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

Rockhounds Herald

920 Yorktown Road, Dothan, AL 36301-4372

www.wiregrassrockhounds.com

September 2013

Words from…

The President

Well, summer break has come and gone, again. As we resume our regular schedule, I'd like to invite everyone to join us for our first meeting of the fall season, especially the folks who expressed an interest in the rock club during our Spring Show last April and signed up to receive a complimentary copy of our newsletter in the mail.

As you peruse this month's edition, you'll find our usual features and rock-related trivia, along with a section specifically geared toward the kids in the club. You'll also find the first, of a three-part series on Alabama Physiographic Provinces written by clubmember, Elliott Whitton. Just so you know, to keep printing costs low we mail a black and white version of the newsletter, but if you'd like to see the pictures and features in full color, you can always download a copy from our website by going to: www.wiregrassrockhounds.com.

For the Newcomers – Our monthly meetings typically last under two hours and include a little business, a little socializing and some light refreshments. We may or may not have an educational program—depending upon how much business there is to discuss—but we always have "Show and Tell", where members can display specimens from their personal collections. We'll be meeting at 2:00 PM on Sunday, September 22 in the United Methodist Church Tabernacle Fellowship Hall (4329 S. Brannon Stand Road, Dothan, AL). Bring your family and friends and come see what we're all about. Members, I hope to see you there, as well.

Jeff DeRoche

Upcoming Digs

October 4 – 6 Graves Mountain "Rock Swap and Dig" in Lincolnton, GA

Everyone is invited. No need to sign-up. Hot food cooked on the grill, cold drinks and chips will be available for purchase on the mountain during all three days of this event. If you want to set up a table, call Clarence Norman Jr. (Junior) - 706-359-1544 (his business) or 706-401-3173 (his cell). For more information, go to: www.gamineral.org/ft/commercial/ftgravesmain.html.

Upcoming Shows

October 4 – 6	**Gaston Gem, Mineral & Faceters Club**	**Dallas, NC**
October 5 – 6	**Rockhounds of Central Kentucky (ROCK)**	**Lexington, KY**
October 11 – 13	**New Orleans Gem & Mineral Show**	**Metairie, LA**
October 11 – 13	**Huntsville Gem and Mineral Society**	**Huntsville, AL**
October 19 – 20	**Tampa Bay Mineral & Science Club**	**Plant City, FL**

Source: www.amfed.org/sfms/club-shows-10-11-12.html

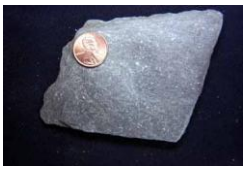
Special Guest Feature

Barrovian Metamorphic Rock Changes

The best known and most commonly seen metamorphic rocks are those produced by Barrovian (also called regional) metamorphism.

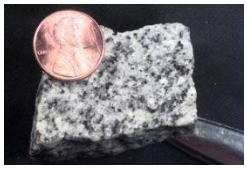
Beginning with a shale parent, Barrovian metamorphism produces a sequence of metamorphic rocks that goes through slate, and then through phyllite, schist, and gneiss. It can be hard to imagine at first that all these very different looking rocks can come from the same sedimentary parent, but we know that they do. This demonstrates the hidden truths that lie within the earth, and to the profound changes that earth processes can effect.

shale >>> *slate* >>> *phyllite* >>> *schist* >>> *gneiss*

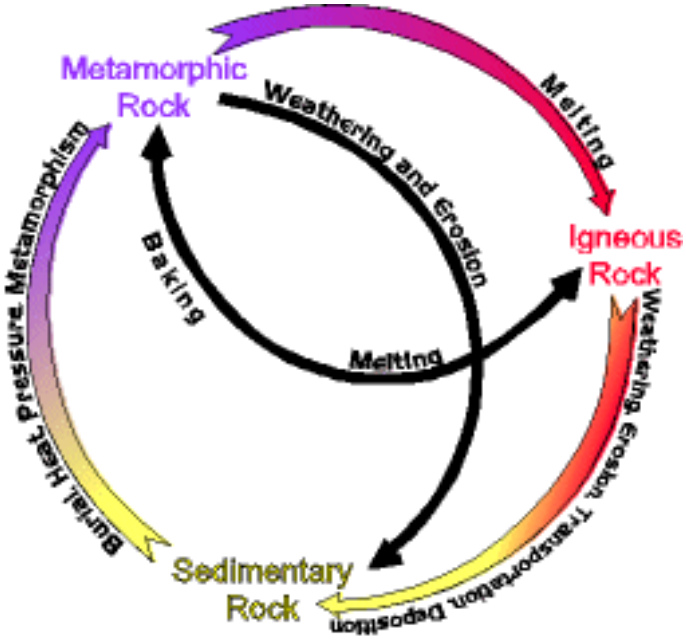


But even with gneiss the process is not done, because if the temperature rises even higher the gneiss begins to melt. Such a partially melted rock is a ***migmatite***.



Finally the rock melts completely and we have entered the igneous realm with a magma. When the magma solidifies we now have an igneous rock, in this image, a *plagiogranite*.

In this transformation from a sedimentary Rock (shale) through the various metamorphic rocks, and finally ending with an igneous rock we see one of the fundamental pathways through the rock cycle. It is transformations of this kind that have resulted in all the great diversity of rocks we find on the earth.



Lynn S. Fichter © 2000
(fichtels@jmu.edu)
Department of Geology and Environmental Science
James Madison University, Harrisonburg, Virginia 22807

Source: *http://csmres.jmu.edu/geollab/fichter/MetaRx/Barmetachanges.html*

Alabama Physiographic Provinces – Part 1

Physical Geography: The Geological Basis for Alabama's Landscape Regions

Geographers and Geologists divide the land into different regions based on key physical characteristics such as topography, the drainage patterns of streams, dominant vegetation types, soils, and other features of the natural environment. In a sense it is geology, or the region's predominant rock types, their physical properties, and their surface distribution that is responsible for many, if not all, of these regional landscape distinctions.

Alabama can be subdivided into at least six physiographic provinces-geographical regions with a distinctive set of physical features. Geographers apply several systems to define landscape regions, some simple and others more complex. We will use a simple, geology-based system that takes into account the type and age of local rocks, in addition to the general surface features of the land. Using this system Alabama can be subdivided into seven physiographic provinces, each of which can be further subdivided into sub regions. The dominant vegetation of any area is closely tied to the physical characteristics of the environment such as soil types and climate. A region's soils result from the types of rocks that underlie the area, which along with local climate affects how the area's rocks weather into soils.

Geology not only controls an area's landscape and topography, but in doing so determines the route that rivers and streams follow as they make their way to the sea. Stream drainage systems develop over time based on the differences in durability, or resistance to erosion of surface rocks. The surface distribution of hard and soft rocks across Alabama has controlled how the state's watersheds have evolved through time. Stream position, size, and gradient, or slope, are all determined by how the land has been shaped by erosion.

Several of Alabama's rivers are guided through valleys carved into softer, more soluble rocks such as limestone and dolostone. At some point the Tennessee, Coosa, and Cahaba Rivers all follow routes where limestone-type rocks have eroded away over time.

Perhaps the most important of all geological as well as geographical boundaries in Alabama is the Fall Line. The Fall Line represents the approximate point where streams leave the upland valleys bounded by older, more resistant rocks in the northern part of the state to begin a more gentle, winding path across a broader and more level flood plain. With less energy of flow below the Fall Line rivers begin to drop some of their load of sediment carried down from the eroding uplands. This loss of sediment

due to gravity over time has created the fertile river “bottomlands” that have been so important to Alabama’s agricultural economy since the earliest days of settlement.

The Fall Line has a special geological significance in that it marks the approximate point where ancient continental rocks are overlapped by much younger sedimentary strata deposited along the northern edge of the Gulf of Mexico during more recent times. The age difference between rocks on either side of the Fall Line is enormous—well over two hundred million years!

The Piedmont Province

Each part of Alabama has been shaped by the geology beneath it. The area of the state with the oldest surface rocks is a region known as the Piedmont, a term which in French means “foot of the mountains.” Many of the rocks in this east-central part of the state are crystalline rocks—igneous and metamorphic types that contain larger crystals that form at great depths and under higher temperatures. The rocks beneath this region have been so highly altered that they are much more difficult to use as a source of information on geologic history. However, the Piedmont’s rocks do contain a wealth of clues related to one extremely significant event in the state’s geologic history—the building of the great Appalachian mountain chain.

The Piedmont’s rocks contain information on not one, but several ancient mountain-building events that took place in this part of Alabama through time. Some minerals in Piedmont rocks can be radiometrically dated to the time when they were altered or recrystalllized, thereby providing a time frame for the mountain-building events that have shaped the eastern margin of North America. Geologists studying Alabama’s Piedmont rocks have uncovered many unexpected facts about how the southern section of the continent has evolved and changed over the last billion years.

The Piedmont is home to the highest mountains in the state, with Cheaha Mountain at 2,407 feet the State’s highest point. However, the properties of certain minerals found in Piedmont rocks suggest that these mountains were far more spectacular in the distant past than they are today. Some geologists believe that this southern stretch of the Appalachians might have rivaled the Himalayas of southern Asia in size when they were at their peak. Alabama’s Piedmont today displays only the bare roots of this once-great Appalachian mountain range uplifted by geologic forces long before the first dinosaurs walked the Earth.

Many of the Piedmont’s metamorphic rocks were formed from sedimentary rocks that were squeezed and “cooked” during the Appalachian mountain-building episodes. Geologists use the term metasedimentary rocks to distinguish these types from altered igneous ad metamorphic rocks with which they might be confused. Slate, one of the most common metasedimentary rocks of the Piedmont, is formed through metamorphism of shale-type rocks. If slate becomes even more highly altered it may

become phyllite or mica schist. Sandstone may become metamorphosed into a dense, very durable rock known as quartzite, and conglomerate may be altered into a rock known as metaconglomerate. Limestone and dolostone are transformed through metamorphism into marble. Marble from Alabama's Piedmont has been used as decorative stone throughout the United States, including in the nation's capitol. Because of its natural beauty and economic value marble has been designated as the official "state rock" of Alabama by the State Legislature.

There have been surprising discoveries made from the study of Piedmont rocks over the last few years about how the land of Alabama developed to reach its present form. Perhaps the strangest of these discoveries is that this part of the state is composed of several distinctly different pieces of the Earth's crust. These fragments, known as terranes, were shoved here from many miles away by immense geological forces long ago. Several of these terranes did not even begin as part of North America. Most of the rest of Alabama has been "built" through the vertical deposition of new sedimentary layers, but here the land was formed largely by lateral accretion, the addition of pre-existing fragments of crust onto the edge of the continent.

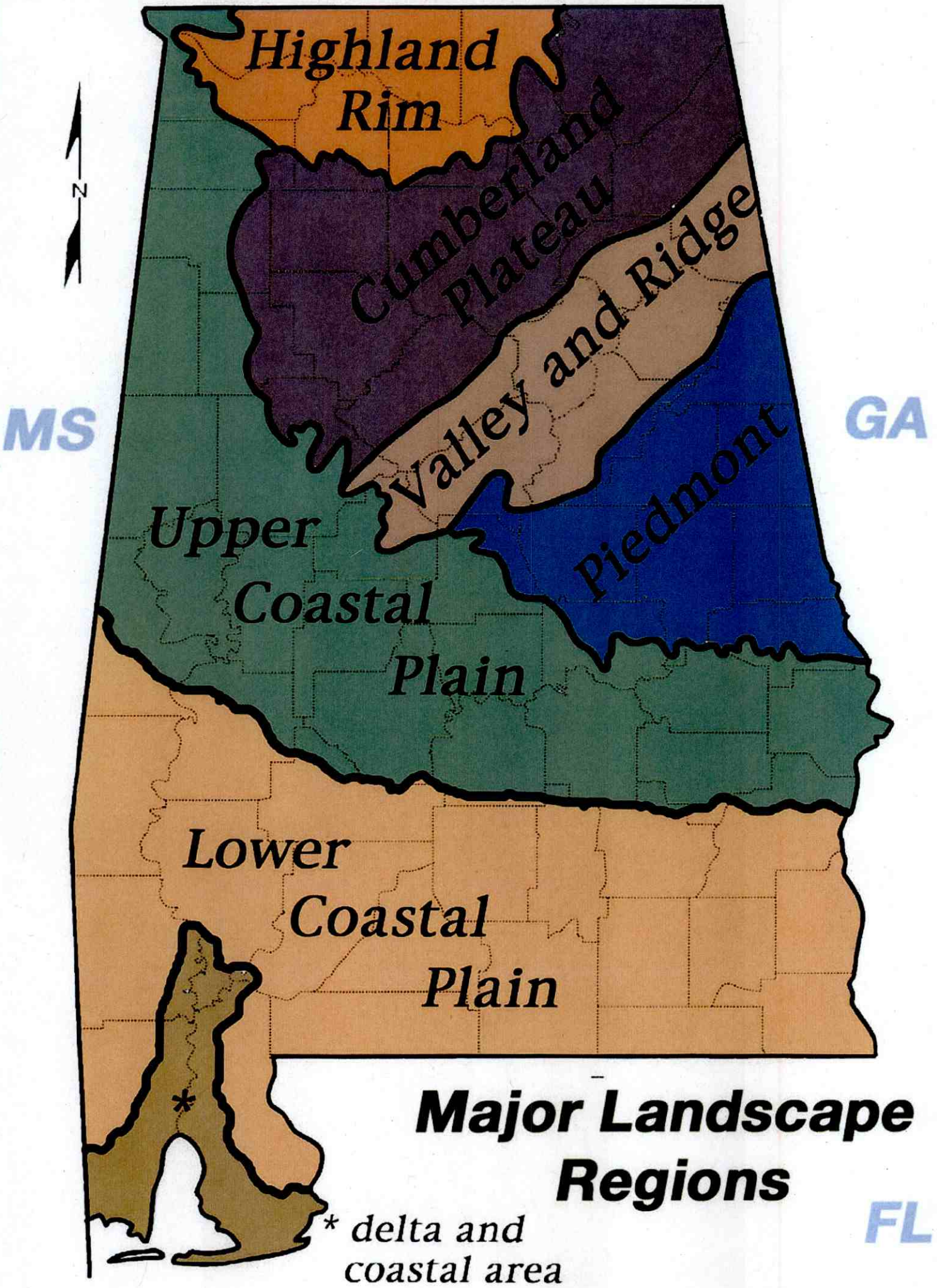
These huge bodies of out-of-place rock were first identified through the use of a special geological technique known as seismic profiling. Sound waves sent into the crust shows that the land is composed of a series of dissimilar crustal fragments wedged onto and over North American rocks. The boundaries between these terranes extends many miles beneath the surface. Because of deep surface weathering taking place over many millions of years, when traveling across the Piedmont the only visible sign of passing from one of these terranes onto another one might be to notice a slight difference in the color of the exposed soil seen in plowed fields and highway cuts.

During Alabama's early period of industrial development the Piedmont was the center of the state's booming textile industry. Where streams crossed outcrops of the region's resistant rocks the energy of the falling water provided the power to drive factory looms and spindles. Thriving mill towns developed at these locations, and many of these manufacturing communities prospered well into the middle part of the 20th century, when overseas competition with lower labor costs drove most of the textile factories out of business. Today the ghostly remains of abandoned textile mills can still be seen at Fall Line towns such as Tallassee and Phenix City.

(Note: See following page for pictorial representation of Alabama's Major Landscape Regions.)

Source: Reprinted with permission from educator and club member, Elliott A. Whitton, who researched and prepared (July 2013) this condensed version of material presented in Jim Lacefield's publication, Lost Worlds in Alabama Rocks.

Editor's Note: This article has been divided into three parts due to limited newsletter space. This is Part 1. Parts 2 and 3 will be printed in the October 2013 and November 2013 newsletters, respectively.

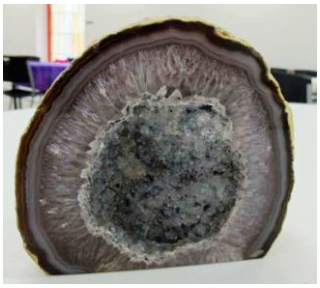


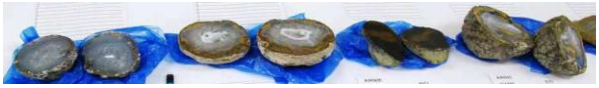
Major Landscape Regions

Summer Social – August 2013

Photos by Pat

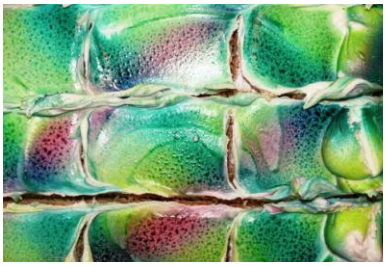
Wonderful turnout for the final Summer Social!!! And the selection of auction items was even more diverse than those at previous events.





Summer Social – August 2013

Photos by Pat



The desserts were as colorful as the geodes and the jewelry.

Landmark Park – August 2013

Photos by JoAn

The Lamberts have been busy again. Together with clubmember, Anne Trice, Arnie and JoAn traveled to Landmark Park to display and talk about part of their vast rock and mineral collection for an inquisitive and eager group of children and adults.

Then it was on to Providence Christian School…

Providence Christian School – September 2013 *Photos by JoAn*

Arnie and JoAn did an hour-long program for 57 students and 3 teachers. Arnie said, "Everything went great. The children were well-mannered and asked some great questions. We got lucky and had the right answers."

Kid's Corner

ZEOLITE WORD SEARCH

Some mineral collectors specialize in collecting zeolites and the minerals associated with them. Search the word search puzzle for the names of zeolite minerals that specimen collectors like to add to their collections.

Zeolites (typically collected by specimen collectors):

Analcime
Chabazite
Heulandite
Harmotome
Mesolite
Natrolite
Phillipsite
Scolecite
Stilbite
Stellerite
Thomsonite

Minerals associated with zeolites (but which are not zeolite minerals):

Apophyllite
Gyrolite
Okenite
Prehnite

E	T	I	L	O	S	E	M	W	E	S	L	E	Y	S
T	H	O	M	S	O	N	I	T	E	F	E	G	P	C
L	I	P	M	I	K	E	E	H	O	L	L	Y	D	O
H	A	R	M	O	T	O	M	E	D	P	P	R	I	L
E	L	E	G	R	I	P	I	A	S	D	H	O	A	E
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L	O	N	T	A	S	H	L	N	T	I	L	I	S	I
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D	O	E	E	S	R	T	A	B	A	L	P	D	A	D
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T	X	R	L	O	K	E	N	I	T	E	I	G	O	D
E	V	I	E	I	H	S	T	I	E	S	T	T	H	S
D	T	O	T	B	E	E	P	O	O	L	E	W	E	R
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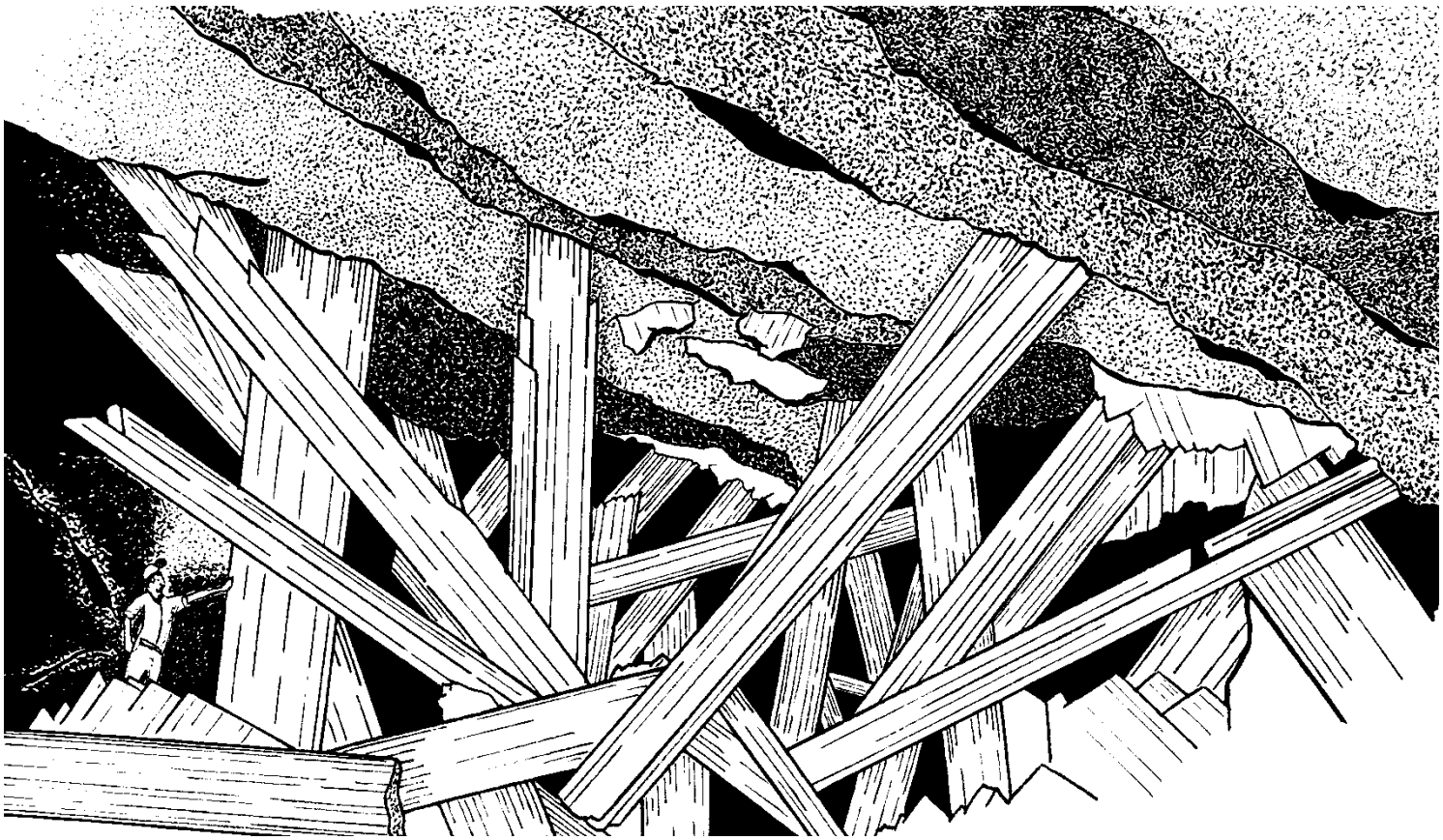
Source: Mini Miners Monthly, Volume 3 Number 5, May 2009

The Biggest Crystals Ever Found



You are probably used to seeing crystals that are about as tiny as a fingernail up to specimens that are about as big as your head. However, some minerals, when allowed to grow in very special conditions, can be bigger than a car!

Above are gypsum crystals that were discovered in 2000, deep underground at Naica, Chihuahua, Mexico. Some of the crystals are up to 40 feet long and are estimated to weigh up to 55 tons . . . each! These crystals are easily the largest gypsum crystals found anywhere in the world. They may very well be the largest crystals of any mineral ever found!

Source: Mini Miners Monthly, Volume 7 Number 4, April 2013

Who What Where When Why How

September Birthdays

SEP 9 – Margie Cody

SEP 16 – Allen Rockwell

SEP 21 – L. J. Ward

Random Rock Facts

Specific gravity (SG) differs widely among gemstones and is one of the most important physical characteristics for identifying gems. SG is the ratio of the weight of one unit volume of the gem to the weight of the same unit of water.

For example, to say sapphire (corundum) has SG = 4.0, means that a cubic inch of sapphire weighs four times as much as a cubic inch of water. In natural gems, SG values range from just over 1 (1.08 for amber) to just short of 7 (6.95 for cassiterite).

Sapphire is the modern birthstone for September and is a member of the trigonal crystal system.

Source: http://www.bwsmigel.info/Lesson3/DEPhysical.Properties.html

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

Website: www.wiregrassrockhounds.com

Officers

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Vice President – Anne Trice
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Secretary – Pat LeDuc
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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

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

Refreshments

SEP 22 – Diane Rodenhizer

OCT 27 – Ginger & Carlos Merino

NOV 24 – Pat LeDuc & Joan Blackwell

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

www.wiregrassrockhounds.com

Where you might hear…

Three common ways for measuring specific gravity (SG) differ in precision as well as suitability for different gems.

Hefting: The crudest technique is simple hefting, i.e, gently tossing and catching a gem. It can often discriminate plastic and some glass imitations from the much denser gems they mimic.

Heavy Liquids: Based on the principle of buoyancy, this technique uses a set of "heavy" liquids with known SGs. A gem will sink in a fluid of lesser SG, remain suspended in one of equal SG, and float in one of higher SG.

Hydrostatic Weighing: The most precise technique uses a specially modified weighing balance that allows a gem sample to be weighed in air (W_a), and also weighed in water (W_w). To calculate:

$$SG = \frac{W_a}{W_a - W_w}$$

Source: http://www.bwsmigel.info/Lesson3/DEPhysical.Properties.html

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