

## Zoom Meeting Oct 27 Time: 7:30 p.m.

### Program: “An Introduction to Mineral Evolution” by Patrick Rowe from NM

Presenter, Patrick Rowe is Vice President for the Los Alamos Geological Society and the Chairmen for Paleontology for the Rock Mountain Federation of Geological Societies. His presentation will introduce the 3 eras and 10 stages. The 10 stages can be summarized by the following: Earth’s accretion and differentiation (stages 1, 2, and 3); petrologic innovations (e.g., the stage 4 initiation of granite magmatism) and modes of tectonism (stage 5 and the commencement of plate tectonics); biological transitions (origins of life, oxygenic photosynthesis, and the terrestrial biosphere in stages 6, 7, and 10, respectively); and associated environmental changes in oceans and atmosphere (stage 8 “intermediate ocean” and stage 9 “snowball/hothouse Earth” episodes). Details on next page

### President’s Message:

by Dave MacLean

It seems that Covid-19 keeps its grip on us while requiring us to meet virtually. One upside has been the variety of interesting programs with a larger and international audience. Thank you, Mark Kucera.



I still remember Mike Seeds' talk about creating the elements in the hot fiery centers of the stars. I am intrigued by how minerals are made and transformed on Earth.

We could meet in person if we could find a temporary place in one of our homes or elsewhere. I am open for suggestions, please.

Last Spring, we held our conference including two talks and an auction. That successful conference shows how we can still meet productively if we put our minds to it. Thank you to all who made or virtual meetings happen.

### Mystery Photo of the Month



**Reminder: Desautels Micromount Symposium hosted by the Baltimore Mineral Society of Maryland October 9, 2021, 1pm**

Turn to pp 4-5 for details. 2 great speakers!  
Sign up with Mike Seeds, Symposium Chair  
[mseeds@fandm.edu](mailto:mseeds@fandm.edu)

### Oct Mystery Photo of the Month Clue

What are the yellow green blades? Black mineral?  
CLUE: MUSONOI MINE

Photomicrograph by Pete Chin of Honolulu, Hawaii  
FOV = 3.5 mm 353 stacked photos: The answer to verify your inquiry is found on page 3.

## Program Oct 27 Details

### Abstract: An Introduction to Mineral Evolution

by Patrick Rowe, Los Alamos, New Mexico

Earth's near-surface mineralogy has diversified over more than 4.5 b.y. from no more than a dozen preplanetary refractory mineral species (referred to as "ur-minerals" by Hazen et al., 2008) to ~5,000 species.

At a Christmas party in 2006, Robert Hazen, a mineralogist and astrobiologist was asked a simple question: "Were there clay minerals in the Archean?" That question has important implications for origin-of-life models that depend on clays, but the answer is not at all obvious. Hazen was immediately struck by the idea that Earth's mineralogy must have changed over 4.5 billion years of history in ways that had never been thoughtfully explored. In 2008, Robert Hazen and his colleagues published a paper entitled "Mineral evolution" (*American Mineralogist*, v.93, pp.1693-1720, 2008) that essentially reframed the science of mineralogy in an historical context.

In this paper, they divided the earth's geologic and mineralogical history into three eras and ten stages. Each of which realized significant changes in the planet's near-surface mineralogy, including increases in the number of mineral species; shifts in the distribution of those species; systematic changes in major, minor, and trace element and isotopic compositions of minerals; and the appearance of new mineral grain sizes, textures, and/or morphologies.

This dramatic diversification is a consequence of three principal physical, chemical, and biological processes: (1) the progressive separation and concentration of the elements from their original relatively uniform distribution in the presolar nebula; (2) the increase in range of intensive variables such as pressure, temperature, and the activities of H<sub>2</sub>O, CO<sub>2</sub>, and O<sub>2</sub>; and (3) the generation of far-from-equilibrium conditions by living systems. The sequential evolution of Earth's mineralogy from chondritic simplicity to Phanerozoic complexity introduces the dimension of geologic time to mineralogy.

This presentation will provide an introduction to the 3 eras and 10 stages. The 10 stages can be summarized by the following: Earth's accretion and differentiation (stages 1, 2, and 3); petrologic innovations (e.g., the stage 4 initiation of granite magmatism) and modes of tectonism (stage 5 and the commencement of plate tectonics); biological transitions (origins of life, oxygenic photosynthesis, and the terrestrial biosphere in stages 6, 7, and 10, respectively); and associated environmental changes in oceans and atmosphere (stage 8 "intermediate ocean" and stage 9 "snowball/hothouse Earth" episodes).

### Bio: Patrick Rowe

Patrick Rowe is the Vice President for the Los Alamos Geological Society and the Chairmen for Paleontology for the Rock Mountain Federation of Geological Societies. He has multiple engineering backgrounds including mining and petroleum engineering. With a father that was a geologist, he has been involved in collecting mineral specimens since a small boy. He currently works at the Los Alamos National Laboratory as a project engineer. While he still collects cabinet specimens, for the last several years his collecting focus has been on micro-minerals.

### Previous Meeting Minutes: 9/22/21

by Bob Cooke, Secretary

Since no business meeting was held at our September 22 meeting, there are no minutes to report.



### Previous Program Review: 9/22/21

by Kathy Hrechka, Editor

**A Few Microminerals from New Jersey:** Steve Stuart of Bethlehem, PA presented a selective abstraction from his modest collection of New Jersey micromineral specimens. Several localities from the Hugh McCulloch "Winston Collection" were included. Focus was on little-known and unusual localities. Biography: In the late 1990s, Steve bought a stereo microscope, which opened a whole new world for him. He is a retired fire protection and risk management consultant since January 2016. Post retirement Steve joined the Canadian Micromineral Association, and is the editor of their newsletter, the *MicroNews*, since 2016. Steve posted his first photo to Mindat in 2004, and now has over 2,500 images on Mindat.

**October Mystery Photo of the Month**

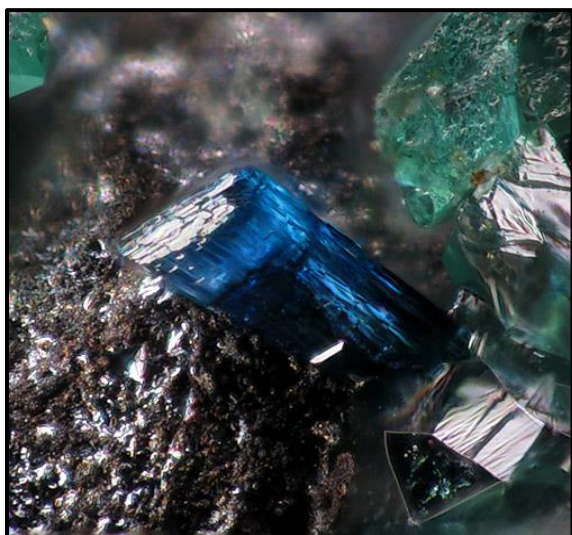
by Pete Chin, Honolulu, Hawaii



Here is **Demesmaekerite** from the Musonoi mine, doubly terminated yellow green blades with dark green almost black derriksite crystals. Most of the derriksite crystals are coated with a brown gunk. Bright green is malachite. The Musonoi mine is a set of open-cut pits near Kolwezi from which copper and other metals have been extracted since the 1940s. The mining complex is in the Lualaba Province of the Democratic Republic of the Congo.

**September's Photo of the Month**

by Pete Chin, Honolulu, Hawaii



Voila, it's **KEYITE!** The glassy green crystal is cuprian adamite. Clue: Tsumeb, Namibia  
Photomicrograph by Pete Chin

**Self-collected Mystery Photo of Month**

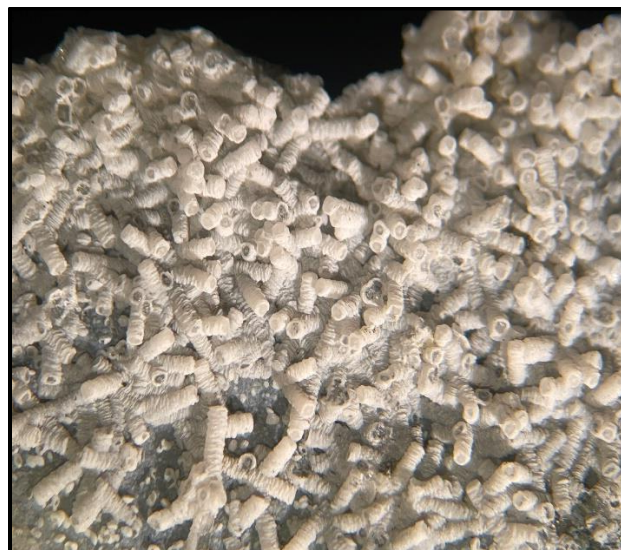
by David Fryauff, Vice President



**Clue:**

David Fryauff found this specimen at the Haines-Kibblehouse Pennsylvania - Maryland serpentine quarry in Lancaster County, Pennsylvania. FOV 8mm

Mike Pabst took a micro photo for me several years ago of an unencumbered hexagonal prismatic magnesite crystal from the same place. Photo taken by David Fryauff with an iPhone 12, shot through the eyepiece of my microscope.



Your answer can be verified on page 24.

**Desautels Micromount Symposium  
hosted by the Baltimore Mineral  
Society of Maryland Oct 9, 2021, 1pm**

By Mike Seeds [www.baltimoremineralsociety.org](http://www.baltimoremineralsociety.org)

The 65<sup>th</sup> Annual Paul Desautels Micromount Symposium will be held on Saturday, October 9<sup>th</sup>, 2021 at 1 pm ET by [Zoom](#)

Hall of Fame Inductions: Jean-Luc Designolle & Dr. Anthony Kampf, which will be followed by the announcement of new candidates.

**\*Jean-Luc – “Micromounts of the Sancy Massif”**  
**\*Tony – “The Journey from an Unknown to a New Mineral”**

Voice Auction: Items will be selected and auctioned by Al Pribula.

Register with Mike Seeds [mseeds@fandm.edu](mailto:mseeds@fandm.edu) to receive a free Zoom invite.

**Biographies** by Quintin Wight, Ottawa, Canada  
On October 9, 2021, **Dr. Anthony (Tony) Kampf** of the Natural History Museum of Los Angeles County, and **Jean-Luc Designolle** of Tignieu-Jamezieu, France, will be inducted to the Micromounters' Hall of Fame.

**Tony Kampf**, as many of our readers will know, is an indefatigable researcher who has described at least 290 new mineral species and has named many of them after the micromounters who brought them to him. He has also been a friend to micromount groups and has made presentations at our symposia in both the USA and Canada. As a professional, he has been a strong voice in international mineral circles.

**Jean-Luc Designolle**, on the other hand, is a strong voice in micromount circles in Europe. In particular, he has given a new impetus to the development of the public micromount collection of French localities built by the *Association Française de Microminéralogie* (AFM) and hosted by the *École des Mines* (School of Mines) museum in Paris. He is also assiduous in promoting micromounting at major events such as the huge annual mineral show at Sainte-Marie-aux-Mines in France.

Both gentlemen have earned their places in the ranks of the Micromounters' Hall of Fame and will be welcomed in October.

**Micromounts in the Sancy Massif**  
**By Jean-Luc Designolle**

The Sancy Massif is a volcanic area right in the middle of the French Massif Central, in the Department of Puy-de-Dôme. The Puy de Sancy culminates at 1 886 m height (6 190 feet). The first eruptions took place 4 000 000 years ago and the last only 6 700 years ago (giving rise to Pavin lake). The landscapes are wild with deep valleys carved by glaciers. Jean-Luc presents the synthesis of more than 30 years of mineral collecting in the massif, during his holidays and familial excursions. He follows ski slope development works. Most of the time, mineralizations developed in xenoliths: zircon, titanite, pyroxenes, magnetite, fluorapatite, pseudobrookite... Jean-Luc tries to differentiate the habitus of zircons according to their origin. Some basaltic lavas also host a few zeolites. Some exotic species (for France) have been found as well and are still to be published in the *Cahier des Micromonteurs*.

**Jean-Luc Designolle** is an engineer. He graduated in 1989. After one year spent in Cameroon for his national service, he has worked at Colas (road building) for ten years as works supervisor, and since 2000 as design office manager. As a child, Jean-Luc discovered minerals during holidays in the Alps with his parents. He got his first microscope in the early 80s', and became member of the *Association Française de Microminéralogie* (AFM) in 1987. Ever since 1990, he is the *Rhône-Alpes, Bourgogne, Franche Comté* regional delegate. He organizes an annual meeting where regional members of the AFM **share** their best findings of the year, and where they decide the program for the field trips of the year to come (5 to 7 a year). Jean-Luc was elected president of the AFM at the annual meeting in Besse (in the Sancy Massif!) in 2007. Over the years, Jean-Luc has regularly authored papers in the *Cahier des Micromonteurs* (more than 40), promoted micromounting in mineral shows such as the annual event in Sainte-Marie-aux-Mines. He has designed and built carousels for ease of manipulation by inexperienced visitors. He also manages the AFM micromount collection housed in the Mineralogical Museum of the *École des Mines de Paris*.

## Micromineralogists of the National Capital Area, Inc.

### The Journey from an Unknown to a New Mineral By Dr. Anthony R. Kampf

There are now more than 5700 known mineral species and that number is growing by more than 100 each year. The long-held notion that there is a limit to the number of mineral species does not account for the existence of exotic geologic and geochemical environments (some extraterrestrial), which continue to come to light and others that have only recently been explored. Mineralogy books tell us about some of the basic tests (streak, hardness, cleavage, density, etc.) that can be used to identify a mineral; while such properties are important in characterizing minerals, they have limited usefulness when it comes to unambiguously identifying an exotic phase, or determining that it is a new mineral. Tony Kampf will lead us on the journey from the finding of an unknown mineral through its description as something new to Science – a journey that he has now taken more times than anyone else in the world.

**Dr. Anthony (Tony) R. Kampf** discovered mineralogy and crystallography as an undergraduate chemistry major at the University of Illinois in Chicago. He received his B.S. in chemistry (1970) and his M.S. in mineralogy and crystallography (1972) from that institution. He continued his studies at the University of Chicago under the mentorship of the inimitable Prof. Paul Brian Moore who introduced Tony to the thrill of discovering and characterizing new minerals, using both classical and modern techniques. After receiving his Ph.D. in mineralogy and crystallography in 1976, Tony joined the staff of the Natural History Museum of Los Angeles County at the beginning of 1977. He has spent his entire 44-year professional career at the museum, serving more than 34 years as Curator (including 31 as head of the Mineral Sciences Department) and the past 10 years as Curator Emeritus. Tony has more than 450 publications and has authored the descriptions of 300 minerals (more than anyone else). Since 2008, he has served as the U.S. delegate to the International Mineralogical Association's Commission on New Minerals, Nomenclature and Classification.

### Shoebox Adventures 110: Keepers

by Mike Seeds, BMS Chair & Editor Conglomerate

There are no rules in micromounting. It's your rock so do it your way. But the shoebox on the end of my bench has its own rule. It insists that if you open the lid you have to take what's on top. No high grading. A week ago, I reached in and pulled out a sandwich bag full of old mounts. I got them from Al Pribula at the Atlantic Conference just a few years ago. Of 21 mounts, only 9 had names on them and that raises a question.\* If there is no name on a mount, do I have the right to remount it in my own box?



Fig. 1 Milton L. Speckels wrote a book about micromounting, *The Complete Guide to Micromounts*, Gem Books, 1965.

In fact, all nine of the boxes with names were mounted by members of the Micromounters Hall of Fame. Herb Corbett (1990) was one of the founders of the Hall of Fame. Hatfield (Hat) Goudey (2003) and Randy Rothschild (2016) did beautiful work. Milton Speckels (1991) wrote a book about micromounting, and John Ebner (1997) has created a museum of micromounting history. Their micromounts are historic documents that need to be preserved. I'm not building a collection of historic micromounts, but I'll keep these Hall of Fame mounts safe and clearly identified and someday someone will find them in my collection and smile.



Shoebox continued



Fig. 2 Randy Rothschild and Hat Goudey were both known for making beautiful mounts. The best of Randy's collections is now at the Smithsonian, but many fine specimens from both mounters are in circulation among micromounters.

Most of the boxes in that baggie had no names on them. If I can identify the mounter from the style of the label etc, then I can add a peelable label on the side with the name of the mounter. That makes it a keeper. But most of those old boxes were untraceable. Some of the boxes were stained, cracked or broken. So is it OK to remount those minerals? Is it just a tiny bit like mineral plagerism to remount someone else's specimen? They found the mineral, identified it, trimmed it, and mounted it in a box, so it feels a little bit iffy to pull out the rock and remount it, even if I clean the rock and trim it and improve the mounting. Is there a difference between finding a little rock lose on a giveaway table and finding it glued in an unsigned box?



Fig. 3 John Ebner has built a huge collecton of historic mounts and tools, and he is also a Hall of Fame micromounter.

There is always pressure to remount. We micromounters are duck shepherds; we want to hurd our ducks into nice even rows. That is, we have the urge to put all of our specimens in matching boxes with matching labels and line them up in even rows. So a rock in a different size box with a different style label is not as satisfying an addition to our collections as the same rock in our standard matching box. So can't a nice specimen in an unsigned box, especially in a damaged box, be remounted?

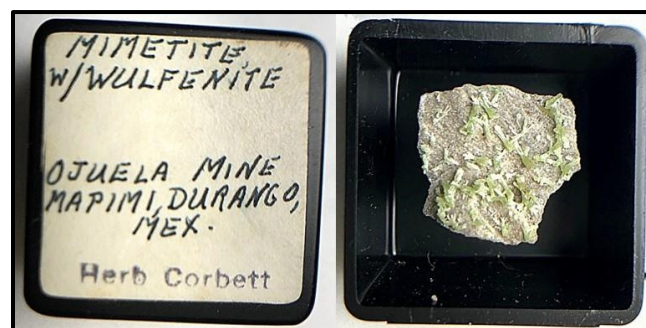


Fig. 4 Herb Corbett was a long time member of the Baltimore Mineral Society and one of the founders of the Micromounters Hall of Fame.

I can't remount specimens if there is a name on the box, or if I can identify the maker from the style of the label. Those boxes are part of the history of micromounting and should be preserved. There are micromount collections stored in museums, and John Ebner's extensive collection is a key to the story of micromounting. There are a few books on micromounting including Quintin Wight's pivotal book *The Complete Book of Micromounting*. But to a large extent, the history of our hobby lies in a floating collecton of signed micromounts circulating through auctions, dealer stocks, giveaway tables, and collections around the world. And that means we are each of us Keepers of the Flame.

\*No. It does not beg the question. That means something entirely different. Look it up.

Photo credit by Mike Seeds

## Cumengeite and Pseudoboleite

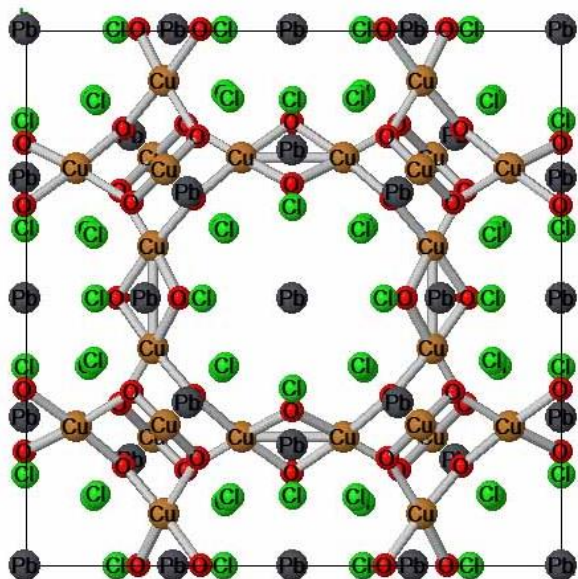
by Michael Pabst PhD, Treasurer

Cumengeite was named for the French geologist, Edouard Cumenge, who found the first specimens in Baja California, Mexico. The name Pseudoboleite comes from pseudo ψευδής meaning false in Greek. Boleo in Baja California is the type locality for both Cumengeite and Pseudoboleite. Cumengeite and Pseudoboleite are poor cousins of Boleite, in the sense that they lack silver in their structures, and instead must settle for lead ( $Pb^{2+}$ ).



Cumengeite and Pseudoboleite are often epitaxial on Boleite, although they can occur in isolation.

In one paragenesis, Boleite forms first when silver is present, then as silver becomes depleted, Pseudoboleite forms, perhaps initially as zones near the surface of Boleite crystals. As Pseudoboleite begins to predominate, then the crystals switch to tetragonal, forming epitaxially on the cubic Boleite crystals. Finally, Cumengeite forms on the Pseudoboleite to form complex star-shaped crystals: Boleite → Pseudoboleite → Cumengeite.



Structure of Cumengeite from Mindat. Unlike Boleite that has a “cage” of silver ions (please see my last article on Boleite), Cumengeite and Pseudoboleite, poor cousins, each have a cage of lead (dark gray Pb). Boleite to Pseudoboleite: 10+ charges from one  $K^{1+}$  and nine  $Ag^{1+}$  are replaced by five  $Pb^{2+}$ .

The colors of Cumengeite and Pseudoboleite look the same as Boleite, so apparently silver does not contribute to the beautiful blue color. Copper is the source of the blue color apparently.

This might be an opportunity to stop for a moment and ponder with amazement how these atoms and ions can come together spontaneously and self-assemble into the amazing blue crystals we are about to see.

### Cumengeite

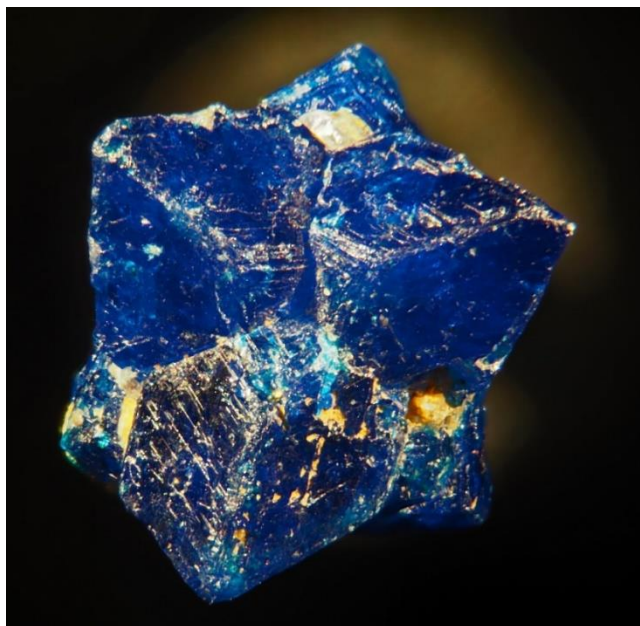
Here is my first specimen of Cumengeite. It comes from the Amelia Mine in Baja California Sur.



**Cumengeite** from Amelia Mine, Santa Rosalia, Baja California Sur, Mexico. FOV 3 mm. Photo by Michael Pabst, using stereomicroscope and stacking 25 images with CombineZP (#560). The green mineral in the lower left might be Paratacamite  $Cu_3(Cu,Zn)(OH)_6Cl_2$ .

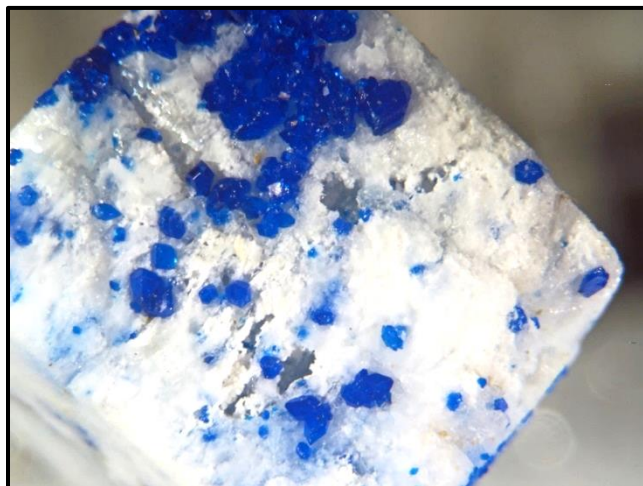
## Cumengeite and Pseudoboleite

The second specimen from my collection is a small and not-so-clean sixling of Cumengeite. This specimen could have Boleite in the center, but the Boleite appears to be hidden:



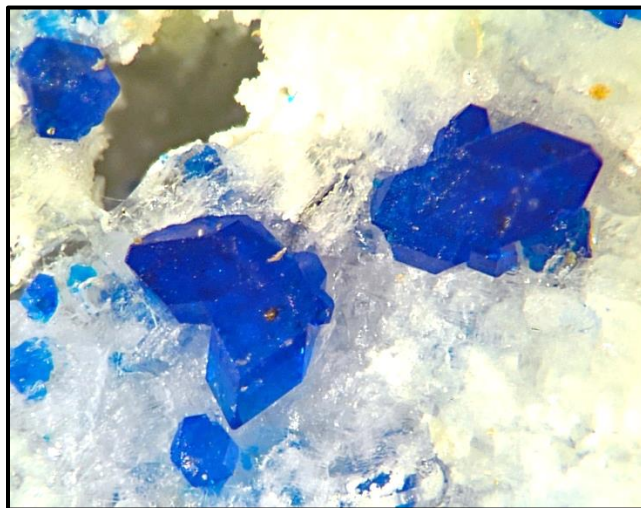
**Cumengeite on Anglesite**, from Boleo, Baja California Sur, Mexico. FOV 10 mm. Photo by Michael Pabst, using stereomicroscope, stacking 22 images (#236).

The next photo shows a closeup view:



**Cumengeite** sixling, Amelia mine, Santa Rosalia, Baja California Sur, Mexico. FOV 5 mm. Photo by Michael Pabst, using stereomicroscope, stacking 26 images (#1085).

My next specimen has tiny crystals of Cumengeite on a rhombohedron of Anglesite  $PbSO_4$ :



**Cumengeite** on Anglesite (closeup). FOV 2.5 mm. Photo by Michael Pabst, using stereomicroscope, stacking 10 images (#236).

Two specimens of Cumengeite from Baja at the Smithsonian:



**Cumengeite** from Santa Rosalia mine, Boleo, Baja California, Mexico. Photo by Michael Pabst, using Panasonic DMC-GF3 camera, taken 20 June 2019.

The world's best Cumengeite lives in Paris, France. Behold, **The Great Cumengeite of Paris**, from the collection of the Université Pierre et Marie Curie (Paris):

continued next page



## Micromineralogists of the National Capital Area, Inc.



**Cumengeite epitaxial on Boleite.** The crystal is 35 mm in each direction. Photo taken by Nelly Bariand. From the book: *Mémoires d'un Minéralogiste sans Frontières*, by Pierre Bariand, Les Editions du Piat, Glavenas – 43200 Saint-Julien-du-Pinet, France, 2008. Pierre Bariand was the curator from 1956 to 1998. This is a fascinating book of his adventures (in French), with wonderful photographs by Nelly Bariand. Weblink to purchase for 23 €: [www.minerauxetfossiles.com/produit/memoires-dun-mineralogiste-sans-frontieres](http://www.minerauxetfossiles.com/produit/memoires-dun-mineralogiste-sans-frontieres).

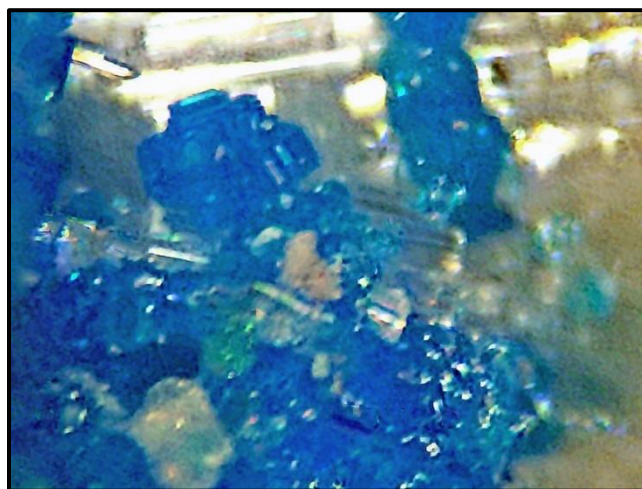
### Pseudoboleite

I have specimens of Pseudoboleite, according to the labels, but they do not show the classical epitaxy on Boleite that would clearly proclaim their identity. So, I borrowed this photo from Mindat:



**Pseudoboleite** plates epitaxial on a cube of Boleite. Photo by Rolf Luetcke. MinID 56U-9YK. Link: [www.mindat.org/photo-1016448.html](http://www.mindat.org/photo-1016448.html).

One of my specimens has tiny Pseudoboleite crystals as an accessory mineral on a sample of Mammothite from the Rowley Mine in Arizona, which I bought from Shannon and Sons Minerals in Tucson a few years ago. They had many such specimens; my specimen has Mammothite, Phosgenite, Cumengeite, Boleite, and Pseudoboleite. It is difficult to show the 3-dimensional shape of these tiny crystals in a photomicrograph. The crystal is too small for me to get a sharp photo (< 0.2 mm). The Pseudoboleite shape here reminds me of the shape of the lanterns with stepped lenses that used to hang on the back of a caboose.



**Pseudoboleite on Boleite** with green Mammothite and with colorless Phosgenite. Rowley Mine, Theba, Maricopa County, AZ. FOV 1 mm. Photo by Michael Pabst with stereomicroscope, stacking 6 images.

While we are here looking at this specimen with green Mammothite, I will mention that Mammothite is  $\text{Pb}_6\text{Cu}_4\text{AlSb}^{5+}\text{O}_2(\text{OH})_{16}\text{Cl}_4(\text{SO}_4)_2$ . Which means that Mammothite is another example of a lead copper oxychloride, like Boleite and its cousins. Here is my photo of the best Mammothite crystal group on this specimen:

continued next page

## Cumengeite and Pseudoboleite



**Mammothite (green) and Boleite or Pseudoboleite (blue) with colorless Phosgenite.** Rowley Mine, Painted Rock Mountains, Maricopa County, AZ. FOV 1 mm. Photo by Michael Pabst, with stereomicroscope, stacking 7 images (#1200).

Here is a link to a nice photo of Mammothite from the Rowley Mine in Mindat: [www.mindat.org/photo-326708.html](http://www.mindat.org/photo-326708.html). This is an impressive photo for a specimen that is only about 0.5 mm across. This photo also appears in a recent Mineralogical Record article on the Rowley Mine with photos of Boleite, Caledonite and Mammothite:

Wilson W. The Rowley Mine, Painted Rock Mountains, Maricopa County, Arizona. *Mineralogical Record* **51**: 181-226 (2020).

The next article will feature another cousin of Boleite, namely Diaboleite.

## Virtual Micromineral Presentations

The Micromount Club Facebook group has been meeting on Zoom every other week, hosted by Steve Sorrell in Australia. All presentations are available through the following link:

[The Micromount Club - YouTube](#)

Talk # 21-15 was on August 24th. The speaker was Martin Stolworthy on “The Mines and Minerals of Cumbria, England, Part 2”. Part 1, in July, was a comprehensive tour of the Caldbeck Fells area. Part 2 ranged far and wide across Cumbria. Localities and minerals included:

- Force Crag Mine- brown pyromorphite, siderite, sphalerite, galena, pyrite, gypsum
- Stoneycroft Gill Smelter- lead and copper secondaries
- Barrons Mine-calcite, quartz, sphalerite
- Old Brandley Mine, Catbells- fluorite, pyromorphite, quartz
- Graphite Mine, Seathwaite- graphite, calcite
- Florence Mine, Egremont- hematite, calcite, barite, quartz
- Kelton & Knockmurton Fells, Lamplugh- botryoidal hematite
- Kinniside Mine, Cleaton Moor- wulfenite, pyromorphite, cerussite, barite
- Conniston Mine- smelter slags
- Shap Quarry, aka Shap Pink Quarry-anatase, rutile, brookite, fluorite, apatite
- Hilton Mine, Appleby-Barite, fluorite, cerussite, galena
- Smallcleugh Mine, Nenthead- sphalerite
- Tynebottom mine- cobalt minerals
- Park House, Greystoke- aragonite, calcite malachite

Adapted from MicroNews, Canadian Micro Mineral Association, Inc. Vol. 55, No. 9, September 2021  
Steve Stuart, Editor

**40<sup>th</sup> Annual British Micromount Society Symposium September 17-19.21 recap**

by Kathy Hrechka, Editor

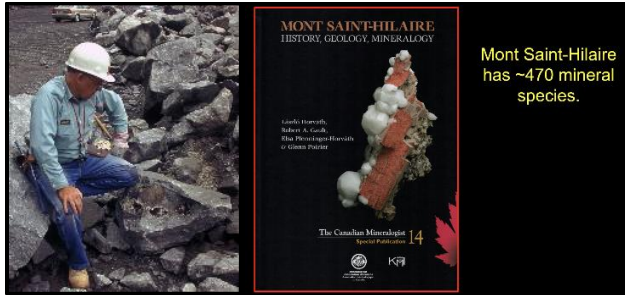
I attended this year's British Micromount Society symposium due to the online Zoom format. The time change did not bother me, as I my airline career gave me no choice what hours to work or sleep. I saw mini screen shots of Mike Seeds, Quintin Wight, and Steve Stuart in attendance from our area. Of course, Steve Sorrell from Australia endured a different clock setting, to attend. Over forty micromineral collectors attended this amazing symposium. We had tea breaks.

I was impressed at the recovery BMS endured, considering such short notice to broadcast via Zoom. Symposium co-chairs, David Ifold and Martin Stolworthy lined up twelve speakers to engage us all. Anticipation also surrounded the photomicrography contest, which made for many participants to enter.



Speakers & programs in order at symposium:

**Quintin Wight, Ontario, Canada**  
'Microminerals of Mont St. Hilaire'



**Roy Starkey Bromsgrove, Worcestershire, UK**  
'40 years of the British Micromount Society'

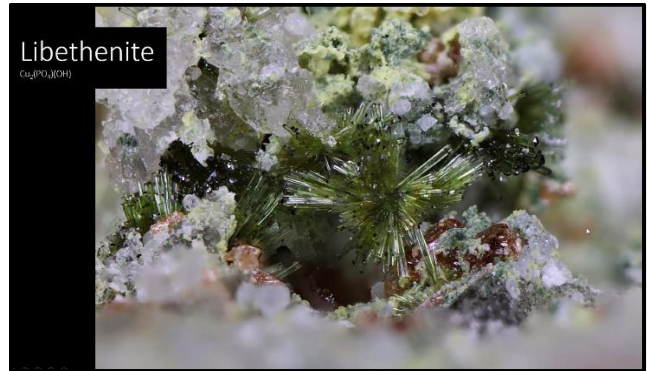


Micromineralogists of the National Capital Area, Inc.

Phil. Taylor, Yeovil, Somerset, UK  
'Tsumeb'



Steve Sorrell, Victoria, Australia  
'Broken Hill under the Microscope'



Dr. Michael Doel, High Wycombe, UK  
'Aris Quarries'

**ARIS MINERALS: A - Z.**

Thornasite.  
 $Na_{12}Th_3(Si_6O_{19})_4 \cdot 18H_2O$

Tsepinit-Na.  
 $(Na, H_2O, K, Sr, Ba)(Ti, Nb)_2(Si_4O_{12})(OH, O)_2 \cdot 3H_2O$ .

Labuntsovite-Mn.  $Na_4K_4Mn^{2+}_2Ti_6O_4(Si_4O_{12})(OH)_4 \cdot 10 - 12H_2O$ .

**GREAT COMBINATIONS:**


Arisite-Ce, Sazhinite-La,  
Aegirine, Tupsersuatsiaite.

Analcime, Fluorite,  
Microcline, Aegirine.

# Micromineralogists of the National Capital Area, Inc.

**Frank Ince, Loughborough, UK**  
 'The Chemistry of Lead and Copper Secondary Mineral Formation'

Oxidising Ore Deposit: Cu Supergene Minerals  
 Roughton Gill, 1 mm (DG)

	<b>Cu<sup>2+</sup></b>	$Cu_2(SO_4)(OH)_2$
	Antlerite	$Cu_2(SO_4)(OH)_2$
	Brochantite	$Cu_2(CO_3)(OH)_2$
	Malachite	$Cu_2(CO_3)(OH)_2$
	Azurite	$Cu_2(CO_3)(OH)_2$

Oxidising Ore Deposit: Cu Supergene Minerals  
 New Cliffe Hill Quarry, 1.8 mm (DG)

	<b>Cu<sup>2+</sup></b>	$Cu_2(SO_4)(OH)_2$
	Antlerite	$Cu_2(SO_4)(OH)_2$
	Brochantite	$Cu_2(CO_3)(OH)_2$
	Malachite	$Cu_2(CO_3)(OH)_2$
	Azurite	$Cu_2(CO_3)(OH)_2$

Oxidising Ore Deposit: Pb-Cu Supergene Minerals  
 Driggeth Mine, 1.5 mm (DG)

	<b>Pb<sup>2+</sup>-Cu<sup>2+</sup></b>	$PbCu(SO_4)(OH)_2$
	Linarite	$PbCu(SO_4)(OH)_2$
	Caledonite	$Pb_2Cu_2(CO_3)(SO_4)(OH)_2$

**David Ifold, Dolton, Devon, UK**  
 'Ten specimens that mean something to me' GOLD



**Susan Tyzack, Surrey, UK**  
 'Ten specimens that mean something to me'

**No 1**  
*'And a Monster appeared the next morning...'*

'The Monster' - 47 x 25 x 23 cm. Stilbite, quartz, chlorite, analcime and analcime 'shells' on basalt matrix.

Port Glasgow motorway extension, 1981.



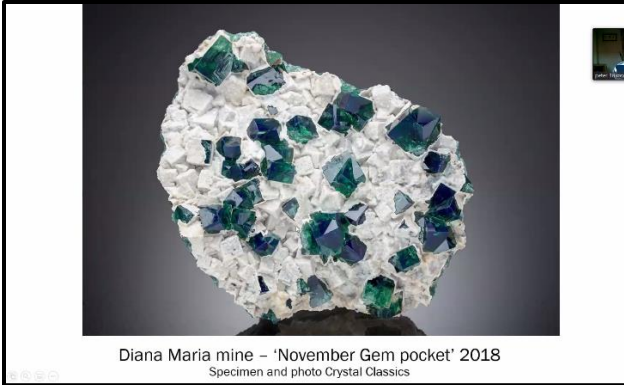
**Bill Pinch - a man who was passionate about minerals**  
 At Niagara Falls, and outside his original house in Rochester, New York



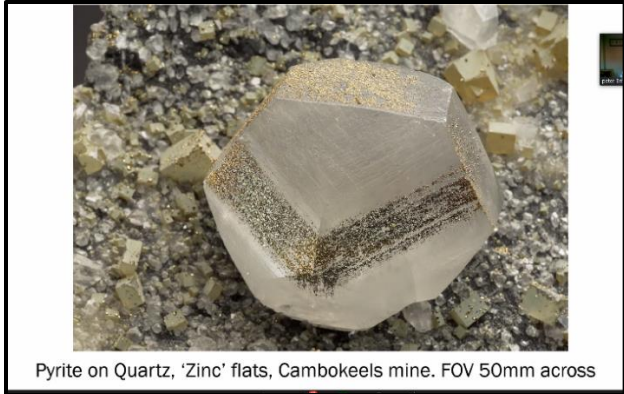
**Peter Briscoe, Nottinghamshire, UK**  
 'Contemporary Fluorite Locations of Weardale' UK



Micromineralogists of the National Capital Area, Inc.



Diana Maria mine - 'November Gem pocket' 2018  
Specimen and photo Crystal Classics



Pyrite on Quartz, 'Zinc' flats, Cambokeels mine. FOV 50mm across



**Prehnite**  $\text{Ca}_2\text{Al}_2\text{Si}_2\text{O}_{10}(\text{OH})_2$   
**Copper Cu**  
North Kearsarge Mine  
Houghton Co., Michigan  
FOV: 4.0 mm  
Maltby Collection  
Mindat POTD: 17 May 2017



**Saponite**  $\text{Ca}_{0.25}(\text{Mg},\text{Fe})_3(\text{Si},\text{Al})_4\text{O}_{10}(\text{OH})_2 \cdot n\text{H}_2\text{O}$   
**Quartz**  $\text{SiO}_2$   
Laurium Mine  
Houghton Co., Michigan  
FOV: 3.2 mm  
Maltby Collection  
Mindat POTD: 9 October 2011

Tony Kampf, California

'The Journey from an Unknown to a new Mineral'

The March of the New Minerals

- 1775 – 1955 10 – 20 per year
- 1956 – 2000 30 – 50 per year
- 2001 – 2009 ~ 60 per year
- 2010 – present >100 per year

Current total: 5722

1974 Whitmoreite

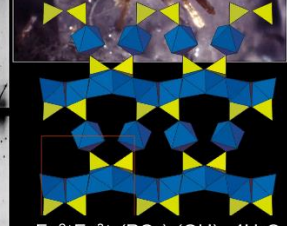
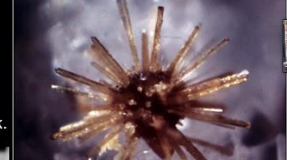
Palermo No. 1 Pegmatite, North Groton, New Hampshire  
*My first new mineral description*  
Because of twinning, I obtained the data for the structure determination by visual inspection of X-ray diffraction films.



It took months of work.



Whitmoreite "naval mine"



Paul Brandes, Texas

'Michigan's Keweenaw - Where Copper was King'

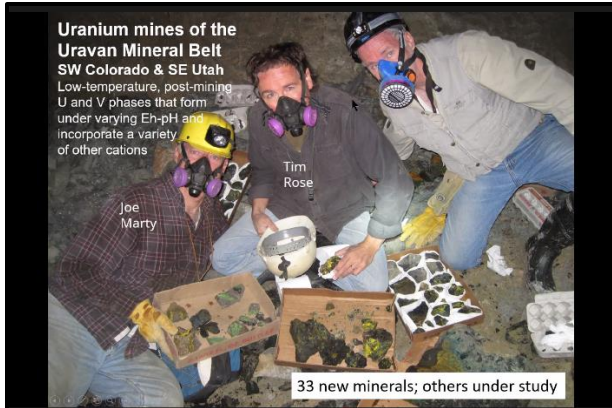
**Copper Cu**  
**Epidote**  $[\text{Ca}_2][\text{Al},\text{Fe}^{2+}][\text{Si}_2\text{O}_7](\text{SiO}_3)_2(\text{OH})$

South Kearsarge Mine  
Houghton Co., Michigan  
FOV: 5.0 mm  
Rosemeyer Collection  
Mindat POTD: 5 May 2019

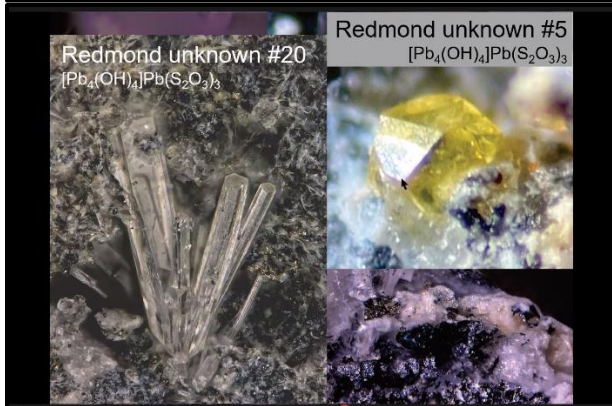
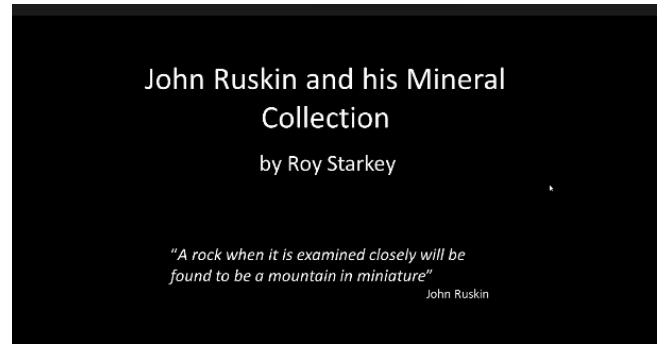
**Hopper Copper Cu**  
Ahmeek Mine  
Keweenaw Co., Michigan  
5.9 x 3.5 x 4.0 cm  
Largest crystal: 1.6 cm  
A.E. Seaman Mineral Museum  
Specimen: DCG 1111  
Photographer: G. Robinson

Courtesy A.E. Seaman Mineral Museum

**Micromineralogists of the National Capital Area, Inc.**

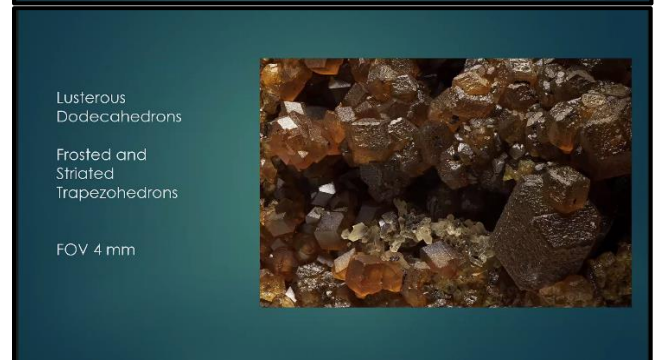
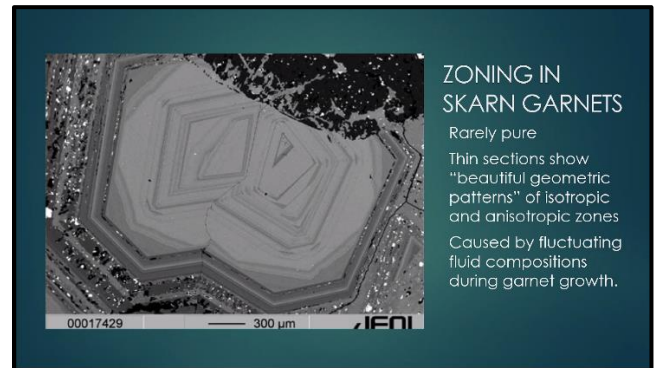


**Roy Starkey, Bromsgrove, Worcestershire, UK**  
'John Ruskin and his mineral collection'



**David Roe, South Devon, UK**

'Devon Gems'



Note: Tony Kampf will be inducted into the Desautels Micromount Hall of Fame on October 9, 2021. The Desautels Micromount Symposium is sponsored by the Baltimore Mineral Society of Maryland.

**Roy Starkey** gave us Mineral Quizzes.  
Topics: Identify countries of ten world museums, chemistry, Mohs hardness scale using Roy's list of random minerals, and birth order of historical international geologists. For fun we had to guess micro photos of ordinary items, such as soap bubbles, etc. Thank goodness grading was on the honor system.



**The End! See you in person 2022.**

Micromineralogists of the National Capital Area, Inc.

40<sup>th</sup> Annual Symposium - British Micromount Society photomicrography contest 9.17-19.2021

Congratulations!

First Place: Martin Gale “green mineral”



Second Place: John Haupt “green mineral”



Third Place: Richard Bell “green mineral”



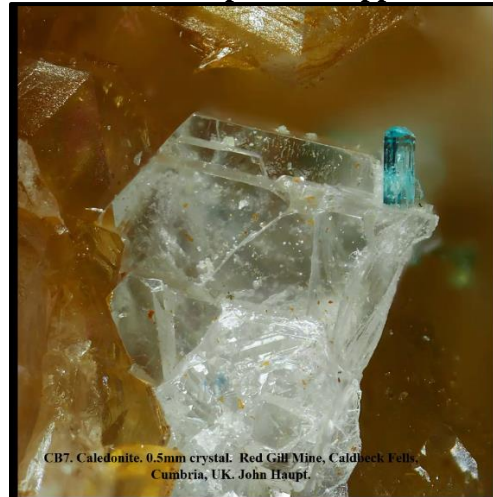
First Place: Richard Bell “lead/copper mineral”



Second Place: John Haupt “lead/copper mineral”



Third Place: John Haupt “lead/copper mineral”





**Grand Opening of the New James Madison University Mineral Museum  
Friday, October 29th at 4:30pm**

by Drs. Lance & Cindy Kearns

The grand opening is on Friday, October 29th at 4:30pm. Please spread the word and the invitation to all members of your club. We are inviting all members from eight different clubs, but we do not have individual addresses for everyone. Please, be certain that everyone who intends to come will send an RSVP. You can respond either by email, by phone call, or by USPS. Please be sure to indicate which club you belong to.



RSVP to Ann Marie Coe  
Email - COEAM@JMU.EDU  
Phone - 540-568-7274  
Mail to: Ann Marie Coe  
James Madison University  
Office of Donor Relations MSC 3604  
Harrisonburg, VA 22807



**Type Mineralogy of Brazil: a 663-page open access e-book**

by Herwig Pelckmans, Belgium



In October 2020, Daniel Atencio, professor at the Instituto de Geosciências of the University of Sao Paulo (Brazil), published a very important work regarding the minerals of Brazil, titled: "Type Mineralogy of Brazil: a book in progress"

The abstract reads: " This is a compilation of bibliographic (historical and descriptive) information for the minerals first described from Brazil; it includes both valid and invalid, discredited species, unnamed, unidentified, problematic minerals, and so on. This work brings together as much data as possible concerning type mineral species. It will save future researchers a lot of work because it contains data from many publications that are difficult to obtain."

The good news about this 663-page book: it will never be out of print, for it is an open access e-book. Downloading it is free and legal (from Researchgate.net)! The only thing it will cost you is the disk space to store the pdf-file (about 26 Mb).

For more information and an actual review of the book, see Min. Rec. 52(4), p. 479-480.

**Fun Mineral Fact #1**

Quartz is used in watches and clocks. Quartz has a property called *piezoelectricity*. When electricity from the battery goes to the quartz, it creates a pulse that makes the hands move in time on the watch.

[www.diamonddanpublications.net](http://www.diamonddanpublications.net)

## Friends of Mineralogy Virginia Chapter FMVA

by Thomas Hale, President



The Shenandoah Valley Gem & Mineral Show hosted on September 17-19 was a massive success! The club received record-breaking numbers and social media outreach. You can find photos and updates here ([Day 1/Day 2](#)).

Thomas H. hosted the Virginia resources booth and gave out over 100 maps and materials, including the Virginia State Directory. Many of these individuals had expressed that Virginia Rockhounding was directly responsible for their knowledge about the show!

Over 50 new emails were added to our outreach list! Several connections were made with new Parks/Tourism officials, Earth Science teachers, and JMU geology club students.

Thomas H. spoke with JMU geology club representatives about the student opportunities within FMVA. There are discussions for an FMVA presentation at JMU for the students in the program.

The *Mineral-Security Nexus* lecture given to the Delaware Mineralogical Society was a massive success! This presentation will be given at multiple organizations throughout the next year. Please inquire if you are interested.

The Richmond RIR show was also a success. Jim Doran, August Dietz, and Tom Girton attended the show and supported FMVA outreach.

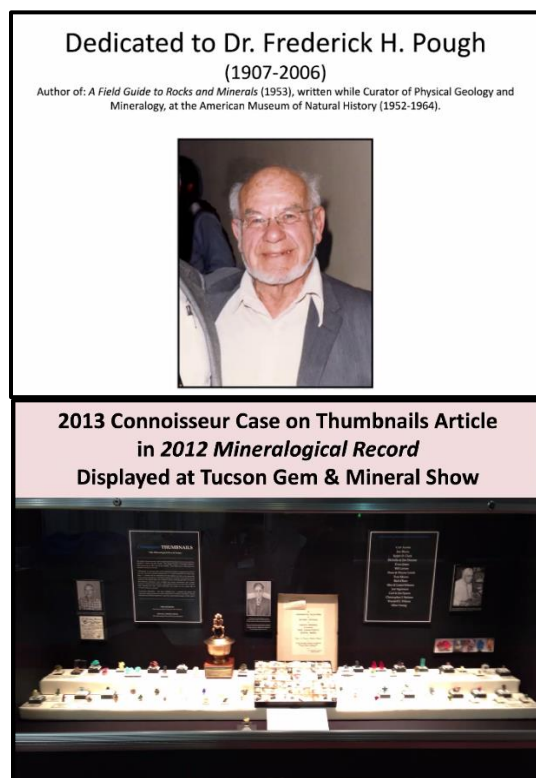
FMVA will be participating in the Virginia Academy of Science Mentorship Program. Michael Wolyniak has connected our group with a teacher in Loudoun County. More information incoming!

September 24<sup>th</sup> speaker series; FMVA hosted the distinguished Dr. Alex Schauss speaking on "The World of Thumbnail Minerals." He presented the many characteristics thumbnail collecting affords beyond the emphasis and limitations imposed by focusing too much on connoisseurship.

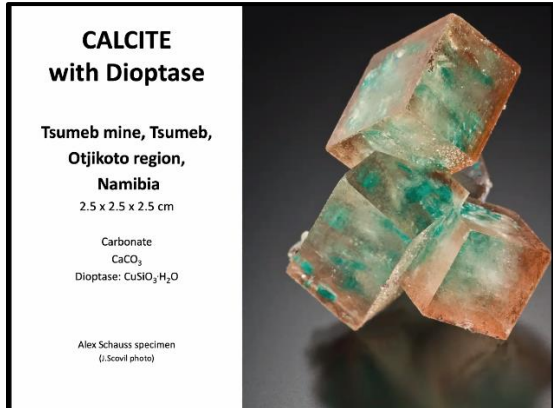


Photo: Dr. Alex Schauss collecting mineral specimens underground in a mine.

Speaker Bio: A graduate of the University of New Mexico, where he earned his bachelor's and master's degrees, allowed Alex to field collect for specimens throughout the Rocky Mountain region, highlighted by a rich vein of lustrous blue-green botryoidal Smithsonite he discovered in 1967 at the 400 level in the Kelly mine, in Magdalena, New Mexico, specimens that now grace private collections and museums. Dr. Frederick H. Pough was Alex's mentor.



Dr. A Schauss - The World of Thumbnail Minerals



**CALCITE**  
with Diopside

Tsumeb mine, Tsumeb,  
Otjikoto region,  
Namibia  
2.5 x 2.5 x 2.5 cm

Carbonate  
CaCO<sub>3</sub>  
Diopside: CuSiO<sub>2</sub> H<sub>2</sub>O

Alex Schauss specimen  
(J. Scovill photo)



**CALCITE (twin)**  
with Copper  
inclusion on  
Copper

Quincy mine,  
Houghton County,  
Michigan  
3.2 x 2.8 x 2.0 cm

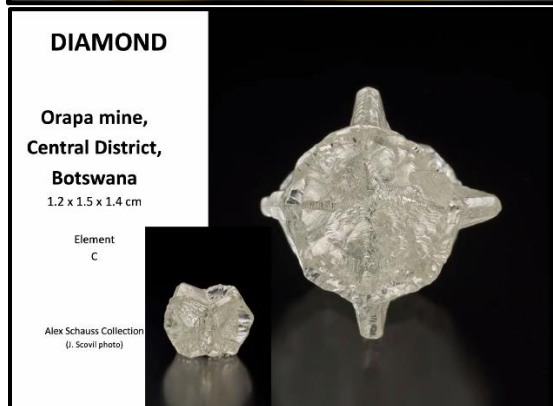
Carbonate  
CaCO<sub>3</sub>  
Copper: Element, Cu  
Cinnabar: Sulfide, HgS

Alex Schauss Collection  
(M. Neuhuber photo)



**ETTRINGITE**

N'Chwaning I mine, near Kuruman, Kalahari manganese field, Northern Cape Province, South Africa  
2.1 x 2.0 x 0.6 cm Sulfate: Ca<sub>6</sub>Al<sub>2</sub>(SO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub> · 26H<sub>2</sub>O  
Alex Schauss Collection (J. Scovill photo)



**DIAMOND**

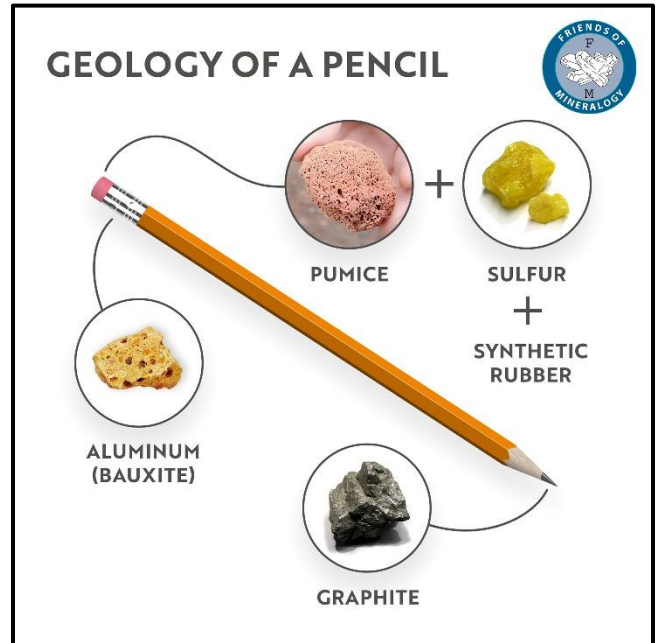
Orapa mine,  
Central District,  
Botswana  
1.2 x 1.5 x 1.4 cm

Element  
C

Alex Schauss Collection  
(J. Scovill photo)

Geology of a Pencil – Friends of Mineralogy VA

Check out this wonderful [post](#) by FM National on the "Geology of a Pencil!" It has reached over 54,000 people and has been shared over 363 times!



Friends of Mineralogy outreach committee is rebranding and extending their outreach across the country.

**FMVA Weekly Brief #6**

The Gem and Mineral Society of Lynchburg hosted the Willis Mountain Kyanite dig on September 25th. It was beautiful weather with over 100 participants. There were zero infractions, and the quarry management was very pleased with how the small groups policed safety and maintained compliance with industry standards. Tom and Thomas gathered several buckets of material for students and teachers across!

FMVA held its monthly board meeting on September 27th. Details on the agenda can be passed along for those interested.

The **VAST Annual PDI** will be held virtually on Tuesday, Wednesday, and Thursday November 16-18, 4:00pm - 9:00pm. The In-person section will be held at JMU on Friday afternoon and Saturday November 19-20. Check out the [VAST website](#) for more information. continued next page

## Friends of Mineralogy Virginia FMVA

Participants from the Rockhounding 101 course participated in the Willis Mountain trip. This was a primer trip before the course goes to another quarry for their main field trip. Many of the participants were excited and have expressed deep interest in joining local clubs and engaging deeper with the hobby. The next course will open in early winter 2022.

The annual gem show at George Mason University has been cancelled. President Tom Kim confirmed this in an email.

The [Richmond Rock Swap](#), hosted by our very own August Dietz, will be held on November 13th, 2021 from 9:00am - 3:00pm.

Thomas and Tom will be meeting with the Loudoun County teacher to discuss the Virginia Academy of Sciences Mentorship Program.

**FMVA's first annual Fall Rock Out event will be hosted on November 7th.** We encourage all our affiliates, friends, and members to attend. Please reach out and RSVP if you are interested. FMVA will provide food for the event and there will be a ton of tables and opportunities to swap, buy, and look at minerals. The location will be in Ashland, Virginia.

**NEW WEBSITE NOW ONLINE!** Please let us know what you think about FMVA's new website! We would love to hear your thoughts and feedback. If you notice issues, just reach out to us. This will expand and grow with new partnerships and activities. <https://friendsofmineralogyvirginia.org>

World of Thumbnail Minerals by Dr. Alex Schauss [https://www.youtube.com/watch?v=s4-HwULK\\_P0](https://www.youtube.com/watch?v=s4-HwULK_P0)

Friends of Mineralogy Virginia FMVA is a non-profit organization dedicated to promoting and expanding the study of mineralogy and the hobby of mineral collecting. Learn more about FMVA and follow us on Social Media: [Facebook](#) [Instagram](#)

<https://www.friendsofmineralogyvirginia.org/>  
Email: [friendsofmineralogy.virginia@gmail.com](mailto:friendsofmineralogy.virginia@gmail.com)  
Thomas Hale is the founder and President of FMVA.

## Mineral Talks Live: Oct 6 at 1pm EDT

by Kathy Hrechka, Editor

Bryan Swoboda, Blue Cap Productions in Honolulu will be interviewing László Kupi, who was born in Hungary to a family of miners and collectors.

He graduated in Budapest in 2001 as a geologist and worked in Hungary while earning his PhD. Dr. Kupi is one of the top mineral photographers in Europe.



**Diaspore** (var. zultanite) from Selcuk, Mugla Province, Aegean Region, Turkey. 13x11mm (Laszlo Kupi Collection). Courtesy of László Kupi

To join: Register in advance for this webinar: <http://go.mineraltalkslive.com/register> After registering, you will receive a confirmation email containing the link joining the webinar on Zoom.

Each month, on the first Wednesday at 1pm EDT Bryan Swoboda, Blue Cap Productions in Honolulu, Hawaii presents various mineral persons of interest on Zoom. All MLT lectures are complementary to our geology community through Dr. Rachel Alanzo Perez from the Mineralogical & Geological Museum at Harvard University, and Dr. Eloise-Gaillou, curator of the Mineralogy Museum Paris School of Mines in France representing the Society of Mineral Museum Professionals SMMP. Each program is recorded, so you can view archived speaker topics.

<http://go.mineraltalkslive.com>

## The Mineralogical Books by James and Edward Dana

by Herwig Pelckmans, Belgium



I don't think there is any serious recreational or professional mineralogist out there that does not know about "Dana's System of Mineralogy" or "Dana's Manual of Mineralogy". These books have been around forever, so it seems! For quite a while now I had been thinking of creating a list of at least the different "Systems of Mineralogy", together with links to online versions that can be fully searched digitally.

So finally, a few weeks ago, I started on this project only to find out a whole bunch has been written about these books, AND some things looked quite complicated when it came to different editions, different printings, different titles, different authors, and so on!

On the other hand, there were many digital versions to be found online, but quite a few were not what they pretended to be. Frequently the date of printing was plain wrong, or the edition stated was incorrect, or ... you name it. It was clear there was a need for a simple yet efficient list of the different editions of each work, linked to its digital version.

And so, I compiled a "Links to the most important mineral books by Dana" that I published on Mindat towards the end of August. I wrote it as a text file first, which turned out not to be such a great choice, because the article on Mindat needs to be in html format. Since my Word document had a lot of different characters and a specific layout, morphing it into an acceptable html version took a lot of time and even more copy & pasta. ;-)

Anyway, here is the link to my most recent article: [https://www.mindat.org/a/links\\_to\\_dana\\_books](https://www.mindat.org/a/links_to_dana_books)

For people who are looking for more info on Dana, here are a few useful links:

\* A detailed biography (and bibliography) of James Dwight Dana was written by his son Edward Salisbury Dana, right after James passed away in 1895, and can be found here:

<https://babel.hathitrust.org/cgi/pt?id=hvd.32044107217713&view=1up&seq=9&skin=2021>

\* The most detailed bibliographic description of the mineralogical works by James Dwight Dana can be found here:

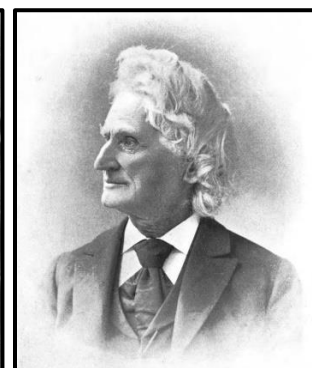
[https://mineralogicalrecord.com/new\\_biobibliography/dana-james-dwight/](https://mineralogicalrecord.com/new_biobibliography/dana-james-dwight/)

The most detailed bibliographic description of the mineralogical works by Edward Dana can be found here:

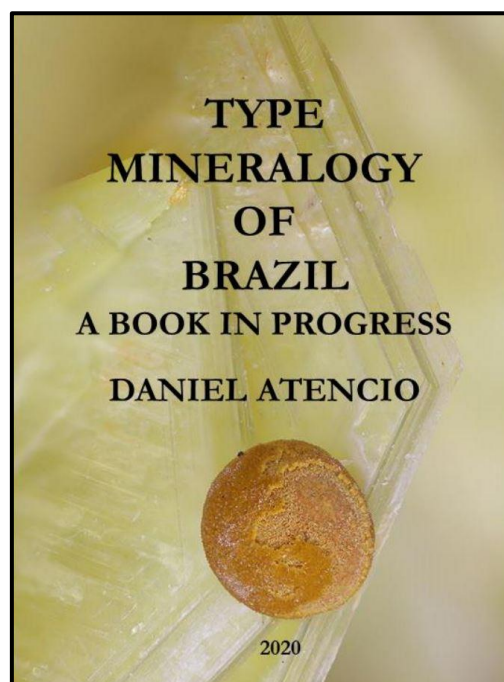
[https://mineralogicalrecord.com/new\\_biobibliography/dana-edward-salisbury/](https://mineralogicalrecord.com/new_biobibliography/dana-edward-salisbury/)



Edward Salisbury Dana



James Dwight Dana



## Micromineral News from Australia

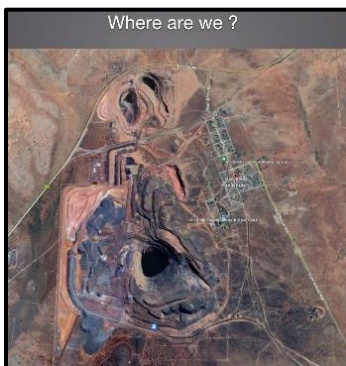
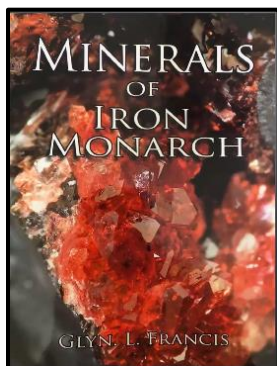
by Kathy Hrechka, Editor

Steve Sorrell from Melbourne, Australia hosts a program every other Tuesday at 4pm (EDT) with various geology persons of interest at their micromount meeting. You can sign up for Steve's programs, and meet new presenters, while enjoying friendly faces within our geology community around the globe.



[steve@sorrellpublications.com](mailto:steve@sorrellpublications.com)

**September 7: Henk Smeets presented "Iron Knob and the Iron Monarch; the birthplace of the Australian steel industry".**



Henk Smeets began his program promoting the book, Minerals of Iron Monarch by Glyn L. Francis, which features over 180 minerals. 164 are valid according to Mindat, with six type locality specimens of which Henk has four. He also revealed that his collection contains about one hundred pieces. He also showed us a Google Earth map of Iron Knob.

Iron Knob and Iron Monarch, together with some other mining areas in the region were the major source of iron ore for more than one hundred years, until 1960. These mines were, in 1915 to 1952 were the sole supplier for steel making in Australia with over 150 million tons of high-grade iron ore mined. Nowadays, ten million tons per year are still mined, says Simec.com.

Henk's whole collection was acquired with much appreciated help from John Toma and Peter Elliott from the South-Australian Museum. It is supposed to be the only larger collection in Europe. All specimens are analyzed and photographed by Henk Smeets.



Atacamite

$\text{Cu}_2(\text{OH})_2\text{Cl}$

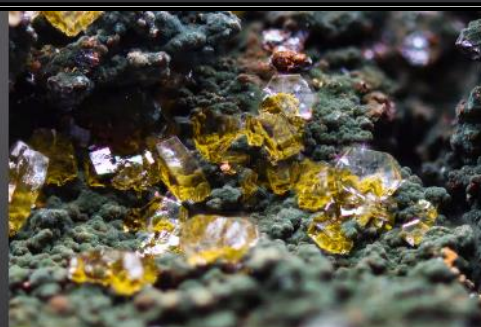
FOV 3 mm



Rhodochrosite

$\text{MnCO}_3$

FOV 4 mm



Shigaite

$\text{Mn}_2\text{Al}_2(\text{OH})_{10}[\text{Na}(\text{H}_2\text{O})_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}]$

FOV 1 mm



Triploidite on calcite

$\text{Mn}^{2+}_2(\text{PO}_4)_2(\text{OH})$

FOV 3 mm

## Micromineralogists of the National Capital Area, Inc.



American Federation of  
Mineralogical Societies

(AFMS)  
[www.amfed.org](http://www.amfed.org)

**Please read the AFMS bulletin attached in original monthly email to MNCA members.**

2021 Purpose of the AFMS: To promote popular interest and education in the various Earth Sciences, and in particular the subjects of Geology, Mineralogy, Paleontology, Lapidary, and related subjects, and to sponsor and provide ways to coordinate the work and efforts of all interested persons and groups; to sponsor and encourage the formation and international development of Societies and Regional Federations and thereby to strive toward greater international good will and fellowship.

Congratulations! **Matt Charsky** Arlington, Virginia was recently voted as 1st Vice President of the American Federation, representing the EFMLS.

**University of Arizona Alfie Norville Gem and Mineral Museum at the Historic Pima County Courthouse, Is Now Open!**

By S. Kaminski, Mineralogical Society of Arizona

A new gem, and mineral museum has opened in Tucson, Arizona. The University of Arizona Alfie Norville Gem & Mineral Museum (UAANGMM) is located within the historic Pima County Courthouse, an iconic and historic building of magnificent Spanish Revival architecture in the heart of Tucson

\*Full article published in the AFMS News Sept 2021



The Rock & Gem magazine is recognized as the official magazine of the AFMS.

Free archived downloads

[Rock & Gem Magazine Archive : Free Download, Borrow, and Streaming : Internet Archive](#)



Eastern Federation of  
Mineralogical and Lapidary  
Societies

(EFMLS)  
<https://efmls.org>

Communication and Involvement  
Are the Keys to Our Success!

**Please read the EFMLS bulletin attached in original monthly email to MNCA members.**

### Local Geology Club Meetings:

**October 2021**

**6: Mineralogical Society of the District of Columbia**  
MSDC 7:30 Zoom [www.mineralogicalsocietyofdc.org](http://www.mineralogicalsocietyofdc.org)

**October 9: Desautels Micromount Symposium**  
hosted by the Baltimore Mineral Society of Maryland  
1pm. Zoom Hall of Fame Inductions: Jean-Luc Designolle & Dr. Anthony Kampf, which will be followed by the announcement of new candidates.  
\*Jean-Luc – “Micromounts of the Sancy Massif”  
\*Tony – “The Journey from an Unknown to a New Mineral”

Register with Mike Seeds [mseeds@fandm.edu](mailto:mseeds@fandm.edu) invite.  
[www.baltimoremineralsociety.org](http://www.baltimoremineralsociety.org)

**11: The Gem, Lapidary and Mineral Society of Montgomery County, Maryland - GLMSMC**  
7:30 pm - Zoom [www.glmsmc.com](http://www.glmsmc.com)

**15: The Gem, Lapidary and Mineral Society of Washington, DC - GLMS-DC meeting**  
[www.glmsdc.org](http://www.glmsdc.org)

**20: The Baltimore Mineral Society BMS**  
7pm Zoom [www.baltimoremineralsociety.org](http://www.baltimoremineralsociety.org)

**25: Northern VA Mineral Club – NVMC meeting**  
7:30 Zoom [www.novamineralclub.org](http://www.novamineralclub.org)

**27: Micromineralogists of the National Capital Area, Inc. - MNCA 7:30pm** Zoom  
[www.dcmicrominerals.org](http://www.dcmicrominerals.org)

## Micromineralogists of the National Capital Area, Inc.



### GeoWord of the Day and its definition:

**argutite** (ar'-gu-tite) A colorless tetragonal mineral occurring as prismatic crystals in sphalerite:  $\text{GeO}_2$ . A member of the *rutile* group.

**bronzitite** (bronz'-it-ite) A *pyroxenite* composed almost entirely of orthopyroxene with bronzite composition.

**clinoptilolite-(K)** A colorless monoclinic zeolite mineral of the *clinoptilolite* group:  $(\text{K}, \text{Na}, \text{Ca})_{2-3}(\text{Si}, \text{Al})_{18}\text{O}_{36} \cdot 11\text{H}_2\text{O}$ .

All terms and definitions come from the [Glossary of Geology, 5th Edition Revised](#). GeoWord of the Day is brought to you by EnviroTech!

[envirotechonline.comwordoftheday@agiweb.org](http://envirotechonline.comwordoftheday@agiweb.org)

AGI was founded in 1948, under a directive of the National Academy of Sciences It is a not-for-profit 501(c)(3) organization dedicated to serving the geo-science community and addressing the needs of society. AGI headquarters are in Alexandria, Virginia.

### Self-collected Mystery Photo of Month

by David Fryauff, Vice President

Microminerals featured on page 3:

I believe this might be a formation of 2 minerals...a core of hexagonal magnesite and an epitaxial sleeve of lenticular pyroaurite crystals. The darker matrix is a very dense and fine-grained serpentine with a color like jade. Mike Pabst took a micro photo for me several years ago of an unencumbered hexagonal prismatic magnesite crystal from the same place. Mindat has a photo on its Cedar Hill quarry page of a Magnesite-pyroaurite specimen that resembles one of the "worms" or "crinoid stems" in my photo.

**Micromineralogists of the National Capital Area Meeting:** The 4th Wed. of each month 7:30 -10 p.m. Long Branch Nature Center (No meetings July & Aug) 625 S. Carlin Springs Road, Arlington VA 22204 Phone (703) 228-6535 (Long Branch is still closed)

**MNCA Purpose:** To promote, educate and encourage interest in geology, mineralogy, and related sciences.

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### Editor's Note: By Kathy Hrechka

Send your articles and photos to your editor.

**Club Article Deadline is 1st of each month.**

*The Mineral Mite* will be emailed by 5th.

**No newsletter July/August**

### Inducted into Editor's Hall of Fame – 2018 EFMLS Trophy 2021 Small bulletins



### Newsletter inputs:

\*Dave MacLean

\*David Fryauff

\*Michael Pabst

\*Kathy Hrechka

\*Herwig Pelckmans

\*Thomas Hale

\* Pete Chin

\*Mike Seeds

\*Drs. Lance & Cindy Kearns

