



# The Mineral Newsletter

**Next meeting: January 2 Time: 7:30 p.m.**

Virtual meeting through Zoom



Volume 64, No. 1  
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Explore our [website!](#)

**January Meeting Program:**  
Kicking Off the New Year  
*details on page 7*

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**Carrollite**  
Kamoya South II Mine,  
Kambove, DR Congo  
*Source: Mindat. Photo: Rob Lavinsky.*



## Mineral of the Month Carrollite

by Sue Marcus

The type locality for our January Mineral of the Month brings us fairly close to home. Before we get to that, let me introduce you to carrollite.

Carrollite is a relatively rare copper cobalt sulfide. Cobalt deposits are rare, and carrollite crystals are bright, shiny, and metallic. Their color is silvery, tinged with yellow, possibly from copper in the crystal lattice. Chalcopyrite, a copper iron sulfide mineral, often occurs with carrollite and occasionally coats the carrollite crystals.

### Nomenclature

*Sychnodymit* ([sychnodymite](#) in English) was a name used in Germany in the 1890s for the same mineral as carrollite; but carrollite is the name used in the earliest mineral description, so it is the legitimate mineral name.

William Faber first described and named this mineral for Carroll County in Maryland, the source of the type specimen, found by Professor James Booth. In his original 1852 description, Faber includes this footnote: "The name is given in memory of the locality whence it was obtained, as well as a name cherished by all Americans." Time has passed since Faber wrote that, though I doubt that even in 1852 [Charles Carroll](#) of Carrollton, the county's namesake, was known to *all* Americans. He may be best known as a signer of the Declaration of Independence.

The chemical formula for carrollite is usually given as  $\text{CuCo}_2\text{S}_4$ . However, technological advances have produced new equipment that scientists can use to improve and sometimes complicate our lives. Patrick and others (2008) determined that the more precise formula for carrollite is  $\text{Cu}^{1.2+}(\text{Co}^{2.4+})_2(\text{S}^{1.5-})_4$ . I am glad I took mineralogy in the Dark Ages, when formulas were simpler. (There will *not* be a quiz.)

### Geologic Environment

Carrollite usually forms in veins with pyrite and copper minerals like chalcopyrite, bornite, and chalcocite. Hydrothermal fluids extract elements from the surrounding rocks and, as the fluids cool, recombine those elements with elements contained in the original fluids. The resulting minerals include carrollite.

# Happy New Year!



### Northern Virginia Mineral Club members,

The next club meeting will be on **Tuesday, January 2, 7:30 p.m.** We won't have our usual Monday meeting place, so the meeting will be online through Zoom.

See program details on page 7.



*Carrollite on calcite with spherocobaltite, Kambove Principal Mine, Kambove, DR Congo. Source: Mindat; photo: Brian Kosnar.*

Sometimes, when we collectors are fortunate, there is space and time for the minerals to grow into crystals. More often, the minerals solidify as grains interlocked with other mineral grains, with no evidence of crystal faces.

### Maryland

Several mines in Carroll County, MD, explored deposits of iron and copper, with cobalt found and probably extracted but not as a primary source of the mining



*Carrollite from the area of the type locality in Carroll County, MD. This specimen came from the Mineral Hill Mine. Source: Mindat; photo: Rob Lavinsky.*

economics. The mines were active in the mid-19<sup>th</sup> century. The miners worked veins in shear zones and along faults in chlorite-amphibole schist. Mineralization occurred in the late stages of regional metamorphism.

Cobalt minerals from the [Patapsco](#), [Mineral Hill](#), and [Springfield](#) Mines included carrollite, linnaeite, siegenite, and gahnite. Chemical analyses of copper and cobalt varied because distinct minerals were intergrown and analytical techniques were more limited in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries than they are now. Although mineralogists in those times debated the veracity of the carrollite analyses, there has been no retraction of Carroll County as a source of this mineral.

The Patapsco Mine in Carroll County, also known as the Finksburg or Orchard Mine, is the type locality for carrollite. Separate parts of the mine property received additional names. Mining began about 1850 on seven veins and progressed underground at two levels to a depth of 365 feet.

Faber's type specimen occurred in a chalcopryrite (he called it copper pyrites) vein along with "erubeacite," of which I could find scant mention. An online search found a reference to erubeacite in an 1861 version of H.W. Bristow's Glossary of Minerology. The online reference led to a document that was either a poorly scanned or never corrected version of that book; even

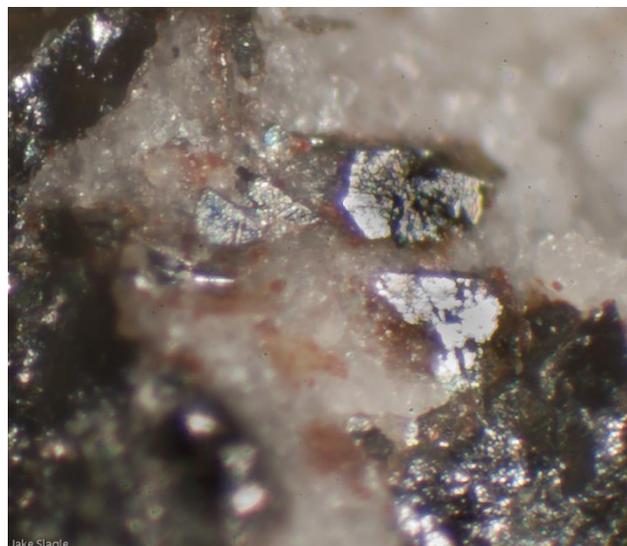
the author's name was misspelled. It may have originally been published in German. I found a more readable online version of Bristow's Glossary, though I could not find any mention of erubeacite.

Faber states that his type material was crystalline and homogenous, though he observed no distinct crystals. The vein with the type specimen occurred in chlorite-amphibole schist. Carrollite occurred near a pegmatite vein. Quartz-magnetite veins contained the copper minerals chalcopryrite, chalcocite, and bornite. The rare zinc-aluminum oxide gahnite was also found at this mine.

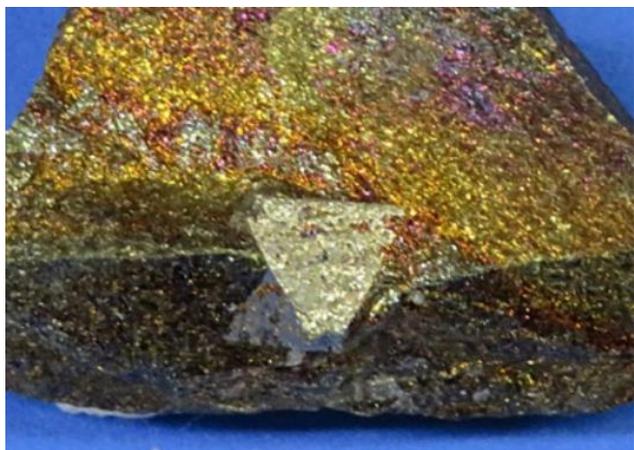
Collecting days are probably permanently over at the Patapsco Mine. While Maryland Rt. 140 was being built, a bulldozer fell into a collapsed shaft. The workings, including the dumps, were obliterated to support the road.

The Mineral Hill Mine was probably the largest mine in the area. It was another source of cobalt in Carroll County active in the mid-19<sup>th</sup> century, although mining began as early as about 1750. Its original British owners returned to England due to the American Revolution and their property was confiscated.

The mine was operated from about 1850 to 1890, employing up to 100 people. Mine workings reached about 400 feet deep. The mine exploited several parallel veins through an inclined shaft. Amphibole gneiss hosted stringers of cobalt minerals like carrollite.



*Carrollite, Patapsco Mine, Carroll County, MD. Source: Mindat; photo: Jake Slagle.*



*Carrollite crystal in sulfide ore, Kidd Mine, Ontario, Canada. The ore is mostly chalcopyrite and lesser bornite. Source: Mindat; photo: John R. Montgomery.*

One source mentions copper and cobalt sulfides occurring in the chlorite schist in the footwall (lower side) of a shear zone. The cobalt sulfide was probably carrollite. The ore's minerals are described as mainly "chalcopyrite and bornite, with which bunches of carrollite are locally associated." Bands of carrollite or siegenite up to 1 centimeter (0.39 in) in size were found at this mine, interlayered with bands of quartz and magnetite.

At least part of this property is now flooded; part of the eastern mine dumps was bulldozed in 1965 for unknown reasons. A mining company might have wanted to check the potential for reprocessing material to extract more metals—or else a building company might have wanted to put up homes or a commercial facility.

Cobalt was also reported at the Springfield Mine, which started operation in 1819 as an iron mine. Four subsurface levels were eventually mined, extending to 1,400 feet deep via an inclined shaft. Though originally worked as an underground operation, it became an open pit mine in 1916 after a period of dormancy.

After mining ceased, samples from the mine dump had cobalt minerals as grains in the copper-iron ore. Rich copper ore reportedly contained 4 to 5 percent cobalt and nickel. It is not known whether open-pit mining found or recovered any cobalt.

### **Canada**

Canada has cobalt—maybe you know of the Canadian city of Cobalt, Ontario. The Canadian carrollite specimens I saw, mostly on Mindat and from the [Kidd](#)



*Carrollite, San Giovanni Mine, Bindua, Sardinia, Italy. Source: Mindat; photo: Enrico Bonacina.*

[Mine](#), are unspectacular. They are embedded in massive copper ore (mainly bornite and chalcopyrite).

### **Germany**

Massive carrollite (once called [sychnodymite](#)) was found in the late 1800s in iron mines in the [Eiserfeld](#) area near Siegen, Germany. The ore contained copper and cobalt. Carrollite was probably a main cobalt ore mineral. The Eisenzecher Zug and Kohlenbach (also known as Brüderbund) Mines have been sources of massive carrollite specimens. The [samples](#) are most likely to interest collectors of German minerals or those who like historic localities.

### **Italy**

Micromount collectors have identified carrollite in specimens from the [San Giovanni Mine](#) in Sardinia. Some specimens show elongated grains or strings of carrollite grains, although at least one specimen shown on Mindat is a tiny euhedral crystal.

### **Japan**

Massive carrollite with chalcopyrite and bornite was found at the [Sazare Mine](#) in the Ehime Prefecture. A possible crystal cross-section was shown in one of the two Mindat photos of carrollite from this mine.

### **Democratic Republic of Congo**

The Democratic Republic of Congo, or DRC, hosts the world's finest carrollite crystals and is also the most



*Carrollite, Kamoya South II Mine, Kambove, DR Congo.  
Source: Mindat; photo: Chinellato Matteo.*

prolific producer of carrollite specimens. The [Kambove West](#) and [Kamoya South II](#) Mines are parts of the same geological system. Both have produced beautiful carrollite crystals. These crystals, along with similar ones from the Luiswishi Mine, display a range of interesting features, including striated crystal faces, stepped faces, perfect octagonal forms, and many modifications of those forms. Specimens up to 10 centimeters (3.9 in) in size have been reported.

The lone specimen in my collection came from the Kamoya Mine—probably the Kamoya South II Mine, which has produced more marketed crystals than other mines in the DRC. Many prospects near the town of Kambove have Kamoya in their names.

The Kamoya South II Mine is large, and it is the main source of carrollite crystals. Mining began at the main mine in 1998 after the collapse of its predecessor, the Kamoya South I. Since then, the mine in Haut-Katanga has produced the world's best single-crystal carrollite specimens.

The cobalt-rich zone is the lower of two orebodies. It is hosted by faulted dolomite, shale, and chert as part of the Kambove Anticline. Ore mineralization preceded tectonism. This mine and nearby sites are also a significant source of bright fuchsia cobaltian calcite and cobaltian dolomite.

The Kambove West Mine's Third Orebody is the best source of carrollite from that mine. Chalcopyrite can be seen replacing carrollite in some specimens. Large carrollite floater specimens, with crystals up to 3.5 centimeters (1.4 in) in size, were extracted in the 1990s.



*Carrollite, Kamoya South II Mine, Kambove, DR Congo.  
Source: Mindat; photo: Maggie Wilson.*



*Carrollite, Kambove West Mine, Kambove, DR Congo.  
Source: Mindat; photo: Brian Kosnar.*

The [Luiswishi Mine](#) is another part of the same geologic system, though farther from Kambove than the other mines mentioned here. Although Mindat does not list carrollite for this locality, a detailed geologic report makes extensive mention of carrollite from this mine.



*Carrollite, Musonoi Mine, Kolwezi, DR Congo. Source: Mindat; photo: Vic Vanrusselt.*

The [Musonoi Mine](#), in the DRC's Kolwezi mining district in Lualaba Province is better known for copper species and unusual uranium minerals, but it is another carrollite locality.

### **Zambia**

Carrollite is found in Zambia, where it is the main cobalt ore at the [Nchanga Mine](#). Copper is the major ore, though massive carrollite might be more economically important. No carrollite crystals are known from this locality.

### **Other Cobalt Deposits**

Carrollite is likely to be found in most of the world's cobalt deposits. Remember that crystals are rarer than massive material, particularly for metallic ore minerals. Carrollite is reported from Russia's Dalnegorsk region, a major mining area, though no crystals or even massive specimens could be readily found. Similarly, Morocco is noted for cobalt minerals, though not carrollite.

Carrollite has also been reported in Australia, Austria, Azerbaijan, Brazil, Bulgaria, Chile, China, the Czech Republic, France, Namibia, North Korea, Norway, Oman, Poland, Romania, Slovakia, Sweden, Switzerland, and Turkey. None of these is a source of carrollite crystals for collectors.

### **Commercial Uses and Values**

Cobalt deposits are uncommon, yet cobalt is increasingly important to our technological economy. Air



*Carrollite, Kamoya South II Mine, Kambove, DR Congo. Source: Mindat; photo: Rob Lavinsky.*

bags, rechargeable batteries, superalloys (especially for aircraft engines), and petroleum catalysts are among its many uses. The DRC has the world's largest cobalt reserves and is the largest cobalt producer. China refines most of the DRC's cobalt. Though Russia is the second largest cobalt producer, little information is available on the mineralogy of their deposits.

A nice carrollite crystal isn't cheap, and all are from the DRC. I found a carrollite specimen with a chipped euhedral 1.2-centimeter (0.5-in) crystal for \$64. Another specimen for only \$39 comprised mostly fractured crystals in calcite matrix.

Or you can splurge for a ~4-centimeter (1/6-in) lovely octagonal floater for just over \$3,000 (includes shipping!). Feeling rich? A specimen with a carrollite crystal that is 3.5 centimeters (1.4 in) across by 2 centimeters (0.8 in) on an edge is priced at \$21,000 by Arkenstone. (Prices were online on December 22, 2023.)

## Technical Details

Chemical formula .....	CuCo <sub>2</sub> S <sub>4</sub>
Crystal form.....	Isometric
Hardness.....	4.5-5.5
Specific gravity.....	4.5-4.8
Color .....	Silver, colored slightly yellow when more copper rich
Streak .....	Gray-black
Cleavage.....	1 good
Fracture .....	Conchoidal to uneven
Luster .....	Metallic

## Sources

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- Singewald, J.T. 1946. Mineral resources of Carroll and Frederick Counties. In: The physical features of Carroll County and Frederick County, Maryland. Dept. of Geology, Mines and Water Resources: Carroll and Fredrick Counties Report: 158-161.
- Slagle, J. 2009. [Carrollite and the cobalt sulphides of Carroll County, MD](#). Mineral Bliss. 12 September.
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## Kickoff Meeting for the New Year January 2 Program

For our NVMC meeting on Tuesday, **January 2, 7:30 p.m.**, our normal meeting place at the Dunn Loring Fire Station will not be available, so we will not meet in person. Please join us on Zoom at <https://tinyurl.com/ycx7tf8j>. Our club officers for 2024 will introduce themselves and discuss this year's plans for the club. In addition, club members are invited to participate in a show-and-tell and to give short presentations (with a few slides) on a favorite specimen or geology/collecting trip. ↗

- Van Langendonck, S.; Muchez, P.; Dewaele, S. [and others]. 2013. Petrographic and mineralogical study of the sediment-hosted Cu-Co ore deposit at Kambove West in the central part of the Katanga Copperbelt (DRC). In: *Geologica Belgica*, vol. 16: 91-104.
- Wikipedia. N.d. [Carrollite](#).

## Field Trip Opportunity

Nature Forward (formerly the Audubon Naturalist Society) offers local classes and nature programs, including short field trips (see the [Nature Forward website](#)).

### *C&O Canal Widewater Geology Loop*

**January 7, 9 a.m.–noon.** This field trip is led by Joe Marx, who once explained the geology of Maryland's Sugarloaf Mountain to our club (summary [here](#)). The C&O Canal downstream from the Great Falls Tavern in Maryland offers dramatic erosional features and gnarled outcrops. On a 3-mile loop hike starting from the Widewater parking area opposite Old Angler's Inn, Joe will outline the area's geologic history. We'll hike upstream on the towpath to the canal's stop gate and return on Berma Road on the other side of the canal. The towpath has a level graveled surface; the old Berma Road is a natural trail that is slightly hilly and can be rocky or muddy. Our pace will be faster than the usual naturalist's shuffle. Registration is required; the cost is \$46 for nonmembers. For more information and registration, go to [Nature Classes & Field Trips - Nature Forward](#). ↗

## President's Collected Thoughts

by Jason Zeibel

As we face a new year, we often take a minute to look back at the fun and fond memories that we had during the previous year.

For me, 2023 was a year of adventure and excitement. Both my girls embarked on new adventures: Celia began high school at the Thomas Jefferson High School for Science & Technology, with all the trials and amazing opportunities that came with it. Lyra started in the Scouts, advancing quickly through the early ranks and going to summer camp without me. They are both growing so fast and becoming very capable young women.

For my part, I got to try my hand at leading the NVMC. We have a very dedicated group of volunteers who have kept this club healthy and vibrant in the face of global pandemics and aging demographics. We even won an award for this past year's increases in our youth membership. I have tried to keep things moving forward, and with all of your help we hope to continue our community outreach and fellowship for years to come!

There was one very fun piece of outstanding business from our 2023 Gem, Mineral, and Fossil Show. For the first time in many years, the club funded a grand door prize, which was drawn on Sunday afternoon. Unlike the other prizes, this one did not require being present to win. The prize was an enormous cluster of vanadinite crystals with a retail value of about \$100.

The lucky winner was Rachel Davenport from Poolsville, MD. After contacting Ms. Davenport, I learned that her son Hunter was the budding geologist in the family and very excited to hear that they had won the grand prize. I had the singular pleasure of meeting Hunter and presenting him with the specimen. His smile said it all, and I certainly hope this continues to feed his interest in our hobby.

On December 4, we held our 2023 NVMC Holiday Party in conjunction with the Micromineralogists of the National Capital Area, Inc. We had a nice turnout, with around 25 people in attendance. The party featured quite a buffet, with barbeque as well as all manner of side dishes and sweet temptations.



*Rachel Davenport and her son Hunter were the lucky winners of our club's grand door prize from our 2023 Gem, Mineral, and Fossil Show at George Mason University. Hunter, a future geologist (shown here with Jason Zeibel), was thrilled to receive a huge cluster of vanadinite crystals!*

After dinner, we held a lively gift exchange, with all the youth in attendance actually scoring not one but two gifts! We concluded with some geology-themed competitions and door prizes.

A big thank you to Sue Marcus and Roger Haskins for doing the vast majority of organization and logistics for this event. A good time was had by all, as you can see from the incriminating photos on the next page.

At the Holiday Party, we also held a brief election of your 2024 officers. I have agreed to continue on as your club president for another year. In addition, Craig Moore will stay on as vice president and Roger Haskins as treasurer. We asked for volunteers to fill the office of secretary ... and I believe we have one! This will greatly help keep the rest of us better organized, so thank you! Hopefully, we can announce the lucky office holder at the January meeting.

Having said that, there are still a number of appointed positions that are vacant or could use additional help (see the last page). Please consider stepping up—our organization is only as good as those of us who help to build and sustain it. Reach out to me or to any other club officer if you can help in any capacity.

I want to emphasize the upcoming schedule change for January's meeting. Because the first Monday of January falls on New Year's Day, we have decided to shift our January meeting to Tuesday, January 2. The January meeting will be entirely virtual due to lack of a meeting place. But we will still have a program, and we all know how to do Zoom by now. We'll start the



New Year off right with a (virtual) get-together to talk about rocks, minerals, and fossils! In general, we will try to stick to Mondays for meetings, but thank you all for being flexible this time.

Our meetings in 2024 will also institute a return of the show-and-tell format for (almost) every meeting. This was a very popular feature that somehow fell victim to COVID and virtual meetings. We'll start by calling it a "Rock-n-Talk" feature. I encourage every member to try to present something short (a couple of minutes) at least once during the year. Obviously, you can present more often, but I think everyone should be able to find something to brag about at least annually! We are going to try this whether we are virtual or in person, so try to optimize those camera settings for January!

Looking ahead, we have some amazing programs lined up. In February 2024, we are going to welcome Dr. Barbara Berrie from the National Gallery of Art to come talk about the mineralogy of pigments. I highly encourage folks to come to her talk. For in-person speakers, we traditionally go out for a meal beforehand; watch your e-mail for the timing and logistics, and try to join us in sharing time and geological fellowship with other club members.

In addition to Dr. Berrie, Craig (our vice president) has lined up a number of high-quality presentations for the spring. Having said that, there is always an opportunity for you yourself if you are moved to talk about a particular topic or know someone who might be able to present to our organization. Just reach out to Craig or me, and we'll figure out a way to make it happen! ↗





## Club History Have a History?

by Ellery Borow, EFMLS Immediate Past President

**Editor's note:** The article is adapted from *EFMLS News* 70(11) (November 2023), pp. 4-5.

**D**oes your club have a history? Sure it does—every club has a history. But does your club have a record of it? Some clubs do and others don't.

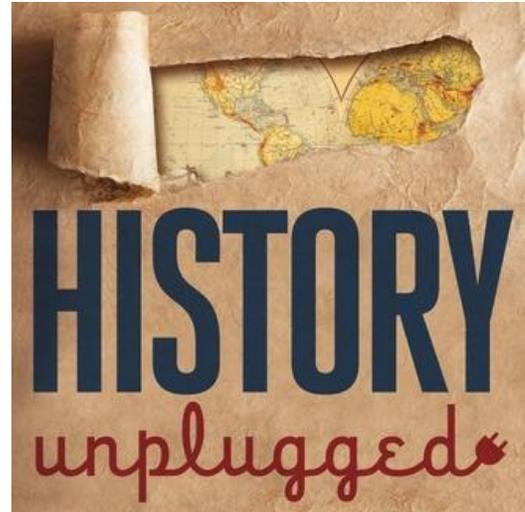
- A club's history could be contained in boxes of newsletters going back to the club's beginning.
- The history might include file folders of clippings about club activities and community service; photographs of past events; field trip records/journals/maps; posters and flyers of past club shows; and file folders of the club's founding documents, such as tax status, articles of incorporation, and drafts of the club's constitution and bylaws.
- The "history" could instead be entirely contained in the memories of its founding members, with the only written records being the last few issues of the club's newsletter still on the editor's device.

But let's draw a distinction: boxes of club newsletters and other files constitute an archive, whereas a club's history comprises the club's accomplishments, goals, activities, and relationships recorded within the archived documents. A club's history is about its stories—its fantastic program speakers, great field trips, learning opportunities, lapidary workshop activities, and so much more.

Reasons for keeping a history are many. People love reading about history. Visit any library and you will find histories on every subject imaginable—American history, World War II history, baseball history, world history, ancient history, Panama Canal history, medical history, science history, the histories of innumerable famous people, and so on.

A club's history is just as likely to have many great stories worth being read—stories about where and when its best field trips have occurred; where and when its meeting places or show venues changed; and what has worked best for meeting programs and times, committee reports, auctions, and show-and-tell times. A club's history might even include a story of how a club's workshop has evolved over the years.

A club's history might contain stories about its goals and how it is meeting them. It could be stories about



what has and has not worked; how the club has grown (or perhaps decided to keep itself manageably small); or how the club has traveled the path to its present form. A club's history can be an invaluable source of information, ideas, inspiration, and incentives.

If a club's history resides in the memories of its members, much can be lost when they leave the club. Recording their stories can be invaluable.

A club's archive of newsletters can be a valuable resource. Newsletters can contain years or decades of lapidary tips or mineral studies; just think of the possibilities if all those stories were collected into a booklet for future members. If a club's newsletter contained years or decades of rockhound humor, what a wonderful legacy it would be for new members.

Another newsletter resource would be stories about field trips, with information about potential destinations. If the club has an archive of such information, perhaps someone in your club might be interested in turning it into a something for a new field trip chair. Something similar would go for new program chairs, safety chairs, show chairs, or other club officers.

A history is a great resource. The EFMLS has useful histories: a library of programs, a directory of member clubs, lists of scholarship winners, publications for safety and show information, and suggestions for working with young people. Past EFMLS newsletters contain all manner of articles on increasing club membership, news of website developments, and more.

Any club or federation has stories to be told and possibilities to be explored. A history is a good starting point for a grand future. ↗



## Canadian Rockhounding Guides Available Online for Free

by Maggie Wilson

*Editor's note: The author posted the information on Mindat in January 2014. Thanks to Sue Marcus for the reference!*

**G**ood news for Canadian rockhounds!

Many rockhounding guides in the book *Rocks and Minerals for the Collector*, written by Ann Sabina of the Geological Survey of Canada, are now available for free download at the GEOSCAN website. For many years, these guides (originally written in the 1970s and revised beginning in the 1980s) have been the “go-to” references for finding mineral sites. Not all of the guides have been scanned in yet, but it seems to be an ongoing project.

The GEOSCAN website is a bit hard to use, so we have listed the currently available guides below:

<http://tinyurl.com/klonhrg>: Kirkland Lake-Rouyn-Noranda-Val-d'Or, Ontario and Quebec, 2003.

<http://tinyurl.com/lhfprjo>: La Ronge-Creighton, Saskatchewan; Flin Flon-Thompson, Manitoba, 1987.

<http://tinyurl.com/mprdn24>: Buckingham-Mont-Laurier-Grenville, Quebec; Hawkesbury-Ottawa, Ontario, 1986.

<http://tinyurl.com/ot587ay>: Bancroft-Parry Sound area and southern Ontario, 1986.

<http://tinyurl.com/mn9I27x>: Kingston, Ontario, to Lac Saint-Jean, Quebec, 1983.

<http://tinyurl.com/l32y54g>: Cobalt-Belleterre-Timmins, Ontario and Quebec, 2000.

<http://tinyurl.com/kbpoed9>: Ottawa to North Bay and Huntsville, Ontario; Gatineau (Hull) to Waltham and Témiscaming, Quebec, 2007.

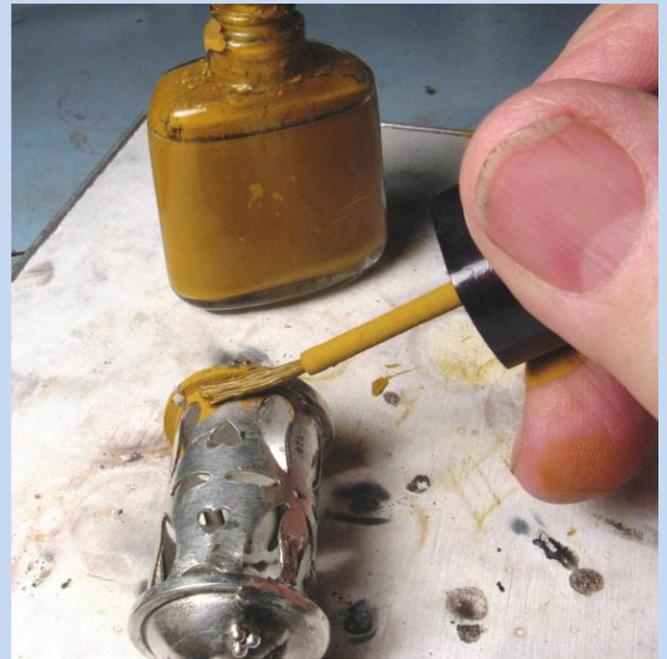
## Bench Tip: Ochre Applicator

Brad Smith

Yellow ochre is used to keep solder from flowing onto an area of your piece while you're soldering another area. The only problem with ochre is coming up with a good way to store and apply it.

I use recycled nail polish bottles. They seal well and have a built-in brush applicator. Just clean them out with a little acetone or nail polish remover, and they're ready to go.

Smart Solutions for Your Jewelry Making Problems  
[amazon.com/author/bradfordsmith](https://amazon.com/author/bradfordsmith)





## Tyrannosaur's Stomach Contents Have Been Found for the First Time

by Jeanne Timmons

**Editor's note:** The full article is in *SciAm* (8 December 2023). Thanks to Sue Marcus for the reference!

For the first time, scientists have unearthed direct proof of what a [tyrannosaur](#)—often thought of as the epitome of fearsome predators—actually ate.

The [fossilized stomach contents](#) of one member of this dinosaur family were described in a new study published on Friday in *Science Advances*. This remarkable discovery gives insights into the tyrannosaur diet and the animal's place in ancient ecosystems, both of which have previously only been hypothesized about.

Darren Tanke, a fossil preparator at the Royal Tyrrell Museum of Paleontology in Alberta, found the specimen in the province's Dinosaur Provincial Park and delicately removed it from the rock in which it was encased. He called it “the discovery of his life,” according to study co-author François Therrien, the museum's curator of dinosaur palaeoecology.

The study examines remnants of two small oviraptorosaur—[feathered dinosaurs](#) with a toothless beak—that were found in the stomach of a young *Gorgosaurus libratus*, a type of tyrannosaurid. (The family includes this species' more famous cousin *Tyrannosaurus rex*.) ... [Read more](#).



## What Is the Rarest Mineral on Earth?

by Elizabeth Rayne

**Editor's note:** The piece is adapted from *LiveScience* (1 January 2023).

There is only one specimen of the rarest mineral on Earth, and it's from Myanmar. Most human eyes have seen the mystical beauty of quartz, possibly without knowing that it is one of the most common minerals on Earth, but which is the rarest?

Minerals are scattered everywhere on our planet, from glittering flecks in gravel or sand to actual hidden gems. According to the U.S. Geological Society, minerals are naturally occurring elements or compounds that are inorganic, meaning they do not contain carbon. Each type of mineral exhibits order in its internal structure and has a unique chemical makeup. The form a mineral's crystals take can vary, as can its other physical properties.

The rarest mineral on Earth is kyawthuite. Only one crystal, found in the Mogok region of Myanmar, is known to exist. ... [Read more](#).



## January 2024—Upcoming Meetings/Shows in Our Area (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 <span style="color: red;">New Year's Day</span>	2 NVMC mtg	3 MSDC mtg	4	5	6
7	8	9	10	11	12	13
14	15 GLMSMC mtg	16	17	18	19	20
21	22	23	24 Show: Tucson, AZ	25 Show: Tucson, AZ	26 Show: Tucson, AZ	27 Show: Tucson, AZ
28 Show: Tucson, AZ	29 MNCA mtg Show: Tucson, AZ	30 Show: Tucson, AZ	31 Show: Tucson, AZ	Tucson show goes to Feb 4		

### Event Details

- 2: Dunn Loring, VA**—Northern Virginia Mineral Club; <https://www.novamineralclub.org/>.
- 3: Washington, DC**—Mineralogical Society of the District of Columbia; <http://www.mineralogicalsocietyofdc.org/>.
- 14: Rockville, MD**—Gem, Lapidary, and Mineral Society of Montgomery County; <https://www.glmsmc.com/>.
- 22: Burke, VA**—Micromineralogists of the National Capital Area; <http://www.dcmicrominerals.org/>.
- 24-Feb 4: Tucson, AZ**: Annual show; JOGS Tucson Gem & Jewelry Show; Tucson Expo Center, 750 E Irvington Rd; daily 10-5, Sun. 10-4; adults \$20, military/children free (no children under 14); the show features a wide variety of products from a diverse group of vendors, including jewelry designers, manufacturers, miners, wholesalers, and jew-

elry liquidators from around the world; info: Yelena Masenko, 213-629-3030, [advertising@jogsshow.com](mailto:advertising@jogsshow.com), [www.jogsshow.com](http://www.jogsshow.com).



*Carrollite, Kamoya South II Mine, Kambove, DR Congo. Source: Mindat; photo: Rob Lavinsky.*



## 2024 Club Officers

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# The Northern Virginia Mineral Club, Inc.

Visitors are always welcome at our club  
meetings!

PLEASE VISIT OUR WEBSITE AT:

<http://www.novamineralclub>

*Please send your newsletter articles to:*

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## RENEW YOUR MEMBERSHIP!

### SEND YOUR DUES TO:

Roger Haskins, Treasurer, NVMC

4411 Marsala Glen Way, Fairfax, VA 22033-3136

OR

Bring your dues to the next meeting.

**Dues:** Due by January 1 of each year;  
\$20 individual, \$25 family, \$6 junior (under 16, sponsored by an adult member).

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**Club purpose:** To encourage interest in and learning about geology, mineralogy, lapidary arts, and related sciences. The club is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS—at <http://www.amfed.org/efmls>) and the American Federation of Mineralogical Societies (AFMS—at <http://www.amfed.org>).

**Meetings:** At 7:30 p.m. on the first Monday of each month (except January and September) at the Dunn Loring Fire Station, 2148 Gallows Road, Dunn Loring, VA.\* (No meeting in July or August.)

*\*Changes are announced in the newsletter; we follow the snow schedule of Fairfax County schools.*

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