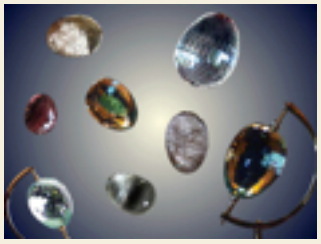
GEM & MINERAL JOURNAL

Official Monthly Publication of the Gem & Mineral Society of Lynchburg, VA, Inc
WWW.LYNCHBURGROCKCLUB.ORG

September 2013 VOLUME 22~ ISSUE 9



Presidents Message

Hello To All,

Things are getting very busy for the GMSL. September is boasting of two great field trips, October 19-20th is the Apple Harvest Festival we participate in each year, & our Club auction will be at the November 20th meeting. November 24th is the Jefferson Choral Society Holiday Bazaar, and November 29-December 1st is our fluorescent mineral show at the Salem Civic Center. I said that to say this: HELP!!!. We have made good progress sorting through the truck loads of material from the estate of William Willoughby. Now we need help finishing book ends, clocks & candles to sell at these functions. Nona & I have sawed out about 20 new book ends in addition to what we have on the trailer, but we need help sanding and polishing these items as well as gluing felt on the bottoms. Thom Noble has made up several cabs for belt buckles, now they need to be assembled. We had planned to install E-track inside the trailer to make tie downs easier, but we need to unload all material to facilitate the new installation. If you would like to give us a hand on the next few Saturdays, see Dave Callahan or John Haskins at the September meeting, I am sure we can find something for you to do for the Club. The few people that come to the workshops regularly seem to be getting overwhelmed with so many things to do right now in preparation for all these upcoming events. Come on out and join in the fun, I feel sure you will have fun and learn something about rocks and minerals in the process.

Don't forget, the mineral of the month presentation by a Club member at each up coming meeting, there are positions filled through January 2014 already, so be sure to signup for a slot at the September meeting. You learn more about a mineral or rock when you are teaching others. It is a good experience, I hope to see everyone participate.

At the September meeting I will be looking for three people that are willing to take on the task of the nominating Committee for Club officers for 2014. Remember you can nominate yourself for a position. I hope you will get involved.

That's all for now; I hope to see you at the September18th meeting.

Keep Looking Down,
John Haskins

From the First V.P.

Dave Callahan has generously offered to present the club with a program on Field Trips at the September meeting.

The following article on chert is very helpful in understanding the rock.

About Chert

By Andrew Alden, About.com Guide

Radiolarian chert

Photo (c) Andrew Alden, licensed to About.com (fair use policy)

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August Meeting Minutes

Meeting-Wednesday August 21, 7:00 PM

Attendance- 33 members and 2 guests

Host- Thom and Linda Noble took over for Dave and Noel who could not be at the meeting tonight. Franklin and Jean Midkiff will host the September meeting.

On Time Drawing- Winners were: Thom Noble, Don McIntyre, Siglinde Allbeck, Cindy Shields

Old Business- John Haskins: Rock swap with Oklahoma couple – John received a few examples of OK rocks from them.

He brought in activity books that were ordered from Diamond Dan Educational for children and adults.

V.P.- Jack Curtin:Jack Curtin brought in samples for identification of Metamorphic, Igneous, and Sedimentary Rocks for the monthly program.

Second V.P.- Dave Callahan: Field Trips: 9/21: US Silica Montpelier Feldspar Mine; 9/28: Willis Mtn.; All Safety Equipment Required as both of these sites are working mines.

Treasurers Report- Balance at this time $ 4737.30

New Business: Volunteer needed to create a flyer for our upcoming auction. Pamela Klein agreed to do this. She will come to the workshop and take pictures of the rocks that will be offered for sale. In addition to the Silent Auction run by Warren Darling, Cindy Mitchell set up a table with rocks priced low enough just for children to purchase.

A suggestion was made for the club to have a welcome committee to help welcome guests and new members by explaining the operation of the club and introduce them to other club members.

Pamela Klein volunteered to help membership chairman Thom Noble with this.

Program: Identify Rocks; John Haskins gave the first presentation of our monthly series of Mineral Identification. His presentation was on Managanese and he provided handouts and brought in samples.

Minutes submitted by

Linda Noble, Secretary.

2013 ELECTED OFFICERS

PRESIDENT - John Haskins
(434) 525-8430
JMHaskins1@netzero.net

First Vice President
Jack Curtin
(434) 384 -6249
jacwcurtin@gmail.com

Second Vice President
David Callahan
(540) 297-1853
DBCALL1@aol.com

Secretary
Linda Noble
(434) 332-4869
linda-noble@hughes.net

Editor - Natalie Darling
(434) 941-1899
gmsleditor@gmail.com

Treasurer - Frank Midkiff
(434) 660-1565
midkifff@aol.com

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- OPEN
Membership- Thom Noble

PROGRAMS

Program outline for the September meeting

"All things you should know about field trip mineral collecting; tools, equipment, safety and more"

We will discuss the following topics and illustrate with examples where applicable.

Signing up, Getting ready, Plan your trip, Getting there, Clothing, Food, Tools and tool maintenance, Safe collecting practices, Safety hazards, Being aware, After the trip, Cleaning and displaying and Questions.

Please Join us on Wednesday, Sept 18, 2013 at 7:00 PM.

Bench Tips by Brad Smith

More Bench Tips by Brad Smith are at:
groups.yahoo.com/group/Bench Tips/
or facebook.com/Bench Tips

LAYOUT TOOLS

Dimensions on some features of a design can be fluid while others must be accurate for the design to work. When precision on a piece is important, good layout techniques are essential.

These are the tools that I rely upon to get holes in the right place, to achieve correct angles, and to cut pieces the correct length.

I like crisp sharp lines to follow, so I often coat surfaces with a dark marker and scribe my layout lines onto the metal. A square makes quick work of checking right angles or marking where to cut, and the thin center-punch helps me mark a place to drill holes exactly where I want them.

Finally, a good set of dividers is probably my favorite layout tool. They let me quickly mark a strip for cutting, swing an arc, and divide a line or curve into as many equal segments as I need. I keep at least one set of dividers in every toolbox.

INVENTORY RECORD

In an ideal world each of us has a complete pictorial record of all pieces of jewelry in our inventory. We use it for insurance. We use it as a record of what was sent out on consignment. We use it to remember which items we are taking to a show. And eventually, we use it as a record of what we have sold.

Unfortunately, we don't always have time to take good pictures for an inventory. In situations like this I've been able to make a quick record with the help of a color copier. Simply place a number of pieces face down on the glass and make a copy. The quality is more than sufficient for an accurate record.

FIELD TRIP REPORT..

2nd VP Report

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

Past Field Trip
Spruce Pine, NC ~ August 2-4, 2013

The weather was mostly dry and beautiful this weekend, which is unusual for this time of the year. It did rain, hard at times but not to disrupt our Field Trip and perusing the Grassy Creek Show. We were joined again this year by our friends with the Georgia Mineral Society. Their field trip leader, Charles and his wife Lori Carter met us at the Wal-Mart parking lot Saturday morning with 12 members from Georgia in tow. With our five from Lynchburg and Roanoke we had a pretty good group. We divided into two groups, those that wanted to go to the Sinkhole first and the rest of us went to the Ray Mine.

The weather was cool in the woods at the Ray and just prefect collecting weather. We split up and each found a likely area to dig in the old dump piles. After a lot of hard work digging and tossing rocks most all were rewarded with some nice green beryl finds. We also found some very nice schorl tourmaline, green apatite, small red garnets, pink thulite, and lots of pretty muscovite mica. Those at the Sinkhole were rewarded with some nice specimen finds also but they were in the sun and it was a lot hotter. That's why I like the Ray Mine, It is always shaded and a lot cooler.

The Georgia Mineral Society is looking forward to join us again next year and it is always a pleasure to be reacquainted with old friends.

UP COMING FIELD TRIPS

Official Gem and Mineral Society of the Virginia Peninsula (GMSVP) Club Field Trip (Hosting)

This is an official combined field trip for

The Gem and Mineral Society of Lynchburg, Va. Inc. (GMSL)
Roanoke Valley Mineral & Gem Society, Inc. (RVMGS)
The Tidewater Gem & Mineral Society, Inc. (TGMS)

U.S Silica Montpelier Feldspar Mine
17359 Taylors Creek Road / UPS-Route 677
Montpelier, VA 23192
Saturday, Sept. 21, 2013 ~ 9 am until 1 pm

SIGN-UP REQUIRED…CALL ME…E-MAIL ME…OR SEE ME AT THE MEETING

NOTE: All field trip participants must be 2013 Club members in good standing with either the GMSVP, GMSL, RVGMS, or TGMS Club and covered by Club Liability Insurance. NO GUESTS ARE ALLOWED. Young Folks - Children must be accompanied by a responsible adult.

These minerals have been found here in the past. Ref: http://www.mindat.org/loc-11147.html
Actinolite, **Albite** (**var: Andesine**), Albite-Anorthite Series, **Amphibole Group (var: Uralite)**, **Anatase**, **Anthophyllite**, Apatite, **Biotite**, Garnet Group, **Goethite**, Hornblende, **Illite**, **Ilmenite**, **Kaolinite**, **Microcline**, **Muscovite**, **Prehnite**, **Pyrite**, Pyroxene Group, **Quartz** (**var: Blue Quartz**), **Rutile**, **Sericite**, **Spessartine**, **Titanite**, **Zircon**

Disclaimer: The availability of these minerals depends on where they are working in the quarry at the time of the field trip and that some of the occurrences are very small, particularly the zircon

Standard full dress safety precautions apply. Here's the safety equipment that is required:
1. Steel Toed Boots – A MUST
2. Safety Glasses or Goggles – A MUST
3: Heavy Work Gloves – Optional but a good idea
4: Safety Helmets - A MUST, though color is optional. Remember that the helmets must be less than five years old at this mine. Be sure to check the mark on the brim. No helmet means no admittance.
5. Knee Pads – Optional but a good idea.
6. Wheel chocks (2) for your vehicle. –A MUST This requirement has been conveyed as a mandatory requirement by the Mine representative. (NEW REQUIREMENT: AVAILABLE AT NORTHERN, WALMART AND OTHER PLACES THAT SELL CAMPING OR SAFETY EQUIPMENT OR MAKE YOUR OWN)

Other items recommended are as follows:
1: Collecting bags, buckets, hammer, chisel, and wrapping paper.
2: Drinking Water, snacks, lunch items

DRIVING DIRECTIONS FROM LYNCHBURG AND ROANOKE AREA:

Everyone MUST be there by 8:30 a.m. at the quarry office for mandatory sign in paperwork (waiver) and safety instructions! If you miss this deadline you WON'T be permitted into the site!

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UP COMING FIELD TRIPS... *Continued from page 5*

Driving From Lynchburg and Roanoke, the quarry is about 120 miles so allow about 2.5 to 3 hours driving time from Lynchburg. From Roanoke, add I hour.
Here is the route I will take from Lynchburg. From Roanoke, stay on 460E.

-Follow US 460 to Appomattox (about 20 miles, 30 min).
-Turn on Rt. 24N to Mt. Rush (20 mi, 30 min).
-Merge into US 60E and drive to US 522N, just before Powhatan (40 mi, 1 hr.).
-Follow US 522N to Gum Spring at I-64. (16 mi, 20 min.).
-Continue on US 522N, cross I-64 and continue for about 2.1 mi.
-Turn right on Owens Creek Rd. (Rt. 663) for about 1.5 mi.
-Turn left on Holly Grove Dr. (Rt. 610) for about 4.1 mi. to the Louisa / Hanover County line.
The road changes to Taylors Creek Rd. (Rt. 610).
-Continue about 3.25 mi. to Bethany Church Rd. on the left. Taylors Creek Rd. bears to the right.
-Follow Taylors Creek Rd. (Rt. 677) .8 miles to the quarry on the right.

SPECIAL NOTE

They won't have any staff at the main entrance building to let you in after we begin the drive into the mine, so you MUST be there on time. We will begin collecting after all safety information has been given out and we drive into the mine as a group.
We will go if there happens to be light rain or drizzle, but the trip will be cancelled should there be an extended heavy rain or any sign of thunderstorms.
Everyone will enter the mine together and collect in one side of the mine first. We will move as a group by driving to the other side of the mine. Nobody is permitted to wander off and collect in other areas without the group! We all need to keep an eye out for each other and make sure nobody wanders into unsafe zones. Everyone must stay away from the high-walls at all times!
Their plant manager will be in the quarry with us to answer our questions and as a safety lookout.

NOTES: Severe weather or other crisis out of our control may result in the canceling or rescheduling of this trip. If there is any question, please call me to confirm the trip.

Courtesy Note: If you sign up and find that you cannot attend, please call or notify me that you will not attend. **DO NOT SIGN UP AND THEN DON'T SHOW UP!!! Thank you**

David Callahan, GMSL and RVMGS Field Trip Leader….Home phone 540-297-1853, Cell (the day of the trip)
540-874-5201, email dbcall1@aol.com

For your information also:

Al DeHart, GMSVP host field trip leader
Home ph. no. 757-877-3844, Cell ph. no. 757-254-3844, email address: dehartalbert@cox.net

Field Trip Report continued on page 9

Welcome to our Newest Members: Josh and Jim Baroch from Lynchburg, VA

Rock Raiders

The Lure and Lore of Rocks: Amethyst

By Kristin Lolmaugh, reprinted from sept. 2013 Rockhounder

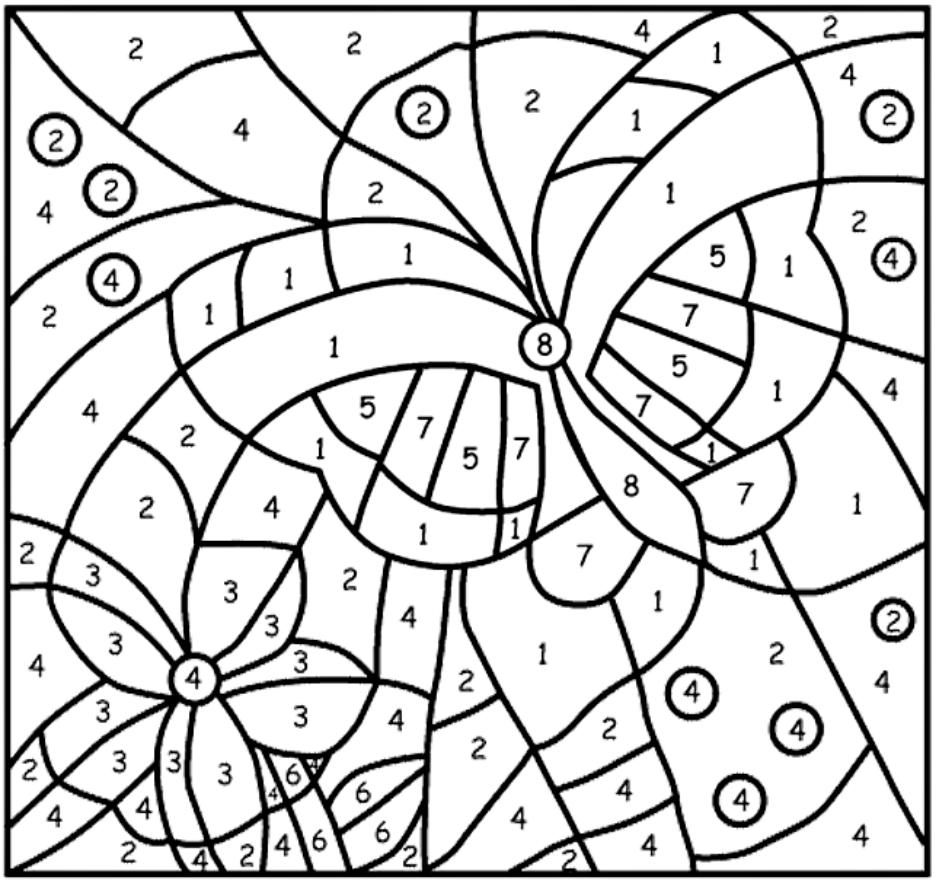
Amethyst is known as the Bishop's Stone and is still worn by Catholic Bishops. The amethyst symbolizes piety, humility, sincerity and spiritual wisdom. It derives its name from the Greek word "amethystos" meaning "not drunk" or "not intoxicated." It is thought the amethyst is the perfect stone to symbolize the Age of Aquarius.

Some use the amethyst as a dream stone and to help insomnia. Putting an amethyst under your pillow may bring pleasant dreams, or rub it across your forehead to offer relief from a headache. Ancient Egyptians used the amethyst to guard against guilty and fearful feelings. It is also thought to protect one from poison. It has been worn as protection from self-deception, as well as a protection against witchcraft.

Leonardo Da Vinci once wrote that amethyst holds the power to dissipate evil thoughts and quicken one's intelligence. Healers have been using amethyst to increase their psychic abilities and intuition for centuries. Cross culturally, this popular gemstone was used as a symbol of peace and unification. It is also thought to evoke feelings of serenity and calmness in those who wear it.

Amethyst is often used during meditation to provide an overall sense of spiritual balance. Some naturopaths will use amethyst to help treat insomnia and sugar imbalances. And to relieve head aches. Amethyst is used for problems in the blood and in breathing problems. Amethyst crystal clusters are used to keep the air and life force in the home clean and positive.

Make Your Own Color Code!



Can you see what this picture is? Color each number a different color to find out!

Make your own Color Code: 1= 2= 3= 4= 5= 6= 7= 8=

http://www.crayola.com/free-coloring-pages/print/butterfly-color-by-number-coloring-page/

Upcoming Events

Sept. 21-22- 22nd annual Morgantown Gem Mineral and Fossil Show hosted by Prehistoric Enterprises. Mylan Park Expo Center, Exit 155 off I-79, Morgantown, WV

Sept. 28-29- 49th Annual Atlantic Coast Gem, Mineral & Jewelry Show hosted by the Gem Cutters Guild of Baltimore. Howard County Fairgrounds, West Friendship, MD.

Oct. 25-27- 11th annual Harrisonburg Bead, Gem, Mineral & Jewelry Show; Rockingham County Fairgrounds, Commercial Exhibits Building- 4808 South Valley Pike, Harrisonburg, VA 22801. (Off I-81 between exits 240 & 243) Contact Van Wimmer 540-384-6047 or visit www.toteshows.com

Nov. 2-3- 44th annual Gemarama 2013: "Shades of Red"- sponsored by the Tuscarora Lapidary Society. The School at Church Farm, Business Rte. 30, 1/2 mile west of Frazer Rte.30 exit off Rte. 202, Exton, PA.

Nov. 23-24- Annual Gem, Mineral & Fossil Show sponsored by the NOVA Mineral Club, George Mason University, www.novamineralclub.org for more info.

September 2013

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 Meeting 7:00 PM	19	20	21 Field Trip
22	23	24	25	26	27	28 Field Trip
29	30					

ATTENTION ALL CLUB MEMBERS

Workshops will be held regularly on the second Saturday of each month at Dave Callahan's. Start time is 9:00 AM, but come anytime and stay as long as you'd like. There is a store/deli about a mile down the road if you want to break for lunch and return.

The workshops will be open format, and the purpose will be for club members to learn how to use the lapidary equipment to turn rough specimens into finished lapidary pieces for their own personal use. Experienced members will be available to help teach and assist.

We have a great set up with several sets of wheels for cabbing, faceting machines, saws, and much much more. From time to time there may be special class offerings, so be sure to let us know what you are interested in.

Workshops are open to club members only, and due to liability we can not allow guests or non-members at our club workshops. Remember, membership is just $15.00 per year for the fist family member and $3.00 for each additional family member.

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

OFFICIAL COMBINED MINERAL COLLECTING FIELD TRIP
THE GEM AND MINERAL SOCIETY OF LYNCHBURG, VA INC. (HOST) &
THE ROANOKE VALLEY MINERAL AND GEM SOCIETY INC. (HOST)

An official Field trip of the (enter your club's name here)
KYANITE MINING CORP. ------- ANNUAL FIELD TRIP

WILLIS MOUNTAIN KYANITE MINE
If the mine is working, we may have to limit our collecting areas

SEPTEMBER 28, 2013
9:00AM to 1 PM
Sign-up is required, call me, email me or sign-up at the meeting.

All club field trip leaders send me a list of your total collectors so that I can compile a list and forward to the mine management by 9-26-13. There is a total limit of 100 collectors from all clubs for this event so there should be room for everyone.

SAFETY: Everyone should arrive at the office parking lot between 8:30AM and no later than 8:45AM for the required safety briefing. Each Club field trip leader, or his appointed replacement, will act as safety observer and will be expected to be on the lookout for and correct all safety infractions from any collector. Keep in mind that this site is one of the few that is still open for collecting**.** **Not obeying all the safety rules will cause this site to be closed to all future collecting.**

DRIVING FROM THE ROANOKE AND LYNCHBURG AREA: From Roanoke, follow US 460 East to Lynchburg, to the Sheets Station on US 460 and Rt. 811 in New London. Continue on the US 460 East by-pass around Lynchburg thru Appomattox and take Rt. 24 North to the end at US 60 at Mt. Rush. Continue on US 60 East to Sprouses Corner. Turn right on US 15 South and drive 4 miles to Willis Mt. Plant Road. Turn left and stop at the stone mine office and park out of the way as not to block traffic. Allow 1 ¼ minimum hour driving time from New London west of Lynchburg.

GENERAL LOCATION and ASSEMBLY TIME: Everyone will meet at the mine office for sign-in and safety instruction, be there between 8:30 and no later than 8:45am. The mine is located north of Farmville, Va. On Rt. 15 North. Proceed from US 460 North on Rt. 15 for a little over 12 miles to Willis Mt. Plant Rd. The stone mine office on the right. If you approach from Rt. 60 at Sprouses Corner, then go south on Rt. 15 for 4 miles to Willis Mt. Plant Rd. and the office will be on your left. Wait in the parking lot and do not block traffic. Many trucks may be using the road. While you're waiting, be sure to enjoy the beautiful blue kyanite bolder in the front yard from the old closed Baker Mountain.

COLLECTING: Willis Mountain is what's known as a monadnock. The kyanite exposure resisted weathering and, as the surrounding area was eroded and weathered away, the mountain outcrop was left standing. This is very much like the famous Graves Mountain kyanite mine in Georgia. The center of the mountain has been mostly mined away. We should be able to find plenty of white kyanite blades in the massive kyanite quartzite; pyrite; quartz; hematite with some iridescent, red mica, apatite and possibly some blue kyanite and pale green trolleite. Some of the white kyanite here fluoresces a beautiful light blue as well as some of the quartz.

Continued on next page

UP COMING FIELD TRIPS... *Continued from page 9*

EQUIPMENT: The standard quarry gear required is hard hats with a mfg. date of 5 years or less, safety glasses, only steel toed boots or very good strong leather boots will be allowed, long pants, gloves, hammer and chisels, wrapping paper, buckets, food and water. **If you do not have the required safety equipment, you will not be allowed to enter the quarry.** Be prepared for windy, hot or wet weather. We will be on the mountain top and it's always windy. We can drive to the designated collecting area, so hand trucks should not be needed. Bring a camera, as the view is awesome.

AGE LIMIT: There is no age limit, but all children must be signed for and supervised by an adult.

WEATHER: The trip will be canceled in case of hard rain or a thunderstorm. Call to confirm if there is any question.

CONTACT: David Callahan, Phone 540-297-1853 Cell 540-874-5201 Field Trip Chairman for the Lynchburg and Roanoke Clubs, email dbcall1@aol.com **web sites www.LynchburgRockClub.org**

Upcoming DMC Trips

DMC Program of the SFMS Field Trip Committee
An Official Field Trip of the Gem & Mineral Society of Franklin, NC (HOST)
An Official Field Trip of the (enter your associated club's name here!)

10:00 AM
Wednesday, September 25, 2013
Cowee Mtn. Ruby Mine, Franklin, NC
Clay County, North Carolina
NO FEE

Date: September 25, 2013
Day: Wednesday Time: 10 a.m.-
No Fee - Buckets with local dirt from a great Franklin source will be available. There will be no digging however; you may bring your own screen. Mining sluice at this mine will be used for cleaning of dirt
Location: Cowee Mtn. Ruby Mine
6771 Sylva Rd.
Franklin, NC 28734
828-369-5271

For information contact: Arlon Eldridge
828-369-5271 cowee@yahoo.com

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Fluorescent Mineral Display at James Madison University in Harrisonburg, VA

by Mary Loose DeViney, #1650, secretary@uwminerals.org, Keswick, VA

Reprinted from UV Waves, Volume 43, number 4, July-August 2013

Each year, Dr. Lance Kearns opens his geology lab to gem and mineral societies to view their specimens or the lab's specimens with microscopes, ramen spectroscopes, x-ray diffractometers, ultraviolet laps and much more equipment. I usually go to the lab and use the equipment to identify an unknown mineral, or watch as discoveries are made of new minerals in specific locales. The difference this year was my specific interest in the ultraviolet lamps on the mineral case containing the fluorescent minerals.

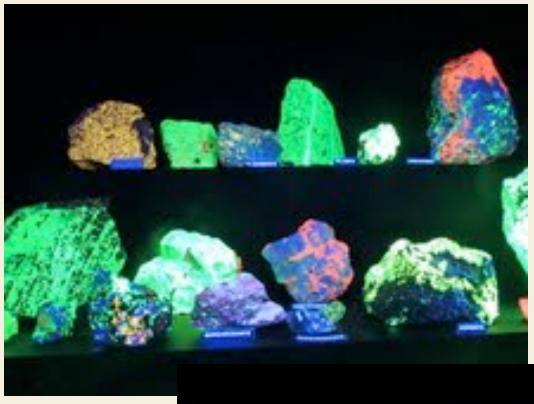
This year I spent my time in the fluorescent mineral drawers looking at specimens, much like I had watched Geologist Dave Woolley look at them for years, but this year the same rocks seemed special. As an FMS Board Member, the fluorescent minerals have piqued my interest even more.

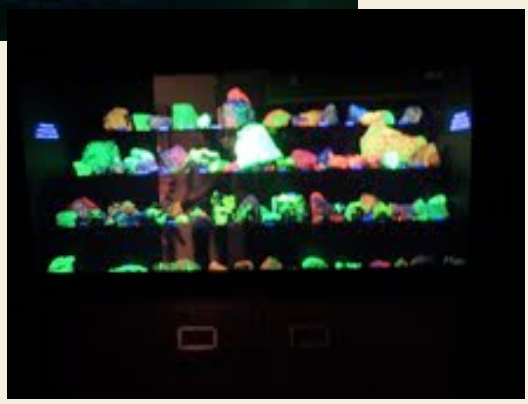
James Madison University in Harrisonburg has a Mineral Museum that houses minerals from across the Commonwealth of Virginia, specifically, and specimens from across the nation and the world, more generally. Virginia does have some minerals that fluoresce, but the geology is not really known for its fluorescents. Hopefully this will change as we begin to spotlight fluorescent Virginia minerals.

For years, Lance has taken up a "collection" for his soon-to-be mineral museum. A thirty year passion to offer a mineral museum came to fruition for lance in 2005. Each year, there is a new mineral or minerals to see. The museum's home is in a secure room provided by the university. The minerals and cases have been made a reality due to gifts from gem and mineral societies and from individuals who believed in his passion for rocks and minerals.

There is a Systematic Collection which is arranged by chemistry and structure, a Locality Collection from Elmwood, TN and Virginia Minerals, and a Fluorescent Mineral Display from Franklin & Sterling Hill, New Jersey. The room is approximately 600 square feet with sixteen display cases. One of the most exciting for our hobby is the ultraviolet display room. The minerals are viewed with ultraviolet lights at all times, yet there is a light to give one an idea of what the mineral may have looked like without the UV light exciting it. I invite all Glow-Enthusiasts to the James Madison mineral Museum to see the collection and view the beautifully flowing minerals.

The museum is located at 395 S. High St. Harrisonburg, VA on the campus of James Madison University's Geology & Environmental Science in Memorial Hall, near entrance E. (Grace St. side of the building). The museum is open to the public Monday through Friday from 8:00am to 4:30PM.





Rockhounding Clues and Tips

by C.E. Johnson, reprinted from 9/3013 Rockhounder

There are many clues out there in the field to guide us, so we just need to know what they are and what they mean, and of course we need to be observant and curious, or we will be just wasting our time. Assuming that we are already out there in the field, anything that appears uncommon or odd such as rust or stains, sudden changes in color of rock or its grain-size, or differences in compositions, may be worth investigating closely. For instance, rust stains could be oxidation products of mineral deposits containing one or more metal-bearing minerals such as those of iron, copper, lead, zinc, uranium, tungsten, manganese, nickel, cobalt, molybdenum, bismuth, and silver (in the form of a chloride). Metal-bearing deposits, of course, indicate a mineralized area, so whether or now you are interested in the metals, such an area is very much worth investigating for other types of minerals. However, even many of those metallic minerals often occur in very attractive forms, whether beautifully crystallized or not.

Sudden changes in color of a rock formation could mean segregations or differentiations of some of the rock's accessory minerals (which are more desirable or valuable than the usual common rock making minerals), or hydrothermal alteration of parts of the rock's accessory minerals (which is a good indicator of mineralizing solutions in the area). Any increase in texture or grain size of an intrusive igneous rock formation such as one of the granite family, would be especially encouraging for several reasons; because one or more of the rock's accessory minerals would be especially valuable in larger sizes; and such rock formations often breed pegmatites, which are always very much worth exploring because of their very special valuable minerals typically occurring in very large sizes, and often very well crystallized. Of course, probably most of us are familiar with quartz or calcite vein material, and the significance of it, and the presence of certain indicatory minerals, and other clues are always a plus, but I can't include them all in this article.

Lava flows with many cavities (bubble-holes), are fairly obvious, and they are often happy-hunting-ground for agate material and zeolite crystals, etc. Our best clues are rock formations, to begin with, if we are familiar with them, because areas can be chosen before leaving home, simply by using geologic maps, which describe the types of rock formations shown in any particular area. However, with or without a geologic map, the usual clues as shown above are standard procedure for rockhounds and prospectors.

We always have rock formations wherever we go, and the types of formations determine whether or not any of the above clues will exist in any given area, what those clues will be, and what minerals to expect, so learning enough about rocks and minerals to be able to use geologic maps as a very valuable tool to is, of course, the best approach to rockhounding and prospection, and I highly recommend it. This and your usual visits to the usual pay-to-dig collecting sites complement each other perfectly. There are many potential areas out there, and geologic maps are a great help in choosing which areas are favorable for which type of minerals before leaving home, and, of course, will guide you in the field. It's not necessary, of course, to be familiar with rock formations to explore for minerals, but if you are naturally curious and you enjoy exploring, at least do yourself a favor and take samples and make notes of those curious-looking areas while traveling to and form those pay-to-dig collecting sites, and find out what your rock samples are and what relationship they may have with what kinds of minerals. Surely there's someone in your community that you can ask about it, at schools or libraries, universities or colleges, local U.S.G.S. offices, or Bureau of Land Management, or forestry service offices, etc. Happy Hunting.

Via West Seattle Petroglyphs, 7/10; via Gem Cutters News 5/10; Via The Rock Collector. 4/10; from El Gambrosino, 4/10.

About Chert *Continued from page 1*

"Chert is the name for a widespread type of sedimentary rock that is made of silica (silicon dioxide or SiO2). The most familiar silica mineral is quartz, but the stuff of chert is quartz in microscopic or even invisible crystals—that is, microcrystalline or cryptocrystalline quartz. Here's how such a rock comes to be.

Chert Ingredients

Like other sedimentary rocks, chert starts with particles accumulating. In this case, the setting is in bodies of water and the particles are the skeletons (called tests) of plankton—microscopic creatures that spend their lives floating in the water column. Plankton secrete their tests using one of two substances that are dissolved in water: calcium carbonate or silica. When the organisms die, their tests sink to the bottom and accumulate in a growing blanket of microscopic sediment called ooze.

Ooze is usually a mixture of plankton tests and extremely fine grained clay minerals. A clay ooze, of course, eventually becomes claystone. An ooze that is primarily calcium carbonate (aragonite or calcite), a calcareous ooze, typically turns into a rock of the limestone group. The creation of chert requires a siliceous ooze. The composition of ooze depends on details of geography: ocean currents, the availability of nutrients in the water, world climate, depth in the ocean and much more.

Siliceous ooze is mostly made of the tests of diatoms (one-celled algae) and radiolarians (one-celled "animals" or protists). These organisms build their tests of completely uncrystallized (amorphous) silica. Other minor sources of silica skeletons include the particles made by sponges (spicules) and land plants (phytoliths). Siliceous ooze tends to form in cold, deep water because calcareous tests dissolve in those conditions.

Chert Formation and Precursors

Siliceous ooze turns to chert by going through a slow transformation unlike that of most other rocks. The lithification and diagenesis of chert is an elaborate process we still have much to learn about.

In some settings, siliceous ooze is pure enough to lithify into a lightweight, minimally processed rock, called diatomite if composed of diatoms or radiolarite if made of radiolarians. But usually things don't stop there.

The amorphous silica of a plankton test is not stable outside the living things that make it. It seeks to crystallize, and as ooze is buried to depths greater than 100 meters or so, the silica begins to mobilize with the modest rise in pressure and temperature. There is plenty of pore space and water for this to happen, and plenty of chemical energy being released by crystallization as well as by the breakdown of organic matter in the ooze.

The first product of this activity is a hydrated silica (opal) called opal-CT because it resembles cristobalite (C) and tridymite (T) in X-ray studies. In those minerals, silicon and oxygen atoms stack together with water molecules in a different arrangement than that of quartz. A less-processed version of opal-CT is what makes up common opal. A more-processed version of opal-CT is often called opal-C because in X-rays it looks more like cristobalite. The rock composed of lithified opal-CT or opal-C is porcellanite.

More diagenesis causes the silica to lose most of its water as it fills pore space in the siliceous sediment. This activity converts the silica into true quartz, in microcrystalline or cryptocrystalline form, also known as the mineral chalcedony. This rock is now true chert.

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About Chert *Continued from page 14*

Chert Attributes and Signs Continued on

Chert is as hard as crystalline quartz, hardness 7 in the Mohs scale—maybe a bit softer, 6.5, if it still has some hydrated silica in it. Beyond simply being hard, chert is a tough rock. It stands above the landscape in outcrops that resist erosion. Oil-well drillers dread it because it's so hard to penetrate.

Chert has a curvy conchoidal fracture that is smoother and less splintery than the conchoidal fracture of pure quartz; ancient tool makers favored it, and high-quality rock was a trade item between tribes.

Unlike quartz, chert is never transparent and not always translucent. It has a waxy or resinous luster unlike the glassy luster of quartz. Whereas sandstone is made of quartz grains, chert is made of quartz *stuff*.

The colors of chert range from white through red and brown to black, depending on how much clay or organic matter it contains. It often has some sign of its sedimentary origin, such as bedding and other sedimentary structures or microfossils. They may be abundant enough for a chert to get a special name, as in the red radiolarian chert carried to land by plate tectonics from the central ocean floor.

Special Cherts

Chert is a quite general term for noncrystalline siliceous rocks, and some subtypes have their own names and stories.

In mixed calcareous and siliceous sediments, the carbonate and the silica tend to segregate. Chalk beds, the calcareous equivalent of diatomites, may grow lumpy nodules of chert of the type called flint. (Similarly, thick chert beds may grow nodules and pods of limerock—limestone or dolomite rock.) Flint is commonly dark and gray, and more lustrous than typical chert.

Agate and jasper are cherts that form outside the deep-sea setting; instead they occur where fractures allowed silica-rich solutions to enter and deposit chalcedony. Agate is pure and translucent whereas jasper is opaque. Both stones commonly have reddish colors from the presence of iron oxide minerals. The peculiar ancient banded iron formations consist of thin layers of interbedded chert and solid hematite.

Some important fossil localities are in chert. The Rhynie Cherts, in Scotland, contain remains of the oldest land ecosystem from nearly 400 million years ago early in the Devonian Period. And the Gunflint Chert, a unit of banded iron formation in western Ontario, is famous for its fossil microbes, dating from Early Proterozoic time some 2 billion years ago.

What Chert Means

As we have seen, chert is primarily a seafloor rock that forms at shallow depths of burial. Because it's made almost entirely of the bodies of plankton, chert is very often rich in organic matter and typically an important source rock for petroleum. The diagenetic process that turns ooze into stone helps the organic matter escape while the mineral matter consolidates.

In the cycle of plate tectonics, most of the material on the world's seafloor ends up recycled into the deep Earth through the process of subduction. Therefore the silica in chert must be an important ingredient in arc volcanism, ore formation, silica enrichment of magma, and all the other processes that maintain the continents against erosion. The quartz found everywhere in veins, in granites and ultimately in sandstones and beaches has surely been

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recycled from chert at least once in Earth's history. "

That may be more than you wanted to know about chert, but it sure is interesting to know that opal and jasper are varieties of chert, isn't it?

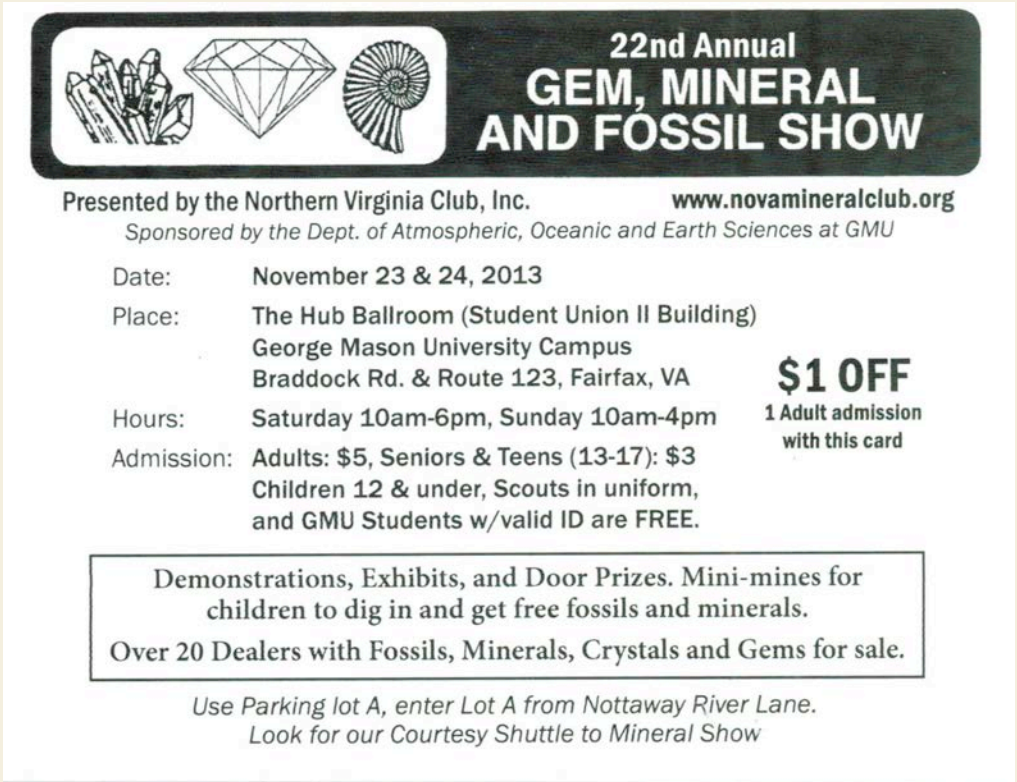
Happy Hunting to all,

Jack Curtin

Upcoming DMC Trip

Saturday October 5, 2013
10AM – 2PM CST
Coon Creek Science Center
McNairy County, Tennessee
FEE $15 – Limited to 35 participants

Program – Field Paleontology (4 Hours): Introduction – 30 minutes; Collecting Session (quarry and surface) – 2 Hour; Lunch – 30 minutes; Clean and Identify Fossils - 45 minutes
Contact: Wayne Ramsey, Fieldtrip Chair MTR; 615-859-7472; WRamsey205@comcast.net or John Stanley, President, MTR; 615-885-5704; jstanley@picagroup.com (no calls after 10pm CST; to register for fieldtrip email MiddleTnRockhounds@gmail.com) http://www.memphismuseums.org/coon_creek-overview/



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Natalie Darling, Editor
211 Chesterfield Rd.
Lynchburg, VA 24502

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Fairview Center
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Lynchburg,VA

DIRECTIONS: Fairview Center; 3621 Campbell Ave., Lynchburg, VA 24501 434-847-1751~ *From Route 29 expressway or Route 460, take the Campbell Avenue Exit. Follow Campbell Ave. to* ***3621****, which is across the street from a* ***Citgo Gas Station****. There is a fence around the building and parking on both streets running along the sides of the property as well as a lot in the back. We will be looking for you!*