

# ROCKHOUNDS HERALD

920 Yorktown Road, Dothan, AL 36301-4372

[www.wiregrassrockhounds.com](http://www.wiregrassrockhounds.com)

## March 2013



## Words from...

### The President

We've survived the switch to Daylight Savings Time, and Spring will arrive just a few days before the **March meeting on the 24<sup>th</sup>**. Warmer weather and the extra daylight at the end of the work day really make it easy for me to get excited about the upcoming show—even though there is still a lot to do to get ready. On Sunday, we'll hear some committee updates, distribute the signs and flyers, and attend to a few details that haven't been ironed out yet. If you are donating an item for the silent auction or door prize drawing, don't forget to bring it to the meeting. That will give us an accounting of what more we need to add and it will save you the burden of trying to get it to JoAn before the show.

In honor of Easter this month, the newsletter features a short article in *Kids' Corner* on the geology of Israel and a striking geological feature found there called a graben. Check out the announcements below, too. We'll be auctioning a display case at the meeting. Bring your money! Jeff

## Announcements

**Auction** – A display case will be sold to the highest bidder at the March meeting. The case is 2' x 2' x 4' with a glass front. It folds up and comes with a stand that is 36" high. Proceeds from the sale will be donated to the club by Grady and Esther Dunn.

**Rock Swap & Dig** – The caretakers of Graves Mountain (near Lincolnton, Georgia) will host a rock swap and dig on April 26 – 28 from 8 AM to 6 PM each day. For complete details, check out their website: [www.gamineral.org/commercial-gravesmountain.htm](http://www.gamineral.org/commercial-gravesmountain.htm).

**Arts Festival** – Though we don't have clubmembers participating in the Piney Woods Arts Festival this year, it is a family-friendly event worth attending. It will be held on the campus of Enterprise State Community College in Enterprise on April 6 – 7. If you are in the area, be sure to check it out.

## Upcoming Shows

<b>April 27 – 28</b>	<b>Dothan Gem &amp; Mineral Club</b>	<b>Dothan, AL</b>
<b>April 27 – 28</b>	<b>Memphis Archeological and Geological Society</b>	<b>Memphis, TN</b>

Source: [www.amfed.org/sfms/](http://www.amfed.org/sfms/)

# Meeting Minutes – February 2013 – by Secretary

The meeting was called to order by club president, Jeff DeRoche, at 2:15 PM. We got started a bit late, having spent several minutes milling around and admiring the new church hall where our meetings will be held from now on. Jeff wished our February members a Happy Birthday and let the group know today would be the last call for ordering T-shirts. He also reminded everyone that it is time for membership renewal. We had 32 people in attendance, including new member, Harold Newman.

**CORRESPONDENCE:** The club received the AFMS newsletter.

**OLD BUSINESS:** The February minutes were approved without changes. Diane Rodenhizer presented the treasury report.

**NEW BUSINESS:** Jeff has arranged for the dates to be changed on the show signs. Arnie Lambert asked everyone to put the word out that we have space for two more mineral dealers at the show. He and Ken Johnson are tumbling rocks that will be used as prizes for the kids who participate in the show's kid-related activities. JoAn Lambert reminded the folks who are donating items for door prizes and the silent auction to bring their items to the March meeting, as it will be the last meeting before the show.

After some discussion, the group decided Joan Blackwell should have 100 - 200 extra copies of the April newsletter printed to be distributed at the show. She will get prices for both black & white and color copies and we'll decide at the March meeting how many copies to make. At the January meeting, Joan proposed the club consider having a competition for a scholarship to the William Holland School of Lapidary Arts. The idea was further discussed during this meeting and the motion to hold the competition was passed. Club members will get points based on criteria determined by the club and the competition will run from March 2013 to February 2014. A drawing will be held in March 2014 and the winner will have until October 2014 to use the scholarship. To see what type classes are available at the school, check out their website: <http://www.lapidaryschool.org/>.

JoAn discussed the supplies needed for the bracelet class being held at the church hall on March 9<sup>th</sup> at 10:00 AM. (Note: That list of supplies is available in the February newsletter.) A sign up list was circulated for the eight slots in the cabochon class being taught by Arnie on March 16<sup>th</sup>. If you signed up and have a special piece you want to cut and polish, bring it along. If not, Arnie said he has plenty of stuff to work with.

As evidenced by his presence at the meeting, Ken Wilson is getting around pretty well after his hip surgery.

**SHOW & TELL:** Samantha Merino kicked off our Show & Tell with a huge fossil matrix containing ammonites and squid. She won it at the Panama City Gem & Mineral Show. Laural Meints displayed some amber. Joe and Margie Cody brought some crystals they got in JoAn's yard, a neat stone from L. J. Ward's yard and a beautiful opal Joe got at a gem show many years ago. Diane showed a thunder egg from New Mexico. Joan brought a nice plant fossil she collected on a trip to the Steven C. Minkin Paleozoic Footprint Site near Jasper, AL. There was a lot of interest in the site and the club discussed the possibility of planning a dig there. See this website for info about the site: [http://www.alabamapaleo.org/Alabama\\_Paleontological\\_Society\\_files/Minkin%20Guide%20-%20optimized%20Apr%206%202012.pdf](http://www.alabamapaleo.org/Alabama_Paleontological_Society_files/Minkin%20Guide%20-%20optimized%20Apr%206%202012.pdf). Jeff showed a wavelite he got from Arnie and a really nice emerald matrix from Brazil. JoAn brought a new bracelet to show us what we'll be making on March 9<sup>th</sup>.

**PROGRAM:** No program was presented. The group spent quite a bit of time discussing events for the show, upcoming classes, and enjoying the refreshments graciously provided by JoAn & Arnie. Door prizes went to JoAn, Esther Dunn & Chris Wisham.

Respectfully submitted by Pat Leduc

## Metamorphic Rocks Transformation at Work

**Metamorphic rocks** are one of the three types of rock classifications, the other two being igneous and sedimentary. Rocks are classified by the processes under which they were formed. The differences in formation account for variations in the appearance of the rocks and, with some practice, you can learn to recognize the different types by sight.

Metamorphic Rocks are rocks that have changed form due to **heat and pressure**. Metamorphic comes from the Greek words **meta** and **morph**. Meta means change and morph means form. So we get metamorphic meaning to change form.

Metamorphic rocks were once sedimentary, igneous or even other metamorphic rocks that have been changed by heat and pressure.

**There are two kinds of metamorphism.**

- **Contact metamorphism**
- **Regional metamorphism**

**Contact metamorphism** occurs when magma intrudes or forces its way into existing rock. The heat of the magma bakes the surrounding rocks causing them to change. This is a local event. The changes due to contact metamorphism are relatively small and are said to be low-grade metamorphism. An example of contact metamorphism is the metamorphic rock marble. Marble is created from limestone that has been subjected to heat.

**Regional metamorphism** by contrast takes place over large areas and is high-grade metamorphism. Regional metamorphism is associated with mountain building.

### **The Causes or Agents of Metamorphism**

The causes or **agents of metamorphism** are heat, pressure, and hydrothermal solution. But where does this heat and pressure come from? And what is hydrothermal solution? Well read on...

The heat and pressure comes from inside the earth. From the upper mantle up to within a few kilometers of the surface of the earth there is a tremendous amount of heat and pressure. This heat and pressure increase with depth. It is estimated that the temperature increases about 20° to 30° C per kilometer of depth.

### **Plate Tectonics Adds Heat and Pressure**

There is something else that adds to both the heat and pressure, and that is plate tectonics. When the plates of the earth collide, they squeeze the rocks at the borders with unbelievable force. This force increases the pressure in this and surrounding areas. Friction is also created by the plates grinding together. This friction generates enough heat to melt the rocks at the point of contact.

### **Heat**

For metamorphism to occur **energy** is needed to fuel the chemical reactions. Heat is the primary source of this energy.

### **Pressure**

The pressure within the earth is the result of gravity pulling the crust of the earth downward. Like heat, pressure increases with depth. This pressure can actually squeeze the spaces out of the minerals within the rock. This makes the rocks denser. The heat and pressure together cause the rock to flow instead of break or fracture. The mineral grains become realigned. They flatten out and get longer.

### **Hydrothermal Solution**

Magma contains many different gasses including H<sub>2</sub>O. That's right water! Or more properly steam. Minerals are carried by the steam. When this hot fluid escapes from the magma it is called Hydrothermal Solution. These hot fluids can change the crystallization in rock by dissolving the minerals and then depositing new ones. Rocks that come in contact with this hydrothermal solution can have their composition altered as a result of this recrystallization.

### **The Classification of Metamorphic Rocks**

Metamorphic rocks are classified as **foliated** or **nonfoliated**.

Foliated metamorphic rocks appeared banded or layered.

Nonfoliated metamorphic rock usually contains one mineral. It is uniform in texture.

# Examples of Common Metamorphic Rocks

## Quartzite



**Quartzite** is a coarse-grained metamorphic rock derived from sandstone.

Heat and pressure combine to fuse grains of quartz sand to make up the composition of quartzite

It has a uniform texture (non-foliated) and is very hard, 7 on the Moh's Scale.

Quartzite is resistant to weathering.

Quartzite is usually white or grey and sometimes pink to red if iron oxides are present as in this example.

## Marble

**Marble** is a metamorphic rock that comes from metamorphosed limestone or dolomite. Limestone is mostly calcite or calcium carbonate,  $\text{CaCO}_3$ .

Dolomite  $\text{CaMg}(\text{CO}_3)_2$  is related to limestone but is rich in magnesium.

Marble has a uniform texture (non-foliated).

There is a lot of variation in the color and texture of marble. The two main influences are the kind of limestone that makes up the parent rock and the kind and degree of metamorphism.



It can be most any color including white, black, reds, greens, and more. It is usually coarse grained though fine-grained marble is found in some places and is highly prized for creating sculptures. Marble is used as building materials for its strength and beauty.

Marble will fizz when in contact with acid. Vinegar can be used as a test.

# Slate

**Slate** is a fine grained metamorphic rock.

Shale is the parent rock. It is made up of clay minerals. Shale can metamorphose into **slate**, phyllite, schist or gneiss depending on the degree of heat and pressure. Slate is the least metamorphosed of this group; meaning that it has been subjected to the least amount of heat and pressure (low-grade metamorphism). It is associated with regional metamorphism and with mountain building.



Slate is foliated and easily splits into thin, flat, parallel planes. This along with its chemical inertness and thermal stability make slate useful for many purposes. It is used for roofing shingles, floor tiles, pool tables and laboratory benches.

# Phyllite

**Phyllite** is a fine grained metamorphic rock.

Shale is the parent rock. It is made up of clay minerals. Shale can metamorphose into slate, **phyllite**, schist or gneiss depending on the degree of heat and pressure. Phyllite has a greater degree of metamorphism than slate but less than schist. It is associated with regional metamorphism and with mountain building.



It is primarily composed of quartz, sericite mica, and chlorite.

Phyllite has larger crystals than slate. This gives it a greater degree of light reflection or sheen. The sheen is used to distinguish phyllite from slate.

# Schist

**Schist** is a coarse grained metamorphic rock.



Shale is the parent rock. It is made up of clay minerals. Shale can metamorphose into slate, phyllite, **schist** or gneiss depending on the degree of heat and pressure. Schist has a greater degree of metamorphism than phyllite but less than gneiss.

It is classed as a medium-grade metamorphic rock and is associated with regional metamorphism and with mountain building.

The crystals in schist are large enough to see with the naked eye. They are flattened and elongated. Schist contains more than 50% platy and elongated minerals.

Schist is foliated or layered in appearance. Quartz, micas, and amphiboles are primary minerals in schist.

Schist comes from a Greek word meaning "to split"

# Gneiss

**Gneiss** is a medium to coarse grained metamorphic rock.



Shale is the typical parent rock. It is made up of clay minerals. Shale can metamorphose into slate, phyllite, schist or **gneiss** depending on the degree of heat and pressure. Gneiss has the greatest degree of metamorphism in this group. It is classed as a high-grade metamorphic rock and is associated with regional metamorphism and with major mountain building.

Igneous rocks especially granite, can also make up the parent rock for gneiss.

This is a foliated dense rock that has light and dark colored banding. It is typically composed of feldspars, quartz, micas, and amphiboles. Because of the high heat and pressure, the minerals contained in gneiss have been mostly recrystallized.

Gneiss is a very common metamorphic rock.

## Metamorphic Rock Classification

Metamorphic rock is classified by texture and composition. The texture can be **foliated** or **nonfoliated**.

Foliated metamorphic rocks appear banded or layered. Foliated rocks can be ordered in terms of increasing metamorphism. In the example chart below, notice how each of the first three rocks become the parent rock for the next. In each of these it takes more heat and pressure to move to the next level of metamorphism. Nonfoliated metamorphic rock usually contains one mineral. It is uniform in texture.

Grain size is another characteristic of texture. It ranges from very fine to coarse.

Classification of Metamorphic Rocks				
Name of Rock	Parent Rock	Texture	Grain Size	Notes
<b>Slate</b>	Shale, mudstone, siltstone	Foliated	very fine	smooth dull surfaces
<b>Phyllite</b>	Slate		fine	glossy sheen
<b>Schist</b>	Phyllite		medium to coarse	micaceous minerals
<b>Gneiss</b>	Schist, granite, volcanic rocks		medium to coarse	mineral banding
<b>Marble</b>	limestone	Nonfoliated	medium to coarse	interlocking calcite or dolomite grains
<b>Quartzite</b>	quartz sandstone		medium to coarse	fused quartz grains
<b>Anthracite</b>	bituminous coal		fine	black, shiny, organic rock

### Sources:

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[http://www.rocksandminerals4u.com/metamorphic\\_rocks.html](http://www.rocksandminerals4u.com/metamorphic_rocks.html)

<http://www.rocksandminerals4u.com/metamorphic.html>

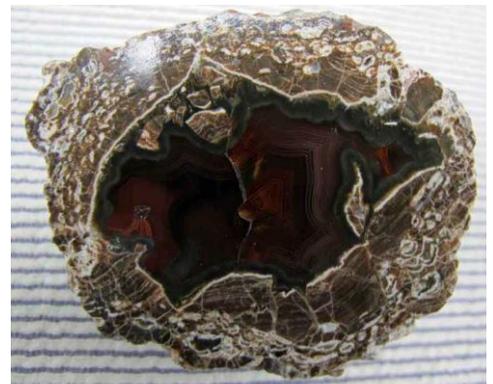
[http://www.rocksandminerals4u.com/metamorphic\\_rock.html](http://www.rocksandminerals4u.com/metamorphic_rock.html)

# Club Meeting – February 2013

Photos by Pat & Ginger



**First meeting in our new facility. It's a delightful space!!! Bright, cheery, plenty of room to spread out, and the acoustics are great.**



# Club Meeting – February 2013

Photos by Pat & Ginger



We had 31 folks, plus a new member, some interesting Show & Tell...and music!



**Orthoceras Fossils**  
 Orthoceras fossils are dated back to the Silurian Age 400-360 million years ago and are the earliest recognizable animals. They are precursors to the modern day squid. Even though they were among the earliest forms of animal life, the Orthoceras ranged in size from a few inches in length to over six feet! They could swim as well as crawl on the ocean floor. By filling the chambers of their shells with air they could float through the water swimming. Hemolymph (a precursor to blood) was pumped into the chambers to support the animal. As they died their shells accumulated upon the ocean floor and eventually by sediment they transformed into stone over the ages. Having a long, straight, shell - fossils have an iridescent pearly quality when polished. These Orthoceras specimens are from the Atlas Mountains in Morocco.



## Dead Sea Graben

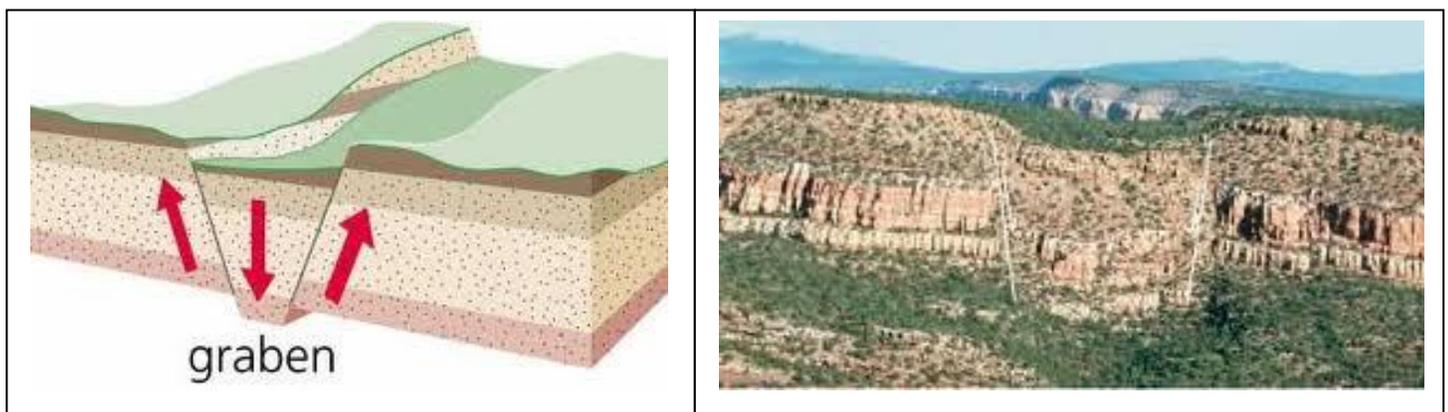
Israel, located in the Middle East, has a semi-arid climate. It is still influenced by the Mediterranean Sea, which allows sufficient rains in the coastal areas during winter. But a mountain range, running north to south along the coast divides the country. Jerusalem sits on the top of this ridge. To the east is the most interesting geologic structure of the country: the Dead Sea Graben.

A graben is an elongated, relatively depressed crustal unit bounded by faults on both sides. It is caused by a divergent movement of the plate. The plate widens and becomes faults, which results in a downlift of the crust between two of the faults. Once it is deep enough sea water will flow in and the graben will become a new sea, slowly but continually widening. This is how the Atlantic Ocean started many million years ago. This geologic structure was first described in German, that's why the German term *graben* (ditch) is used internationally as the geologic term.

The numerous limestone and sandstone layers of the Israeli mountains allow the water to pour from the west flank to the east. Several springs along the Dead Sea each form an oasis. Today, the Dead Sea's east wall graben is of different geology than the west wall because the edge of the Arabial plate has moved northward 65 miles.

Israel has huge limestone karst areas. Small natural caves and abris are very common all around the country and the caves are around a comfortable 20°C. All this applies to the northern part of Israel. The southern part of the country is the Negev desert. Beautiful landscape, interesting geology but no underground sights we know of.

Rock types that are found in the area near the graben include granite, other igneous rocks, acidic silicates, gravel, clay, sandstone, rock salt, and alluvial deposits.



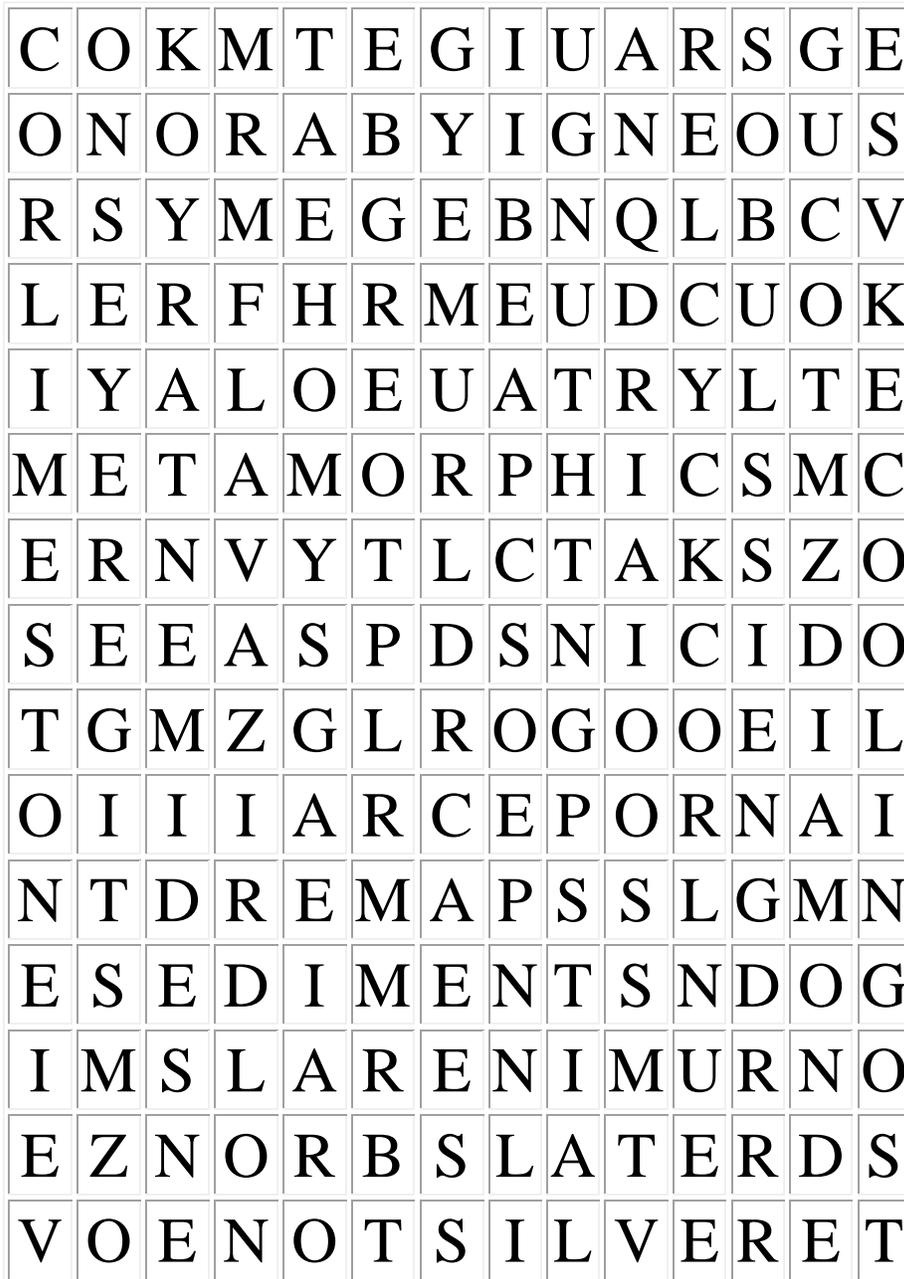
**Source:**

<http://www.showcaves.com/english/il/Geology.html>  
<http://deadseageo.webs.com/geologicalsignificance.htm>  
<http://www.aapg.org/explorer/2008/11nov/deadsea.cfm>

# Ultimate Rocks and Minerals Word Search

by Katelyn Omar

30 WORDS TO FIND RELATING TO MINERALS, ROCKS, AND ROCK CYCLES



volcano  
quartzite  
eruption  
rockcycle  
rock  
gneiss  
igneous  
limestone  
metamorphic  
slate  
sedimentary  
emerald  
heat  
tigereye  
pressure  
foolsgold  
sediments  
copper  
diamond  
gold  
minerals  
silver  
ruby  
bronze  
stone  
gem  
granite  
lava  
magma  
cooling

# Who What Where When Why How

## March Birthdays

**MAR 1 David Jones**  
**MAR 7 Jeff DeRoche**  
**Thomas Merino**  
**MAR 8 Harold Newman**  
**MAR 16 Ginger Merino**  
**MAR 19 Grady Dunn**  
**George White**  
**Lisa Wisham**  
**MAR 20 Kama Clay**  
**MAR 23 JoAn Lambert**

## Random Rock Facts

Not only is the color of aquamarine due to trace amounts of iron impurities in the beryl structure, but also to the location of those impurities. Beryl crystals contain channels outlined by rings of silicon dioxide. The rings are stacked upon each other leaving space (octahedral and interstitial) within the channels for water or other impurities.

When Fe<sup>3+</sup> is present and substituting for aluminum in the octahedral space, a yellow color is produced. When Fe<sup>2+</sup> is present in the interstitial space, a pure blue color is evident. When both are present, it produces the typical blue-green color associated with fine aquamarine.

Aquamarine is in the hexagonal crystal system and is the modern birthstone for March.

Source: <http://www.mineralminers.com/html/aquminfo.htm>

## Meeting Information

**Time:** 2:00 PM  
**Date:** Fourth Sunday of each month (except June, July and August)  
**Place:** Fellowship Hall – Tabernacle United Methodist Church  
4329 S. Brannon Stand Road  
Dothan, AL

## Officers

**President – Jeff DeRoche**  
334-673-3554

**Vice President – Meredith Capshaw**  
334-684-9448

**Secretary – Pat LeDuc**  
334-806-5626

**Treasurer – Diane Rodenhizer**  
334-447-3610

**Bulletin Editor – Joan Blackwell**  
334-503-0308  
Tfavorite7@aol.com

**Webmaster – Pat LeDuc**  
334-806-5626

**Membership Chair – Diane Rodenhizer**  
334-447-3610

**Show Chair – Arnie Lambert**  
334-792-7116

**Field Trips Chair – Ken Wilson**  
850-547-9577

**Hospitality Chair – JoAn Lambert**  
334-792-7116

**Club Hostess – Laural Meints**  
334-723-2695

**Website:** [www.wiregrassrockhounds.com](http://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 10<sup>th</sup> 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: Tfavorite7@aol.com

## Annual Dues

Single \$15  
Family \$20

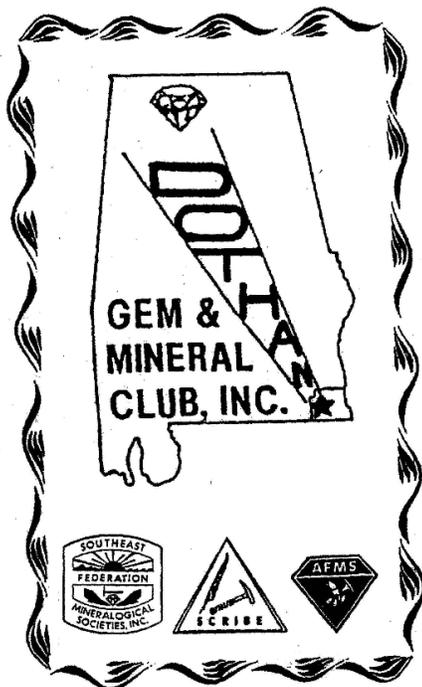
## Refreshments

**MAR – Brooke Brown & Jeff DeRoche**  
**APR – No meeting due to show**  
**MAY – Chris Wisham**

# ROCKHOUNDS HERALD

Editor – N. J. Blackwell  
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[www.wiregrassrockhounds.com](http://www.wiregrassrockhounds.com)



## Where you might hear...

**Migmatite** is a high-grade Barrovian metamorphic rock that has begun to fractionally melt; thus, leaving the realm of metamorphism and entering the realm of igneous rocks.

Metamorphic textures (schistosity or mineral banding) are intermixed with igneous textures.

In appearance, it looks like a gneiss intermixed with patches and splotches of phaneritic igneous texture (coarse-grained).

If the heating process continues, the rock could melt completely to form a magma.

Source: <http://csmres.jmu.edu/geollab/fichter/MetaRx/Metatexture.html>

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**Southeast Federation of Mineralogical Societies, Inc.**  
**American Federation of Mineralogical Societies**