

# The Lake George Gem and Mineral Club -

## Club News

May, 2017



**Please Note: Membership in the Lake George Gem & Mineral Club is now closed for 2017. If you did not renew, you cannot attend field trips. However, non-members are welcome to attend meetings.**

### Program for the month: Saturday May 13, 9AM:

At 9 AM on May 13 at the Lake George Community Center, we will not have a regular business meeting but **John Rakowski** will give a PowerPoint slide presentation mainly oriented to new collectors in this area. This may also be a good refresher discussion for other members. He will discuss the **general geology of the Pikes Peak region** and present a general discussion of the **pegmatite mineralization in the Pikes Peak Granite**. There will be a discussion of **the common minerals in this area with tips to identify them**. Beginning tool selection and safety tips will be discussed along with tool suggestions for more serious collectors (see article near the end of this Newsletter). **Examples of the minerals and tools will be available.**

The session should be completed by about 10-10:30 AM and will be followed by a **field trip to the Wigwam Creek Claim area** traveling by convoy; carpooling is encouraged. The intent is to follow the meeting-room discussion with examples on the ground at the claim area. Travel time to the claim area from Lake George is about 90 minutes. **Be sure you have plenty of gas, a lunch and drinking water.** Minimum suggested tools are a **rock hammer (not a carpenter hammer), GI folding shovel and a small brush or whisk broom.** **Bring egg carton(s) and newspaper for your finds.**

**As with any other field trip, this is weather dependent!**

### Coming Events

- ✓ ✓ Several mineral, fossil, and geology clubs meet relatively nearby and encourage visitors. These include:
  - > **Cañon City Geology Club**, meets on the 2<sup>nd</sup> Monday of the month at 6PM in the United Methodist Church, Cañon City;
  - > **Colorado Springs Mineralogical Society**, meets on the 3<sup>rd</sup> Thursday of each month at 7PM in the Colorado Springs Senior Center, 1514 N. Hancock Ave., Colorado Springs;
  - > **Columbine Gem & Mineral Society**, meets on the 2<sup>nd</sup> Thursday of each month, 6:30PM in the meeting room, Mt. Shavano Manor, 525 W. 16<sup>th</sup> (at J St.), Salida;

>**Pueblo Rockhounds**, meets on the 3<sup>rd</sup> Thursday of each month at 6:30PM in the Westminster Presbyterian Church, 10 University Circle, Pueblo.

✓ ✓ **Pete Modreski** and others sent notices of the following upcoming events:

**Wed., May 3**, 4:00 p.m., CU Geological Sciences Seminar, Boulder, **The Obstacles Are Largely the Same: On Climate Change and Education Reform**, by Don Duggan-Haas, the Paleontological Research Institution and Museum of the Earth, Ithaca, NY; Benson Earth Sciences Building Auditorium (room 180). All welcome; refreshments are served at 3:30 in the 2nd floor atrium.

**Sat., May 6**, 11 a.m. – 2:45 p.m., **Colorado Mineral Society's Silent and Verbal Auction**, Holy Shepherd Lutheran Church, 920 Kipling St. (3 blocks north of West 6th Ave.) Lakewood, CO 80215. "Minerals, fossils, faceted stones, lapidary pieces, books, jewelry, and fluorescent minerals. Door prizes every half hour, raffle at 2:45pm. Special verbal auction at 1:00 pm of museum quality specimens donated by special dealers. Abundant parking, refreshments, and easy handicap access. A few auction tables reserved for only children to bid on. Checkout will begin at 2:45pm (cash or check only). \*\*A special invitation is extended to non-CMS members to participate in this auction as sellers and buyers.\*\* Limit of sales to three flats of materials. Sellers can get copies of bidding slips on our club website (fillable and printable pdf file): see <http://www.coloradomineralsociety.org/>. Checkout will be by bidder number, so contact Leslie Osgood at 303-986-4488 for a bidder number and/or seller letter. Any questions about the auction should be directed to Ben Geller by phone at 303-550-5993 or by email at [geller520@gmail.com](mailto:geller520@gmail.com)."

**Thurs., May 11**, 7:30 p.m., monthly meeting of the **Colorado Chapter, Friends of Mineralogy**. 7:30 p.m., social time to meet & talk with members, and all are invited to bring specimens to show or pictures to share as PowerPoint or .jpg images. 8:00 p.m., formal meeting and program—speaker & topic still TBA at this time. VIP Room, Denver Museum of Nature & Science. All are welcome. See <http://friendsofmineralogycolorado.org/events/> for more info.

**Fri., May 12**, 3:00 p.m., **The Evolution of Sensory Systems in Mammals**, by Simone Hoffman, New York Institute of Technology; Denver Museum of Nature & Science Earth Sciences Colloquium, VIP Room, DMNS, all are welcome, Museum admission not required to attend.

**Sat., May 13, Friends of Mineralogy, Colorado Chapter, Silent Auction.** Clements Community Center, 1580 Yarrow St., Lakewood CO, 12:00-4:00 (setup begins at 10:30 a.m., auction begins at 12:00, verbal auction 1:00, all tables will close by 3:00 p.m., checkout follows). For more info see <http://friendsofmineralogycolorado.org/>.

**Sat., May 13, Dinosaur Discovery Day – Boy Scout Day** at Dinosaur Ridge, Morrison, CO. Scouts as well as the public are invited." Parking will be off-site at the Bandimere Speedway overflow lot located east of C-470 and south of Alameda along S. Rooney Road. Signs will be posted. Parking is \$5 per car, paid as you enter. More than 80 earth scientists and other volunteers, including certified Merit Badge Counselors, assist with the event." There is a registration fee for participating Scouts, and a \$4 per person charge for persons (over age 3) who wish to take a bus tour of the ridge" (no charge for just a walking tour). For full information see <http://www.dinoridge.org/scoutdays.html#bsa>. The next Dinosaur Discovery Day will be **Saturday, June 10**. For a full list of upcoming lectures, field days, and other events at Dinosaur Ridge please see <http://www.dinoridge.org/calendar.html>.

**Thurs., May 18**, 7:00 p.m., **Too Warm, Two Poles: How Past Super Interglacials Should Inform Future Coastal Policy**, Julie Brigham-Grette, University of Massachusetts-Amherst. Annual S.F. Emmons Lecture of the Colorado Scientific Society; American Mountaineering Center Auditorium, 710 10<sup>th</sup> St., Golden. No admission charge and all are welcome.

**Sun, May 21**, noon (shared potluck lunch), 1 p.m. (lecture), "**A geologic cross section of Colorado along the I-70 corridor**", by geologist Ned Sterne. At the Dinosaur Discovery Center, west side of Dinosaur Ridge, 17681 W. Alameda Parkway Morrison (located at Entrance 1, the north entrance, to Red Rocks Park). See <http://www.fss-co.org/> for details, or contact Beth Simmons at [cloverknoll@comcast.net](mailto:cloverknoll@comcast.net). All are welcome.

**Mon., May 22**, 3:00 p.m., **Hyperthermals: Extreme Global Warming Events in the Geological Past**, by William Clyde, University of New Hampshire;. Denver Museum of Nature & Science Earth Sciences Colloquium, VIP Room, DMNS, all are welcome, Museum admission not required to attend.

**Fri.-Sun., May 26-28, Fossil Fish Dig, Kemmerer, Wyoming.** Friends of Dinosaur Ridge is sponsoring a field trip to collect fossil fish at a private quarry in Kemmerer, WY. The registration fee of \$550 per person (\$525 for Friends

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members and volunteers) includes transportation to and from Kemmerer, 2 nights lodging, 2 breakfasts and 2 lunches, 2 speaker sessions about the fossils, and 2 days (4 hours each) digging for fossils. Registration and full payment is due by May 5. For full info and a copy of the registration form, please write to [volunteer@dinoridge.org](mailto:volunteer@dinoridge.org).

**Fri.-Sat.-Sun., June 2-4, Pikes Peak Gem & Mineral Show**, sponsored by the Colorado Springs Mineralogical Society. At Mortgage Solutions Financial Expo Center, 3650 N. Nevada Ave., Colorado Springs. 10-5 Fri. & Sat., 10-4 Sun.

**June 8-11, Fairplay Contin-Tail** rock, gem, and mineral show, MiddleFork RV Resort, 255 Highway 285, Fairplay, CO; see [www.facebook.com/ContinTail](http://www.facebook.com/ContinTail).

**June 16-18, Victor, CO Gem and Mineral Show**, Victor, CO; see <http://victorcolorado.com>

**Sunday, June 25, a geologic field trip through South Park**, led by Peter Barkmann, Colorado Geological Survey. A one-day field trip sponsored by the Florissant Scientific Society; all are welcome to attend. Details are still TBA. The trip will generally follow the route of a trip Peter led during the 2016 Geological Society of America annual meeting,

**Sat.-Sun., July 15-16**, The Florissant Scientific Society will hold its annual multi-day event at the Bear Basin Ranch in southern Colorado, south of Canon City. "Gary Ziegler, ranch owner and international archeologist will show us the culturally modified trees there and tell us about his work in Peru. There is a cabin where 6-8 people can bed down for the night. Campers are welcome. You can look at the Bear Basin Ranch's website to get a feel for the ranch. Other accommodations are available in Westcliffe and Florence. More information, including costs, to come later." See <http://www.fss-co.org/> for future info to be posted.

**Fri.–Mon., July 21-24, Gold and Silver Deposits in Colorado**, a symposium cosponsored by the Friends of the Colorado School of Mines Geology Museum, the CSM Museum, DREGS (Denver Region Exploration Geologists Society), and Friends of Mineralogy, Colorado Chapter. "The event will feature two days of talks (July 22 - 23) and two days of field trips (July 21 and 24) to historic Colorado gold and silver mining areas, focusing on the Front Range and the northern half of the Colorado Mineral Belt." More information about the symposium is at: <https://www.facebook.com/LikeCSMGeoMuseum/posts/1822491981371516> . Registration cost will be \$100; students, \$50; banquet, \$40; each field trip, \$40. A complete registration form will be available soon.

**Aug. 4-6, Creede Rock & Mineral Show**, at the Creede Underground Mining Museum and Community Center, Creede, Mineral County, CO. 10 a.m. – 5 p.m. daily; see <http://creederocks.com/> .

**Aug. 10-13, Contin-Tail rock & mineral show**, Buena Vista Rodeo Grounds, Buena Vista, CO; see [www.facebook.com/ContinTail](http://www.facebook.com/ContinTail)

**Aug. 17-20, Woodland Park Rock, Gem, & Jewelry Show**, Woodland Park, CO; see <https://www.facebook.com/woodlandparkrockandgemshow/>

**Aug. 18-20, Lake George Gem & Mineral Show**, sponsored by the Lake George Gem and Mineral Club, Lake George, CO. See <http://www.lggmclub.org/>; set-up will be on August 12.

**Sep. 8-16, Colorado Mineral and Fossil Fall Show**, Crowne Plaza Hotel - Airport, 15500 E. 40th Ave. Denver, CO.

**Sep. 9-17, Denver Coliseum Mineral, Fossil, and Gem Show**, Denver Coliseum; see <http://www.coliseumshow.com/>

**Sep. 13-16, Denver Fine Mineral Show**, Denver Marriott West, 1717 Denver West Blvd.; see <http://finemineralshow.com/denver/>

**Sep. 15-17, 50<sup>th</sup> annual Denver Gem and Mineral Show**, Denver Mart, 451 E 58<sup>th</sup> Ave., Denver, CO. **Gold and Silver** is the 2017 show theme. See <http://denvershow.org/wp/>

**Nov. 11-12, 38<sup>th</sup> annual New Mexico Mineral Symposium**, at New Mexico Institute of Mining & Technology, Socorro, NM; see <https://geoinfo.nmt.edu/museum/minsymp/home.cfml>

**Nov. 17-19, Denver Area Mineral Dealers Show**, Jefferson County Fairgrounds, Golden CO.

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✓ ✓ Please welcome the following new members:

**Tim & Melanie Allums  
Lee & Stacy Burnett  
Elaine Chambers  
Jerry Crossland  
Robert Crossland  
Scott & Dawn Hanson  
Harold Hilley  
Justin Himlin  
Catherine McLaughlin  
Christopher Milton  
Brittany Northwood  
Suzanne & Phillip Ort  
Lori & Ken Rebisch  
Denise Ruybalid-Miller  
Kevin & Linda Tacker  
Harold Taylor  
Susan Williammee  
Bob & Mary Beth Williams**

✓ ✓ **Bob Baker** sent this note about this summer's field trips:

#### **2017 Field Trips**

May 13: Patience/Piety claims (smoky quartz/fluorite) (easy)  
May 24: Baculite Mesa (Cretaceous fossils) (easy)  
June 3: Sedalia Copper mine (almandine garnet/other minerals) (steep hike in)  
June 7: Arroya gulch (gemmy almandine garnet) (easy)  
June 10: Badger Flats (magnetite/fluorite/barite/malachite) (easy)  
June 17: Blue Moon (smoky quartz/amazonite) (Karen Vogl claim)  
June 18: Calumet mine (epidote/quartz xls./magnetite/corundum) (steep slopes; large area)  
June 24: Topaz Mountain mine (topaz) (easy; \$50 fee) (Dorris claim)  
July 19: Smoky Hawk claim (amazonite/smoky quartz) (Dorris claim)  
July 26: Badger Flats (magnetite/fluorite/barite/malachite) (easy)  
July 29: Harvey blue barite mine (barite) (easy)  
August 2: Mushroom gulch (jasper)  
August 9: Spruce Grove (topaz) (moderate hike at 9000 ft.)  
August 12: Specimen/Sentinel rock (fluorite/amazonite/quartz) (extreme hike)  
August 26: Eureka mine (fluorescent zircon/riebeckite/astrophyllite) (moderate walk)  
Sept. 8-10: Great Salt Plains (gypsum crystals) (3-day trip to Oklahoma)

Bob Baker

[bobsboards46@gmail.com](mailto:bobsboards46@gmail.com)

[719-464-7102](tel:719-464-7102)

✓ ✓ Thanks to **Jerrolynn Kawamoto** and **Carol Kennett**, who volunteered to take over as joint Show Chairs for 2017, and to **Becky Blair**, who is acting as Dealer Chair.

✓ ✓ Thanks to **John Gibbs** for donations of specimens for Pebble Pups.

✓ ✓ Congratulations to **Steve Veatch**, who was recently appointed to the Board of Trustees of the Western Museum of Mining and Industry. Remember that your membership in the LGGMC gives you free admission to the WMMI.

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✓ ✓ Our club is proud to have donated money to the Cripple Creek District Museum that allowed the museum to purchase a 46-pound sample of turquoise, plus some polished turquoise pieces, from the Burtis mine in Cripple Creek. We also loaned them a display case to temporarily house the specimen, until they buy a permanent case. Members can see the specimen on display during regular museum hours.

✓ ✓ **Wayne Orlowski** sent several interesting links, including the following:

✓ *I found an image of a coccolith on the web and have always been impressed with their numbers, size, and geometry,*

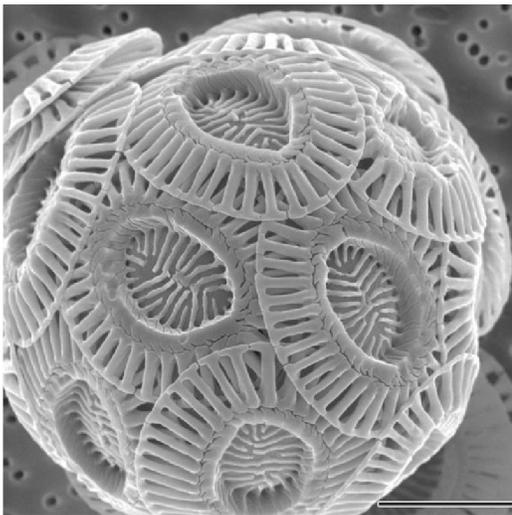
*"Like any other type of phytoplankton, coccolithophores are one-celled marine plants that live in large numbers throughout the upper layers of the ocean. Unlike any other plant in the ocean, coccolithophores surround themselves with a microscopic plating made of limestone (calcite). These scales, known as coccoliths, are shaped like hubcaps and are only three one-thousandths of a millimeter in diameter or less. Note the scale bar on the image = 1 micrometer or micron or one millionth of a meter, which is very very very small!*

Article --- <https://earthobservatory.nasa.gov/Features/Coccolithophores/>

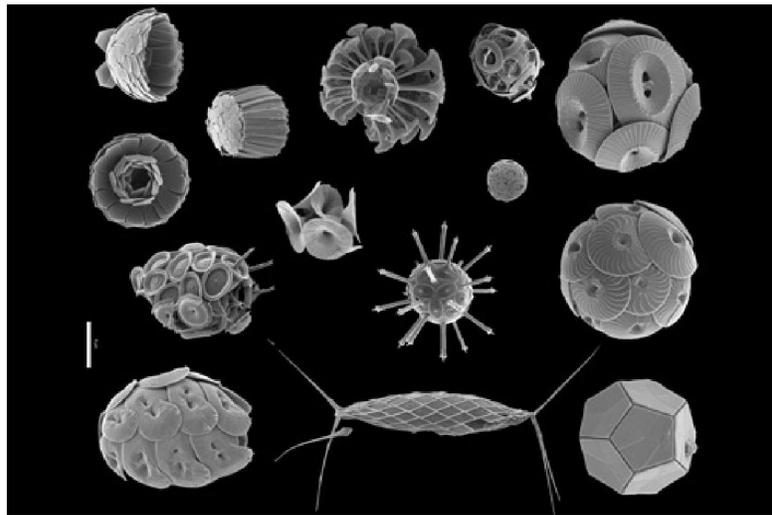
BBC video --- <http://www.bbc.co.uk/nature/life/Coccolithophore#p00bxk9c>

More Geometry at Pictures --

- [https://www.google.com/search?q=&tbm=isch&tbs=rimq:Cf1IEMdhanDljhKgNuO8eOCE4EHGjwA\\_1sqg7gOCDBAbs5UtlZaaXvjO2HuGIVdmeR4API0s2k-BQsWbWEsci1nAioSCUqA247x44ITESH\\_1wUZXPBiWKhJgQcaPAD-yqAR51jln\\_1YZ61sqEgnuA4INsBuzIRGKmuKyydOShyoSCS2W1lpe-M7EaxTJQkJ10VKKhIJYe4aVV2Z5HgRqdPuitwMtcwqEgkA8jSzaT4FCxFg3-gbLLKMKSoSCRZtYSxyLWcCEQS-s9qFGpQo&tbo=u&sa=X&ved=0ahUKEwjy1oThuMnTAhUo1oMKHYOIBf0Q9C8IGw&biw=1600&bih=736&dpr=1](https://www.google.com/search?q=&tbm=isch&tbs=rimq:Cf1IEMdhanDljhKgNuO8eOCE4EHGjwA_1sqg7gOCDBAbs5UtlZaaXvjO2HuGIVdmeR4API0s2k-BQsWbWEsci1nAioSCUqA247x44ITESH_1wUZXPBiWKhJgQcaPAD-yqAR51jln_1YZ61sqEgnuA4INsBuzIRGKmuKyydOShyoSCS2W1lpe-M7EaxTJQkJ10VKKhIJYe4aVV2Z5HgRqdPuitwMtcwqEgkA8jSzaT4FCxFg3-gbLLKMKSoSCRZtYSxyLWcCEQS-s9qFGpQo&tbo=u&sa=X&ved=0ahUKEwjy1oThuMnTAhUo1oMKHYOIBf0Q9C8IGw&biw=1600&bih=736&dpr=1)



(decodedscience.org)



(www.bristol.ac.uk)

✓ Here's a link to a short video of a spectacular rock flow:

<https://www.facebook.com/severeweatherEU/videos/1997143960508695/>

✓ ...and a link to some spectacular volcano footage:

<https://www.facebook.com/GuatemalaImpresionantePaginaOficial/videos/600897240098700/>

Awesome. Make sure to go full screen, go HD, and turn up the volume. Cannot believe how close people appear to live in proximity to the Fire Volcano.

✓ ✓ **Dan Alfrey** forwarded the following e-mail about a rock-tumbling resource:

Dear Mr. Alfrey,

I am writing to let you know about a resource that might be of interest to your club members. We believe that we have compiled the internet's largest library of rock tumbling articles!

<http://rocktumbler.com/questions.shtml>

Please consider adding us to your resource list at <http://www.lggmclub.org/Links.htm>.

Thank you!

Sincerely,  
Angela King

[RockTumbler.com](http://RockTumbler.com)  
1040 Eberly Way, Suite 150  
Lemont Furnace, PA 15456

✓ ✓ And here is the latest installment of "Bench Tips" by Brad Smith ([www.BradSmithJewelry.com](http://www.BradSmithJewelry.com)):

### **CUTOFF WHEELS**

Cutoff wheels are inexpensive and do a great job cutting or shaping steel. You can use them to sharpen tool points, cut piano wire to length, make slots, and sharpen worn drills. Other uses include modifying pliers and making your own design stamps.

My preference is the one inch diameter size. Be sure to hold the wheel firmly so nothing moves to break the disk, and definitely wear your safety glasses. Those are little flakes of steel coming off the disk.

BTW - Cutoff wheels are poor at soft metals like copper, silver and gold. Soft metals clog up the cutting edges.

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### **DEBURRING JUMP RINGS**

When cutting jump rings from large gauge wire for chain making, you'll notice the saw leaves a small burr. An easy way to remove these is to tumble the rings with some fine-cut pyramids. It's best not to tumble for a long period with the pyramids because it will remove the polished finish from the wire.

No tumbler, no problem. You don't actually need a tumbler. I just put a handful of pyramids in a wide mouth plastic jar and shake for a bit. You can find these pyramids in the tumble finishing section of most jewelry supply catalogs.

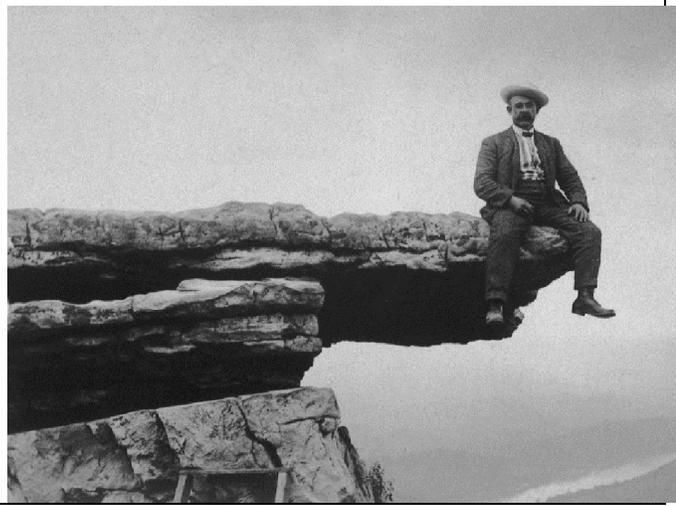
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See all Brad's jewelry books at [Amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)

## Notes from the Editor

Bob Carnein, Editor

[ccarnein@gmail.com](mailto:ccarnein@gmail.com)

719-687-2739



I received two articles from members this month. The first, by **John Rakowski**, has appeared before, but I think it's especially useful to review it at this time of year. It covers equipment and safety issues related to field collecting.

The second article, by **Norma Engelberg**, is on the Mohs hardness scale. If you ever wondered where this scale came from, read Norma's article and find out!

## Field Collecting Notes by John Rakowski

These notes have been printed in a past newsletter but should be useful to assist new members and serve as a reminder for the older members. I encourage our more experienced members to bring extra tools when possible to help supplement tools available to our newer members on field trips.

### General:

- Be sure you will be going to unclaimed public land or if not, that you have permission.
- If you're on a Club Field Trip pay attention to descriptions of the area where collecting is allowed and any safety information for that site that is provided.
- It's safest and more fun to be prospecting or collecting with at least one other person.
- Make sure you tell someone where you are going and when you expect to be back.
- Use a map or GPS to keep track of where you're going and where you found specimens.
- Keep good notes of where your specimens were found with and place copies in boxes with the specimens
- Stay away from mine openings unless you're with specially trained and equipped people

### Safety and comfort:

- Make careful mental note of landmarks and surroundings so you can find your way back.
- Protect eyes with safety glasses (polycarbonate) or safety goggles.
- Comfortable back pack or 5 gallon size bucket to carry everything.

- Sturdy and safe hiking or work boots for the occasion; prefer steel toes if there are lots of loose big rocks such as Mt. Antero
- Sunscreen, insect spray, toilet paper (TP can be good wrapping for delicate specimens)
- Plenty of water, also food if you'll be gone most of the day
- Use gloves as quartz and other material can slice and dice your fingers quickly!
- Light raincoat BUT beware of lightning storms!
- Knee pads
- Safety orange color vest during hunting season or in coyote hunting areas
- Emergency blanket, Whistle, small first aid set with band aids and antibiotic ointment

### **Initial digging and search tools:**

- Picks, small or medium
- Shovels, small folding or large short handled
- Brush or whisk broom, magnifier and folding saw

**For the initial reconnaissance tools, just take the Safety/Comfort items, small pick, folding GI shovel and brush. You can explore more area this way and when you find a zone of interest you can go back for more tools and packing materials.**

### **Pocket or specimen recovery:**

- Big pick and big shovel and big pry bar to clear the area around a pocket or zone of interest and to knock down and muck out dangerous overhangs.
- Quarter inch hardware cloth mesh screen for some areas like topaz sites
- Small pick and small pry bars
- 3 pound sledgehammer and cold chisels of various sizes (avoid mushroomed chisels)
- Small shovel, trowel, hoe, brushes
- Screwdrivers straight or bent, Bamboo skewer sticks and dental picks
- Egg cartons, newspaper, toilet paper, boxes, bags, Soda pop flats to protect your finds

**Consider Bright Paint on your small tools to make them easier to keep track of. When you find your "goodies" dig around them to make it easier to recover unbroken specimens. Don't dig extended undercut areas – break and muck out overhangs (cover pocket with protective cloth or newspaper which will also alert you when you're digging out that you're at your pocket). Wrap specimens carefully-they will chip or break if not wrapped and protected. If you find a pocket save all pieces, take them home and clean everything since many times specimens can be repaired. After cleaning, work on your 3-D puzzle.**

**Not everybody will have all these tools described above but they're part of a suggested list. The most important items are the Safety/Comfort items and the material for protecting your finds.**

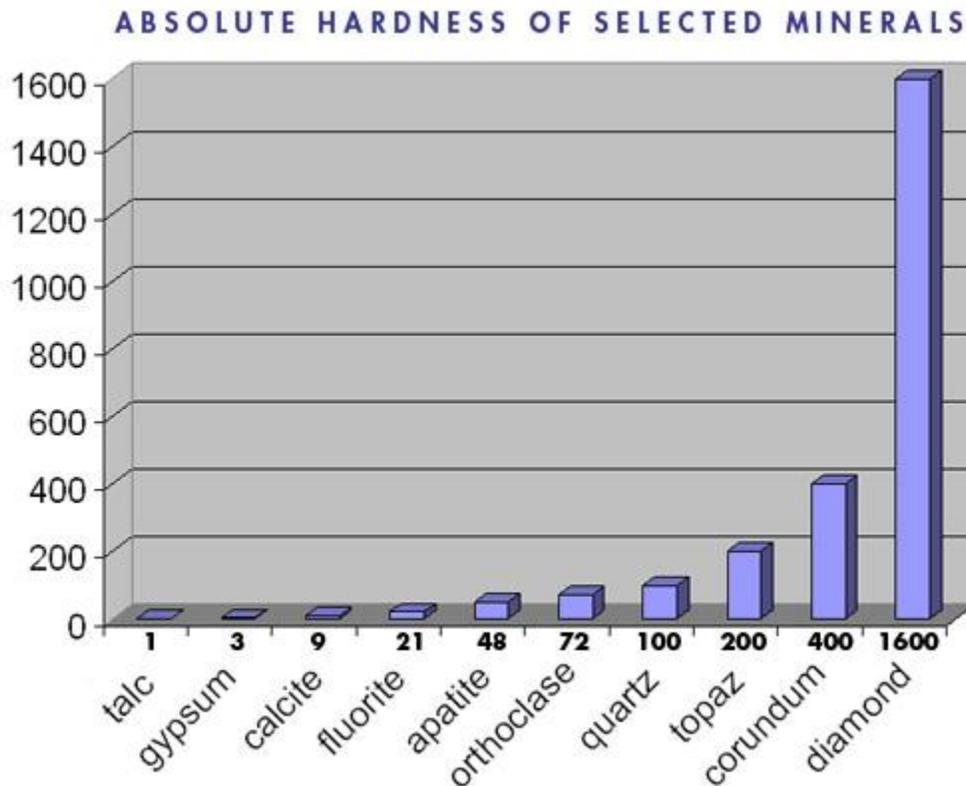
## **Who Was Mohs and Why Do We Want to Know Him?**

**by Norma Engelberg**

As rock hounds, we spend a lot of time collecting mineral specimens but, unless we collected those specimens at a show or in a shop, none of them come with identification labels.

Identifying minerals is part of the fun. One of the tools we use to identify mineral specimens is the Mohs Scale of Mineral Hardness. The scale is based on the ability of one mineral to scratch or not scratch another.

We know that diamonds are harder than talc, but the Mohs scale tells us just how much harder. According to the scale, talc has an absolute hardness of 1 and rates a 1 on the scale. No. 2, gypsum,



(<http://farm4.static.flickr.com/3571/3668>.)

has an absolute hardness of 3, which means it's three times harder than talc. No. 3, calcite, is nine times harder than gypsum. Notice that the scale shows **relative hardness**, rather than absolute hardness.

At the top of the scale, diamond is ranked No. 10. At 1600 absolute hardness, it's four times harder than No. 9 corundum (400 absolute hardness), which is twice as hard as No. 8, topaz (200 absolute hardness).

By scratching an unidentified mineral against or with something with a known hardness, we can determine how hard our unidentified mineral is. Once we determine its hardness, we can eliminate entire classes of minerals.

For example, if your mineral specimen can scratch glass, which has a hardness of about 5.5, then it is harder than any mineral that glass can scratch, including fluorite (4), copper and calcite (3) or gold (2.5). If, in addition, your mineral can be scratched by a piece of quartz (7), then its hardness has to be between the 5.5 and 7, eliminating anything harder than 7.

That means that no matter how clear it is or how prettily it shines, your specimen isn't topaz or diamond. Sorry.

Of course, there's a lot more to the Mohs scale and there are several other scales that are more precise, but the purpose of this article is not to identify minerals but to identify Mohs and why his scale works for us.

Friedrich Mohs (1773-1839) was a German (some sources say Austrian) geologist and mineralogist. He studied chemistry, mathematics and physics before studying geology at the Mining Academy at Freiberg, Saxony, and taking a job as a mine foreman at age 28.



Portrait of Friedrich Mohs (1773-1839). (GEOetc.com)

In 1802, he took a job trying to identify minerals in an Austrian banker's private collection. In 1812, he moved on to a museum and science academy established by Archduke Johann in Graz, Austria. It was here that he developed his scale.

When Mohs started trying to identify minerals, the prevailing standard was to use a mineral's physical characteristics rather than its chemical composition. Then, as now, most people were not chemists, and physical characteristics are easier to discern than doing chemical analyses.

People had been using the hardness of one mineral to establish the hardness of another since the early Greeks. For example, Pliny the Elder knew that diamond was harder than quartz, something good to know if you want to avoid being flimflammed into buying fake diamonds.

Of course, hardness won't always help. At 8.5, cubic zirconia is also harder than quartz and it's nice and sparkly, too. How many of us carry around anything harder than 8.5 to test for cubic zirconia? (Thankfully there are other ways to tell diamonds from cubic zirconia. Look on YouTube.)

Mohs used his hard-earned knowledge to quantify hardness. He assigned the top of his scale, No. 10, to diamond, the hardest naturally occurring mineral, and No. 1 to talc, the softest. He gave everything else intermediate values, depending on their ability to scratch or be scratched.

Other scales are more precise and can be used to determine how well a substance will perform under stress or pressure, for example, something Mohs scale wasn't designed to do.

We're not trying to find the best material to build a bridge or construct an airplane, we just want to know what we have. For that, Mohs scale is good enough, and it's easy to use in the field or back home after a dig.

There are Mohs Mineral Hardness Scale kits that start at around \$100, but most of the items needed to field test for hardness can be found in our homes – a fingernail (2.5), a copper penny (3), a pocket knife blade (5.5), a glass jar (6-7), the unglazed back of a white ceramic tile (also 6-7 but it can also be used for a streak test).

**Bob Carnein** gave a Mineral Identification class in early 2016. He used these simple items to identify the hardness of a variety of minerals. He taught us that finding a specimen's hardness is an important step toward identifying what we find in the field.

Lake George Gem & Mineral Club  
PO Bo 171  
Lake George, CO 80827



**The Lake George Gem and Mineral Club** is a group of people interested in rocks and minerals, fossils, geography and history of the Pikes Peak/South Park area, Indian artifacts, and the great outdoors. The Club's informational programs and field trips provide opportunities to learn about Earth science, rocks and minerals, lapidary work and jewelry making, and to share information and experiences with other members. Guests are welcome to attend, to see what we are about!

The Club is geared primarily to amateur collectors and artisans, with programs of interest both to beginners and serious amateurs. The Club meets on the second Saturday of each month at the Lake George Community Center, located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops. **In the winter, we meet at 10:00AM. From April through October, we meet at 9:00AM, to allow more time for our field trips.**

Our organization is incorporated under Colorado law as a nonprofit educational organization, and is a member of the Colorado, Rocky Mountain, and American Federations of Mineralogical Societies. We also sponsor an annual Gem and Mineral Show at Lake George, where collectors and others may purchase or sell rocks, minerals, fossils, gems, or jewelry. Annual membership dues (Jan. 1 through Dec. 31) are \$15.00 for an individual (18 and over), and \$25.00 for a family (parents plus dependents under age 18).

**Our Officers for 2017 are:**

**John Sprouse**, President  
402 Fremont St.  
Penrose, CO 80814  
719-372-3172  
coedodge@yahoo.com

**John Rakowski**, Vice President  
PO Box 608  
Florissant, CO 80816  
719-748-3861  
rakgeologist@yahoo.com

**Bob Korzekwa**, Treasurer  
11120 Falls Ave.  
Green Mountain Falls, CO80819  
bobbykorzekwa@yahoo.com

**Norma Rhodes**, Secretary  
7546 Duck Hawk Place  
Fountain, CO80817  
normajalexander@gmail.com

**C.R. (Bob) Carnein**, Newsletter Editor  
507 Donzi Trail  
Florissant, CO 80816  
719-687-2739  
[ccarnein@gmail.com](mailto:ccarnein@gmail.com)