

# GEM & MINERAL JOURNAL

JULY 2012

VOLUME 21~ ISSUE 7

Official Monthly  
Publication of the Gem &  
Mineral Society of  
Lynchburg, VA, Inc

[WWW.LYNCHBURGROCKCLUB.ORG](http://WWW.LYNCHBURGROCKCLUB.ORG)

## Presidents Message

Hello To All,

Have you ever made plans to do something and then you received more information about your project? This is happening to the GMSL in real time. I have been brought up to speed on the timing of the Miller Center remodel project. Most of the work will start on the outside of the building, adding rooms and an elevator, and the construction on the inside will not start until Fall, October or November. Until then the employees of the Miller Center will stay in place, therefore the **GMSL monthly meetings will not be moving to the Fairview Center for several months.** I guess we will have to wait and see how this all plays out over time and will have at least a months advance notice when to move.

Speaking of moving! The Club's display cabinet

has been moved to Easter Island and most of the specimens are in place. A big thank you goes out to Dave Callahan, Dave Woolley, Thom Noble and Nona Haskins & myself for facilitating the big move. I still don't like driving around the city with a glass case perched on the back of the truck. But nothing was damaged and the case will stay at Easter Island until we move back to the Miller Center.

Have you really taken a good look at the specimens in the Clubs' display? I feel the Club is past due in adding some nice pieces to our collection. If we can have some individuals donate or the Club buy some nice Amethyst and Quartz Crystals to spruce things up a bit I would vote for that. It seems like most of our large specimens, although nice mineral specimens are a little on the colorless side and are not that attractive

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## From the First VP:

Nature can be quite unpredictable, sometimes providing much needed rain or violent storms. That horrific 80 mph wind storm we suffered recently was a forceful and dramatic reminder of who's really in charge around here. Sometimes I think that mankind gets too large for his britches so to speak. Hasn't it been said, "Pride cometh before a fall"? Well we ain't seen nothing yet! Consider the following article by Alasdair Wilkins.

"The world's biggest, oldest impact crater was hallowed out in Greenland three billion years ago. The asteroid that hit Earth 65 million years ago and wiped out the dinosaur was at least six miles across and left behind a crater over 110 miles across. But

that's nothing compared to a possibly newly discovered impact site.

It's not confirmed yet, but a potential crater site in Greenland would be the oldest, biggest impact ever observed on Earth. The original asteroid would have been about 18 miles across - that's about half the length of Rhode Island, which is pretty damn huge by asteroid standards - and the crater it initially created would have been nearly 375 miles wide and over 15 feet miles deep. While we've seen evidence of impacts on that scale elsewhere in the solar system, we've never seen anything like this on Earth.

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## June Meeting Minutes

**Meeting- Wednesday, June 20, 2012**

**Attendance-** 30 members and 7 guests.

**Host-** Thank you to Jack Curtin for hosting our June meeting. Pam Klien will be the host for our July meeting.

**On Time Drawing-** Winners were: John Haskins, Tom Davis, Caden Glass, Natalie Darling, Ann McAnney, Sherry Gaeta, Sylvia Whitmore, and Phillip Whittaker.

**Old Business-** John Haskins: John Haskins and Natalie Darling donated rocks to Camp Blue Ridge for a lapidary program. Membership applications available at the meetings, also can be downloaded from the website. We need to pack more sluce for future festivals. 60% of the sales from Uncle Billy's Day were from our sluce. We need to purchase about 400 Ziploc bags. Pam Kline, Thom and Linda Noble have some minerals to donate.

**First V.P.-** Jack Curtin: Trying to line up a program on the mines and furnaces in our area. August will be Dr. Lenhart, and tonight's program will be a DVD on "Death Valley."

**Second V.P.-** Dave Callahan: Felid Trips/Activities: The Northern VA. Club has invited us on the following

trips: 6/30-Fossil collecting in WV; 7/14- Limestone Quarry in PA. Other trips include 7/14- DMC trip to Thermal City Goldmine in NC; 7/22-7/29: Franklin, NC Gem show; 7/23-8/1- Spruce Pine NC trips and shows; 8/25 Annual Federation Picnic in Maryland.

Dave Callahan has a booth at the Roanoke Antique Mall with mineral specimens for sale.

**Treasurers Report-** Franklin Midkiff: Balance at this time is \$7,839.18, with uncle Billy's Day profits of \$1,037.00. Thanks to everyone who came out and helped.

**New Business-** John Haskins: Our display case from the parks and rec. lobby will be relocated to Easter Island. The specimens have already been packed up and we plan to move at 9:30 on Saturday, June 23. Volunteers were sought for the move.

Volunteers included Dave Woolley, Dave Callahan, Tony Shields and John Haskins. Easter Island will also have some of our lapidary items for sale.

We had mineral specimens for sale on the silent auction table, as well as Dave Callahan's specimens.

**Minutes submitted by Brenda Glass, Secretary.**

### 2012 ELECTED OFFICERS

**John Haskins - PRESIDENT**

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**Members At Large-**

Bernardino Rivera &  
Tony Shields

### COMMITTEE

#### CHAIR PERSONS:

**Field Trips-** David Callahan

**Hospitality-** Monthly Volunteers

**News Articles-** Natalie Darling

**Silent Auction-** Warren Darling

**Swap for Rocks-** Warren Darling

**Website-** Casper Voogt

**Workshops-** Dave Callahan

**FRA Adult Liaison-** Jon Glass

**Membership-** Ralph Torning



## PROGRAMS

The program for our June meeting was a video no How the Earth Was Made. We will continue this series at our July meeting.

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### **Bench Tips by Brad Smith**

More Bench Tips by Brad Smith are at:  
[groups.yahoo.com/group/Bench Tips/](http://groups.yahoo.com/group/Bench%20Tips/)  
or [facebook.com/Bench Tips](http://facebook.com/Bench%20Tips)

#### **Twisting Wire**

Twisting wire can be done with an old hand drill but goes much faster with a power tool. My preference is to use a screw gun, although a Dremel or Foredom should do well. Just make a little hook out of coat hanger wire (or use a screw-in cup hook) and chuck it up in your screw gun. Fasten the ends of the wires in a vice and slip the other ends on your hook. Keep a little tension on the wires as you twist. Note that a power drill is too fast a tool for this unless you have one with variable speed.

#### **Drilling A Stone**

One of the things my students often ask to do is drill a hole through a piece of gemstone. The usual thought is to get a diamond drill, but I've found these often break or burn up. The reason I think is that the drill pivots on the piece of diamond on the drill tip. By pivoting the diamond does not cut. When it doesn't cut, you tend to add more force, the drill gets hot, and the diamond grit falls off.

A much better approach is to use a core drill. This is a small hollow tube with a coating of diamond grit at

the business end. The diamonds easily carve out a circular arc without undue pressure or heat buildup.

Core drills are readily available from lapidary and jewelry supply companies. They come in sizes as small as 1mm and are very reasonable in price, for instance about \$6 for 2mm diameter.

Chuck up the core drill in a drill press, Dremel or Foredom and be sure to keep the drilling zone wet to cool the tool and to flush out debris. Also, if you're drilling a through hole, go very easy on the pressure as the drill is about to cut through. Otherwise you will usually chip off some of the stone surface around the hole.

If you're into lapidary, you can have some fun making rings out of jasper or jade. Try Harbor Freight for larger sized core drills. Look for one a little smaller than the size of the finger hole you need and a larger one to cut the outer diameter. Cut the finger hole first through your slab of material. Then use the larger core drill to cut the rough outer shape of the ring. Finish the way you'd do a cab.

**Contact Information for Field Trips**

David Callahan,

Field Trip Chairman

Home phone: 540-297-1853

Cell Phone- 540-874-5201

E-mail [dbcall1@aol.com](mailto:dbcall1@aol.com)


# FIELD TRIP REPORT...

## UP COMING FIELD TRIPS

**General field trip note:***I am trying to set up a local field trip but so far, no success. I will keep trying.***July Field Trip**

DMC Program of the SFMS Field Trip Committee

An Official Field Trip of The Southern Appalachian Mineral Society - Asheville, NC (HOST)

An Official Field Trip of the RVMGS and the GMSL

**(This is a go-on-your-own trip but please let me know if you will be attending)****Open 8:30 AM until 5:00 PM****Saturday, July 14, 2012****Thermal City Gold Mine****Union Mills, North Carolina****FEE AREA**

The Southern Appalachian Mineral Society would like to extend an invitation to fellow DMC clubs to join us in panning for gold at a genuine placer mining site in Rutherford County, NC. Thermal City Gold Mine consists of a one mile section of the Second Broad River and about 80 acres of Placer Gravel Deposits, having one of the seven veins from the mountain supplying it. Panning material is brought from the river by backhoe for you to pan. The gravel is not enhanced or enriched. The gold found here is in it's natural state- right where nature deposited it. Gold is found as flakes and maybe small nuggets. Ample shade, parking, and instruction in panning are always available when needed.

**FEE AREA:** Fee \$10 to pan all day. Gem buckets also available for sluicing for adults and kids as low as \$5 per bucket.

Higher prices for high banking or dredging, need reservation for the trammel / Hi-Banker.

**Children :** Welcome with Adult Supervision; **Pets:** allowed on leash

**COLLECTING:** Gold

**BRING:** Shovels and pans are furnished or you can bring your own. Other equipment is for rent/purchase.

For additional information on the site, including details about a 'front-end load' or overnight stay, contact the mine at: phone: 828-286-3016, Website: <http://www.thermalcitygoldmine.com/>

*Continued on next page*

## UP COMING FIELD TRIPS

*Continued from page 4*

**HISTORY:** This is an unsalted site and many people have had success finding gold here. The mine's aim is to provide an authentic experience. This mine is located on the actual site of the earliest placers of Rutherford County. It opened in 1830 and has produced gold ever since then.

**SPECIAL CONDITIONS:** Camping facilities with full hook-ups to primitive are available on a first come basis. Call 828-286-3016 for rates. No drugs, alcohol, or firearms are allowed. The grounds are almost level and a short distance from panning to camping and restrooms.

**DIRECTIONS AND WHERE TO MEET:** We will meet at the site. From I-40 west, take exit #85 (Marion/Rutherfordton); proceed south on US-221 for about 8 1/2 miles to the Rutherford County line; the entrance to the mine is on the left (look for signs along the way).

**CONTACT:** David Callahan, Field Trip Chairman of the GMSL and RVMGS [dbc11@aol.com](mailto:dbc11@aol.com), Phone 540-297-1853 for additional information if needed.

### **July Field Trip**

Highlands Road Gem Show  
Franklin, NC.

Show Dates are July 25 thru July 29, 2012  
(This will be a go-on-your own trip)

Those Roanoke and Lynchburg Club members that would like to go mineral collecting for pink corundum and garnets in the Chunky Gal area, Southwest of Franklin on Saturday, July 28th, Royce Wickham will be leading a trip there. More details will follow in the July newsletter and will be available at the meeting. Sign-up will be required. If you will not be at the meeting, e-mail or call me to get on the list.

Email: [dbc11@aol.com](mailto:dbc11@aol.com)

Phone: 540-297-1853

You should plan to drive down no later than Friday, July 27<sup>th</sup> and return home on Sunday, July 29<sup>th</sup>. If you want to see the Gem and Mineral Show, plan on driving down on Thursday, July 26<sup>th</sup> and see the show on Friday.

You will be responsible for your our food and lodging. Do not delay in reserving your room.

### **August Field Trip**

## **OUR OFFICIAL 8<sup>th</sup> ANNUAL MINERAL COLLECTING FIELD TRIP AND GEM SHOW WEEKEND**

**The Gem & Mineral Society of Lynchburg, VA. Inc.**  
**The Roanoke Valley Mineral & Gem Society, Inc.**  
**and our guests**

**Georgia Mineral Society, Inc.**  
**(This will be a go-on-your-own trip)**

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## UP COMING FIELD TRIPS

*Continued from page 5*

### **55<sup>th</sup> Annual North Carolina Mineral and Gem Fest**

August 2<sup>nd</sup> thru August 5<sup>th</sup>, 2012

Spruce Pine, NC.

----and----

### **The 28<sup>th</sup> Annual Grassy Creek Mineral and Gem Show**

July 28<sup>th</sup> thru August 5<sup>th</sup>, 2012

Spruce Pine, NC.



**Sign-up required for this trip...call me...e-mail me...or see me at the meeting.**

**THE TRIP:** You should plan to drive down no later than Friday, August 3<sup>rd</sup> and return home on Sunday, August 5<sup>th</sup>. If you want to allow extra time to see the Gem and Mineral Shows, plan on driving down on Thursday, August 2<sup>nd</sup> and see the show on Friday.

**LODGING:** You will be responsible for your own food and lodging. Do not delay in reserving your room. There are several motels in Spruce Pine but they fill up fast. Marion, NC is 20 or so miles to the south at I-40.

If you would like to camp, the near-by Bear Den Campground is a great place. Go to [www.bear-den.com](http://www.bear-den.com) and make your own reservations. We will not try to reserve the group camp site this year due to lack of sufficient interest. We would need at least 6 tents to justify the group site cost. Individual camp sites and cabins are available but you must make your own reservations.

**Chamber of Commerce Mine Tours:** The Mitchell County Chamber of Commerce will be offering two mine tours this season.

There will be a two hour tour to the Crabtree Emerald Mine, Thursday, August 2<sup>nd</sup> and Friday, August 3<sup>rd</sup>. Two trips per day at 10AM and 1AM. The cost is \$30.00 per person. Transportation is provided.

There will be an underground Black Light tour of Emerald Village's, Bon Ami Mine on Friday night, August 3<sup>rd</sup> and Saturday night, August 4<sup>th</sup>. The cost is \$15.00 for adults and \$10.00 for kids and seniors. Transportation is provided.

Reservations are required for both tours. Call the Chamber of Commerce at 828-765-9033 for reservations. Space may be limited.

**FIELD TRIPS:** Saturday morning, August 4<sup>th</sup> we will depart at 8:00 AM from the Spruce Pine Wal-Mart parking lot by the gas pumps. Wal-Mart is located off Rt. 226 in the Grassy Creek area. I will have maps available for the Ray and Sinkhole Mines. If you are familiar with the area, you may choose to visit the

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*UP COMING FIELD TRIPS...continued from page 6*

Sinkhole first before things heat up. Then come to the Ray. This would also relieve the limited parking situation at the Sinkhole. Our first stop will be the Ray Mine in Burnsville and hopefully find some nice beryl, tourmaline, apatite, garnet, mica, feldspar, columbite - tantalite, and other minerals. The landowner, where we will park for the Ray Mine, did charge about 2 or 3 dollars to park along the left side of the roadway and in designated places near his yard. The current fees are posted on the box. Do not block any driveways or roads or park in people's yard. Be sure to have the correct amount of currency. There is a **honor system** parking fee collecting mail box near his house. The fees are per car, not per person. There is space for 3 or 4 cars in a free parking area provided by the Forest Service. You may use this if there is available space. Do not block anyone.

There is a rather steep foot trail to the mine. The walk is about 20 minutes, but the potential for some nice beryl crystals makes it worthwhile. No special equipment except hard work is required. Just wear comfortable clothes, comfortable hat, good strong boots, bring snacks, water, bug spray, backpack and / or buckets, hammer, chisel, safety glasses, and wrapping paper to protect any nice crystals you will find. I usually take a hoe to turn over rocks and scrape away the soil. If you dig in the dirt, a hoe or a small shovel will come in handy.

**YOU MAY NOT COLLECT IN THE CREEK OR DISTURB THE CREEK IN ANY WAY. IF YOU DO, WE MAY LOSE ALL OUR COLLECTING PRIVILEGES AT THIS SITE. THIS IS A NEW FOREST SERVICE REGULATION.**

If you plan to spend the day there, be sure to bring food, bug spray and water. You can stay as long as you want and leave any time. Some people will choose to spend the day collecting at the Ray Mine and others will leave for the Sinkhole. There is very limited parking at the Sinkhole so it is best that we all don't try to go at one time. We will not to leave as a group, everyone will be on their own.

After you leave the Ray Mine, you can stop at a fast food in Burnsville and then visit the Sinkhole Mine in Bandana, NC. You should be able to park close to the dump. Here you may find apatite, mica, feldspar, garnet, thulite and smokey quartz. If you like beautiful yard rocks, this is the place to go. The same tools you use at the Ray Mine can be used here.

**SPECIAL NOTE:** It **ALWAYS** rains at some point during this Gem show weekend so bring your rain gear.

Sunday morning, on the way home, you might want to stop by the Thermal City Gold Mine just south of Marion, NC, on Rt. 221 and do some gold panning. There will be some vendors still set up at Grassy Creek so you might find some great mineral and fossil specials.

**CONTACT:** David Callahan, Field trip Chairman, The Lynchburg Gem and Mineral Society Inc. and The Roanoke Valley Mineral and Gem Society Inc. Home Phone 540-297-1853, email at [dbcall1@aol.com](mailto:dbcall1@aol.com). Cell 540-874-5201 Leave a message if I don't answer.

*Upcoming Events*

*July 2012*

**July 14-15-** Annual Gem, Mineral, Fossil & Jewelry Show sponsored by the Gem & Mineral Society of Syracuse, NY. New Location: SRC Events Center, 4585 W. Seneca Turnpike, Syracuse, NY.

**July 20-22-** Treasures of the Earth Gem, Mineral, Fossil, Bead and Jewelry Show, Boone, NC. [www.toteshows.com](http://www.toteshows.com) for details.

**July 28-Aug. 5-** Spruce Pine Shows and Field Trips. See page 6 for details.

**August 10-12-** Treasures of the Earth Gem, Mineral, Fossil, Bead and Jewelry Show, Dalton, GA. [www.toteshows.com](http://www.toteshows.com) for details.

**August 25,-** Region IV Picnic, details on page 10.

**Sept. 15-16-** 47th Annual Rock and Mineral Show and 62nd annual EFMLS Convention sponsored by the Central Pen. Rock and Mineral Club. Zembe Shrine, 3rd and Division Sts., Harrisburg, PA.

**EFMLS Annual Meeting Friday, Sept. 14.**

SUN	MON	TUES	WED	THURS	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18 <i>Meeting 7PM</i>	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

*Spruce Pine Field Trips & Shows- Fun Times in Mitchell Co. North Carolina*

**ALL MEMBERS PLEASE TAKE NOTE**

**\*\*\*\*CHANGE IN AGENDA\*\*\*\***

**Due to renovations at the Parks and Recreation Building where we currently meet, we will be moving our meeting location**

**DATE TO BE ANNOUNCED!!!**

**The new temporary location will be The Parks and Recreation Department Fairview Neighborhood Center, 3621 Campbell Ave, Lynchburg, VA 24501. This is a newly renovated building with an ample meeting room, and plenty of parking.**

**If you have any questions or need detailed directions, please contact John Haskins.**

**We will continue our monthly meetings at the 301 Grove St. Location until further notice!**

## Safety Should NOT Be An Afterthought

By Ellery Borow, EFMLS Safety Chair;

reprinted from EFMLS News, June-July 2012.

Safety should be more than an afterthought! I know of clubs (and no names will be mentioned here) whose approach to field trip safety is something like this, "Hey, has anybody got a Band-Aid?" Seriously, that should not be the way to conduct safety for one of a club's more important activities- field trips.

Mines, quarries, pits, prospects, working faces, talus slopes, and holes-in-the-ground all have their hazards and cautions. In fact, I've seen an instance where a small pile of rock no bigger than a small dump truck load had it's own issues. I recall an instance where a gentleman,, climbing up a small pile of loose rock, lost his footing and tumbled over backwards. In this instance the quarry had several dangerous areas around but this fall occurred in the most innocuous of areas- a small pile of dirt and rocks. Bad things can happen in the least expected places. The thoughts to stress here are to always be prepared, watch for whatever may fall one's way, watch where one is going, and make sure of one's footing.

First aid should not be an afterthought. There are clubs which do a first rate job with their safety programs. Their safety chairperson may have taken classes and refreshers on CPR, first aid, OSHA and MSHA regulations and guidelines- in addition to the training for specific mine and quarry operations. In other clubs, handing a member the club's first aid kit (you do have a club first aid kit don't you?) and saying, "Tag, you're it", is the norm. This latter approach

does not constitute a safety program. Such an afterthought program will just not work in today's litigious society and in effect does the club a disservice.

Due to the diverse nature of safety matters one might consider having at least two club members associated with safety issues. One member might be the go-to person in charge of the first aid kit and be armed with knowledge of how to use its contents, while a second person is designated to keep abreast of safety rules and guidelines, field trip safety, and specific mine/quarry safety requirements. In the best of all worlds there may be two safety persons in a club and on top of that, have each member receive instruction in first aid, CPR and so on. Has your club ever investigated organizations which offer group rates for certain kinds of safety and first aid training? Some clubs actually make it a point every few years or so to have the program for the meeting be a genuine first aid class. Other clubs offer small safety talks as mini-programs and an additional talk just before or during the visit to the mine/ quarry/pit.

Safety should not be an afterthought. Yes, yes, I have heard every safety excuse in the book- Our club is too small to have even one safety person, let alone two; well, we really never get into mines so we don't believe we need a safety person; oh, our club trips are only to abandoned localities, there are no working faces, operating equipment or open pits present; our sites only need sifting and screening, we don't ever use hammers or rock splitting equipment; we only go gold panning in small streams, we don't use hammers and have no safety concerns. Oh my there are so many excuses- and yet, I'm sure you were able to see right through these few excuses and come up with numerous reasons

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## 2012 EFMLS Region IV Picnic and Rock Swap

**Saturday, August 25, 2012**

Hosted by the Southern Maryland Rock and Mineral Club  
and  
Carl Miller, EFMLS Region IV Vice President

### ***Hello Rockhounds in EFMLS Region IV!!!***

You are ALL cordially invited to the **2012 Region IV Picnic and Rock Swap** to be held in Southern Maryland on **Saturday, August 25, 2012** from 9am to 3pm at Gilbert Run Park, 13140 Charles Street, Charlotte Hall, MD 20622. This park is 40 miles southeast of Washington (only 35 miles from the Woodrow Wilson Bridge). Other travel distances: Baltimore 70, Richmond 85, Manassas 70, Staunton 150, Norfolk 170, Lynchburg 175.

The venue is a shaded, hill-top pavilion with 15 picnic tables in the woods above a 60 acre lake. There is a large 100" by 36" brick grill at one end of the pavilion, and there are separate full restroom facilities for men and women on the other end. A 100-foot path with steps leads to the pavilion from a reserved paved parking lot. Vehicles may also drive up a short gravel road to unload at the top (no parking at the top.)

This is a Potluck picnic so please bring picnic food to share.

Due to a limited budget for this event, we are asking area clubs to help by donating and bringing specific items. Please let us know which items you are willing to furnish by August 20<sup>th</sup> via email to [dave.lines@earthlink.net](mailto:dave.lines@earthlink.net) and we will post who volunteers to bring what by email as soon as we find out. We need the following:

1. Soft drinks (no alcohol in the park) / bottled water / iced tea - enough for 100 people
2. Four large coolers with 100 pounds of crushed ice
3. Hotdogs & buns for 50 people (Richmond Gem and Mineral Society volunteered to do this one)
4. Hamburgers with buns for 75 people
5. Condiments - ketchup, mustard, relish, mayo
6. Plastic cups & plates / plastic utensils / napkins for 125 people
7. Approx. 20 lb. charcoal & starter fluid, grilling utensils, and a volunteer cook.

**Guests are welcome.** Other activities in this Park include a 2 mile walking path around the lake, fishing (license required), boat rental, playground, horseshoe pits (one by our pavilion), volleyball, and concession stand.

### **Approximate schedule of events as follows:**

- 8:00 am - pavilion available for our use
  - 9:00 am to 12 noon - swapping of rock, mineral and fossil specimens
  - 12:00 noon to 1:00 pm - picnic lunch for all
  - 1:00 pm (or after lunch) - door prizes drawn followed by the auction
- (All attendees are kindly requested to donate labeled mineral or fossil specimens for door prizes and auction)
- 2:00 pm - swapping continues until 3 pm.

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## Colors of Shale

*Continued from the article last month on "Shale," found on the Geology.com website; submitted by Jack Curtin.*

Like most rocks, the color of shale is often determined by the presence of specific materials in minor amounts. Just a few percent of organic materials or iron can significantly alter the color of a rock.

### Black and Gray Shale

A black color in sedimentary rocks almost always indicates the presence of organic materials. Just one or two percent organic materials can impart a dark gray or black color to the rock. In addition, this black color almost always implies that the shale formed from sediment deposited in an oxygen-deficient environment. Any oxygen that entered the environment quickly reacted with the decaying organic debris. If a large amount of oxygen was present the organic debris would all have decayed. An oxygen-poor environment also provides the proper conditions for the formation of sulfide minerals such as pyrite, another important mineral found in most black shales.

The presence of organic debris in black shales makes them the candidates for oil and gas generation. If the organic material is preserved and properly heated after burial oil and natural gas might be produced. The Barnett Shale, Marcellus Shale, Haynesville Shale, Fayetteville Shale and other gas producing rocks are all dark gray or black shales that yield natural gas. The Bakken Shale of North Dakota and the Eagle Ford Shale of Texas are examples of shales that yield oil.

Gray shales sometimes contain a small amount of organic matter. However, gray shales can also be

rocks that contain calcareous materials or simply clay minerals that result in a gray color.

### Red, Brown and Yellow Shale

Shales that are deposited in oxygen-rich environments often contain tiny particles of iron oxide or iron hydroxide minerals such as hematite, goethite or limonite. Just a few percent of these minerals distributed through the rock can produce the red, brown or yellow colors exhibited by many types of shale. The presence of hematite can produce a red shale. The presence of limonite or goethite can produce a yellow or brown shale.

### Green Shale

Green shales are occasionally found. This should not be surprising because some of the clay minerals and micas that make up much of the volume of these rocks are typically a greenish color.

### Hydraulic Properties of Shale

Hydraulic properties are characteristics of a rock such as permeability and porosity that reflect its ability to hold and transmit fluids such as water, oil or natural gas.

Shale has a very small particle size so the interstitial spaces are very small. In fact they are so small that oil, natural gas and water have difficulty moving through the rock. Shale can therefore serve as a cap rock for oil and natural gas traps and it also is an aquiclude that blocks or limits the flow of underground water.

Although the interstitial spaces in a shale are very small they can take up a significant volume of the rock. This allows the shale to hold significant amounts of water, gas or oil but not be able to effectively transmit them because of the low permeability. The oil and gas industry overcomes these limitations of shale by using horizontal

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**Shale...***continued from page 11*

drilling and hydraulic fracturing to create artificial porosity and permeability within the rock.

Some of the clay minerals that occur in shale have the ability to absorb or adsorb large amounts of water, natural gas, ions or other substances. This property of shale can enable it to selectively and tenaciously hold or freely release fluids or ions.

**Engineering Properties of Shale Soils**

Shales and the soils derived from them are some of the most troublesome materials to build upon. They are subject to changes in volume and competence that generally make them unreliable construction substrates.

**Expansive Soils**

The clay minerals in some shale-derived soils have the ability to absorb and release large amounts of water. This change in moisture content is usually accompanied by a change in volume which can be as much as several percent. These materials are called "expansive soils". When these soils become wet they swell and when they dry out they shrink. Buildings, roads, utility lines or other structures placed upon or within these materials can be weakened or damaged by the forces and motion of volume change. Expansive soils are one of the most common causes of foundation damage to buildings in the United States.

**Slope Stability**

Shale is the rock most often associated with landslides. Weathering transforms the shale into a clay-rich soil which normally has a very low shear strength - especially when wet. When these low-strength materials are wet and on a steep hillside they can slowly or rapidly move down slope. Overloading or excavation by humans will often trigger failure.

**Environments of Shale Deposition**

An accumulation of mud begins with the chemical weathering of rocks. This weathering breaks the rocks down into clay minerals and other small particles which often become part of the local soil. A rainstorm might wash tiny particles of soil from the land and into streams, giving the streams a "muddy" appearance. When the stream slows down or enters a standing body of water such as a lake, swamp or ocean the mud particles settle to the bottom. If undisturbed and buried this accumulation of mud might be transformed into a sedimentary rock known as "mudstone". This is how most shales are formed.

**Contributor: Hobart King**

Shale breaks into thin pieces with sharp edges. It occurs in a wide range of colors that include: red, brown, green, gray, and black. It is the most common sedimentary rock and is found in sedimentary basins worldwide.

In less than ten years, shale has skyrocketed to prominence in the energy sector. New drilling and well development methods such as hydraulic fracturing and horizontal drilling can tap the oil and natural gas trapped within the tight matrix of organic shales.

**Conventional Oil and Natural Gas Reservoir:** This drawing illustrates an "anticlinal trap" that contains oil and natural gas. The gray rock units are impermeable shale. Oil and natural gas forms within these shale units and then migrates upwards. Some of the oil and gas becomes trapped in the yellow sandstone to form an oil and gas reservoir. This is a "conventional" reservoir - meaning that the oil and gas can flow through the pore space of the sandstone and be produced from the well.

Organic-rich black shale. Natural gas and oil are  
*Continued on page 13*

**Shale...** *Continued from page 12*

sometimes trapped in the tiny pore spaces of this type of shale.

**Unconventional Oil and Gas Reservoir:** This drawing illustrates the new technologies that enable the development of unconventional oil and natural gas fields. In these gas fields the oil and gas are held in shales or another rock unit that is impermeable. To produce that oil or gas special technologies are needed. One is horizontal drilling, in which a vertical well is deviated to horizontal so that it will penetrate a long distance of reservoir rock. The second is hydraulic fracturing. With this technique, a portion of the well is sealed off and water is pumped in to produce a pressure that is high enough to fracture the surrounding rock. The result is a highly fractured reservoir penetrated by a long length of well bore.

Shale is used as a raw material for making many types of brick, tile, pipe, pottery and other manufactured products. Brick and tile are some of the most extensively used and highly desired materials for building homes, walls, streets and commercial structures.

Oil shale is a rock that contains a significant amount of organic material in the form of solid kerogen. Up to 1/3 of the rock can be solid organic material.

Two black organic shales in the Appalachian Basin are thought to contain enough natural gas to supply the United States for several years. These are the Marcellus Shale and Utica Shale.

Since the late 1990's dozens of previously unproductive black organic shales have been successfully developed into valuable gas fields. See the article: "What is Shale Gas?"

When shale is drilled for oil, natural gas or mineral resource evaluation a core is often recovered from the well. The rock in the core can then be tested to learn

about its potential and how the resource might be best developed.

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**From the First VP:** *Continued from page 1*

The most compelling evidence is the presence of granite-like rocks that are crushed, melted and pulverized in a way that can only be explained by a sudden, massive impact. The deformed granite is spread throughout an area measuring 35 by 50 kilometers, centered on the supposed impact site. Such large-scale deformation of granite could not have happened over such a large area through any known terrestrial geologic process. "You might see something similar in a geologic fault zone, but not in a circle 100 kilometers across," says team member Iain McDonald of Cardiff University."

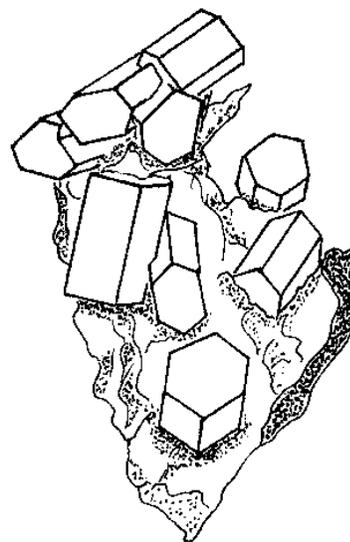
Most of escaped the most recent storm, but will we survive the next?

Hang on,  
Jack Curtin

## Rock Raiders

For the July Meeting, Rock Raiders will be treated to a program on fluorescent minerals with Rock Raiders Adult Liaison Jon Glass. Have you ever seen rocks that change color under certain types of fluorescent light? Come on out and join us for this colorful program, designed for our Junior Rockhounds.

*Beryl Crystals to color*



### Website to visit:

*Mini Miners Monthly* - a monthly electronic newsletter for Junior rockhounds. Great site for fun facts, pictures and activities for Kids.

[http://www.diamonddanpublications.net/index\\_files/page0039.html](http://www.diamonddanpublications.net/index_files/page0039.html)

### Mineral of the Month:

## SPHALERITE (ZnS)

*By Tom Prachar, reprinted from PEAS Rock News June 2012*

Sphalerite comes from the Greek word meaning treacherous. It was also called "blend" from the German word meaning blind or deceiving because, although it often resembled galena., it yielded no lead. Sphalerite is the most common ore of zinc and is a favorite challenge for many collectors due to its many variations and associations with other minerals. Its occurrence and origin are similar to those of Galena (PbS) with which it is commonly found. in the lead-zinc deposits of the Tri-state district of missouri, Oklahoma, and Kansas (now largely exhausted), sphalerite is associated with marcasite, chalopyrite, calcite, and dolomite. Sphalerite with minor amounts of galena occurs in hydro thermal veins and replacement deposits associated with phyrrotite pyrite, and magnetite, Sphalerite is also found in veins in igneous rocks and in contact metamorphic deposits. Massive sphalerite was the main ore mineral at the old Friedensville, PA zinc mines which supplied the Palmerton, PA processing plant.

On occasions, sphalerite has produced some interesting fluorescent varieties. Particularly popular with collectors of Franklin fluorescent minerals are uncommon types of sphalerite that fluoresce anywhere from pale orange to violet, pink, and purple at various wavelengths. One of these varieties is a very pure and superbly crystalline form known as Cleiophane. Which exhibits brilliant violet-pink phosphorescence.

### Diagnostic Properties:

**Color:** Brown, black, gray, yellow, green

**Crystal System:** isometric, tetrahedral

**Streak:** Light Yellow to brown

**Luster:** Resinous to adamantine

**Hardness:** 3.5 to 4.0 (Moh's Scale)

**Cleavage:** Good

**Specific Gravity:** 3.9 to 4.1

## Presidents Message ...*Cont. form page 1*

or interesting to the general public. Lets see what can be done to upgrade our display, and make it something we all can be proud of.

I hope to see you all at the July 18<sup>th</sup> Society meeting. Until then,

Keep Looking Down,  
John Haskins

## Safety...*continued from page 9*

why each of them will notify in the face of what rock and mineral collectors experience. Safety issues can occur anywhere- even in the most innocent of places.

Safety and first aid kits should be no afterthought. Does your club's first aid kit include a pocket edition of a first-aid-guide? Does the kit have a check list of it's required supplies? Are the kit's content's expiration dates reviewed frequently? Is the kit reasonably water tight, or better still will it float? Is the kit light tight and kept from becoming too hot or too cold? Is there a flashlight (yes, a flashlight) in the kit? Are the kit's liquids in tightly sealed containers or kept in separate spill-proof bags? Safety and first aid kits should all include the basics, and then be modified to prepare for the specific concerns faced in the area.

Safety should be no afterthought. As we proceed into field trip season please keep the safety and well being of your fellow club members in mind, and not as a mere afterthought. Your safety matters.

Oh, the fellow who lost his footing and went over backwards on the small pile was not injured; all that was hurt was his pride- this time.

## REGION IV PICNIC... *Continued from pg. 10*

3:00 pm - picnic over / clean-up area / drive home safely

**Other Info:** \$4 per vehicle "Daily Use Fee" will be collected at the Park Entrance.

**Optional** - You may wish to bring camping chairs for your comfort.

**Region IV Treasure Box** - As before, there will be the Treasure Box that everyone can take stuff from - for FREE. The theme has always been: "One person's 'extras' may be another person's treasure." Please bring lots of your "extras" (e.g. specimens, cabbng material, and other rock related items) to put in the Treasure Box. It is great fun, and who knows? You may really find a super treasure!

Please forward all 2012 Region IV Picnic/Swap related questions/comments to Dave Lines by email at [dave.lines@earthlink.net](mailto:dave.lines@earthlink.net) or by phone at [240-427-7062](tel:240-427-7062).

**Directions:** (Recommend "Mapquest" to La Plata on U.S. Rt.301, then follow below)

1. Take U.S. Rte 301 to La Plata from south or north, then
2. Turn EAST on MD Rte 6 (Charles Street) and follow thru town and beyond.
3. Go 9.0 miles - Look for brown Gilbert Run Park sign - Park Entrance is on LEFT.
4. After paying \$4 per vehicle Daily Use Fee, continue STRAIGHT through Park Entrance BEARING LEFT
5. Go 0.3 miles to paved parking area on RIGHT for Hilltop Pavilion.
6. You may drive your vehicle to the top to unload and then re-park in the paved parking lot below Pavilion
7. Follow path up to the Pavilion

## **Bonus field trip info:**

Several excellent fossil hunting sites (open to the public) are within 30 miles of the picnic location. Low tide on the Chesapeake Bay at Matoaka Beach Cabins is 3:18 pm (Fee: \$4/adult, \$2/child under 12). Low tide at Purse State Park on the Potomac River is 7:58 pm (sunset is 7:49 pm. Fee: free).

Natalie Darling, Editor  
211 Chesterfield Rd.  
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The purpose of the Gem & Mineral Society of Lynchburg, VA is to promote education in The Earth Sciences, including: Mineralogy, Geology, Gemology, Paleontology, and Crystallography



Lynchburg Rock Raiders is the official Future Rockhounds of America association of the The Gem & Mineral Society of Lynchburg, VA. Inc.



Independence Day

GEM & MINERAL SOCIETY OF LYNCHBURG, VA, INC.

[WWW.LYNCHBURGROCKCLUB.ORG](http://WWW.LYNCHBURGROCKCLUB.ORG)

***Monthly meetings are held on the third Wednesday of each month at Lynchburg Parks and Recreation Department, 301 Grove St, Lynchburg, VA 24504. Meetings consist of various programs on hobby related subjects. All meetings are family oriented. These meetings are open to the public, please feel free to join us.***

