



Volume 66 ♦ Number 09 ♦ September 2020 ♦ A monthly newsletter for and by the members of MAGS

September Meeting

W. C. McDaniel, MAGS President

MEETING
Friday Night at the Rocks
*Watch for updates**
Friday, September 11
7:00 pm

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***Meeting plans subject to change. Members will be informed.**

Friday Night at the Rocks will be the September 11 MAGS Membership Meeting.

Shelby County is currently in Phase 2.

1. If we are in Phase 1 (getting worse), meeting cancelled.

2. If we are in Phase 2 (current/holding steady) hold meeting indoors at church.

3. If we are in Phase 3 hold meeting indoors at church.

4. Board Meeting 6:30 P. M., Membership Meeting 7:00 P. M. *Continued, P. 3*

THE VOTES ARE IN ...

... and we have our winners. We did our best to coax you to vote, and those of you who voted had some tough choices because we had good entries. Thanks to those who participated.

The winners are shown on P. 3. The specimens shown were collected on MAGS field trips to sites in three differ-



ent states. Prizes (1st, 2nd, and 3rd place) will be awarded at the September Membership Meeting (see above), or the first meeting held after then if the September meeting is cancelled. If Memphis/Shelby County remains in Phase 2—or advances to Phase 3—we'll have a September meeting. So come and applaud the winners.

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

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MAGS AND FEDERATION NOTES

Memphis Archaeological and Geological Society,
Memphis, Tennessee

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

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

MAGS Website: memphisgeology.org

MAGS Show Website: 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.

The September DMC Field Trip has been cancelled. Clubs scheduled to host for the remainder of this year, from July through December, have the option to preemptively reschedule to 2021.

Links to Federation News

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

September Meeting
Continued from P. 1

5. All proceeds to Show account

So, what will we do?

The no's and what each Member must do

1. No formal meeting.
2. No outside visitors.
3. No food/drink (ok to bring your own but no sharing).

4. Must wear a mask.
5. Must maintain social distancing.
6. Must stay home if you feel sick or may have been exposed to Covid-19. Zoom available.
7. Use meeting room and bathrooms (apparently, they have been remodeled) only.

So, how will we do?

Several tables will be set up,

spaced apart. Tables would consist of:

- Displays of finds and things you have made. Everyone that brings a display will get a prize.
- Show table with spinning wheel (have a new small one).
- Grab (MAGS) Bags.
- Silent auction(s).
- Surprise events and activities.

The Winners!

Here are the top three finishers in the Great MAGS Field Trip Finds Photo Contest.



#1. Danny Baker, Agate Rock, Nonconnah Creek, Memphis, Tennessee



#2. Debbie Schaeffer, Pine Cone, Union Chapel Mine, Jasper, Alabama



#3 Lauren Schaeffer, Ammonites, Lake Texoma, Oklahoma

Memphis Arch. & Geol. Soc. April 1976

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Is your Quartz Crystal RIGHT HANDED or LEFT HANDED?

by Don Green,
(Our club)

Ordinary quartz (the oc form) crystallizes in the Trapezohedral class of the Rhombohedral division of the Hexagonal system. The crystallographic structure is very complex and development can be either left handed or right handed. These two forms can be distinguished by optical means, but it is often difficult or impossible to distinguish them by visual examination.

The crystal habit of the common quartz crystal is deceptively simple because only a small number of possible faces are usually present. In the simplest common form (Fig. 1) the body of the crystal is hexagonal in section and bounded by six rectangular faces (m) and the "point" or termination is bounded by six triangles which appear equal but consist of alternate r and z faces which have developed equally. One cannot tell by visual examination if the crystal of this habit is right or left handed.

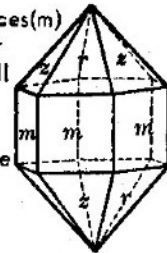


Figure 1

To be readily distinguishable as right or left handed a quartz crystal needs to have the following characteristics:

1. The r and z faces need to be developed unequally, in which case an r face is usually the largest.

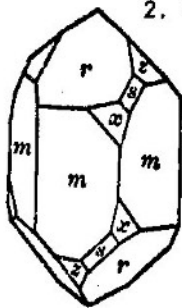


Figure 2

2. One or both of the x and s faces must be present (Figs. 2 and 3)

If you find a crystal with these characteristics hold it so that you are looking at the m face under the large r face. Then if there are any x or s faces to the right of these m-r faces the crystal is right handed (Fig. 2) while if the x or s faces are to the left the crystal is left handed (Fig. 3)

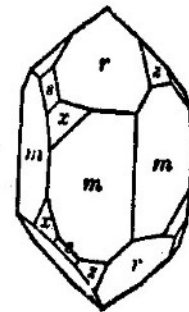


Figure 3

(Now comes the FUN! Dig out some of your old boxes of quartz xls you have collected at Ocus Stanley's or Coleman's and see what you can come up with then bring your findings to the meeting to show and tell.) em



With a little bit of practice you may learn to identify all 4 terminations (right or left) at the same time!

Canadian Pinolite

W. C. McDaniel

It was love at first sight. Walking down one of the many, many tents and aisles at the Tucson Kino Gem Show I saw a booth display and said to myself, “That is some of the nicest fossil plants I have ever seen, displaying super and almost perfect shapes with vivid colors”. I was wrong, about the fossil part, not the love at first sight part. Instead of fossils it was **pinolite** and it was from Canada. A new word/rock for me, so I needed to investigate beyond its good looks:

- “Pinolite is a semi-precious gemstone consisting of magnesite,

dolomite, and graphite; that when brought together, these minerals form a stunning grey, black, and white pattern like nothing else in this world. Also called Pinolith, this stone gets its name from the pinecone like patterns formed by the slow cooling of the three minerals.” The MOHS hardness is around 4-5.

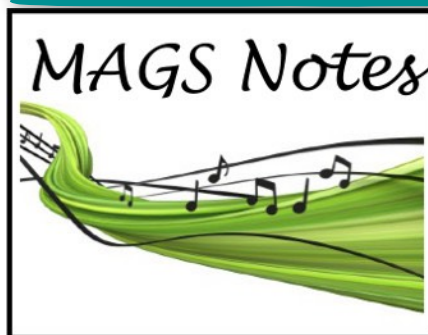
- The first mention of pinolite dates to the 17th century where it was mined in the Sunk, Austria, region. It was mined for industrial and decorative usages and actively mined into the 20th century until it closed, and most recently they have reopened.
- Sunk, Austria’s claim to be the

only pinolite site in the world, was relinquished in 2018 when gold miners came across the current pinolite site in the mountains of British Columbia.

- All the specimens pictured are from the Canadian site and were purchased by the author at the Tucson show.
- Another good thing about the pinolite not being a fossil was the pricing, which was considerably less than a fossil plate of good quality ferns or leaves.

Sources:

- <https://www.pinolite.ca/>
- <https://www.mindat.org/min-26694.html>



🎵 Meetings

September: Friday Night at the Rocks (6:30 P. M.)
 October & November: TBD

🎵 Field Trips

September 19: Sugar Creek, Millington, TN
 October 17: Dale Hollow Lake & Ledbetter Farm
 November: TBD

🎵 September Birthdays

- 1 Frank Pinner
- 2 Eric Marbury
- 5 Leo Koulogianes
- Emily Fox-Hill
- Richard Hill
- 10 Gus Mitchell

- 13 Alishia Parks
- 14 Clara Mueller
- 14 Larry Dunn
- 14 Jane Coop
- 15 Lisa Goossens
- 15 David Bruce
- 16 Bella Smith
- 17 Jeremy Bowen
- 19 Shirley Hawkins
- 20 Max Collins
- 22 Michael Luman
- 23 Park Noyes
- Mildred Schiff

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MAGS Notes

Continued from P. 5

- 27 Shane Ashurst
Leah Fryar
- 28 Elmer Stout
Bonnie Cooper
- 29 Gunnar Wallace

The full MAGS Notes will be resumed when the events are resumed.

Trick Or Treat With Rocks And Fossils

Save the date: Saturday, October 31, 2020.

- Estate sale with over 100 boxes, not opened since the 1990s.
- Within the collection are fossils of all kinds, mica/garnets, quartz (grade A points and cluster) geodes, agates, dino bones, petrified wood, and many boxes of wrapped specimens and boxes to be explored and sorted.

Details to be published.

August Field Trip

Charles Hill

Hello Again, All.

On August 15 we had a field trip to Crow Creek in Arkansas. Our usual site on the east side of



the St. Francis River is a popular one; and we always have good hunts. This time we went to Crow Creek on the west side of the St. Francis River. One of the differences between the two is that the site on the west side does not have an ancient oyster bed. However, we still had a great hunt.

My big concern was parking; but we only had three cars, so it was not a problem. We actually had room for more. From the parking area to the actual creek is a short walk of a couple hundred feet. The five of us gathered in the creek for the safety briefing and pictures. Then everybody went their own way. This is a good site with a lot of room, but I wish we'd had more attendees.

I personally found a lot of good minerals, petrified wood, agate, banded chert, yellow chalcidony, yellow and red jasper, and fossils. One piece I found was an exceptional bright red river agate. The largest piece of petrified wood I found was about 7" x 7" and L-shaped. Some of the rocks there had an iron oxide coating, which can easily be removed with a mild acid.

It was a hot day, but all in all, a good one. Everybody stayed well hydrated and was happy with their finds. Afterwards, three of us went to a local eatery called The Old Sawmill Restaurant. The lunch was

good, and the dessert was better: peach cobbler a la mode for all three of us. A great way to cool down after a hot day!

Hope you're there for the next one.

Charles

Killer Cosmic Rays?

Matthew Lybanon, Editor

Mass extinctions occur when something causes the environment to change too rapidly for evolution to keep up. Species that may have lived on Earth for many millions of years become extinct because they can't adapt to the changed conditions.

Climate change is often the basic culprit, but there can be a number of different things driving the climate change. One mass extinction is thought to be due to an "astronomical event": the Cretaceous-Paleogene extinction, formerly known as the Cretaceous-Tertiary extinction (abbreviated K-T; the K stands for the German word Kreide, the traditional abbreviation for the Cretaceous Period). The K-Pg (Pg stands for Paleogene) extinction is thought to be the result of the impact of an asteroid near Chicxulub, on Mexico's Yucatán Peninsula.

Now there is research that indicates an astronomical event (or several) may be the cause of a different mass extinction. The Devonian period, the "Age of Fishes," ended about 375-360 million years ago, in the second of the "big five" mass extinction events of Earth's history. Rather than a single event, it is known to have had at least two

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Fabulous Tennessee Fossils

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

FTF 68

Dentalium



Kingdom Animalia
Phylum Mollusca
Class Scaphopoda
Order Dentaliida
Family Dentaliidae
Genus *Dentalium* Linnaeus, 1758
D. intercalum Wade, 1926
D. inornatum Wade, 1926
D. ripleyanum Gabb, 1860

This essay is straightforward with no twists in name histories, changes of dates, unusual occurrences, or controversial side-twists. The invertebrate that I discuss in this essay will also pretty much cover my treatment of an entire class of mollusk. This class has only two orders and both are so distinct, with little evolutionary change since the Devonian, making it so easy to recognize, that I only show one genus to illustrate the class to my paleontology classes, telling them “once you have seen one scaphopod, *Dentalium*, you have seen them all”.

I am not aware of any occurrences in Tennessee of scaphopods other than in the Cretaceous Coon Creek Formation of West Tennessee. There are three species of *Dentalium* that occur in the Coon Creek: *Dentalium intercalum*, *D. inornatum*, and *D. ripleyanum*. Two of these species, *D. intercalum* and *D. inornatum*, were described by Bruce Wade in his 1926 monograph on the Coon Creek Formation as new species. The three fos-

sil species differ only in their relative size, number of ribs, and shape of the grooves between the ribs. *D. intercalum*, the largest and most common of the three species, is shown in Figure 1. *Dentalium* gets its name from its shape and are called “tooth or tusk shells” due to their tooth-like shape and the fact that the shell resembles the tapering and slightly curved shape of elephant tusks. The Class Scaphopoda gets its name from the Greek and translates to “shovel foot” or “boat foot”, referring to the shape of the fleshing digging foot that is used to dig into the substrate with a twisting motion as the animal burrows. There are only two orders within the scaphopods: the dentalids and the gatilidids (which are smaller and differ in how they taper). Only the dentalids have been found in Tennessee.

Scaphopod shells are open on both ends with the widest end being where the foot extends, along with many thin thread-like feeding tentacles called *captacula*, used to grasp small foraminifera living in the sediment between the sand grains. The narrow upper apex is used to jet water from the shell that was drawn in from the feeding end. Usually only about one-half to one centimeter of the shell will extrude above the sediment surface when the animal is feeding, which means that *Dentalium* is classified as being infaunal to

semi-infaunal and a deposit feeder. *Dentalium* usually burrows into the sediment at a slight angle, rather than vertically. The shell is ornamented with narrow ridges and furrows that run the length of the shell and that add strength to the otherwise delicate shells. *Dentalium* can be found on beaches today, attesting to the very long evolutionary existence of this genus and its evolutionary stability. However, you will not find them too often as they are generally out in deeper waters below 30 meters in depth and usually do not get washed ashore except during large storm surge events like hurricanes.

I found my first *Dentalium* at Coon Creek when I first visited the site back in 1988 for the grand opening of the Coon Creek Science Center by the Pink Palace Museum. That was my very first time to ever see the site, the formation, and I had only seen some of the fauna in the fossil collections at UT Knoxville as a student. I readily recognized the genus and recall feeling quite good that I could ID at least one of the formation’s taxa by name. I had *Dentalium* in my personal collections from back home in Williamsburg, Virginia, where I used to collect them out of the Pliocene age Yorktown Formation. *Dentalium attenuatum* was one of the earliest fossils that I collected as a pre-teenager. They occurred in a stream bank cut a

Continued, P. 8

Fabulous Tennessee Fossils few hundred
Continued from P. 7 yards

from my house that I would play in as a kid (back when kids spent most of their time out of doors exploring the nearby woods rather than playing video games). Although I have found many fossil *Dentalium* over the years, I have not found any modern specimens on my many beach trips, but there is still lots of time to beach walk for them.



Figure 1. *Dentalium intercalum* Wade, 1926 from the UT Martin Vanderbilt Collection. (Photo by MAG, centimeter scale)

Killer Cosmic Rays? prolonged
Continued from P. 6 episodes of species depletion and several shorter periods. This suggests that there may have been more than one cause. One of them may surprise you.

Rocks from the Devonian-Carboniferous boundary contain hundreds of thousands of generations of plant spores that appear to be sunburnt by ultraviolet light—evidence of a long-lasting ozone-depletion event. University of Illinois, Urbana-Champaign astronomy and physics professor Brian Fields says "Earth-based catastrophes such as large-scale volcanism and global warming can destroy the ozone layer, too, but evidence for those is inconclusive for the time interval in question. Instead, we propose that one or more supernova explosions, about 65 light-years away from Earth, could have been responsible for the protracted loss of ozone."

The green banana hypothesis supports this. According to Fields, "When you see green bananas in Illinois, you know they are fresh, and you know they did not grow here. Like bananas, ²⁴⁴Pu and ¹⁴⁶Sm

decay over time. So if we find these radioisotopes on Earth today, we know they are fresh and not from here—the green bananas of the isotope world—and thus the smoking guns of a nearby supernova."

Neither of these isotopes occurs naturally on Earth today, and the only way they can get here is via cosmic explosions. Researchers have yet to search for these isotopes in rocks from the Devonian-Carboniferous boundary. Fields' team said its study aims to define the patterns of evidence in the geological record that would point to supernova explosions.

So at this time it's an open question. Finding ²⁴⁴Pu and ¹⁴⁶Sm in Devonian-Carboniferous boundary rocks would support the supernova theory. As yet, there is no evidence supporting an alternate cause for the ozone depletion. We'll keep you posted on future developments.

Ref: Brian D. Fields, et al, *Supernova triggers for end-Devonian extinctions*, *Proceedings of the National Academy of Sciences Aug 2020, 202013774; DOI: 10.1073/pnas.2013774117, www.p-*

[nas.org/content/early/2020/08/17/2013774117](https://www.pnas.org/content/early/2020/08/17/2013774117)

Jewelry Bench Tips by Brad Smith

RAISING A CABOCHON

When a cabochon sits too low in a bezel, the bezel can hide a lot of the stone. The solution is to either sand down the bezel height or boost up the stone. But if you choose to raise it, the question is what is the best material to use?

I was taught to use fine sawdust but now think that might be a problem when used in rings. I reason that rings will frequently get wet, which would cause the sawdust to swell in size and push the stone against the bezel. Then when the sawdust dries out, the stone would be a little loose.

In any case, I now prefer to insert a flat sheet to boost up my stones. It can be a scrap of metal or some plastic from product packaging or old credit cards. In either case, just cut a piece to loosely fit into the bezel and drop in the stone (with some dental floss) to check its height.

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Jewelry Bench Tips
Continued from P. 8

TRANSPARENT CABS

When bezel setting a transparent cabochon in silver, I usually cut out the back of the bezel to allow background light to show off the colors and patterns in the stone. If this is not possible or appropriate, I worry that the silver bezel will tarnish under the stone and will ruin its brilliance. What to do?

My solution is one extra step before setting the stone. I place a piece of thin silver Mylar plastic under the stone to act as a mirror that will never tarnish. Mylar is readily available in craft and gift wrap stores, or in a pinch from a party balloon supplier. You may even want to experiment with using colored or patterned Mylar (i. e. diffraction pattern) under some stones.

Learn New Jewelry Tricks and Techniques with Brad's Jewelry-Making Books

amazon.com/author/bradfordsmith

New Ocean In Africa

Matthew Lybanon, Editor



East Africa is home to several visible geographical wonders that attract tourists to the area. These include Lake Malawi and Tanzania's Lake Tanganyika—respectively, the fourth largest freshwater and the second deepest lakes in the world. It also includes active volcanoes such as the Ol Doinyo Lengai in Tanzania, and the Dalla-Filla and Erta Ale in Ethiopia.

The Erta Ale is one of the world's most active volcanoes and one of the only eight lava lakes in the world—possibly the longest-existing.

Another interesting geological feature is the East African Rift system, which stretches from the Afar region of Ethiopia down to Mozambique. It is an active continental rift that began millions of years ago, splitting at 7mm annually. The regular eruption of volcanoes along the rift and new insights into the break up of continents adds to the belief that the continent may be splitting to form a new ocean.

The East African Rift System is one the geologic wonders of the world, a place where the earth's tectonic forces are presently trying to create new plates by splitting apart old ones. The oldest and best defined rift occurs in the Afar region of Ethiopia and this rift is usually referred to as the Ethiopian Rift. Further to the south a series of rifts occur which include a Western branch, the "Lake Albert Rift" or "Albertine Rift" which contains the East African Great Lakes, and an Eastern branch that roughly bisects Kenya north-to-south on a line slightly west of Nairobi. The complete rift system



Landsat image showing the East African Rift Valley, the Red Sea, and the Gulf of Aden.

extends thousands of kilometers in Africa.

The Y-shaped end of the rift (a "triple-junction") at the Afar region is getting attention, as the place an ocean will likely be formed if the splits continue. This junction is where the African, Somali, and Arabian tectonic plates meet near Djibouti and Eritrea, and it is associated with active volcanoes including the Erta Ale volcano.

Researchers believe the volcanic activity in the region suggests a rift-to-ridge transition. The Erta Ale has been erupting constantly for over 50 years and it is believed that as the Erta Ale continues to erupt, a new narrow ocean basin with its mid-ocean ridge will be formed.

However, researchers are uncertain about the future of the East African rift—whether the split will continue and an ocean will eventually be formed. At the rate at which the Afar rift is splitting, it will take tens of million years for an ocean to eventually be formed. So we won't be around to see it.

MAGS At A Glance

September 2020

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
30	31	1	2	3	4	5
6	7 	8	9	10	11 MAGS Meeting, "Friday Night at the Rocks"	12
13	14	15	16	17	18	19 MAGS Field Trip, Sugar Creek, Millington, TN
20	21	22 	23	24	25	26
27	28	29	30	1	2	3

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