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

Rockhounds Herald

920 Yorktown Road, Dothan, AL 36301-4372

www.wiregrassrockhounds.com

February 2015

Words from…

The President

I learned some interesting things at the SFMS quarterly meeting in Panama City and met some really nice people there. The Panama City Gem Show seemed to have really good foot traffic when I popped in to look at all the shiny things after the meeting broke up. Just wanted to say "Thanks" to all our members who supported our sister club's show by shopping and vending.

While cruising the back roads looking for interesting photo ops, Bruce started quizzing me on official symbols and emblems of Alabama. He found a list in one of the local magazines that we picked up. I, for one did not know that we had an official fossil. It is the zeuglodon. They were 50-70' meat-eating members of the whale family. One from Alabama is on display at the Smithsonian. To read more about AL emblems go to http://www.archives.alabama.gov/emblems/st_fosil.html

Our February meeting will be the last one before our show, so I hope we get a good turnout. I am sure that Jeff will need help getting all the last minute details nailed down and volunteers to help out at the show. We got a huge packet of information from the AFMS about the junior badge program. I will bring it to the meeting so everyone can look over the information. See you on the 22nd.

Pat

Announcement

If you haven't paid your annual dues, there's still time to get them in before the deadline. Diane Rodenhizer, our Treasurer/Membership Chair, will again be collecting payments at the February meeting, but if you aren't sure you'll be able to come to the meeting you can mail her a check at: **478 Private Road 1106, Enterprise, AL 36330.** In either case, **please be sure to submit your dues before the end of February**. The price remains the same: $15 for singles and $20 for a family.

Upcoming Shows

February 21 – 22	**Treasure Coast Rock & Gem Society**	**Vero Beach, FL**
February 28	**Imperial Bone Valley Gem, Mineral & Fossil Society**	**Lakeland, FL**
March 6 – 8	**Suncoast Gem & Mineral Society**	**St. Petersburg, FL**
March 7 – 9	**Aiken-Augusta Gem, Mineral & Fossil Show**	**Augusta, GA**
March 20 – 22	**Rome Georgia Mineral Society**	**Rome, GA**
March 28 – 29	**Dothan Gem & Mineral Club**	**Dothan, AL**

Source: http://www.amfed.org/sfms/club-shows-123.html

Meeting Minutes – January 2015 – by Secretary

The meeting was called to order at 14:05 by our new club President, Pat LeDuc. There were 21 club members and two guests in attendance. The guests, Grace Rios and Anabelle Noariga, were brought by Aida Ward. Happy Birthdays were wished to all our January members. Joan Blackwell brought copies of the January issue of Rockhounds Herald to pass out to those attending the meeting. We got an update on Grady and Esther Dunn. Sadly, Esther is not doing well and has been moved to a new facility. Laural Meints has been going over to help Grady photograph his collection. The club was also notified that Maxine Johnson broke her hip and is currently in Westside Terrace undergoing therapy.

CORRESPONDENCE: "Sweet Home Alabama", the official tourism publication for the state of Alabama, sent us a copy of the 2015 annual guide to let us know that our Gem & Mineral Show has been listed in the calendar of events for March.

OLD BUSINESS: Diane Rodenhizer presented the treasurer's report and advised that 2015 membership renewals were still arriving. Our Southeastern Federation dues have been paid, but insurance rates have not been set for the 2015 year. Our current insurance is good through April.

NEW BUSINESS: Pat gave a brief report on the January 23-24 meeting of the Southeast Federation of Mineralogical Societies (SFMS) in Panama City. One item of special interest was on ***field trip sharing*** with other member clubs in the SFMS. By sponsoring a field trip and offering it to member clubs, members of our club are entitled to register for field trips organized by other SFMS clubs for a period of up to three years. Pat will be sharing other ideas with us after she has reviewed all her notes and received info she requested from the SFMS.

SHOW BUSINESS: All tables have been sold out for the show. Members are asked to consider what days and what times they are available to volunteer for working at the show. Jeff DeRoche, the show chair, will advise on final booking of the electric signage. We are looking to rent the sign for two weeks. Jeff will also find out about any permits needed relating to signs/banners etc. At the February meeting, Jeff will bring in the yard signs for distribution. A volunteer is needed for both the TV interview and a newspaper interview. Names were proposed, but this item is still open. There was a discussion about printing and distributing informational flyers/handouts at the Tourist Visitor Centers on highways 231 & 431. Report on this due next meeting.

Diane gave a quick follow-up report regarding the feasibility of taking credit/debit card payments for Silent Auction Bids. The quick fix in this case is to ask friendly vendors at the show who have the "Square" card reader and app installed on their i-phone to process payments as a favor with the understanding that the club will pay the processing fees of about 2.75%. This bit of business has been discussed before, and probably will be again until a workable resolution is reached. At this point the question of the club taking credit/debit card payments is not feasible due to cost.

PROGRAM: No program this month.

SHOW AND TELL: A dazzling array of cabs were brought in by Jeff. He now has a small setup in his shop and has been cabbing during his free time. Joe Cody brought some nice arrowheads and other pieces from his collection. He has a copy of an article featuring some of the pieces from his collection. Joe also brought the large tourmaline crystal he got from the Hogg Mine. Diane showed some new pendant wrappings she has been working with. She said that the new setting is very easy to use, but works best on pieces that are not straight sided. The settings will hold tapered pieces easily. Laurel had a wonderful slice of a fossilized pine cone. Neat-o!

The meeting wrapped up with food and the presentation of Door Prizes. Door prizes went to Garry Shirah, Diane Rodenhizer, Aida Ward, George White, and yours truly.

Respectfully submitted by B. Fizzell

Why is it called the "Inland Basins" Region?

Inland from the mountains, the Earth's crust was buckled (downwarped) into a series of depressions called "basins" (Figure 2.26). Basins are naturally great places to preserve thick sediment layers because they are lower areas that easily collect sediment and commonly continue to subside from the weight of the sediment. There are two major basins in the Inland Basins region separated by the Cincinnati Arch and its branches: the Appalachian and Illinois Basins. Other smaller basins existed throughout the region at various times through geologic history that were also important areas of deposition, including the Black Warrior Basin of northern Alabama and Mississippi (at the southern tip of the Appalachian Basin).

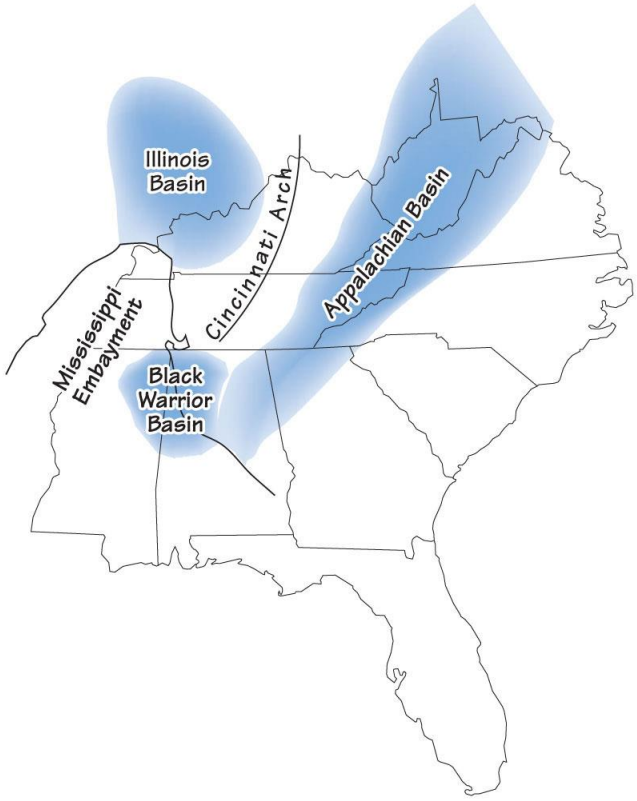
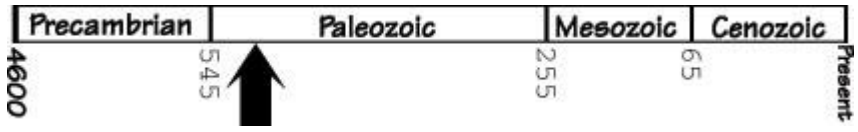


Figure 2.26: In the Southeast, the Illinois, Appalachian and Black Warrior Basins have all been important areas of deposition.

Cambrian - Ordovician Rocks



Following the Precambrian mountain building event, a period of erosion gradually wore down the Grenville Mountains. Globally, sea level began to rise in the early Cambrian until by late Cambrian most of North America was covered with a shallow ocean. The sea widened westward depositing sand and mud near shore and mostly organically derived carbonates like limestone and dolostone in the deeper water. Sea level remained high through the Ordovician, resulting in deposition of limestone and dolostone, which are common in warm, shallow, sediment-starved seas. These widespread carbonate rocks, are thousands of feet thick in Kentucky and Tennessee.

Later in the Ordovician as sea level dropped, the carbonates were exposed to intense erosion and many layers of sediment were removed. The eroded layers represent "missing time," also known as an unconformity. A large, regional unconformity occurs at the top of the Ordovician Knox Group. Several hundred meters of sediment may have been eroded away in some places where the unconformity formed.

Missing time in the Inland Basins

One of the most prominent sections of "missing time" in North America is the Ordovician Knox unconformity. There are other examples of unconformities in the Inland Basins Region, as well. Where are the rocks representing the Triassic, Jurassic, Cretaceous and Tertiary periods in the Inland Basin? The absence of rocks deposited during certain time periods in regions of a geologic map does not mean that there were no rocks forming during that time. It may mean, however, that very little sediment was deposited, that the sediment was eroded away, or that the rocks are buried beneath the surface. There is no single place on Earth that has a complete sequence of rocks from the Precambrian to the Quaternary. Erosion and weathering over time have removed many meters (and in some cases kilometers) of rock from the surface of the Southeast.

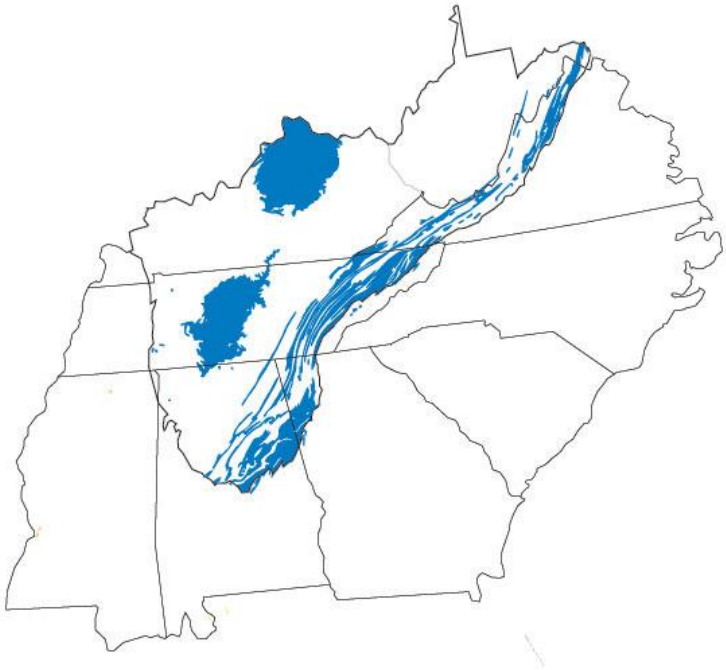
Toward the latter half of the Ordovician, the Iapetus Rocks (including the Taconic volcanic islands, Piedmont Terrane, and associated marine sediment) collided with the margin of North America, forming the Taconic Mountains. The Appalachian Basin, formed as a result of the plate collisions, was submerged under an inland ocean. Reefs developed along the shallow margins of the Appalachian Basin in parts of Tennessee resulting in the formation of very coarsely crystalline limestone that is now referred to as Tennessee "marble." It is marble only in the sense that it polishes to an attractive dimension stone that is architecturally sound and pleasing. Buildings in the National Capitol using Tennessee marble include the National Museum, the National Art Gallery, the Taft Memorial, the Capitol Building, and the Lincoln Memorial. Layers of bentonite clay, altered volcanic ash, from volcanic activity during the collision were deposited in the inland ocean and were preserved within the limestone and shale formations in the Inland Basins region. A deltaic wedge of sediment formed on either side of the Taconic Mountains as they eroded. Close to the highlands, conglomerate formed. Streams brought sandy, muddy sediment to floodplains, lakes, estuaries, beaches, and into the inland ocean to form sandstone, siltstone and shale. Sediment from the Taconic highlands spread as far south as northern Alabama and as far west as central Tennessee, but was concentrated mainly in Virginia and West Virginia. Further away from the highlands, carbonate rocks continued to form, along with sandstone and shale.

Cambrian and Ordovician rocks are exposed in the Valley and Ridge section of the Inland Basin, and along the Cincinnati Arch in Kentucky and Tennessee (Figure 2.27). These rocks are exposed because of folds, faults and erosion in the region—otherwise they would have remained buried beneath younger sediment!

What makes the patterns of rocks that we see on the geologic map? For example, the Ordovician rocks of the Inland Basins region are found in long thin ribbons as well as a circular pattern. The patterns are caused by the underlying structure of the rocks. The "underlying structure" refers to the way layers of rock have been folded and then sliced at the surface by erosion. The long thin ribbons of Ordovician rock are in the Valley and Ridge region where the rocks were compressed into tight, elongated folds along the linear Blue Ridge during the Paleozoic mountain building events. The circular to oval patterns of Ordovician rocks in Kentucky and Tennessee are the result of exposure

on circular domes along an upward buckling called the Cincinnati Arch. Rock above the arch has been uplifted and eroded, exposing the older Ordovician rock (Figure 2.28).

Figure 2.27: Cambrian and Ordovician rocks exposed in the Inland Basins region.



Rock Patterns

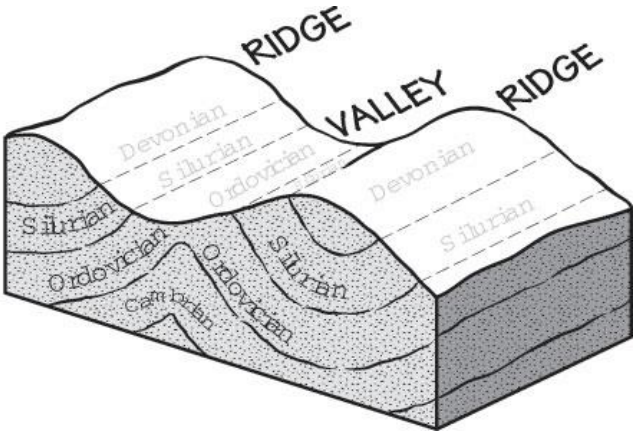
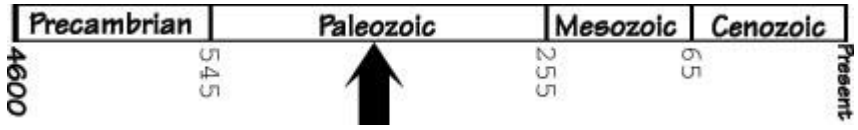


Figure 2.28

Silurian - Devonian Rocks



Silurian rocks are exposed mainly in the Valley and Ridge, and Interior Lowlands section of the Inland Basins region (Figure 2.29). These rocks record the continuing story of the Paleozoic inland ocean and the after-effects of the Taconic mountain building event. Sedimentary rocks were still forming in response to rising and falling sea level in the Inland Basins region. Sea level rose and fell

across North America many times during the Paleozoic, in part because the convergence of tectonic plates continued to buckle the inland basins, deepening the ocean, and in part because sea level itself is continually changing. With shifting sea level, the types of sediment deposited in a given area varied as well. Erosion of the Taconic Mountains continued to provide sediment to the inland ocean, forming sandstone and shale. Further out from the eroded sediment of the Taconic Mountains, carbonate rocks were again forming (mainly in Kentucky).

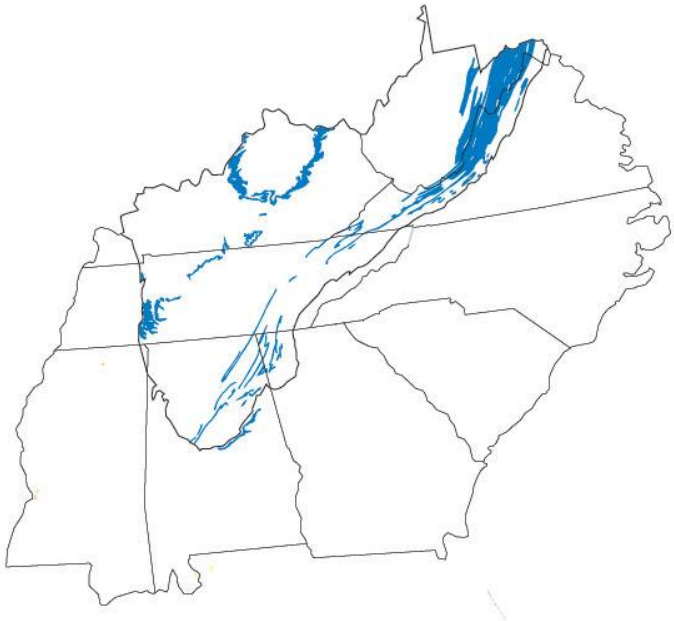


Figure 2.29: Silurian and Devonian rocks of the Inland Basins region.

During the late Silurian, as the Appalachian Basin was filled up with sediment, the ocean became relatively shallow. Much of the sediment deposited in the earlier Silurian was eroded when relative sea level fell. The remaining marine sediments exposed to the air were oxidized, resulting in red sedimentary rocks (including sandstone, siltstone, shale and limestone). A thick band of red sedimentary rocks is found in the Inland Basins region, extending from Alabama to New York. Many of these "red beds" are oolitic. In West Virginia (and further north and east), shallow water and poor circulation resulted in rapid evaporation and deposits of evaporite minerals such as salt and gypsum. None of the salt is exposed at the surface in the Southeast.

The thick sequences of eroded Acadian Mountain sediment filling the Appalachian Basin are called the Catskill Delta. The Acadian highlands eroded rapidly, providing huge amounts of sediment to be deposited on the Catskill Delta and into the inland ocean. Although the thickest sequences are in Pennsylvania and New York, Catskill Delta deposits are found through West Virginia and Virginia as well.

Devonian-aged rocks in the Inland Basins region record the onset of the Acadian mountain building event (Figure 2.29). Acadian mountain building deepened the Appalachian Basin by once again buckling the crust downward, similar to the Taconic mountain building event. Also similar to events of the Ordovician period, eroding sediments from the Acadian Mountains produced a westward spreading delta into the inland ocean. Some of the Devonian rocks produced during the Acadian mountain building event are similar to the rocks of the earlier Ordovician period (when similar tectonic events were happening). Conglomerate was formed close to the Acadian highlands, and finer grained sediment spread westward along coasts and into the inland ocean to form sandstone, siltstone and shale. At times, when the amount of sediment being deposited from the highlands

decreased, limestone and dolostone formed as well. One of the differences between the Ordovician and Devonian are widespread black shales. These were deposited as marine mud rich in organic material in deeper waters of the inland seas.

During the Mississippian period, the Inland Basins region was still covered by the inland sea, with sediment being shed into the ocean from the Acadian highlands in the east. The deeper black shale seas were infilled with gray mud, silt, and sand. Gradually through the Mississippian, the amount of sediment coming into the basin declined and carbonate deposits came to be widespread once again. Chert is common in Mississippian carbonates as well as Ordovician and Devonian carbonates because silica (of which chert is made) was abundant. Shells of siliceous sponges, abundant quartz sand and silt, and other sources provided silica. In western Kentucky at the southern end of the Illinois Basin, evaporites were deposited where the water was shallow and circulation restricted. Mississippian rocks dominate the Interior Lowlands section of the Inland Basins region, and are also found in smaller outcrops of the Appalachian Plateau, and Valley and Ridge (Figure 2.30). Toward the end of the Mississippian period sea level fluctuated. Deltas and coastlines advanced and retreated repeatedly, so that at times large parts of the Inland Basins region were coastal environments and land, and at other times were under shallow seas.

Appalachian Mountains were formed. The collisions created a depression called the Black Warrior Basin, into which sediment was deposited from both the uplifting Appalachian and Ouachita Mountains. Fluctuating sea levels of the inland ocean created alternating sequences of marine and non-marine sedimentary rocks, and broad marshy areas along the shorelines of the Appalachian, Illinois and Black Warrior Basins. The Southeast was still located along the equator at this time, and a warm, tropical climate permitted the development of extensive lush vegetation. Large swamps covered the shoreline areas of the inland sea. Plant material in the swamps died and accumulated as thick deposits of peat. The peat was buried by sediment and was compressed. Over time and continued burial, the peat was transformed to layers of coal. Thus, the Pennsylvanian rocks of the Inland Basin region, found in a wide band through the Appalachian Plateaus and in western Kentucky, are repeating sequences of sedimentary rocks that include thick bands of coal (Figure 2.30). The Southeast's coal layers, formed over 300 million years ago, have been an economically vital natural resource of the region.

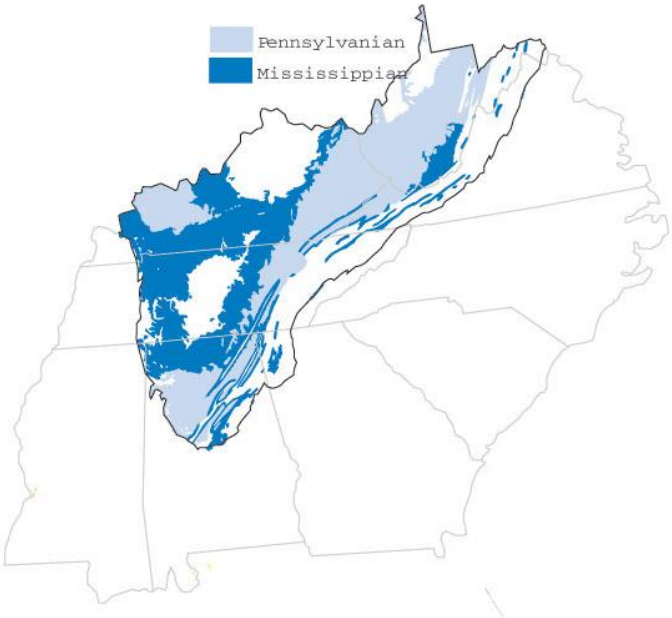


Figure 2.30: Mississippian and Pennsylvanian rocks of the Inland Basins region.

Mississippian - Permian Rocks

In the Mississippian and Pennsylvanian period, Gondwana (Africa, South America, and Australia) and North America were converging into the supercontinent Pangea. The South American crust was shoved over the North American crust when Pangea came together. The Ouachita Mountains of Arkansas and Texas are the structural results of this collision. The Ouachita Mountains also cut across modern day Mississippi at the collision zone, but they are deeply buried. Rather, a deep subduction trench formed where the plates converged and the ocean bottom sediments were squeezed up onto the Gulf Coast margin to form the Ouachita Mountains of Arkansas. As the Iapetus Ocean closed on the adjacent margin where Africa collided with North America, the

By the Permian, the assembly of Pangea was complete. Exposed at the surface in West Virginia are Permian-age sedimentary rocks (Figure 2.31). North America was sutured to Pangea by the collision of Africa with the east coast of North America. The unification of Pangea signaled the closing of the Iapetus Ocean as well as the last time the inland sea invaded eastern North America. This also signaled a major change in the appearance of the Southeast. The area that is now Florida was part of the African continent that became stuck to North America during the construction of Pangea. Later, during the Mesozoic Era, the African continent split away from the Americas and Florida was left behind. Though sea level fluctuated for a time, the inland ocean gradually retreated. With the closing of the Iapetus, the climate in the Southeast became significantly drier as the Southeast was near the center of Pangea. The lush coal swamps of the Pennsylvanian period gradually were replaced by redbeds and lacustrine carbonates, which are typical deposits of drier climates.

Figure 2.31: Permian rocks of the Inland Basins region.

Source: http://geology.teacherfriendlyguide.org/index.php/rocks-se/region-2-inland-basins

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

Club Meeting – January 2015

Photos by Pat & Bruce

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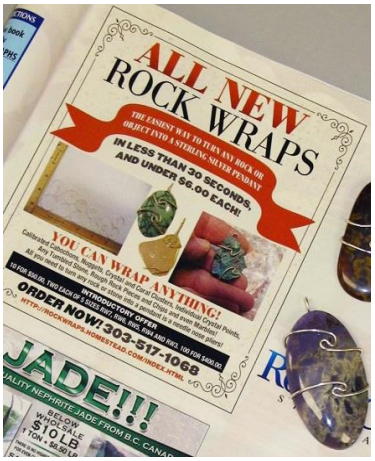

The two pictures below were taken by Pat LeDuc while attending the SFMS meeting in Panama City.

Kid's Corner

A Pile of Minerals

This image shows some of the most common minerals you'll find in rocks. This pile contains plagioclase feldspar, potassium feldspar, quartz, muscovite mica, biotite mica, amphibole, olivine, and calcite. Can you identify any of them?

Quartz

Quartz is one of the most common minerals in the Earth's crust. It is made up of silicon dioxide (SiO_2), otherwise known as silica. White sand is primarily made from quartz.

Plagioclase feldspar

Plagioclase is a member of the feldspar mineral family. Plagioclase feldspars are yet another silicate that contains considerable sodium or calcium. Feldspar crystals are stubby prisms, generally white to gray and a glassy luster. This variety of plagioclase, called albite, is rich in sodium.

Potassium feldspar

Potassium feldspar is another member of the feldspar mineral family. Like plagioclase feldspar, potassium feldspars are silicate minerals that contain a considerable amount of -you guessed it- potassium. Feldspar crystals are stubby prisms, often pink to white. Some potassium feldspars, such as the one shown to the left have a streaky appearance (see closeup) called perthitic texture.

Mica

Micas are another group of silicate minerals composed of varying amounts of potassium, magnesium, iron as well as aluminum, silicon and water.

Biotite

All micas form flat, book-like crystals that peal apart into individual sheets on cleavage planes. Crystals cleave into smooth flakes. Biotite is dark, black or brown mica; muscovite, shown here, is light-colored or clear mica. Mica is so soft that you can scratch it with a fingernail.

Amphibole

The amphiboles are a family of silicate minerals that form prism or needle-like crystals. Amphibole minerals generally contain iron, magnesium, calcium and aluminum in varying amounts along with silicon, oxygen, and water. Hornblende, shown in this image, is a common dark green to black variety of amphibole; it is a component in many igneous and metamorphic rocks.

Olivine

Olivine is another silicate mineral containing iron and magnesium. It is a green, glassy mineral that forms at high temperature. It is common in basalt and in ultramafic rocks. Gem-quality olivine is called peridote. A rock made up entirely of olivine is called dunite.

Calcite

Calcite is made of calcium carbonate ($CaCO_3$). Generally white to clear, it is easily scratched with knife. Most seashells are made of calcite or related minerals. This is the 'lime' of limestone.

Source: http://geomaps.wr.usgs.gov/parks/rxmin/mineral.html

Who What Where When Why How

February Birthdays

FEB 15 Steven Ward
FEB 20 Gary Meredith
FEB 23 Roxanne Pollan
FEB 23 Chris Wisham
FEB 24 John Webber
FEB 26 Samantha Merino
FEB 27 Pat Whittaker
FEB 28 April Rockwell
FEB 28 Bill Tharpe

Random Rock Facts

Amethyst, the gemstone believed by ancient Greeks and Romans to ward off the intoxicating powers of Bacchus, also is said to keep the wearer clear-headed and quick-witted. Throughout history, the gemstone has been associated with many myths, legends, religions, and numerous cultures. English regalia were even decorated with amethysts during the Middle Ages to symbolize royalty. It has been associated with many myths, legends, religions, and numerous cultures. Amethyst is purple quartz, a beautiful blend of violet and red that can found in every corner of the earth. Historically, the finest amethyst were found in Russia and were featured in much royal European jewelry. Today, while Brazil is the primary source of this gemstone, fine material can be found elsewhere, especially in Zambia.

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

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
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Membership Chair – Diane Rodenhizer
334-447-3610

Show Chair – Jeff DeRoche
334-673-3554

Field Trips Chair – Bruce Fizzell
334-577-4353

Hospitality Chair – Vacant

Club Hostess – Laural Meints
334-723-8019

Club Liaison – Garry Shirah
334-671-4192

Refreshments

FEB 22 – Potluck Refreshments

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

www.wiregrassrockhounds.com

DOTHAN GEM & MINERAL CLUB, INC.

Where you might hear…

The Southern Appalachian Mountains include the Blue Ridge province and parts of four other physiographic provinces. The Blue Ridge physiographic province is a high, mountainous area bounded by several named mountain ranges (including the Unaka Mountains and the Great Smoky Mountains) to the northwest, and the Blue Ridge Mountains to the southeast. Metamorphic rocks of the mountains include (1) fragments of a billion-year-old supercontinent, (2) thick sequences of sedimentary rock that were deposited in subsiding (sinking) basins on the continent, (3) sedimentary and volcanic rocks that were deposited on the sea floor, and (4) fragments of oceanic crust.

Source: http://pubs.usgs.gov/sim/2830/

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