schaeffer
19 William Kratz
20 Roger Lambert
23 Rebecca Luman
25 Lauren Schaeffer
Danielle Schaeffer
Jennifer Featherston
Doris Johnston
29 Cornelia McDaniel

🎵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 Membership 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.

April Board Minutes

Mike Coulson

Zoom meeting called to order 6:30. Present: W. C. McDaniel, Mike Baldwin, Carol Lybanon, Matthew Lybanon, Bonnie Cooper, Bob Cooper, Dave Clarke, James Butchko, Nannett McDougal-Dykes, Mike Coulson, Melissa Koontz, Jane Coop.

Old Business: Fossil Fest at Pink Palace went well. Moved inside because of weather. Good event to participate in next year.

New Business: April Membership meeting to be held outdoors in church parking lot. Volunteers needed around 5:30 to set up tables. Restroom facilities will be available inside. New A/C system should be installed in time for meeting.

Show: Still in a holding pattern.

Secretary: March minutes were distributed via email to Board. Board approved minutes.

Treasurer: No Deposits this month. Check to Mike Baldwin for AT&T Web Hosting Fee for our website

Membership: No new Members. April newsletter mailed out.

Field Trips: Discussed several options for local field trips beginning in March. Upcoming: April 17, Melba Cole's place (selenite, fossils), 10:30 am. W. C. suggested

Continued, P. 11

April Board Minutes
Continued from P. 10

seeing if Vulcan could also be an option. May 15, Blue Springs and 20 Mile Creek. May 22, Field Trip and Rock Swap to Memphis Stone and Gravel, details later. June 19, Hot Springs, crystal collecting.W.C. suggested a tour of the Pink Palace and collection.

Adult Programs: Dave has contacted 18 people as possible presenters. Eleven speakers could do Zoom or in-person, seven could only do Zoom. Dave will send the list of potential speakers to Matthew to add to the newsletter. Upcoming: April, Mike Gibson, Zoom talk on Coon Creek. Dave will contact Luke Ramsey from Pink Palace about a talk.

Junior Programs: Junior programs on hold until further notice. Mike gave a talk to home school children in Southaven; it went very well. He is planning a trip with this group to 20 Mile Creek on April 13.

Library: Waiting for books ordered to come in.

Rock Swaps: No rock swap currently planned. May hold off and see how the outdoor Membership Meeting goes, maybe revisit in May.

Editor: April Newsletter is out. Matthew was pleased to get submitted articles on topics he didn't know a lot about. Please send him any photos, reports, or stories.

Web: Website will be updated for April following this Board Meeting.

Adjourned 7:15.

April Meeting Minutes

Mike Coulson

Meeting began at 6:00 P. M. Moved indoors due to weather. It was originally planned to take place in the parking lot. Face masks were worn and social distancing was observed. Displays of recent finds to be seen, auction and door prizes were awarded along with wonderful fellowship among Members present.

Neanderthals In Europe

Matthew Lybanon, Editor

Neanderthal fossils from a cave in Belgium believed to belong to the last survivors of their species ever discovered in Europe are thousands of years older than once thought, a new study said.Understanding when Neanderthals disappeared is a hotly debated topic among paleoanthropologists. When radiocarbon dating placed the Spy Neanderthals (from the Spy Cave in Belgium) amongst the latest surviving in Northwest Europe, questions were raised regarding the reliability of the dates.

Previous radiocarbon dating of the remains from the Spy Cave yielded ages as recent as approximately 24,000 years ago, but the new testing pushes the clock back to between 44,200 to 40,600 years ago. Co-lead author Thibaut Devièse from the University of Oxford and Aix-Marseille University said he and colleagues had developed a more robust method to prepare samples, which was better able to exclude contaminants.

The new method still relies on radiocarbon dating, but refines the way specimens are collected. When it comes to bones, scientists extract the part made up of collagen because it is organic.

"What we have done is to go one step further," said Devièse, since contamination from the burial environment or through glues used for museum work can spoil the sample.

Instead, the team looked for the building blocks of collagen, amino acids, and in particular selected specific single amino acids they could be sure were part of the collagen.

The authors also dated Neanderthal specimens from two additional Belgian sites, Fonds-de-Forêt and Engis, finding comparable ages. Genetic sequencing was meanwhile able to show that a Neanderthal shoulder bone previously dated at 28,000 years ago was heavily contaminated with bovine DNA, suggesting the bone had been preserved with a glue made from cattle bones.

The researchers' direct radiocarbon dates on the Neanderthals from Spy and those from Engis and Fonds-de-Forêt show a reduction of the uncertainty for the time window corresponding to Neanderthal disappearance in Northwest Europe. This population disappeared at 44,200 to 40,600 cal B. P. (calibrated years before the present). Accurate dating is crucial in understanding the relationships between Neanderthals and Homo sapiens.

Reference: *Thibaut Devièse et al, Reevaluating the timing of Neanderthal disappearance in Northwest Europe, Proceedings of the National Academy of Sciences Mar 2021, 118 (12) e2022466118; DOI: 10.1073/pnas.2022466118*

MAGS At A Glance

June 2021

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 Membership Meeting, 7:00 pm, Dr. Julie Morrow, "The Greenbrier Site"	12
13	14 	15	16	17	18	19 MAGS field trip, Hot Springs, quartz crystals
20 Summer begins 	21	22	23	24	25	26
27	28	29	30	1	2	3

Memphis Archaeological and Geological Society
2019 Littlemore Drive
Memphis, TN 38016