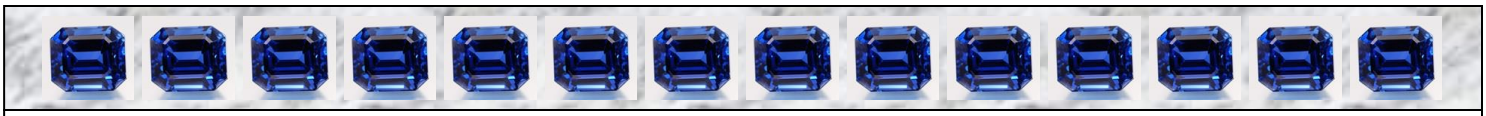
The official bulletin of the Dothan Gem & Mineral Club, Inc.

Rockhounds Herald

920 Yorktown Road, Dothan, AL 36301-4372

www.wiregrassrockhounds.com

September 2015



Words from...

The President

Our August social was nice. We chatted for a while and a few people brought in things for show and tell. We ate way too much and had an auction with proceeds going to the club. I want to thank everyone who donated things for the auction. I got a few very nice pieces to add to my collection, as did most of the other club members.

Our regular 2 p.m. Sunday meetings will resume on September 27th. Elliot Whitton will be giving a program on the geology and geography of Alabama. Hopefully we can discuss possible speakers and decide if the club can provide stipends to bring people to our meetings who can present programs and give demonstrations.

The Florida Faceters Frolic will be in Jacksonville Florida, September 25, 26, and 27 and it is taking place in conjunction with the Jacksonville Gem and Mineral Society's 27th Annual Show. Also, for those who have been waiting for cooler weather to get out, Graves Mountain will be having a Rock Swap and Dig, October 2nd - 4th, in Lincolnton, Georgia.

Hope to see everyone at the September meeting.

Pat

Announcements

The club is compiling a list of program speakers, field trip locations and classes/demonstrations for the coming year. If you, or someone you know, would be willing to lead any of these activities, or if you'd just like to make a suggestion for something you'd like to see or do, please contact Pat LeDuc at 334-806-5626.

Upcoming Shows

September 18 – 20	**Treasures of the Earth, Inc.**	**Richmond, VA**
October 2 – 4	**Gaston Gem & Mineral Show**	**Dallas, NC**
October 9 – 11	**Huntsville Gem & Mineral Society**	**Huntsville, AL**
October 16 – 18	**Knoxville Gem and Mineral Society**	**Knoxville, TN**
October 16 – 18	**Gem & Mineral Society of Louisiana**	**Metairie, LA**

Source: http://www.amfed.org/sfms/club-shows-789.html and http://www.the-vug.com/educate-and-inform/mineral-shows/

Guest Article #1

The REAL Cost of Gold

Or what the jewelry industry doesn't want us to know.

Do you know what the real cost of gold is? Of course it varies day to day according to the gold market. The actual price per gram cost of gold can be figured out according to the carat weight. What we must do is know the percentage of gold per carat: 24k is pure gold, 18k is 75% pure, 14k is 58% pure, and 10k is 42% pure. The lower purity on the gold is because the gold has been mixed with other elements like silver and copper.

We need to convert the troy ounce weight to gram weight, e.g., 24k is 31.1034768 grams per troy ounce. To get the grams per ounce of anything under 24k we need to divide 31.1034768 by the percentage of purity. Therefore, the grams per ounce of 18k gold is 41.4713, 14k gold is 53.62668 and 10k gold is 74.0559 (i.e., adjusted gram weight).

So why did the amount of gold per ounce go up in the calculation? Because the amount of gold has been mixed with other metals, therefore the gram weight goes up, but the gold content is actually staying the same.

Now you take the cost of gold on any day. As I write this today, it is $674.20 per troy ounce. Divide today's gold price by the adjusted gram weight calculated above. Today, 18k gold is worth $16.25 per gram, 14k gold is worth $12.57 per gram and 10k gold is worth $9.10 per gram.

Let's say I want to buy a 10k gold bracelet that weighs 1 gram. I always take into account the manufacturing cost. I usually double the amount to get that – that's just my estimate, I can't base it on anything in particular. But let's use that [($9.10 x 1 gram) x 2]. The manufacturer would sell it to the jewelry store for $18.20. But the store does triple key pricing. That's where they take the price they paid and multiply it by 3. So, the cost to the consumer should be $54.60.

Now let's say I have a bunch of broken gold jewelry. I've seen the ads for folks buying gold jewelry and I want to check it out. When I check on what they'll pay, I find out they will pay $15.24 for 18k, 11.79 for 14k, and 8.53 for 10k. That's less than the prices above because they deduct 6.2% per gram on every carat weight. Then they have lots of extra fees, like $75.00 treatment charges, and a minimum deduction of ¼ troy ounce per order. Hey, they gotta make a profit!

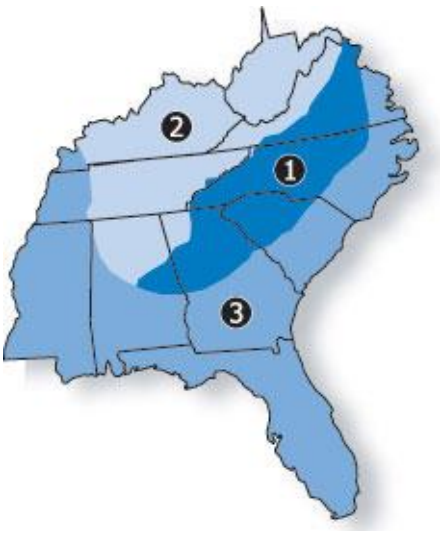
I have an Excel spread sheet I use just about every day to compare the prices. When I was buying gold jewelry I used the formulas above. I tried to never purchase anything over double the actual cost per gram. Now that gold has gone up, I'm not buying anymore. And I'm saving the broken stuff to melt down in my jewelry class.

Source: Monongahela Rockhounds News, Vol. 40, Issue 5, via Debbie Thompson, The Pineywoods Rooter, July 2012

Learning Series: Minerals of the Southeastern U. S. – The BIG Picture

Mineral Resources of the Blue Ridge & Piedmont – Region 1

Overview



The Blue Ridge & Piedmont can be divided into several sections with distinct mineral deposits. The Grenville orogeny of 1 billion years ago produced the Grenville rocks, which contain scattered iron and titanium oxide mineral deposits. The Precambrian rift rocks have been mined for a host of metallic and, within pegmatites, non-metallic minerals. Cambrian-Ordovician sediments produce large deposits of barite and talc. Rocks of the Inner Piedmont contain the Virginia Gold-Pyrite Belt, a 100-mile stretch that includes over 100 gold mines. The Avalon rocks are also known for rich gold deposits. Large deposits of uranium ore have been discovered in the Triassic-Jurassic rift rocks of the region.

Blue Ridge & Piedmont can be divided into several sections with distinct mineral deposits:

- The Grenville rocks formed as a result of the Grenville mountain building event 1 billion years ago when the supercontinent Rhodinia formed and ocean floor sediment was pushed onto ancient North America.
- The Precambrian-Cambrian rift basin rocks include thick sediment deposits in rift basins along the ancient margin of North America formed as the Iapetus Ocean opened.
- Cambrian-Ordovician sediment was deposited on the margin of North America between mountain building events.
- The Iapetus rocks (Inner Piedmont) consist of sedimentary and volcanic deposits from the Iapetus Ocean floor, slivers of oceanic crust, and fragments of continental crust (including volcanic islands). This diverse assemblage was added to the margin of North America during the Taconic mountain building event, and further compressed during the Acadian and Alleghanian mountain building events.
- The Avalon rocks (Outer Piedmont) were once part of the Avalon microcontinent that collided with North America in the late Devonian.
- The Triassic-Jurassic rift basin rocks in the Piedmont formed during the break-up of Pangea.

Grenville Rocks

Mineral Deposit Processes

The processes that formed rock and mineral deposits in Grenville rocks are often obscured by strong metamorphism and deformation. In the Southeast Grenville rocks the mineral deposit processes that are still readily distinguished include magmatic and hydrothermal processes associated with igneous intrusions.

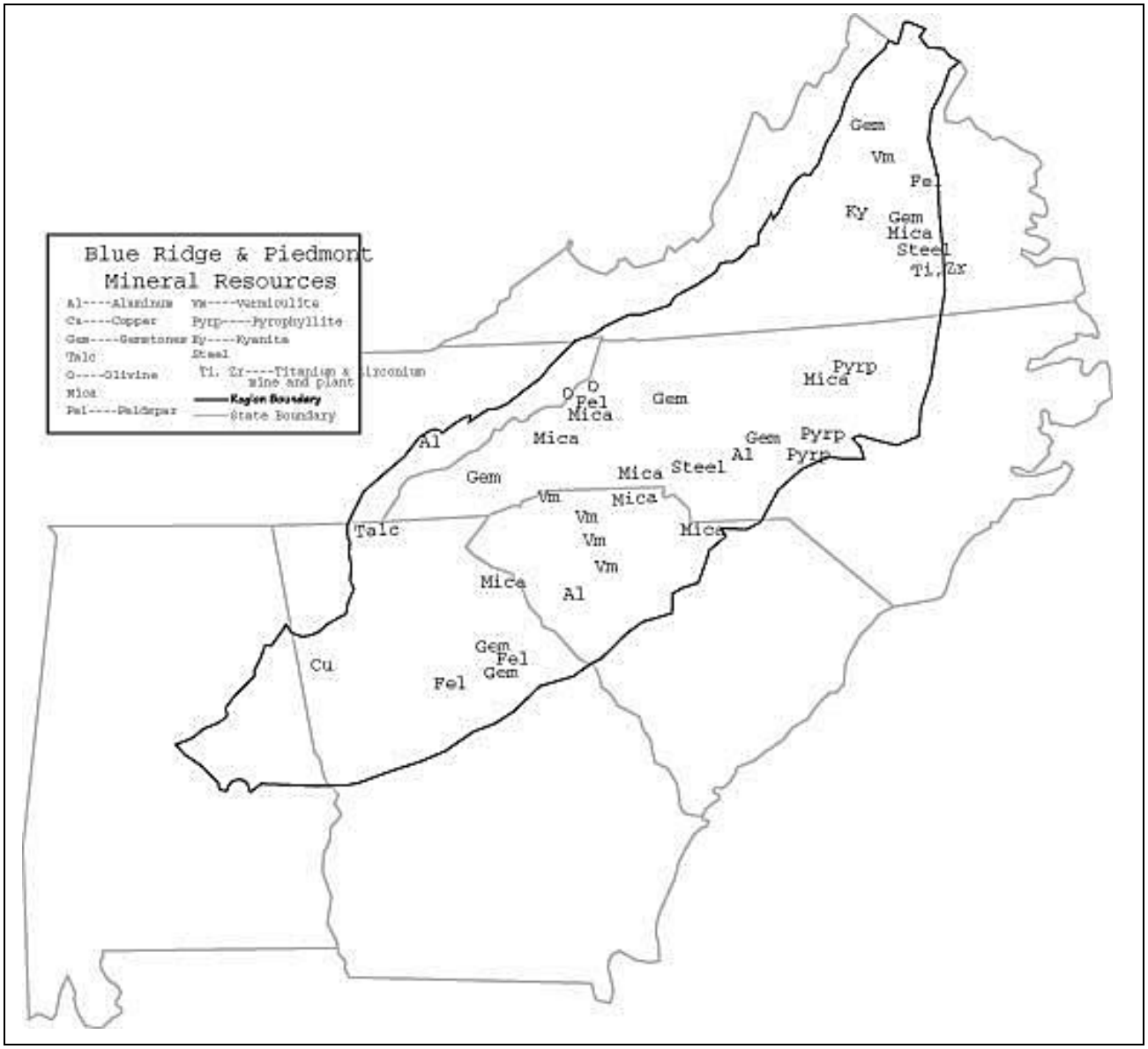


Figure 5.1: Principal current mineral-producing localities of the Blue Ridge and Piedmont region. Figure adapted from [1998 United States Geological Survey State Mineral Information].

Metallic Mineral Deposits

Grenville rocks from Virginia to Georgia host scattered iron (Fe) and titanium (Ti) oxide mineral deposits, largely associated with 1 billion year old igneous intrusions from the Grenville mountain building event. The titanium oxide minerals rutile (TiO2) and ilmenite (FeTiO2) were mined in the Roseland District of central Virginia (western Amherst and Nelson counties). Rutile was mined from about 1900 until 1949 and ilmenite was recovered from 1930 until 1971. The Roseland district once supplied a large percentage of the rutile that was consumed in the United States. The rutile occurs as grains disseminated in igneous rocks composed mainly of plagioclase feldspar. In addition, significant tonnages of apatite, a phosphate mineral, were recovered during the milling operations and stockpiled. A plant was operated at Piney River from 1937 until 1948 to produce phosphorous chemicals from apatite mined with the titanium minerals.

The Virginia Chemical Corporation and the American Cyanamid Company operated titanium-dioxide pigment plant at Piney River in Nelson County from 1931 to 1971. This site is now a 50-acre EPA Superfund site. The processing involved acidification of ilmenite with by-product copperas (ferrous sulfate) which was stockpiled at the site. Many fish kills occurred in the Piney River from 1977 to 1981 because of acidic run off from copperas and acidic leachate. In 1980, copperas was removed from the hillside and buried on site. Site concerns include degradation of the Piney River water quality, vegetation destruction by acidic leachate, and groundwater contamination. The groundwater is contaminated with iron sulfate and is highly acidic.

Small but rich magnetite (Fe3O4) deposits at Cranberry, North Carolina occur in a 40-km long area associated with a large intrusion of the dark colored igneous rock, gabbro (Figure 5.2). Around 1.5 million tons of high purity magnetite was produced in this area of North Carolina from 1882 to 1930.

Figure 5.2: Virginia's Roseland titanium district and North Carolina's Cranberry district.

Precambrian Rift Rocks

Mineral Deposit Processes

The mineral deposit processes operating in the Precambrian rift basins were largely hydrothermal processes. Seawater circulated through the thick sequences sediments (some of which were volcanic in origin), heated by the geothermal gradient or magma below the surface. These hydrothermal fluids dissolved base metals, sulfur, and other elements from the sediments through which they migrated. Because the mineral-laden solutions were hot, they rose upward buoyantly to the surface of the rift basins. As the hydrothermal fluids cooled at the surface, the minerals were precipitated from the solutions to form blankets of sulfides (including iron, copper, and zinc sulfides) within the rift basin sediments. During the Taconic and Acadian mountain building events, these deposits were folded to form thick lenses, and recrystallized into coarse crystals of sulfides that were more easily milled, separated, and smelted.

Metallic Mineral Deposits

Sulfides make up the majority of ore minerals. They include iron (Fe), zinc (Zn), lead and copper (Cu) sulfides such as galena (PbS), sphalerite (ZnS), chalcopyrite (CuFeS2), and pyrite (FeS2). Numerous small deposits of sulfides are present from southwest Virginia to northeast Georgia,

but the largest deposits are those of the Gossan Lead District in the Ashe Formation of Virginia and the Ducktown District in the Ocoee Basin of Tennessee (Figure 5.3). The Virginia Gossan Lead deposits extend for 28 km but are largely iron sulfide. Nine separate sulfide bodies in theTennessee Ducktown District total almost 200 million tons of ore averaging about 1% copper and 0.9% zinc. The district also produced at one time iron, gold (Au), and silver (Ag). Ducktown was also an important source of sulfuric acid, a recovered byproduct of sulfide smelting operations.

Figure 5.3: The Gossan Lead District is in the Ashe Formation of Virginia; the Ductown District is in southeastern Tennessee.

The Ducktown District was first worked in the early 1840s, initially for iron and later for gold in the iron oxide gossans formed by surface weathering of the sulfide ore bodies. Rich secondary copper ores were discovered below the gossans and mined from 1847 to 1879. Initially, the rich ore was piled on huge stacks of cordwood and set to burn for several weeks to oxidize the sulfur. The roasted ore was then placed in smelters fired by charcoal to recover the copper metal. The entire valley was denuded of trees to fuel the roasters and smelters, consuming 1500 acres of mature timber each year by 1876. By 1878 forty-seven square miles of forest had been consumed in and around the valley. Sulfur gases released by roasting and smelting fell with rain as sulfuric acid, killing virtually all remaining vegetation in the valley. High rainfall resulted in extensive erosion and gullying of the surface, producing terrain similar to a desert. The red soils and rocks of the valley were clearly visible amid the green of the surrounding mountains from the air and in early satellite images (Figure 5.4). Morning fog was so acidic as late as the 1960s that it would corrode nylon stockings in a matter of minutes. Mining of the primary sulfide ore bodies underground began in 1890, and continued to the end of mining in 1987. Cleaner smelting technologies and extensive reclamation and planting efforts in the 1970s through 1990s restored vegetation in much of the valley, an effort that continues to the present.

Manganese oxide deposits are locally present in the Precambrian rift basin sediment, especially in the Ashe Formation near the North Carolina-Virginia border (Figure 5.3). These include the deposits at Bald Knob, North Carolina, composed of manganese oxides, carbonates (CO3), and silicates (SiO2). The formation of the manganese deposits is similar to that of the sulfide deposits described above, but took place at lower temperatures.

Figure 5.4: Severe erosion and loss of vegetation resulted from burning sulfide ores in the Ductown District, TN. Photo courtesy of the Library of Congress and EPA.

Non-Metallic Mineral Deposits

Numerous pegmatites intruded the Precambrian rift rocks throughout the Blue Ridge during the Taconic and Acadian mountain building events. Many of these pegmatites have been mined for feldspar, kaolin, quartz, and mica. Among the most important districts are the Franklin-Sylva and Spruce Pine Districts in North Carolina, with hundreds of pegmatites intruded into the Ashe Formation (Figure 5.5). These two districts have produced over half of all U.S. sheet and scrap mica and feldspar since mining began in 1868, and North Carolina continues to be the nation's top producer. Ancient mine pits and shafts in the Blue Ridge Mountains of North Carolina were long thought to be pre-colonial silver and gold prospects attributed to the early Spanish explorers. These old prospects are now thought to be the work of Native Americans in the area, who mined the pegmatites for sheets of muscovite mica ($KAl_2(AlSi_3O_{10})(OH)_2$).

Figure 5.5: The Spruce Pine and Frank-Sylva Districts of North Carolina have hundreds of pegmatites. The Spruce Pine and Webster-Balsam districts have abundant olivine.

Feldspars

Feldspars are very common group of rock-forming minerals found throughout the Southeast in all types of rocks, and used in ceramics and scouring powders.) There are two groups of feldspar: alkali feldspar (which ranges from potassium (K)-rich KAlSi3O8 to sodium (Na)-rich NaAlSi2O8) and plagioclase feldspar (which ranges from sodium (Na)-rich NaAlSi3O8 to calcium (Ca)-rich CaAl2Si2O8). Potassium feldspars of the alkali group are commonly seen as pink crystals in igneous and metamorphic rocks, or pink grains in sedimentary rocks. Plagioclase feldspars are even more abundant than the alkali feldspars, ranging in color from light to dark.)

Pegmatites of western North Carolina have also produced minor quantities of uranium, rare earth elements, and secondary uranium minerals common in many of the Spruce Pine District pegmatites. Beryl (Be3Al2(Si6O18)) is a common mineral in some pegmatites, and mines in the Spruce Pine District have produced gem quality aquamarine and emerald (varieties of beryl).

The mineral olivine (Mg2SiO4), found in the ultramafic igneous rocks dunite and peridotite, is present throughout the Blue Ridge from Virginia to Alabama. It occurs in the highly deformed Precambrian rift rocks thrust westward onto the margin of North America during the Taconic mountain building event. Dunite and peridotite are composed of 50% to 90% olivine. The Webster-Balsam district in Jackson County and the Spruce Pine district in Yancey and Mitchell counties, western North Carolina, have produced commercial olivine (Figure 5.5). North Carolina leads the nation in olivine production, although active mining is presently limited to the Daybook Mine in Yancey County. There has also been minor production of vermiculite ((Mg,Ca)3(Mg,Fe,Al)3), asbestos, and chromite (FeCr2O4) from these bodies.

Figure 5.6: Alteration of ultramafic rocks in Macon County, North Carolina produced corundum.

Alteration of ultramafic rocks in the Blue Ridge during the Paleozoic mountain building events resulted in the formation of local deposits of corundum (Al2O3). Corundum is used as an abrasive, and in gem form is known as ruby (red) or sapphire (blue). The Corundum Hill deposit in Macon County, North Carolina was mined as early as 1871. All corundum production in the United States came from North Carolina and Georgia until 1905. The Macon County area continues to produce gem quality forms of corundum, especially rubies and sapphires (Figure 5.6).

Sources: http://geology.teacherfriendlyguide.org/index.php/minerals-se
http://geology.teacherfriendlyguide.org/index.php/minerals-se/region-1-blue-ridge

Picconi, J. E. 2003. The Teacher-Friendly Guide to the Geology of the Southeastern U.S. Paleontological Research Institution, Ithaca, NY.

Summer Social – August 2015

Photos by Pat & Bruce

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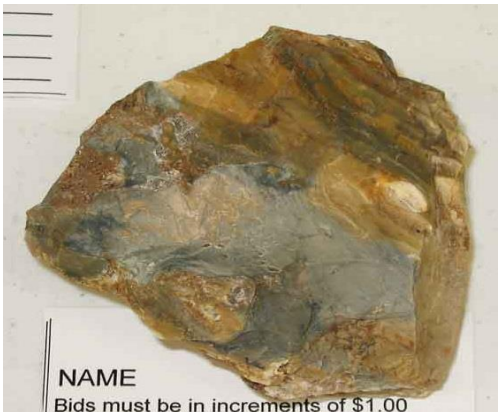


Nice selection of items offered for auction
…but the cat was free to a good home.

Building a Mineral Collection

by Darryl Powell

If you have been to a mineral show, you know that mineral specimens can be very expensive. Some of you have gone out to dig for your own specimens. Whether you are building your mineral collection by buying specimens, finding them yourself or a little of both, you know that your specimens are valuable. You can't believe how many collections have bunches of mineral specimens piled on shelves or on top of desks. The specimens collect dust, are bumped around and are often damaged.

One of the most upsetting experiences of collecting is to have a special, prized specimen broken or damaged. Right away it is worth much less. Also, it looks a lot worse than it did before. Your collection can be carefully kept, and will be more valuable, if you do the following three steps every time you get a new specimen.

Keep your minerals safe

Step 1: Store your specimens in a safe place. Keep your specimens in a container that protects them from getting banged into each other. Just piling them up on your desk is not good. Use egg cartons or strong boxes like cigar boxes to hold your specimens. If you keep them more than one specimen in a box, make dividers to keep the specimens safely apart from each other. Some collectors use a chest of drawers. It is usually possible to buy an old dresser or an old box with drawers for a few dollars at a yard sale. Just like a cigar box, remember to make dividers for the drawers to keep the specimens away from each other.
You may want to make shelves for your specimens. If you like to display your specimens, always keep one specimen two or more inches away from the next specimen. Remember, an important goal of storing your collection is to protect the specimens so they do not get damaged.

Keep good records

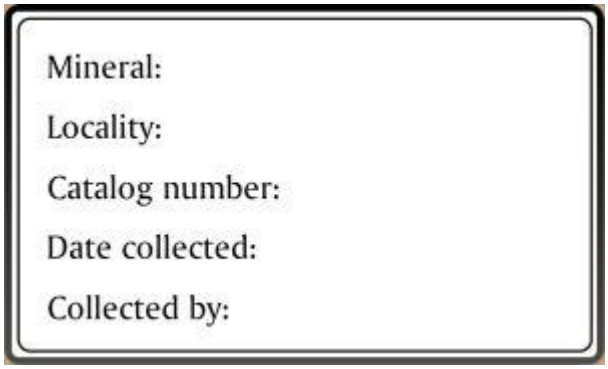
Step 2: Number your specimens and keep a book with the numbers and specimen names. A collection of anything is most valuable if it is more than a pile of objects. It is very important that you keep track of the specimens you have. The best way to do this is to put a small number on each specimen and a list of the numbers.

You can keep a written list in a book or on the computer. Using a computer, print out a sheet of small numbers. Cut out the numbers and carefully attach a number to a specimen with a very small piece of sticky blue poster tack. You can buy this at an office supply store. Stick "1" on a specimen. When this is done, write in your

specimen. When this is done, write in your list the number, the name of the specimen and where it was found. For example, your record book or computer list will look like this:

1. Calcite. Cave-in-Rock, Illinois.
2. Pyrite. Peru.
3. Quartz. Switzerland.

Every time you get a new specimen, make it your first job to give it the next number on your list and record the information you have about the specimen. Expert collectors will tell you that a specimen with the information about where it was found is much more valuable than a specimen that has no information with it.



Step 3: Label your specimens. It's good to have numbers on your specimens, but you don't want people to be picking up all your specimens to find the number and look at the list to see what the mineral is. Every specimen should have a label sitting in front of it that tells a visitor what the mineral is and where it was found.

Some collectors like to have labels with the specimen number on the label. Some get fancy and make labels with their own name on the label. Believe it or not, some mineral collectors collect old labels from old mineral collections. Once in a while an old label is worth more than the mineral specimen that goes with it!

Labels are fun to make. You can make them by hand or on a computer, but If you would like to get started right away, we have created a sheet of mineral labels which you can print out today.

Here's a link where you can download a page of labels to get you started:

http://www.kidsloverocks.com/pdf/minerallabels.pdf

Have fun collecting!

Source: http://www.kidsloverocks.com/html/building_a_collection.html

Who What Where When Why How

September Birthdays

SEP 6	Ellen Rials
SEP 8	Richard Morris
SEP 9	Margie Cody
SEP 16	Allen Rockwell
SEP 20	Lydelle Morris
SEP 21	L. J. Ward

Random Rock Facts

Sapphire, the September birthstone, has been popular since the Middle Ages and, according to folklore, will protect your loved ones from envy and harm. Medieval clergy wore sapphires to symbolize heaven, while commoners thought the gem attracted heavenly blessings. Blue sapphires range from very light to very dark greenish or violetish blue, as well as various shades of pure blue. The most prized colors are a medium to medium dark blue or slightly violetish blue. Sapphire is a variety of the gem species corundum and occurs in all colors of the rainbow. Pink, purple, green, orange, or yellow corundum are known by their color (pink sapphire, green sapphire). Ruby is the red variety of corundum.

Reprinted with permission from the American Gem Society
Source: http://www.americangemsociety.org/september-birthstone

Meeting Information

Time: 2:00 PM
Date: Fourth Sunday of each month (except June, July and August)
Place: Fellowship Hall – Tabernacle United Methodist Church
4205 S. Brannon Stand Road
Dothan, AL

Website: www.wiregrassrockhounds.com

Objectives

To stimulate interest in lapidary, earth science and, when necessary, other related fields.

To sponsor an educational program within the membership to increase the knowledge of its members in the properties, identifications and evaluations of rocks, minerals, fossils and other related subjects.

To cooperate and aid in the solution of its members' problems encountered in the Club's objectives.

To cooperate with other mineralogical and geological clubs and societies.

To arrange and conduct field trips to facilitate the collection of minerals.

To provide opportunity for exchange and exhibition of specimens and materials.

To conduct its affairs without profit and to refrain from using its assets for pecuniary benefit of any individual or group.

Classified Ads

Looking for an item to round out your rock collection?

Got a specimen, tool or handicraft for sale or trade?

Submit the pertinent details to me by the 10th of each month and your inclinations will be made known to the membership in the next bulletin.

N. J. Blackwell
28 Lakeview Trail, Apt. C
Daleville, AL 36322
Phone: 334-503-0308
Email: Tsavorite7@aol.com

Annual Dues

Single $15
Family $20

Officers

President – Pat LeDuc
334-806-5626

Vice President – Garry Shirah
334-671-4192

Secretary – Bruce Fizzell
334-577-4353

Treasurer – Diane Rodenhizer
334-447-3610

Bulletin Editor – Joan Blackwell
334-503-0308
Tsavorite7@aol.com

Webmaster – Pat LeDuc
334-806-5626

Membership Chair – Diane Rodenhizer
334-447-3610

Show Chair – Jeff DeRoche
334-673-3554

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334-577-4353

Hospitality Chair – Vacant

Club Hostess – Laural Meints
334-723-8019

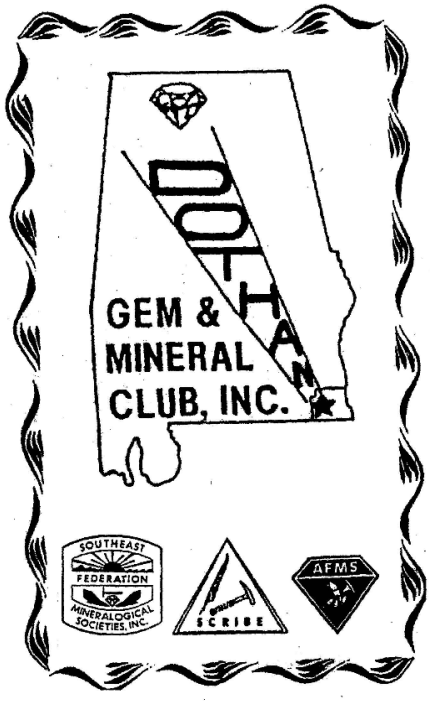
Club Liaison – Garry Shirah
334-671-4192

Refreshments

SEP 27 – Potluck Refreshments

ROCKHOUNDS HERALD
Editor – N. J. Blackwell
28 Lakeview Trail, Apt. C
Daleville, AL 36322

www.wiregrassrockhounds.com



Where you might hear…

Meteorites are among the rarest materials that exist on our planet—far less common than gold, diamonds, or even emeralds—so the chances of finding one are unlikely, but it can happen. Below are a few unique features to look for if you think you have one:

- **Magnet Test** – practically all meteorites contain a significant amount of extraterrestrial iron and nickel but so do some rocks.
- **Weight and Density** – a meteorite should feel much heavier than an ordinary rock of the same size.
- **Fusion Crust** – this is a thin, dark rind caused by the brief, but intense heating that occurs as a meteorite enters our atmosphere.
- **Regmaglypts** – these are oval depressions or "thumbprints" that look like something a sculptor might leave in wet clay.
- **Chondrules and Metal Flakes** – file off a small corner and see if there are metal flakes and small, round, colorful inclusions.
- **Nickel** – nickel is rare on earth but is almost always present in meteorites. If your item is magnetic and looks and feels right, have it tested at a lab.

Source: http://geology.com/meteorites/meteorite-identification.shtml

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