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

Rockhounds Herald

920 Yorktown Road, Dothan, AL 36301-4372

www.wiregrassrockhounds.com

May 2013

Happy Memorial Day

Words from...

The President

Thanks to everyone who played a part in making the show a spectacular success, especially the folks who kept things running smoothly on Saturday when the crowd was H-U-G-E!!! Though we lost some foot traffic on Sunday due to the rain, I think, overall, the vendors were pleased with how well they did for the weekend. And, there were a lot of extra smiles this year from all the kids who scooped rocks out of the sandbox and participated in the other kid-friendly activities we added.

I know some folks will be out of town for the Memorial Day holiday, but we'll have a full recap of the show—complete with facts and figures—during the upcoming meeting at 2:00 PM on Sunday, May 26, so please plan to be there if you can. We'll discuss what worked and what didn't, and what we need to consider doing next year. One thing that comes to mind is to "make more grab bags". I think we were all surprised that the whole lot of them were gone before lunch on Saturday.

Also, with all thoughts focused on show prep for the past few months, we've neglected to mention the results of membership renewals since the first of the year. We currently have a total of 73 members including 8 new members. Thanks to all who renewed their annual memberships and welcome to Christian Holderith, Roxanne & Gene Pollan, Elizabeth & William Ramos, Jason Saad, and Carrie & Jason Solowes.

See you Sunday. Jeff

Announcements

June Social – Due to a health problem, Meredith Capshaw has reluctantly withdrawn the offer to host our first summer social at her pond in Geneva next month. We'll regroup and discuss other options at the May meeting. Please remember Meredith in your thoughts and prayers

Classes & Field Trips – Not yet scheduled for May-June.

Upcoming Shows

June 1 – 2	**Alabama Mineral and Lapidary Club**	**McCalla, AL**
June 1 – 2	**Ben E. Clement Mineral Museum**	**Marion, KY**
June 7 – 8	**Tellus Science Museum Rockfest**	**Cartersville, GA**
June 15	**Greensboro Gem & Mineral Club**	**Pleasant Garden, NC**

Source: www.amfed.org/sfms/ and www.the-vug.com/vug/vugshows.html

Recap of 2013 Gem & Mineral Show – by Secretary

If you missed the show this year, you missed a great time. We had some new dealers and some returning favorites. As usual, Arnie had things well in hand. The setup was great for the flow of people around the displays and tables. It would be difficult to say which activity was the best attended. Every time I popped by to get pictures of the knapping, cabochon making, silent auction or the kids' activities, all were busy. I, personally, was worn out just watching William, Thomas, Michael and Samantha Merino running the Kid's Corner and ferrying ticket jars around for the drawings. With over 500 people attending the show just on Saturday, they were kept pretty busy and did a great job.

The grab bags that Ginger, Carlos and the rest of the Merino clan made were gone before lunch on the first day. I guess we will have to do a bunch more for next year's show. Who knew that they would be such a big hit? (Note: Ginger, if you will supervise, we will get a group of folks together to help assemble them.☺) Speaking of big hits, all the newsletters were gone in a flash, despite scattering them all over the various tables. We had to resort to handing out cards with the web address so people could go download copies.

I zipped around to chat with all our vendors during the show. They seemed pretty pleased by the foot traffic we had, especially on Saturday. Most were actually hoping for a break by lunch. Gabbing with the vendors also gave me the perfect excuse to examine all the beautiful, shiny things. I bought a few nice pieces and I am pretty sure most of the other club members did the same. While the rain cut down on some traffic Sunday, there was still a steady stream of people in and out. We came up with a few ideas for next year's show—such as nice wall signs for the Kid's Corner, and the Flint Knapping and Cabochon Demonstrations—but all in all, I would have to say we had a pretty terrific show.

Hope to see everyone at the May meeting, and don't forget to bring your newly acquired treasures for Show & Tell.

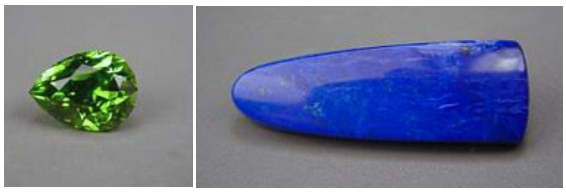
Pat

Cutting Style

Faceted and cabochon cut are the two most common ways in which gems are fashioned.

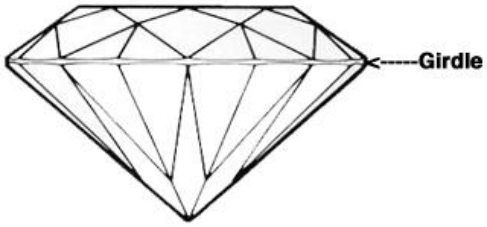
<u>Faceted stones</u> are usually cut from transparent rough of relatively high clarity. They are fashioned with a top (crown) and a bottom (pavilion) that have intersecting flat planes called facets, on their surfaces. These facets have shapes that are generally triangular, kite shaped or rectangular.

<u>Cabochon</u> cutting is most often used for translucent and opaque gems and such pieces generally have a flat bottom and a smoothly curved top called a dome.

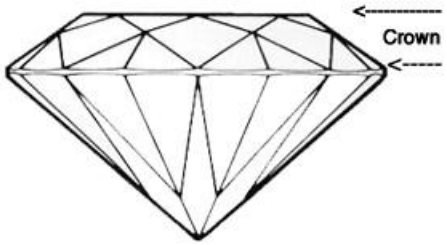


[Faceted peridot, cabochon cut lapis lazuli]

<u>The parts of a faceted gem</u>

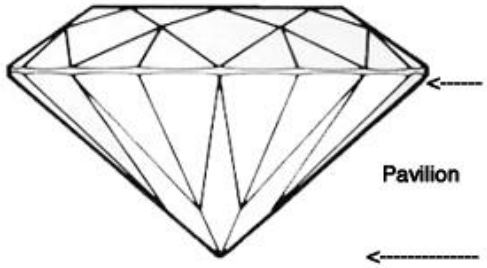


Girdle: The girdle is the divider between the top and bottom of the gem. It defines the face-up outline, and the maximum dimensions of a faceted gem. In well proportioned stones, it usually comprises about 2% of the total depth of the gem.

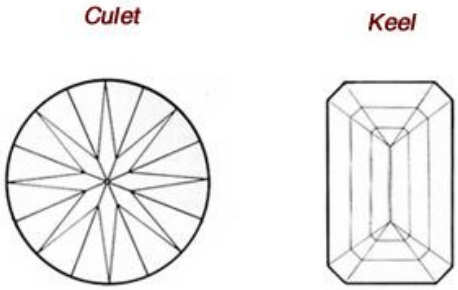


Crown: The top, the part of the gem above the girdle is known as its crown. In a well proportioned stone it makes up 1/4 to 1/3 of the total depth of the gem.

Table: The largest, usually central, facet on the crown of a faceted gem is the table. Generally, it makes up between 40 - 70% of the crown diameter.

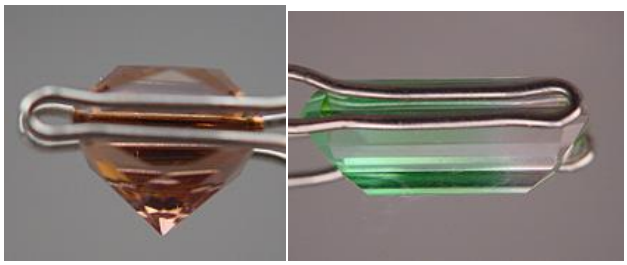


Pavilion: The pavilion is the bottom, the part of the gem below the girdle. In a well proportioned gem, it usually accounts for 2/3 to 3/4 of the total depth of the gem.



[Pavilion view diagrams of round and emerald cut faceted gems]

Culet/Keel: The tip or line at the bottom of the pavilion on a faceted stone where the pavilion facets meet.



[Culet on a square cut stone, keel on an emerald cut stone]

Background Information on Faceting

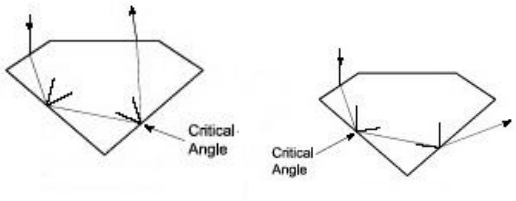
<u>Pavilion and Crown:</u> In the faceted gem, the pavilion and crown have different *functions*. The crown acts as a window or lens to collect the light which strikes it, and direct or focus it into the pavilion of the gem, whereas the pavilion must act

as a mirror to reflect that light around the pavilion, and then *back to our eyes* through the crown. If the pavilion fails to do so, the gem lacks brilliance and is lifeless. Crown angles are much less crucial to the optical performance of a gem than are those of the pavilion, and can vary substantially from stone to stone without severely affecting a gem's brilliance. The crown and pavilion are cut in two separate sequences of operations. The gem is initially adhered to the "dop stick" until one side is finished, then removed, turned exactly 180 degrees, and attached to a new dop, to go through corresponding operations for the other side.

The Critical Angle: Each gem species, depending (with an inverse relationship) on its refractive index, has a pavilion faceting angle below which it loses brilliance.

Think for a moment of skipping flat stones on water. What controls whether the stone will skim and bounce along the surface, or go kerplunk into the depths?.....The angle at which it hits the water! So it is with light that enters a gem and strikes the pavilion facets. When that beam hits outside the critical angle it will be reflected to another facet and/or to the crown, but if it hits inside the critical angle it will not reflect, but pass right out through the side or bottom of the gem, not to return to our eye-->the gem loses brilliance.

In the graphics below we see two gems cut to the same proportions (pavilion main angles at 38 degrees) one is a diamond (RI = 2.42), the other is a fluorite (RI = 1.43). The critical angle for diamond is about 24 degrees, that of fluorite is 44 degrees. At 38 degrees on the pavilion facets much of the light hitting the fluorite is lost, whereas almost all that which hits the diamond is reflected. The diamond would appear bright and the fluorite lifeless, especially in the center: we would say it has a "window". If, instead, we were to cut the fluorite to a pavilion angle of 45 degrees or above, we would then eliminate the window and it would be brilliant, and conversely we would get a lifeless diamond if we were to cut its pavilion at 20 degrees or below.



[Reflection when the pavilion angle is above the critical angle, lack of reflection "windowing"when it is not: Graphic courtesy of Joe Mirsky]

In the first picture below you can see two similar looking gems (each is light yellow and rectangular). The golden beryl gem on the left was cut with its pavilion facets above its critical angle, and it appears brilliant, the yellow

spodumene on the right was cut with the pavilion facets <u>below</u> its critical angle and has a "window". We call it a window because the light passes right through it, like window glass, so that you can easily read the printing underneath. The second set of pictures shows a top and bottom view of a badly windowed topaz. You can see how shallow (low angle) the pavilion is. In order for this gem to be fully brilliant, the necessary recutting would reduce its face up diameter and carat weight substantially.

[Non-windowed and windowed gems]

[A windowed topaz gem with a very shallow pavilion: Images courtesy of thaiambergems.com]

<u>Yield vs Brilliance, Clarity and Color</u>: Faceting is a series of compromises. The yield, that is the carat weight of the finished stone versus the carat weight of the rough, can be as high as 40 - 50% or as low as 1-2% depending on the attributes of the rough, and of decisions that are deliberately made by the facetor.

For example:
1) The shallower the pavilion angles, the greater the yield (but the less the brilliance).
2) Included rough can be oriented (with loss of yield) to eliminate or minimize the appearance of inclusions.
3) Pleochroic stones will give different colors and different yields depending on how the stone is oriented for cutting.
4) Rough that happens to be somewhat "gem shaped" yields more than thin and flat, or highly asymmetrical rough.

Given a moderately well shaped, clean piece of rough, which is cut to correct pavilion angles, the average yield is about 20%. To put it another way: start with gem rough = 5 ct, end up with finished gem = 1 ct.

Source:
Reprinted with permission from Dr. Barbara Smigel
http://www.bwsmigel.info/Lessons1and2/DEBasicTerms.html
http://www.bwsmigel.info/Lesson7/DE.Gem.Fashioning.html

Gem & Mineral Show – April 2013

Photos by Pat

Scenes from our action-packed, personality-filled, 6th annual gems, minerals, fossils, jewelry and flint-knapping extravaganza!

Gem & Mineral Show – April 2013

Photos by Pat

Kid's Corner

Geodes

A Very Cool Rock Formation

Geodes are like the Tootsie Roll Pop of the geology world because underneath the hard exterior lies a surprise center!

Hollow Rocks
So, let's start at the beginning: how do you get a hollow rock with lots of sparkling crystals inside? First you need a hollow rock. Geodes start their lives as a hollow bubble inside a layer of rock. The bubble could be from air inside explosive volcanic rock or it could come from the hollow remains of animal burrows or tree roots.

What About The Crystals?
When these rocks form from air bubbles inside of volcanic rock it is pretty easy to picture. Think about the small air bubbles you see in pumice. Now, imagine just one of those bubbles completely surrounded by black or red volcanic rock. As rain pelts down on the hot bubble, the chemicals in the rock are slowly released into the water. Some of the water soaks through the hard, rocky outside of the bubble and is trapped for a moment on the inside. As the mineral-rich water moves on through the bubble, tiny crystals are left behind, clinging to the sides of the bubble. Millions of years pass while this in and out flow of water gradually builds crystals inside the empty space. The crystal formations might become large single crystals or tightly packed micro-crystals, so small that you can't even distinguish one from another.

An Animal's Home
Let's check out the development of our animal burrow bubble… Long after the animal has moved on or the tree has died and its roots have rotted away, the sediments that surrounded the hollow are being covered up by layers and layers of sediment hundreds of feet think. Eventually the weight of these layers has caused the sediments to turn into rock: sedimentary rock. Just like our volcanic bubble, this animal burrow bubble is host to mineral-filled water flowing in and out through the hollow space. And just like the volcanic bubble, a wide variety of crystals are taking shape inside the animal's former home.

Time Marches On
Fast forward to modern times. The water-soaked land where our bubbles began has become a vast desert where wind howls and the sun beats down. The ground, covered by rocks and scrubby brush yields up unusually shaped rocks. Today, you've found a good field of them and have three nearly-round specimens to crack open when you get home.

All Geodes Are Not Created Equal
The first one is quite hollow but for a nice layer of medium-sized blue crystals. These **dugway geodes** have bands of blue and pink. The colors come from the

different minerals that flowed through the bubble so many millions of years ago. Another specimen is nearly solid all the way through. The **microcrystals** have formed wide bands of different colors and the tiny opening at the center has a thin ring of pointed crystals. Yet another is completely filled with solid rings of browns, reds and pinks. So, you've really found two geodes and one nodule. **Nodule** is the name for these round forms when they are filled solid.

They Come In Colors
As each specimen offers up a different interior, you wonder, "What causes all the colors?" So you head to the computer and you've arrived at this page, so I'll need to tell you.

Trace Elements
Remember the mineral-rich waters that flowed through the bubbles forming crystals inside? There is a variety of elements that can be present in mineral water. It would all depend on the type of rocks the water passed over and through on its way to the geode. Rocks contain iron, magnesium, sulfur or a host of other elements.

Now, think about the variation that can occur in terms of saturation amounts of the different minerals. You can imagine that the different rocks forming from all these variations could be limitless. But there is some consistency that makes it easier for us.

Quartz, Calcite, Or What?
Most geodes have interiors made of either **quartz** or **calcite**. Quartz crystals are silicates. Silicates are the most common mineral in the crust of the earth. Over 90% of the minerals present in earth's crust are silicates. With this said, you can imagine that silicates are a pretty big group with lots of variation in terms of specific chemical composition.

Calcite's main ingredient is **calcium carbonate** $CaCO_2$: dissolved calcium and carbon with some of the oxygen from the water thrown in.

Small variations Can Make A Big Difference
Now, add in a trace of iron or magnesium or copper and, voila, you have color variation. Magnesium traces in calcite forms a nice pink dolomite layer, while magnesium in silicate accounts for the purples of amethyst.

Heat Can Change It
Now if your geode was close to a lot of heat, that could change the color, too. An amethyst that gets a lot of heat loses its purple color and becomes a soft yellow or citrine. You can see why there are so many color possibilities.

A Day In The Life
So, that little geode you're holding has had quite a journey getting to your hand. Treasure it for its beauty, but also for its history and the complex composition of minerals that made it. You're holding millions of years of work in your hand…enjoy touching the miracle of our earth's creation.

Source: Reprinted with permission from Doug Mann
www.rocksandminerals4u.com/geodes.html

Who What Where When Why How

May Birthdays

MAY 4 – Joe Polakoski
MAY 6 – Cheyenne Clay
MAY 8 – Joe Cody
Laural Meints
MAY 10 – Lory Hodges
MAY 14 – Garry Shirah
MAY 21 – Jason Saad
MAY 23 – Carrie Solowes

Random Rock Facts

Within colored stones, the standards for clarity vary by species. Some types of gems occur commonly with few inclusions, while other types generally have many. Emeralds are an example of a gem that rarely, if ever, is found in clarity greater than eyeclean, while amethyst is often quite clean, even at 10x.

Emerald clarity, therefore, is graded less rigorously than amethyst. Inclusions that rate a clarity of “slightly included” for an emerald, might generate a grade of "moderately included" for an amethyst.

Emerald is a member of the hexagonal crystal system and is the modern birthstone for May.

Source: www.bwsmigel.info/Lesson5/DE.Magnification.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

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 – 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
Tsavorite7@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

Refreshments

MAY – Chris Wisham

JUN – TBD

JUL – TBD

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...

Loupe – a small device which magnifies an object to ten times its size (10x). Major types used for observing gems include: *handheld, eye socket, headpiece, eyeglass, and darkfield*.

Each has its advantages and particular best use. The *handheld* is the most versatile, and the *darkfield* type supplies specialized lighting that is important for some aspects of gem identification and grading. The *eyesocket*, *headpiece* and *eyeglass* types aid in situations where leaving the hands free is a necessity.

The two tools most often employed in gemstone magnification are the loupe and the gem microscope.

In general, the advantage of a loupe over a microscope is its portability and low cost. On the other hand, the loupe's capabilities of magnification and lighting are limited compared to most microscopes.

Source: www.bwsmigel.info/Lesson5/DE.Magnification.html

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