



Volume 67 ♦ Number 01 ♦ January 2021 ♦ A monthly newsletter for and by the members of MAGS

# Sphering Into 2021

W. C. McDaniel, MAGS President



See P. 6 for January meeting program information.

The sphere on the left is carved out of quartz crystal. Usually the sphere is milky white with fractures. It is difficult to see through and get a clear view. The sphere on the right is glass or re-constituted quartz. It is usually clear and easy to see through. So,

using the spheres as our viewing guide and benchmark let us look at MAGS in 2021. The picture is poor quality; I hope the article is perfectly clear.

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## THANKS FOR THE GOOD WISHES

We wish all MAGSters and friends of MAGS a very happy New Year. We look forward to resuming club activities; see the article above for details.

And a special “thank you” goes to those who responded with good wishes to the holiday greeting card that went out to all Members. It’s nice to be appreciated.



Memphis Archaeological and Geological Society

# 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](http://memphisgeology.org)

MAGS Show Website: [www.theearthwideopen.com](http://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](mailto:lybanon@earthlink.net).

The December DMC Field Trip has been cancelled. See P. 3 of this newsletter for more details.

### Links to Federation News

- ➔ AFMS: [www.amfed.org/afms\\_news.htm](http://www.amfed.org/afms_news.htm)
- ➔ SFMS: [www.amfed.org/sfms/](http://www.amfed.org/sfms/)
- ➔ DMC: [www.amfed.org/sfms/dmc/dmc.htm](http://www.amfed.org/sfms/dmc/dmc.htm)

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

*Sphering Into 2021*  
*Continued from P. 1*

## **Membership meeting—quartz sphere view**

- Indoor meetings will be difficult to plan in the near future.
- The January and February meetings will not be in person but with Zoom. More information will soon be available.
- March and the remainder of the year is cloudy and we are just unsure when the best time to resume indoor meetings.

## **Field trips—quartz to clear view**

- The first couple of months are dependent upon weather and available locations. Attempts will be made to schedule nearby one day trips.
- March and beyond will be de-

termined later.

## **Show—quartz sphere view**

- The 2021 Show is scheduled for April 24/25.
- Decision for the Show will need to be made in January
- We do have some flex with the Agricenter and that will help with our planning and decision.

## **Rock Swaps—clear sphere view**

- Rock swaps are primarily a warm weather activity, so we have some time to plan and get the swaps scheduled.

## **Club communications—clear sphere view**

- Communications to club members using newsletter, web, social media, and email have been consistent for the

past year and that will continue.

## **Club Financials—clear sphere view**

- The club's financial status and balance sheets are in good and stable shape.

## **COVID-19 Information**

Plans for MAGS activities are strongly influenced by the restrictions resulting from the COVID-19 pandemic. The State of Tennessee maintains a website with useful information about this: <https://covid19.tn.gov>. The City of Memphis also has a website with information at a local level: <https://covid19.memphistn.gov>. The websites are updated frequently, so it's worth checking them periodically.

## **2021 DMC Field Trip Schedule**

Most of the 2020 Dixie Mineral Council (DMC) field trips were cancelled because of the pandemic. Some of them were rescheduled to 2021.

Here is the proposed 2021 schedule of DMC field trips (the next MAGS-sponsored trip is scheduled for October 2023). Changes may be necessary, depending on conditions at the time. *MAGS Rockhound News* will publish the details each month.

<b>January</b>	OPEN
<b>February</b>	OPEN
<b>March</b>	Mobile Rock & Gem Society, Inc. (Mobile, AL)
<b>April</b>	Charlotte Gem & Mineral Club (Charlotte, NC)
<b>May</b>	Mississippi Gem and Mineral Society (Florence, MS)
<b>June</b>	Gaston County Gem, Mineral & Faceting Club (Gastonia, NC)
<b>July</b>	Henderson County Gem & Mineral Society (Hendersonville, NC)
<b>August</b>	Huntsville Gem and Mineral Society (Huntsville, AL)
<b>September</b>	Knoxville Gem & Mineral Society (Knoxville, TN)
<b>October</b>	Cobb County Gem & Mineral Society (Marietta, GA)
<b>November</b>	Mid-Tennessee Gem & Mineral Society (Murfreesboro, TN)
<b>December</b>	Columbia Gem & Mineral Society (Columbia, SC)

## Selected Christmas Tree Photos



Rocks Around the Christmas Tree—photo by W. C. McDaniel



White Christmas (the white is quartz)—photo by M. Lybanon

## Geodes Of Fun

**Editor's Note:** This article is reprinted (with permission) from the **SCFMS Newsletter**, November-December issue. It is Lab 7 from **Geology Lab For Kids**. It was reprinted in the **SCFMS Newsletter** with permission from the author, Garret Romaine. The book can be obtained here: <https://www.amazon.-com/Garret-Romaine/e/B0037187T8>.

Make a cluster of geodes from common kitchen chemicals. This experiment calls for alum, but you can use Borax in the same proportions as the Crusty Crystals lab in Lab 4, or use salt in the same proportion as in the Salty Squares lab in Lab 2.

## Safety Tips

Avoid getting solutions in your eyes.—Wash hands after using the chemicals.—Ask an adult for help boiling the water.—Be cautious around the cooking stove to avoid burns.



## MATERIALS

- ½ cup (120 ml) of very hot water (boiling is okay but

not required)

- 2 clean, 1 quart (946 ml), narrow mouth glass Mason jars
- 2 ½ tablespoons (45 g) of pure alum powder (potassium aluminum sulfate—you must have the right kind!)
- Metal stirring spoon
- Paper towel
- Rubber band
- 12" (30 cm) of light nylon fishing line
- Scissors
- Ruler, pencil, or single chopstick



## PROTOCOL

**STEP 1:** Make sure your plastic bowls or plastic eggs are clean. Note that you can also use actual eggshells if they are large enough, and very clean. Then you can break them away when you're done if your crystals are thick enough.

**STEP 2:** Bring a quart (946 ml) of water to a boil and pour about 3 cups (709 ml) of the hot liquid into a mixing bowl or Mason jar. Add 2½ tablespoons (45 g) of alum per each cup of water, so if you want to make a lot *Continued, P. 5*

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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*Geodes Of Fun* of geodes,  
*Continued from P. 4* keep that ratio. Stir it up, but don't worry if some alum settles to the bottom of the jar.

**STEP 3:** If you want a colored crystal cluster, stir in plenty of food coloring.

**STEP 4:** Put a few drops of glue in the bowl or egg, coating the inside edge. Before it dries, sprinkle in some alum, Borax, or salt crystals. These are the seed crystals that will help the geode grow faster.

**STEP 5:** Pour the mix into the plastic bowls or eggs. If you're using eggs, use a towel, a muffin tin, or empty egg container to hold the eggs upright.

**STEP 6:** Put the cooling forms somewhere where they are safe from spills.

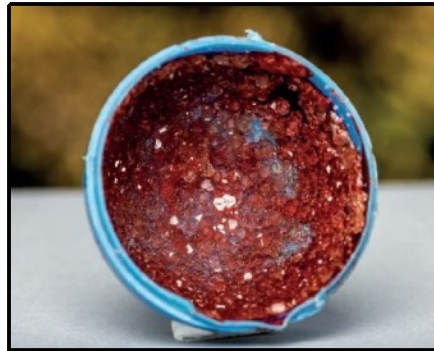
**STEP 7:** After twenty-four hours, you should see a crust forming. It will take some time for all the water to evaporate, but if you don't want to wait that long, you can pour the remaining liquid into a jar and reuse it for more fun later.

## Creative Enrichment

1. Add fluorescent, glowing paint to your mix if you want to create a "space rock" effect.

## THE SCIENCE BEHIND THE FUN

Geodes form in igneous and sedimentary rocks as hollow, round structures. They may begin as large bubbles or holes in the rock. Hot, quartz-rich fluids in the rocks can then reach the



bubbles and start filling them in. Sometimes the hot fluids pick up colors from the rocks around them and leave colored agate bands inside the geodes. We'll learn more about that in Lab 42. Geodes often look like ordinary rocks on the outside. Because they cool slowly and evenly, crystals can form into fantastic shapes on the inside. The geodes also get refreshed with new surges of hot liquid, usually quartz, but other minerals, such as calcite, may come in. Sometimes the new material comes into the geode as a gas, so each crystal clinging to the inside of the geode can grow a little. Other times, the material comes in as a liquid, and the geode fills up with bands, from the bottom up. Geodes and "thundereggs" are common in many parts of the U. S. where there is lots of lava, such as at Oregon's famed Richardson's Ranch. Keokuk, Iowa, is also known by rock hounds for its geodes. Cracking open a geode is a lot of fun, because you never know what's inside. There are many different websites where you can order your own geodes to break apart.



## Meetings

*January 2021:* Zoom meeting, Stacy Walbridge, "Collecting in the Sonoran Desert."

*February:* Zoom meeting, program TBD.

*March:* TBD.

## Field Trips

*2021:* Field trips will be announced soon. James Butchko is the new field trip coordinator.

## January Birthdays

- |    |                                    |
|----|------------------------------------|
| 1  | Sarah Wilson<br>Jasmin Sloan       |
| 2  | Justin Coulson                     |
| 3  | Mary Kratz                         |
| 6  | Dan Crowder                        |
| 9  | Heidi Browning<br>Leigh Bartram    |
| 10 | Kaiison Lyles<br>Noa Parks         |
| 12 | Greg Bartram                       |
| 16 | Jack Cupps<br>Mitch Mitchell       |
| 18 | Ricky Waters                       |
| 21 | Brooke Ledbetter<br>Richard Gunter |
| 24 | Dr. Jon Stanford                   |
| 31 | Teresa Noyes                       |

Happy New Year 2021

**January 2021 Meeting Adult Program**

Stacy Walbridge began rockhounding when he was stationed at Yuma Proving Ground, Arizona, several years ago. Since then he and his wife, Kathi, have explored and collected in the southwestern desert as well as the New England area. Stacy and Kathi are now living in Franklin, North Carolina, known as “The Gem Capital of the World,” and are working on improving their lapidary skills. They are both active in their local Gem & Mineral Club where Stacy is the newsletter editor and Kathi is in charge of Programs. Stacy will provide a Zoom presentation on “Collecting in the Sonoran Desert” that will cover the geology of the area, soft and hard tools, and collecting sites, showing some samples they’ve collected.



Looking For Wulfenite



Exploring the Castle Dome Mining District with wife, Kathi



Looking for Geodes at Hauser Geode Bed

*Photos provided by Stacy Walbridge*



Prickly Pear Bloom



Mammoth Mine Wulfenite

**Jewelry Bench Tips** by  
*Brad Smith*



**ADJUSTABLE CHUCK FOR DREMELS**

Many of us have a Dremel motor tool to use at home or when out to a class or workshop. The one thing that makes this tool much more productive is the addition of one inexpensive option, an adjustable chuck.

The basic motor tool as sold typically comes with a collet chuck. This means you have to use a wrench to change every tool bit, you have to switch collets to use different shaft sizes (3/32 or 1/8 inch bits), and you can't use ordinary drills at all—only the special ones that have a 3/32 shaft.

*Continued, P. 8*

## Fabulous Tennessee Fossils

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

### FTF 72

Miscellaneous Tennessee Fossil Replacement



We are in December awaiting Christmas festivities in the days of Covid-19! So, in honor of the occasion, I am going to end my writings on fossil replacement with a serendipitous occurrence of Decembers. Watch for them as you read!

We have covered the most prevalent minerals that are found replacing the original biominerals of fossilized organisms that are common in Tennessee, along with a couple of occurrences that are less common. To summarize, most fossil replacement in Tennessee is dominated by polymorphs of carbonates (calcite and to a lesser extent magnesite), silica-rich minerals (in order of occurrence—quartz, chert, agate, and rarely opal), sulfides (pyrite and marcasite), and phosphate that is often associated with the replacement process of carbonates. There are many other minerals that have been reported in the literature to replace original invertebrate, wood, or vertebrate biominerals, including barite, celestite, gypsum, carnotite, carnelian, jasper, wulfenite, sphalerite, cinnabar, galena, and many more; however, none of these have been reported in Tennessee.

In the last essay, I noted that teeth and bone are composed primarily of the hydroxyapatite,  $(\text{Ca}_{10}(\text{PO}_4)_6\cdot 2(\text{OH}))$ , which contains phosphate that is important for organism metabolism. Ten-

nessee has numerous bone fossil occurrences, mostly concentrated in the Mesozoic and Cenozoic deposits of West Tennessee, the Miocene-age Gray fossil site of northeast Tennessee, and numerous cave deposits in Middle and East Tennessee, primarily from the Pleistocene and Holocene epochs. Younger Cenozoic fossil bone and teeth generally appear nearly unaltered, but may show some sediment infill or minor infill mineralization if buried (this is permineralization, not replacement). Detecting replacement within bone often requires sophisticated chemical studies as there may be little outward sign of any replacing processes. Color is usually the first indication of replacement in bone, with white bones becoming tan, brown, or black, and teeth becoming gray to black. The later is often due to changes in the phosphate state within teeth (see FTF 71).

One relatively easy phosphate replacement mineral to recognize is vivianite  $(\text{Fe}_2^{+3}(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O})$ , primarily because of the blue to blue-green tint that the mineral produces in fossils. Notice that vivianite is a ferric iron-rich, hydrated, phosphate mineral. The distinctive color is due to exposure of the normally clear mineral to oxygen and groundwater such that the iron oxides and interacts with the phosphate to produce the characteristic blue color. Vivianite is well-known as an alteration

mineral on bone from human burials.

Readers of this MAGS newsletter may recall that back in December of 2006, Marvin Nutt published a nice summary of a new mineral occurrence found in Nonconah Creek, that was originally thought to be vivianite. In that article, it was reported that vivianite had only been reported from two Tennessee localities, probably West Tennessee, but both lost to science. The Nonconah Creek mineral specimens were evaluated using X-ray diffraction and determined to be a variety of phosphate mineral related to vivianite, but differed at the chemical level by possessing iron and magnesium in place of some of the calcium in the crystal lattice, called baricite  $(\text{Mg, Fe}^{2+})_3(\text{PO}_4)_2 \cdot 8(\text{H}_2\text{O})$ . The Nonconah Creek baricite was the first reported occurrence of baricite in this part of the U. S. The *MAGS Rockhound News* report remains the only recording of this occurrence, as a separate paper describing the occurrence was never published in a scientific journal, nor was the occurrence included in any of the Tennessee Division of Geology mineral summaries, nor was it included in Travis Paris's "Tennessee Mineral Localities Index", published in *Rocks and Minerals* in December 2011. Merry Christmas to everyone!

*Jewelry Bench Tips* A simple and inexpensive (\$12) adjustable chuck solves all of this. It's available in most large local hardware stores or modelmaking outlets. Tightening the chuck is done easily by hand to any size shaft. No key is required.



## IDENTIFYING UNMARKED SOLDERS

There are plenty of ways to mark your sheet or wire solders, but suppose you forgot to mark them and have a couple that you can't identify. The answer is to compare the melting temperature of the unknowns with that of a known solder.

What I do is take a thick scrap of copper or nickel and arrange several solders on it. Ideally, I would have a sample of easy, medium, and hard known solders surrounding the unknown solder. Then I heat the plate from the bottom and watch the order in which the solders melt.

Learn New Skills with Brad's "How To Do It" Books

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

## November 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, Jane Coop.

**Old Business:** Estate Sale was a success, everything sold. W.C. deposited the proceeds from the sale.

**New Business:** Discussion continues around Holiday Party. Will wait on decision until closer to December.

**Secretary:** Copies of the October minutes were distributed via email. Minutes accepted.

**Treasurer:** Club finance report presented and accepted. W. C. advised that the church didn't charge for our outdoor September Board/Membership Meeting. We used \$100 of our October rent for the storage area. We have 3 CDs that are performing well.

**Membership:** We've had a great response to the free 2021 membership that was offered to all current 2020 Members. Fewer than 24 Members haven't responded yet. The November newsletter has been mailed out.

**Field Trips:** No report.

**Adult Programs:** Membership Meeting on Zoom. W. C. will send out the link and info. Members can watch even if their computer doesn't have a camera. November presentation by James Witts on the Extinction of the Ammonite. A future presentations could be Memphis Metal Museum, Metal Detecting Club.

**Junior Programs:** Junior programs on hold until further notice.

**Library:** Looking into purchasing DVDs to add to library that could be checked out by Members.

**Show:** Show still on hold until further notice. W. C. doesn't feel safe to put it on at this time.

**Rock Swaps:** On back burner for now.

**Editor:** November Newsletter is out. Please send any photos, reports, or stories to Matthew. Also schedules for field trips, adult programs, or anything else coming up in the new year.

**Web:** Website will be updated after the November Board Meeting.

Adjourned 7:15.

## November Meeting Minutes

*Mike Coulson*

Zoom meeting called to order around 7:05. About 20+ Members attending.

### Old Business:

1. Bob reported Members are still contacting him for the free 2021 membership.

2. W. C. reported that the estate sale at Melba's went very well. Everything was sold and we closed down before 1 pm.

3. Matthew reports that the check to the owner of the collection has been mailed out.

**New Business:** Charles Hill resigned as field trip coordinator due to health issues. W. C. will start a search for his replacement.

**Show:** Show for 2021 is in a holding pattern. W. C. is not comfortable at this point to make a decision.

**Adult Program:** "Ammonite extinction and the K-Pg. boundary in the Gulf Coastal Plain, USA," presented by Dr James Witts, Department of Earth & Planetary Science, University of New Mexico, Albuquerque (Zoom presentation).

Adjourned after presentation.



2020 Show Grand Prize—2021?



### From The Archives

Memphis Archaeological & Geological Society

July 1978

Page 9.

From The SMS Matrix---- YOUR HOUSE COMES OUT OF A MINE.

The raw material for the majority of the material used in building your home was furnished by the mining industry.

The foundation is probably concrete( limestone, clay shale, gypsum and aggregate mining).

The exterior walls may be made of brick(clay mining) or stone ( dimension stone mining)

The insulation in the walls may be glass wool(silica, feldspar, and trona mining) or expanded vermiculite (vermiculite mining)/

The interior walls are usually wallboard(gypsum mining)

The lumber in the structure will be fastened with nails or screws(iron ore mining and zinc mining).

Your sanitary facilities are made of porcelain( clay mining).

Your gutters are galvanized steel or aluminum( iron ore, zinc or aluminum mining)

If your roof is covered with asphalt shingles, the filler in the shingles is from a variety of colored silicate minerals from mining.

Your fireplace is probably of brick or stone lined with a steel box(iron ore mining.)

Your sewer piping is made of clay or iron pipe( clay or iron ore mining.)

Your electrical wiring is of copper( copper mining)

Your plumbing fixtures are made of brass(copper and zinc mining) or stainless steel(nickel and chrome mining).

Paint is manufactured with mineral fillers and pigments(from minerals obtained from mining).

Your door locks, knobs, and hinges are of brass or steel(copper, zinc and iron ore mining).

Your windows are made of glass(trona, silica, and feldspar mining).

And finally, your mortgage is written on paper made from wood and cloth fibres, but fibres filled clay( from clay mining).

Mining Engineering via California Geology.

\*\*\*\*\*

#### LINCOLN'S MARBLE LEAKS.

Did you know that the Lincoln Memorial in Washington, D.C. is sprouting Stalagmites and stalactites in its basement? This phenomenon is caused by water seeping through the marble. Though the memorial is only a little more than thirty years old, the formations have grown several feet. When the Memorial was built, engineers sank 122 steel cylinders to bedrock 50 feet underground. The base of the memorial is set high above ground on a rectangular platform, thus forming a cavernous space beneath the floor. This is where the stalagmites and stalactites are growing.

Via Richmond Rock Pickings.

\*\*\*\*\*

The no wash method of tumble polishing: Start with No. 80 grit, tumble a week. Don't empty the tumbler, but add 5 teaspoons full of new grit to the mixture in a three pound tumbler. Follow this procedure through with No. 190, 320, and 600 grits. Thoroughly wash the stones and tumbler before polish and final powders.

For a glossy finish, after washing out add spoons of sugar, one level spoon of Cascade or All or any non-sudsing detergent, and about 10 drops of muriatic acid if you have some. Let stand for one minute open, close tub and tumble for one week.

Via various newsletters.  
\*\*\*\*\*

WE ARE STILL LOOKIN FOR A NEW NAME FOR OUR NEWS LETTER. PUT YOUR SUGGESTION ON AN ENVELOPE THEN PUT YPUR NAME INSIDE AND SEAL SAME. MAIL OR GIVE IT TO YOUR EDITOR. HURRY HURRY HURRY

# MAGS At A Glance

## January 2021

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
27	28	29	30	31	1 <b>2021</b>	2
3	4 Zoom Board Meeting, 6:30 pm	5	6	7	8 Elvis's birthday/ Zoom Membership Meeting, 7:00 pm, "Collecting in the Sonoran Desert," 7:00 pm	9
10	11	12	13	14	15	16
17 <i>I have a dream.</i>	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

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