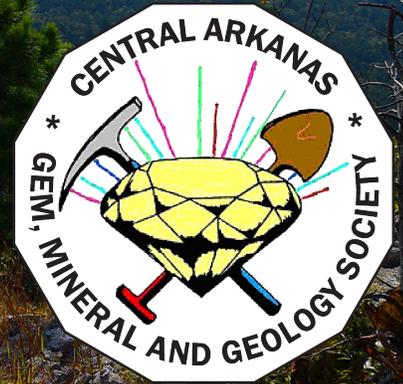


ARKANSAS ROCKHOUND NEWS



MISSION STATEMENT

The Central Arkansas Gem, Mineral and Geology Society is dedicated to promoting interest in mineralogy and the related sciences, interest in lapidary and the related arts; to encourage field trips and the enjoyment of collecting and preserving minerals as they occur in nature, and the study of geological formations, especially those of our Natural State of Arkansas.

We are a small group of people that enjoy getting together to share our common interests.

Regular meetings are at the Terry Library 6:30 PM on the fourth Tuesday of the month (except December)

**Due to closures during the COVID-19 pandemic, we will meet at 2504 Riverfront Drive #3, Little Rock, AR 72202 - gate code: #2020

SUMMER 2020

Arkansas Meteorites, a Compilation of Information and Images

By J. Michael Howard, *presented at the June 2020 meeting*

General Meteorite Information

Meteorites are fragments of rock or metal that fall from space. Except for a few that have come from the moon or Mars, meteorites represent fragments of small non-planetary bodies within the solar system, such as the objects that make up the asteroid belt. Most meteorites are remnants from the formation of the solar system that have drifted in orbits between the primary planets for over 4.5 billion years.

Meteorites are some of the most scientifically significant materials on earth. Sample return missions to find and recover these objects from their orbits in space are, in most cases, prohibitively expensive or impossible. It is extraordinarily good fortune for scientists when a new meteorite falls to earth, since each one offers an unparalleled source of information about the solar system and its history. Only fifteen meteorites have been found in the state of Arkansas as of this date. Six of these stones originated as observed falls. An additional nine meteorite "finds" resulted from un-witnessed or prehistoric falls.

Age Dating of Meteorites

Meteorites and many other rocks are dated radiometrically, using a variety of suitable radioisotopes. Below is a chart that shows the radioisotopes and their daughter products and half lives of each.

...continued on page 3

ARKANSAS ROCKHOUND NEWS is the official newsletter of the Central Arkansas Gem, Mineral and Geology Society. It is published monthly. To submit information, articles or photographs please email Nikki Heck, nikkiheck@windstream.net.

2020 Officers & Committee Chairs

President, John Schoeneman
501-679-4531, cagmagsprez@gmail.com

Vice President, Mike Howard
501-246-0964, jmichaelhoward@
sbcglobal.net

Secretary, Vacant

Treasurer, Barbara Champagne
501-258-2576, bachampagne@comcast.
net

Newsletter Editor/Webmaster,
Nikki Heck
501-626-5440, nikkiheck@windstream.net

Show Chair, Lorrie Norwood
501-650-4361, cagmags.showchair@
yahoo.com

Swap, John Schoeneman
501-679-4531, cagmagsprez@gmail.com

Field Trip Coordinator/Library
David Hodge
501-837-6713, dc42hodge@yahoo.com

Programs/Education, Stephanie
Blandin
501-590-5760

HELP!
Send in your:
stories, articles, tips,
photos
suggestions or questions!
Submissions due by the
28th of each month.

From the editor...

Greetings! I know 2020 has not panned out as we had all hoped, it's just been a rough year all around. I hope that you all have remained healthy and pray for those who have been sick. I also hope that you have been able to make the most of our newfound time at home. Maybe you have gotten back into reading? Maybe you have taken advantage of the many new digital offererings out there with your family? Maybe you have spent more time in your rock shed? Or maybe you have discovered some new online sources to buy minerals since so many of our beloved shows are cancelled this year? I know many of us continue to go to work though, and that we all have had to adjust in our own ways there too. Whatever you are doing these days, I hope you are being careful and taking whatever precautions you need to take. We'll get through this, hopefully soon.

I would like to hear from you if you have something that you would like to share with the membership about what you have done this summer, what you're reading, or maybe what new minerals you have aquired. Send me an email and please include pics!

Speaking of spending more time in the rock shed, one of our members has been doing just that. Mr. Bill has been spending a lot of time in his shop and he has graciously offered to create a new column for our newsletter! I am excited to see what he puts together and to see what he has been up to this summer.

Also, a note about our meetings, we are continuing to meet, until further notice we will meet at David Hodge's condo.

Finally, our show has been cancelled this year. I know Brandon and I are very upset to not have our show, it is such a highlight of the year. But, you know what, let's start working now and make next year's the best yet!

Stay safe everyone!

Parent	Daughter	Half-Life (billion years)
Uranium-238	Helium-4, Lead-206	4.47
Uranium-235	Helium-4, Lead-207	0.704
Thorium-232	Helium-4, Lead-208	14
Rhenium-187	Osmium-187	41
Samarium-147	Neodymium-143	106
Rubidium-87	Strontium-87	48
Potassium-40	Argon-40	1.28
Carbon-14	Nitrogen-14	.0000057 (5730 yrs)

An examination of the half lives shows that only certain methods can be used for meteorite dating. The ages of meteorites typically fall between 4 and 4.5 billion years old. The oldest rocks exposed on the earth's surface are dated at 4.28 billion years. The earth's age is estimated to be 4.54 ± 0.05 billion years, and likely represents the beginning of the accretion of the planet. So it is interesting to note that the age of the formation of meteorites is around the same time as the beginnings of the formation of the earth.

Meteorite Classification

All of the meteorites found in Arkansas can be grouped into three major types: chondrites, stony-irons, and irons. The first type, chondrites, are relics of the first, relatively unsorted, unaltered materials from which the solar system formed. They provide researchers with a glimpse back in time to the earliest moments of the solar system, when the planets and sun were clumping together from a nebular cloud of dust and hot gas. They also provide insights into what one sees when looking outward into deep space. Understanding what happened in the distant past when this solar system was forming helps scientists understand what processes might be taking place in other distant star- and planet-forming environments visible in the galaxy today.

Well over ninety-nine percent of all of the matter in our solar system is contained in our sun. Since chondrites are composed of a generalized cross section of the material from which the entire solar system was formed, they are more similar in composition to the sun than to any planetary body or moon in the solar system. Chondritic meteorites have not undergone the sort of mixing, heating, and melting processes that have altered larger objects in the solar system. One could make the analogy that, if the sun and planets are like bread, the chondritic meteorites are the equivalent of samples of the uncooked dough from which they were made.

The other two types of meteorites that have been found in Arkansas, the iron and stony-iron meteorites, allow scientists to understand more of what the internal structure of the earth, moons, and asteroids in the solar system might be. The iron meteorites are almost completely composed of iron and nickel. Arkansas's single stony-iron meteorite, which was found near Newport (Jackson County), is similar to the irons but also contains olivine crystals. The iron and stony-iron meteorites are understood to have formed from the melting and separation of metals in larger asteroids or even planets, in the same manner as the iron rich mantle and core formed within our earth.

Meteorite Preservation in Arkansas

Many tons of materials from space are added to the Earth each year, but most of it falls as microscopic or barely visible dust particles. What little is known about how often meteorites fall suggests that larger objects, weighing a couple of pounds or more, fall within the approximately 53,000-square-mile area of Arkansas about every year or two. Smaller objects, between about half an ounce and two pounds, fall up to fifty times more frequently than larger objects.

Meteorites are the oldest known objects on the planet. Isotopic dating has routinely shown them to be a little over 4.56 billion years old. If they fall in Arkansas, however, they do not tend to last very

long. Arkansas offers an almost textbook example of the wrong conditions for preserving or finding meteorites once they reach the ground. The abundant rainfall and rich soils in the southern part of the state, and thick forest in the northern part, create an inhospitable environment for meteorites to be preserved or recognized. Since most meteorites are rich in iron and thus vulnerable to rusting, they fall apart relatively quickly under the chemical and physical onslaught of the state's wet and biologically rich land.

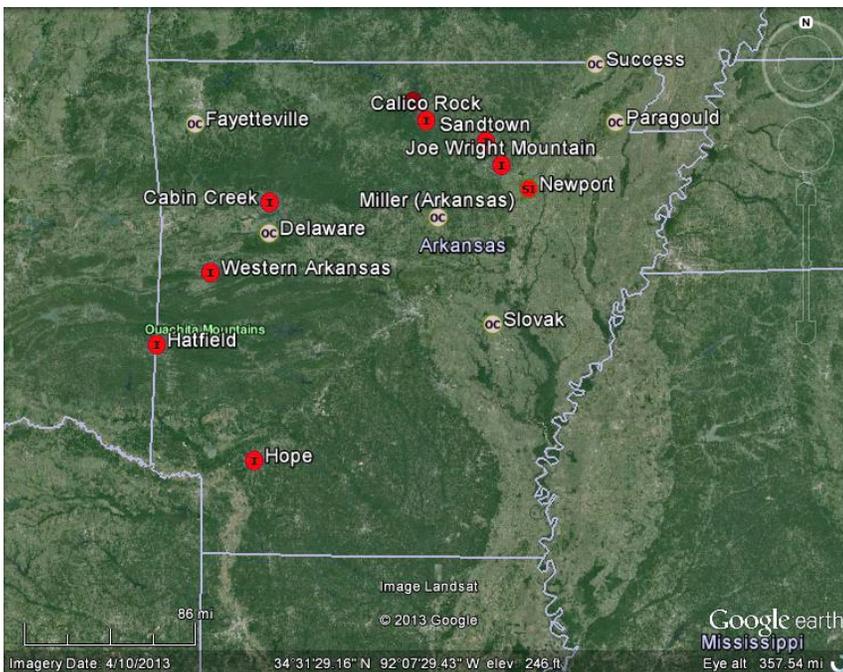
Arkansas Meteorites Recovered from Witnessed Falls

Place	Year	Type	Weight	Location
Cabin Creek	1886	Iron-Nickel	48.5 Kg	35°30'N 93°30'W
Fayetteville	1934	H4 Chondrite	2.36 Kg	36°03'N 94°10'W
Miller	1930	H5 Chondrite	16.7 Kg	35°24'N 92°3'W
Norfolk*	1918	Iron-Nickel	1.05 Kg	36°13'N 92°16'W
Paragould	1930	LL5 Chondrite	408 Kg	36°04'N 90°30'W
Success	1924	L6 Chondrite	3.5 Kg	36°29'N 90°40'W

Arkansas Meteorite Finds

Place	Type	Weight	Location
Calico Rock	Iron-Nickel (IIAB)	7.28 Kg	36°05'N 92°09'W
Delaware	L4 Chondrite	8.35 Kg	35°17'N 93°30'W
Hatfield*	Iron-Nickel (IAB, Complex)	0.021 Kg	34°29'N 94°27'W
Hope*	Iron-Nickel (IAB-MG)	6.8 Kg	33°41'N 93°36'W
Joe Wright Mountain*			
Mountain*	Iron-Nickel (IIIAB)	42.6 Kg	35°46'N 91°30'W
Newport	Pallasite (PMG)	5.6 Kg	35°36'N 91°16'W
Sandtown*	Iron (IIIAB)	9.35 Kg	35°56'N 91°38'W
Slovak	H5 Chondrite	8.22 Kg	34°39'N 91°35'W
Western Arkansas*			
Arkansas*	Iron (IVA)	1.75 Kg	35°N 94°W

*No Picture available.



This map depicts the locations of the various known meteorites recovered in Arkansas.

What now follows are pictures of Arkansas meteorites that I was able to glean from the Internet. This also includes what I describe as a meteorwrong!



Left: The **Cabin Creek** meteorite is undoubtedly one of the most beautiful meteorites preserved from Arkansas. It is part of the Col. Roubling Collection that was donated by his widow to the Vienna Museum after his death. This view displays the leading face of the meteorite that displays the indentations of the mineral troilite which burned away during atmospheric entry.



Left: A slab of the **Calico Rock** iron meteorite, from a private collection.

Below: Sawn piece of the **Delaware** chondrite meteorite, showing reflections of included native iron.



Left: Two views of the **Fayetteville** chondrite meteorite.



Delaware
0.9g

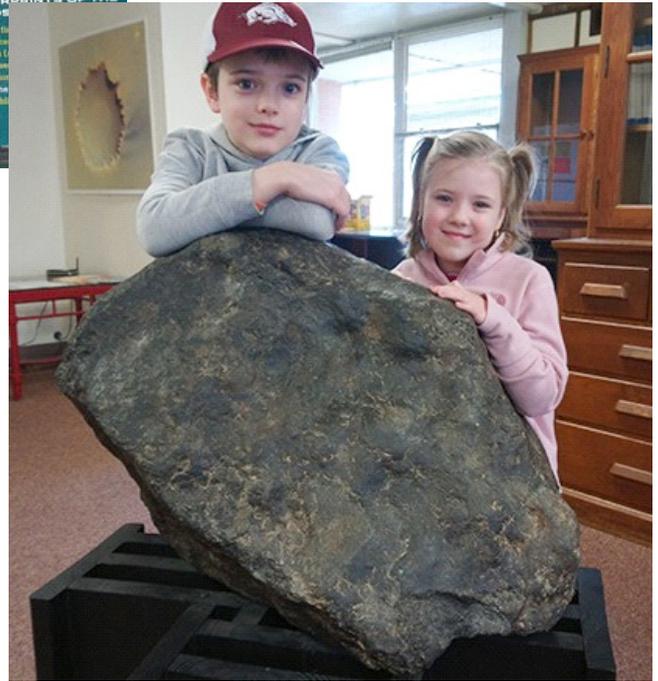


Left: This is a slab (~ 2 inches across) of the **Newport** iron meteorite that has been polished and etched to show the internal structure. From a private collection.



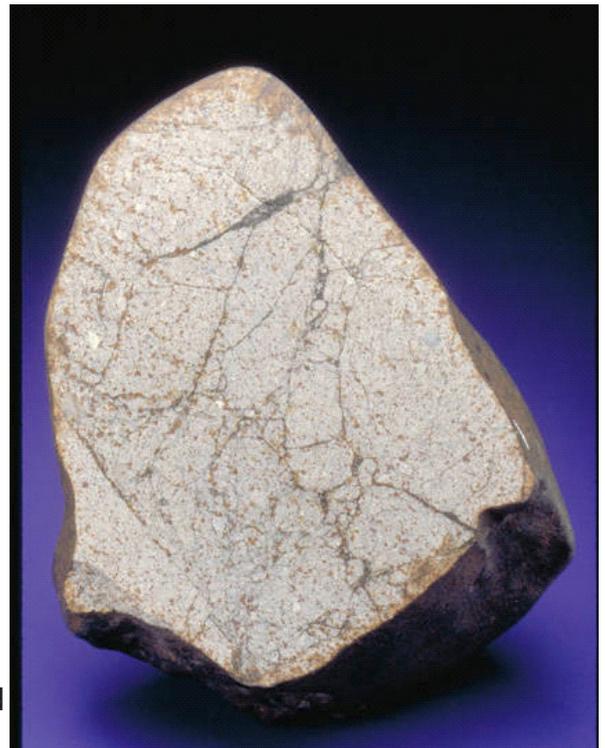
Left: Note the ablation surface of the **Miller** iron meteorite. This view is from straight on as the meteorite was entering the earth's atmosphere. Notable are the troilite holes and striations that were formed as molten iron flowed from the center of the face to the edges!

Right: The **Paragould** chondrite meteorite is the largest meteorite recovered from Arkansas.

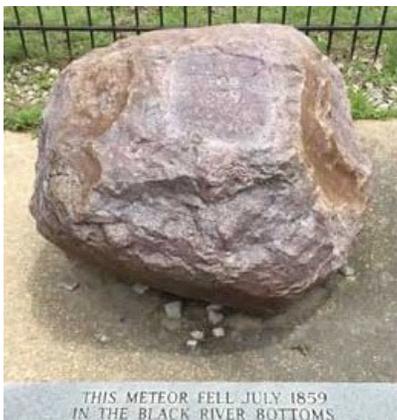


Above: This slice of the **Slovak** chondrite meteorite displays reflections on the cut face of native iron inclusions. The Slovak had been used by a local farmer as a doorstep for many years when it was recognized to be a meteorite!

Right: The **Success** chondrite meteorite was discovered shortly after its fall in 1924.



The Arkansas Meteorwrong!



This piece of limestone was claimed to have been seen as a fall by a local individual and is on display at the county court house in Pocahontas, Arkansas. It is a classic example of mistaken identity

based only on a supposed eyewitness account and the gullibility of local politicians and people, who are not recognized meteorite experts. It is so ingrained in current local culture that present day citizens refuse to believe their forbearers were hoodwinked. It is often used as an example of a meteorwrong by Dr. Derek Sears, a recognized meteorite expert in the Chemistry Department of the University of Arkansas at Fayetteville. He often sends students to examine this stone so that they can recognize a fraud when they see one, despite local belief. It does draw some tourists to the area who take pictures of it and unknowingly perpetuate the myth of its origin by posting pictures of it on Facebook and the internet!

A short funny story

While in the vicinity of Prim, Arkansas, investigating the distribution of the large rounded concretions known as Prim boulders, I was approached by an older local man, who was quick to inform me that he was in the area when these boulders fell from the sky! So here we have another example of an “eye witness” account of something not a meteorite falling from the sky. Perhaps he got hold of some bad Ozark moonshine??

Sources of Information for this presentation:

Various Google searches for information about the age of the earth, age of meteorites, pictures of Arkansas meteorites, and data gathered on the individual meteorites found in Arkansas.

Brad's bench tips...

Straightening Wire

Have you ever pulled out some silver wire only to find that it's all bent up? The easiest way I've found to straighten it out is to stretch it a bit.



Simply put one end in the vise and grab the other end with a pair of serrated tip pliers. Then pull just enough to feel the wire stretch like a rubber band. This works best on smaller wire diameters, up to about 16 ga.

Be careful if you are trying to pull hard on a thick wire. Brace yourself in case the wire breaks or pulls out of the pliers.

Do Bezels Shrink

The engineer in me says there's no reason a bezel should shrink when I solder it onto a base plate, but I sometimes find that the stone won't quite fit into the bezel that was perfect just before soldering.

If that ever happens to you, here's a fix that usually works for those times when there's just a minor problem. I file or sand the stone down a little around it's base. For soft cabs like turquoise, lapis, jet or Howelite, you can use a sanding stick. Harder cabs like jasper or agates will require a diamond file. In a pinch, a ruby nail file from the drugstore will work.

There are two important things to remember when doing this. First, you can only make a minor adjustment to the stone's size. All filing or sanding has to be hidden by the bezel because it takes the polish off the stone.

Secondly, remember to round off all sharp edges on the bottom of the stone. A sharp edge here might sit on a little extra solder that's in the bottom joint of your bezel. Just a little bump here can put enough stress the stone to risk breakage when you burnish the bezel down over the stone.

Learn New Jewelry Tricks and Techniques in Brad's Jewelry-Making Books [Amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)

Of interest...

Very Common Phenomena Produce Stones of Uncommon Beauty

By Brandon Poy, From the January, 2020 Pick and Dop Stick, Chicago Rocks & Minerals Society via March 2020 MWF News

One mineral that is well known for its unique display of colors is the precious variety of opal. Unlike other gemstones, precious opal shines with the colors of the rainbow. Its reputation for being a beautiful iridescent gemstone has made it known throughout the world even by people who do not know anything about geology.

There are two types of opal: precious and common. Precious opals display vibrant colors and are known for their “play of color” from different angles. Precious fire opals have similar properties to precious opals, but their underlying color is different. They are known for having vivid orange or red background colors that add to the iridescent and opalescent colors. Not all fire opals have play of color. Finally, common opals lack the iridescent colors or play of color and show only opalescence. They appear like a solid color with a glossy surface or they can be clear, as in jelly opal, and are many times found included with other minerals.

Opal is a hydrated form of silicon dioxide, meaning it contains water in the gem. It is also amorphous, meaning that it has no distinct form. Technically, opal is considered a mineraloid, which is almost exactly like a mineral, but has no crystals. It is believed to be formed when silica-rich water seeps into cracks and cavities in the host rock and that water evaporates, leaving behind a layer of silica. The unique colors that precious opal displays are a result of two effects: iridescence and opalescence. Iridescence is the effect that makes the stone appear to change colors when viewed from different angles.

Because opal is amorphous, its surface is made up of lumps of silica. These lumps act like prisms and split white light into various colors.

Depending on how uniform these lumps are, the lights can be more or less intense. The size of the silica lumps also affects the dominant color displayed. Small lumps tend to show more blues, while larger ones show more reds.

Opalescence is different than iridescence because unlike iridescence, which involves diffraction of light, opalescence is caused by the reflection of light at different wavelengths. There is a thin film in the substance that splits light due to varying densities. Rather than showing various rainbow colors, it creates a milky blue sheen over the whole gem.

Clearly, there is a lot to know about opals, from their different varieties to their play of color. Many people know opal as the gemstone with the indescribable rainbow colors, but the science behind it is not very complicated. Diffraction and reflection are both very common phenomena in the world.

Following is some suggested reading:

Opal | Causes of Color, Web Exhibits, www.webexhibits.org/causesofcolor/15F.html. Accessed December 22, 2019.

10 Awesome Facts About Opals, Opal Auctions, www.opalauctions.com/learn/did-you-know/10-awesome-facts-about-opals. Accessed December 22, 2019.

Opal Gemstones, Gem Select, www.gemselect.com/gem-info/opal/opal-info.php. Accessed December 22, 2019.



Fire opal from Chihuahua, Mexico. Photo by Didier Descouens, via Wikimedia Commons.

Kids Corner...

Brandon Heck is the Junior Editor of Arkansas Rockhound News. He is 12 years old and has enjoyed rockhounding since he could walk. In each issue he will share information about minerals that he loves and about his adventures in rockhounding.

Growing Borax Crystals

Items you will need:

- Borax ("20 Mule Team Laundry Booster" works very well. Do NOT use Boraxo Soap; it won't work!)
- Pipe Cleaners
- A pencil or stick of similar length
- String
- A large jar with a wide mouth (the pencil will have to sit across the mouth of the jar). A Ball canning jar will work well.
- Water
- Optional: Food coloring of any color you wish.

1. Bend your pipe cleaners in any shape you like. The borax crystals will grow on the pipe cleaners.
2. Tie one end of the string to the middle of the pencil (or stick) and the other end to the pipe cleaner. The string should be long enough to let the pipe cleaner hang in the jar without touching the bottom of the jar.
3. THIS STEP SHOULD BE DONE WITH YOUR PARENT'S HELP. Create a mixture of borax in water. Use 3 tablespoons of borax for every cup of water. Boil the water and carefully stir in the borax before the water cools. You may find that some borax won't dissolve and will settle on the bottom of the pan. That is ok. Add any color you wish at this point.
4. Pour this mixture into your jar. Fill it nearly full. You want to have enough mixture in the jar so that the pipe cleaner will be completely submerged in the water.
5. Hang the pipe cleaner in the mixture. Let the pencil/stick rest across the mouth of the jar. Check to make sure the pipe cleaner is not touching the bottom of the jar.
6. Crystals will grow overnight. They will get larger if left in the solution longer. You will discover that if they stay in the water too long, they will eventually grow into each other and then be covered by small crystals. Pull them out of the solution when they look the way you want them to.

Caution: Do not put borax in your mouth. It is harmful to eat borax.

from the April 2020 MiniMiners Monthly by Diamond Dan Publications

MEMBERSHIP FORM
Central Arkansas Gem, Mineral and Geology Society
Membership Dues: \$15 / year Individual; \$25 / year Family

Make checks payable to: "Central Arkansas Gem, Mineral and Geology Society".

Name: _____ Date _____

Business Name: _____ Birthday: Mo. _____ Day _____

Address: _____ Anniversary: Mo. _____ Day _____

City: _____ State: _____ Zip: _____ Phone No. _____

Cell Phone _____

Email address: _____ Occupation _____

How would you like your Club Newsletter delivered? U.S. Mail _____ Email _____

Family Members are considered as all of those living at the above address.

Please list their names, Birthday Mo./Day, if applying for a Family Membership.

Because of limited space, only one name will appear on the newsletter mailing label.

How did you hear about our Club?

How long have you been interested in this hobby? _____ Do you have any equipment? _____

I would be interested in Attending _____ Hosting _____ work shop in _____ (subject)

on _____ (day of week)

Please circle your club interests:

Mineralogy Lapidary Fossils Field Trips Geology Carving
Collecting Jewelry Making Casting Silversmithing Beading Wire Wrap

Other _____

Outside Interests: _____

These will be listed in the Membership Directory, so that members can find others with similar interests.

What areas would you be able to assist the Club:

Social Publicity/Advertising Educational Junior Programs Membership

Annual Show Committee Work Newsletter Articles Mineral Display

Other: _____

What would you like to see the club focus on in the coming year? _____

_____ I do not want my name to appear in the Club Directory.

_____ My name and address can appear, but NOT my Phone Number.

_____ Please do NOT include specifically the following info about me: _____

Please Mail to:

**CAGMAGS, c/o Barbara Champagne, P.O. Box 241188, Little Rock, AR
72223**



Central Arkansas Gem,
Mineral & Geology Society
PO Box 241188
Little Rock, AR 72223

August program
Mike Howard -
Arkansas Quartz
and
Silent Auction!

2020 CAGMAGS show
has been cancelled

2020 Meeting Dates

**Remainder of 2020
meetings will be held
at 2504 Riverfront
Drive #3, Little
Rock, AR 72202,
gate code: #2020**

August 25th
September 22nd
October 27th
November 24th

Join CAGMAGS!

Membership Dues - \$15 Individual,
\$25 Family (Yearly)

Visit www.centralarrockhound.org
to learn more!