



# Arkansas Rockhound News



Official Newsletter of the

January 2010

Central Arkansas Gem, Mineral and Geology Society

## CAGMAGS

The Arkansas Rockhound News is Published monthly by the **Central Arkansas Gem, Mineral, and Geology Society**

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**Website:** [www.centralarrockhound.org](http://www.centralarrockhound.org)

**Member of:** American Federation of Mineralogical Societies

Midwest Federation of Mineralogical Societies

**CAGMAGS**

**4900 Sparks Rd.**

**Little Rock, AR 72210**

January 2010

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Next Meeting: January 26, 2010, 6:30 PM - Terry Library

Call James (501-568-0315), Dave (870-255-3679) or Obie (501-337-0511) to find out about the field trip plans.

**2010 Officers:**

**President:** Mike Austen [steelpony@aol.com](mailto:steelpony@aol.com)

**Vice President:** Tom Sharp  
[thom61847@yahoo.com](mailto:thom61847@yahoo.com)

**Past President:** Jim Schenebeck  
[jsjimstone@yahoo.com](mailto:jsjimstone@yahoo.com)

**Secretary/Treasurer:** Pat Kissire  
4900 Sparks Rd.

Little Rock, AR 72210

501-821-2346 [pkissire@sbcglobal.net](mailto:pkissire@sbcglobal.net)

**Committees / Chairs:**

**Programs:** Pearl Roth **Library:** Ann Austen

**Membership:** Mike Austen

**Field Trips:** James Burns

**Show Chair:** Weldon Kissire

**Editor:** Barbara Nierstheimer

**Club Contact:** Lenore Murray

**Sunshine Chairman:** Angelee Peeler

**Junior Programs:** Obie Willix

**Webmaster:** Phillip Nierstheimer  
[phillspa@hotmail.com](mailto:phillspa@hotmail.com)

**Time and Location of Meetings:**

4th Tuesday of the month (January-November)

6:30 PM Terry Library, 2015

Napa Valley Drive, Little Rock, AR 7221

(Non-smoking) **Visitors are always Welcome**

**Membership Dues** \$15 Individual \$25 Family  
(Yearly)

**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.

**2010 Meeting Schedule**

**January 26 – Program is SHOW AND TELL**

**February 23 - Program is the CLUB AUCTION**

**March 23**

**April 27**

**May 25**

**June 22**

**July 27**

**August 24**

**September 28**

**October 26**

**November 23**

**President's Message**



Dear Rock Club Members,

I hope everyone had a great time over the holidays, and are looking ahead to a year of fun with the club. Fun is the key word this year, more events, something for everyone, more involvement by all. The first thing will be to get information about what is happening out to all members. The website is better than ever, the newsletters are being published again, and you will be getting lots of messages from me as your new leader. Please make sure that your contact information is up to date so that you are not left out of the fun. Of course the best way to keep on top of things is to come to the meetings. We will try to have more interesting meetings with more programs and less business, when we can. Business meetings will be held about every other month, open to all that want to come. As always any new ideas and comments are welcome anytime. If you want something done just let me know and we will see what we can do, it is your club so make the most of it.

Mike Austen, Club President

**Club events**

**Jan 9** Field trip to Miller Mt for Quartz

**Jan 16** Birthday party at home of Carl Hill

**Feb 13** Field trip to Leslie for fossils

**Apr 17** Swap Meet at Burns Park

**June 12** Field trip and picnic at the James Burns home in Malvern

**Oct 2-3** Club Show at Jacksonville

## January 2010

CAGMAGS Business Meeting January 5, 2010

Mike Austen opened the meeting with a discussion of his plans for the next year. Eleven members were present. The emphasis will be on more activities and field trips. Hopes are for every member to be involved in some manner.

Old Business covered the renewal of Rock & Gem, Mineralogical Record, Burns's Park and Jacksonville Community Center. Membership and Insurance for the Midwest Federation was discussed.

Carl Hill invited the club to his birthday party on July 16<sup>th</sup>, if it is not freezing. He will have lunch. Call him if you can attend (501-889-5260) or need directions.

Up coming events discussed were: January 26<sup>th</sup> – Show and Tell with a get acquainted session; February – Club Auction, bring no more than 5 items and cash if possible; March – Program; April - Burns Park Swap; May – Program, June - Cook out at James Burn's place in Malvern; July – Club Auction; August – Program; Sept – Program and get ready for Show; October –



### January Birthstone: Garnet

The **garnet** group includes a group of minerals that have been used since the [Bronze Age](#) as [gemstones](#) and [abrasives](#). The name "garnet" may come from either the Middle English word *gernet* meaning 'dark red', or the [Latin](#) *granatus* ("[grain](#)"), possibly a reference to the *Punica granatum* ("[pomegranate](#)"), a plant with red seeds similar in shape, size, and color to some garnet crystals.

Six common species of garnet are recognized by their chemical composition. They are [pyrope](#), [almandine](#), [spessartine](#), [grossular](#) (varieties of which are [hessonite](#) or cinnamon-stone and [tsavorite](#)), [uvarovite](#) and [andradite](#). The garnets make up two [solid solution](#) series: 1. pyrope-almandine-spessartite and 2. uvarovite-grossular-andradite.

Garnets species are found in many colors including red, orange, yellow, green, blue, purple, brown, black, pink and colorless. The rarest of these is the

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Show; November – Election; and no meeting in December. Other items discussed were:  
Library list is on website with last checkout in yellow. Please return items or Notify Ann Austen if list is not correct.

A possible membership contest for new memberships

- I If anyone knows of possible new dealers for the October show, contact Weldon.(501-821-2346). We need to continue the variety of items but can have a waiting list. He will contact the dealers with information.

Museums, etc may be added to the field trip list. More trips are needed to include more members, even if just a few at a time and even some longer trips were mentioned.

Mike presented his list of committees and their members for next year. He will present this at the January meeting on January 26<sup>th</sup>. Everyone needs to be involved in some manner, so feel free to volunteer.

Respectfully submitted

Pat Kissire, Sec/Tres.

blue garnet, discovered in the late 1990s in Bekily, [Madagascar](#). It is also found in parts of the [United States](#), [Russia](#) and [Turkey](#). It changes color from blue-green in the daylight to purple in [incandescent](#) light, as a result of the relatively high amounts of [vanadium](#) (about 1 wt.% V<sub>2</sub>O<sub>3</sub>). Other varieties of color-changing garnets exist. In daylight, their color ranges from shades of green, beige, brown, gray, and blue, but in incandescent light, they appear a reddish or purplish/pink color. Because of their color changing quality, this kind of garnet is often mistaken for [Alexandrite](#).

Garnet species's light transmission properties can range from the gemstone-quality transparent specimens to the opaque varieties used for industrial purposes as abrasives. The mineral's [luster](#) is categorized as [vitreous](#) (glass-like) or resinous (amber-like).

[Almandine](#), sometimes incorrectly called almandite, is the modern gem known as carbuncle (though originally almost any red gemstone was known by this name). The term "carbuncle" is derived from the [Latin](#) meaning "live coal" or burning charcoal. The name Almandine is a corruption of [Alabanda](#), a region in [Asia Minor](#) where these stones were cut in ancient times. Chemically, almandine is an iron-aluminium garnet with the formula  $\text{Fe}_3\text{Al}_2(\text{SiO}_4)_3$ ; the deep red transparent stones are often called precious garnet and are used as gemstones (being the most common of the gem garnets).

[Pyrope](#) (from the Greek *pyrōpós* meaning "fire-eyed") is red in color and chemically a magnesium aluminium [silicate](#) with the formula  $\text{Mg}_3\text{Al}_2(\text{SiO}_4)_3$ , though the magnesium can be replaced in part by calcium and ferrous iron. The color of pyrope varies from deep red to almost black. Transparent pyropes are used as [gemstones](#).

A variety of pyrope from [Macon County, North Carolina](#) is a violet-red shade and has been called *rhodolite*, from the Greek meaning "a rose." In chemical composition it may be considered as essentially an isomorphous mixture of pyrope and almandine, in the proportion of two parts pyrope to one part almandine. Pyrope has tradenames some of which are [mismomers](#); *Cape ruby*, *Arizona ruby*, *California ruby*, *Rocky Mountain ruby*, and *Bohemian garnet* from the [Czech Republic](#). Another intriguing find is the blue color-changing garnets from Madagascar, a pyrope spessartine mix. The color of these [blue](#) garnets is not like sapphire blue in subdued daylight but more reminiscent of the grayish blues and greenish blues sometimes seen in [spinel](#). However, in white [LED](#) light the color is equal to the best cornflower blue [sapphire](#), or D block [tanzanite](#); this is due to the blue garnet's ability to absorb the yellow component of the emitted light.

Pyrope is an indicator mineral for high-pressure rocks. The garnets from [mantle](#) derived rocks, [peridotites](#) and [eclogites](#), commonly contain a pyrope variety.

[Spessartine](#) or spessartite is manganese aluminium garnet,  $\text{Mn}_3\text{Al}_2(\text{SiO}_4)_3$ . Its name is derived from

[Spessart](#) in [Bavaria](#). It occurs most often in [granite pegmatite](#) and allied rock types and in certain low grade metamorphic [phyllites](#). Spessartine of an [orange](#)-yellow is found in [Madagascar](#). Violet-red spessartines are found in [rhyolites](#) in [Colorado](#) and [Maine](#).

[Andradite](#) is a calcium-iron garnet,  $\text{Ca}_3\text{Fe}_2(\text{SiO}_4)_3$ , is of variable composition and may be red, yellow, brown, green or black. The recognized varieties are topazolite (yellow or green), [demantoid](#) (green) and [melanite](#) (black). Andradite is found both in deep-seated [igneous rocks](#) like [syenite](#) as well as serpentines, schists, and crystalline limestone. Demantoid has been called the "[emerald](#) of the [Urals](#)" from its occurrence there, and is one of the most prized of garnet varieties. Topazolite is a golden yellow variety and melanite is a black variety.

[Grossular](#) is a calcium-aluminium garnet with the formula  $\text{Ca}_3\text{Al}_2(\text{SiO}_4)_3$ , though the calcium may in part be replaced by ferrous iron and the aluminium by ferric iron. The name grossular is derived from the [botanical](#) name for the [gooseberry](#), *grossularia*, in reference to the green garnet of this composition that is found in [Siberia](#). Other shades include cinnamon brown (cinnamon stone variety), red, and yellow. Because of its inferior hardness to [zircon](#), which the yellow crystals resemble, they have also been called *hessonite* from the [Greek](#) meaning inferior. Grossular is found in contact [metamorphosed limestones](#) with [vesuvianite](#), [diopside](#), [wollastonite](#) and [wernerite](#).

One of the most sought after varieties of gem garnet is the fine green grossular garnet from Kenya and Tanzania called [tsavorite](#). This garnet was discovered in the 1960s in the Tsavo area of Kenya, from which the gem takes its name.

[Uvarovite](#) is a calcium chromium garnet with the formula  $\text{Ca}_3\text{Cr}_2(\text{SiO}_4)_3$ . This is a rather rare garnet, bright green in color, usually found as small crystals associated with [chromite](#) in [peridotite](#), [serpentine](#), and kimberlites. It is found in crystalline [marbles](#) and [schists](#) in the [Ural mountains](#) of [Russia](#) and [Outokumpu, Finland](#)..

## Mineral of the Month: Calcite



**Calcite** is a [carbonate mineral](#) and the most stable [polymorph](#) of [calcium carbonate](#) ( $\text{CaCO}_3$ ). The other polymorphs are the minerals [aragonite](#) and [vaterite](#). Aragonite will change to calcite at  $470^\circ\text{C}$ , and vaterite is even less stable.

Calcite [crystals](#) are [trigonal](#)-rhombohedral, though actual calcite rhombohedra are rare as natural crystals. However, they show a remarkable variety of habits including acute to obtuse rhombohedra, tabular forms, prisms, or various scalenohedra. Calcite exhibits several [twinning](#) types adding to the variety of observed forms. It may occur as fibrous, granular, lamellar, or compact. Cleavage is usually in three directions parallel to the rhombohedron form. Its fracture is conchoidal, but difficult to obtain.

It has a [Mohs hardness](#) of 3, a [specific gravity](#) of 2.71, and its luster is vitreous in crystallized varieties. Color is white or none, though shades of gray, red, yellow, green, blue, violet, brown, or even black can occur when the mineral is charged with impurities.

Calcite is transparent to opaque and may occasionally show [phosphorescence](#) or [fluorescence](#). A transparent variety called [Iceland spar](#) is used for optical purposes. Acute scalenohedral crystals are sometimes referred to as "dogtooth spar".

Single calcite crystals display an optical property called [birefringence](#) (double refraction). This strong birefringence causes objects viewed through a clear piece of calcite to appear doubled. The birefringent effect (using calcite) was first described by the [Danish](#) scientist [Rasmus Bartholin](#) in 1669. At a wavelength of  $\sim 590$  nm calcite has ordinary and extraordinary [refractive indices](#) of 1.658 and 1.486,

respectively.<sup>[5]</sup> Between 190 and 1700 nm, the ordinary refractive index varies roughly between 1.6 and 1.4, while the extraordinary refractive index varies between 1.9 and 1.5.<sup>[6]</sup>

Calcite, like most carbonates, will dissolve with most forms of acid. Calcite can be either [dissolved](#) by groundwater or [precipitated](#) by groundwater, depending on several factors including the water temperature, [pH](#), and dissolved [ion](#) concentrations. Although calcite is fairly insoluble in cold water, acidity can cause dissolution of calcite and release of carbon dioxide gas. Calcite exhibits an unusual characteristic called retrograde solubility in which it becomes less soluble in water as the temperature increases. When conditions are right for precipitation, calcite forms mineral coatings that cement the existing rock grains together or it can fill fractures. When conditions are right for dissolution, the removal of calcite can dramatically increase the [porosity](#) and [permeability](#) of the rock, and if it continues for a long period of time may result in the formation of [caverns](#), most notably the [Snowy River Cave](#) in [Lincoln County, New Mexico](#).

The largest documented single crystals of calcite originated from Iceland, measured  $7 \times 7 \times 2$  m and  $6 \times 6 \times 3$  m and weighed about 250 tons.<sup>[7][8]</sup>

Calcite is a common constituent of [sedimentary rocks](#), [limestone](#) in particular, much of which is formed from the shells of dead marine organisms. Approximately 10% of sedimentary rock is limestone.

Calcite is the primary mineral in [metamorphic marble](#). It also occurs as a [vein](#) mineral in deposits from [hot springs](#), and it occurs in [caverns](#) as [stalactites](#) and [stalagmites](#).

Calcite may also be found in [volcanic](#) or [mantle-derived](#) rocks such as [carbonatites](#), [kimberlites](#), or rarely in [peridotites](#). Lublinit is a fibrous, efflorescent form of calcite.<sup>[9]</sup>

Calcite is often the primary constituent of the [shells](#) of [marine organisms](#), e.g., [plankton](#) (such as [coccoliths](#) and planktic [foraminifera](#), the hard parts of red [algae](#), some [sponges](#), [brachiopoda](#),

[echinoderms](#), most [bryozoa](#), and parts of the shells of some [bivalves](#), such as [oysters](#) and [rudists](#)). Calcite is found in spectacular form in the [Snowy River Cave of New Mexico](#) as mentioned above, where microorganisms are credited with natural formations. [Trilobites](#), which are now extinct, had unique compound eyes. They used clear calcite crystals to form the lenses of their eyes.

[Calcite seas](#) existed in Earth history when the primary inorganic precipitate of calcium carbonate in marine waters was low-magnesium calcite (lmc), as opposed to the [aragonite](#) and high-magnesium

calcite (hmc) precipitated today. Calcite seas alternated with aragonite seas over the Phanerozoic, being most prominent in the [Ordovician](#) and [Jurassic](#). Lineages evolved to use whichever morph of calcium carbonate was favourable in the ocean at the time they became mineralised, and retained this mineralogy for the remainder of their evolutionary history.<sup>[10]</sup> [Petrographic](#) evidence for these calcite sea conditions consists of calcitic [ooids](#), lmc cements, [hardgrounds](#), and rapid early seafloor aragonite dissolution.<sup>[11]</sup> The evolution of marine organisms with calcium carbonate shells may have been affected by the calcite and aragonite sea cycle.<sup>[12]</sup> (Birthstone and mineral of the month courtesy of [www.wikipedia.com](http://www.wikipedia.com).)

TOP TEN REASONS FOR COLLECTING ROCKS

- 10 If your relatives stay to long over the holidays, you can put rocks under their mattress.
- 9 When your vehicle is full of rocks, it gets better traction on slick roads.
- 8 You became addicted and can't stop.
- 7 Rocks take up less space than antique cars.
- 6 In case of a tornado, enough rocks may keep your trailer house from blowing away.
- 5 After you are gone, the family won't fight over your stuff.
- 4 It's a good thing when people say, you have rocks in your head.
- 3 You have so many yard rocks, there is no grass to mow.
- 2 Thieves won't break in to steal your collection.
- 1 All you need for Christmas is a rock in your sock.

(submitted by Mike Austen)

CALENDER OF AREA ROCK SHOWS AND SWAPS

JAN 2010	16.17	Fredericksburg, Tx
	22.24	Tyler, Tx
	31	Lincoln, Ne
FEB 2010	9	Lincoln, Ne
	12	Park Forest, Il
	20.21	Plainview, Tx
MAR 2010	5-7	Richmond, In
	6.7	Big Springs, Tx
	12	Houston, Tx
	13	Baton Rouge, La
	13.14	Macomb, Il
	20.21	Cedar Rapids, Ia
	26.28	Ada, Ok
	26.28	Bridgeton, Mo
	26.29	Indianapolis, In
	27.28	Lincoln, Ne