

# *The Mineralogical Cabinet*

## *The Newsletter for the Friends of the New Mexico Bureau of Geology & Mineral Resources - Mineral Museum*

Volume 6, No. 2, October 2021



### *From the Director's Desk*

Greetings Friends,

Lots of news for this edition of the Mineralogical Cabinet, I'll save perhaps the biggest for last...to force you read it all.

First and foremost, the mineral symposium as an in person event was approved by the university's special events committee. This includes a Friday field trip to Copper Flat, courtesy of Dr. Virginia McLemore. That will be followed by our evening reception at the Mineral Museum. We may use the courtyard to increase space so you might bring a jacket. A complete schedule of presentations for Saturday and half of Sunday and a banquet on Saturday night is planned. Be prepared for possible changes in schedule due to potential responses to the Covid-19 situation. Please be patient with us and be sure to bring your masks. As of today, New Mexico requires masks in all indoor facilities but we do not have any quotas on the number of participants other than capping the banquet at 180 as is the custom.

Check out Mineral Talks Live on Facebook or Instagram or register at: <http://go.MineralTalksLIVE.com/> register to see yours truly on November 3 at 11 am Mountain Time. I have been invited to discuss New Mexico mineralogy and the museum.

Kelsey will have a lot to say and show about recent donations; frankly we have been buried by some really large and fine collections. Ah well, the price of success. Interestingly, we received almost the same amount in donations during the shutdown as we normally receive in a year. We greatly appreciate the generosity of our donors. The museum has also been very busy with visitors. It is good to see people back in the facility and enjoying the collection.

I received a Small Business Administration – Shuttered Venue Operators Grant earlier this year. The grant was to offset lost revenue at performance venues

and museums. Although a bit complicated, we were granted approximately half of our lost revenue from March 2020 to March 2021. The amount allowed us to recover all of Kelsey's salary that is paid by the museum so we are now out of the red and into the black. The increased attendance and guest purchasing in the meantime has helped us improve the financial situation in the museum.

We raised enough money to purchase new UV lighting units for the three display bays in the Ultraviolet Mineral room. The new units have arrived and we are planning to have them installed and operational before the symposium. Thank you, Friends!

Finally I want to announce to our friends that I have decided to retire at the end of this year. I have served in my position here at the Bureau for 27 years, that doesn't include the five years at my previous professor job in Texas. I have enjoyed this job tremendously and have made so many wonderful friends and acquaintances. Lisa and I are not leaving the Socorro area, we plan to retire here and I will maintain a relationship with museum. So I will not be gone, only a bit less conspicuous. I am comfortable that it is time to move on and leave the museum to someone with a new vision for the facility. Thankfully Kelsey will still be here to help transition the museum to the next generations of friends, donors, and visitors. Please accept my heartfelt thanks for all the support you have given to me and the museum.

Onward,

*Virgil W. Lueth*

### *Director's Choice*

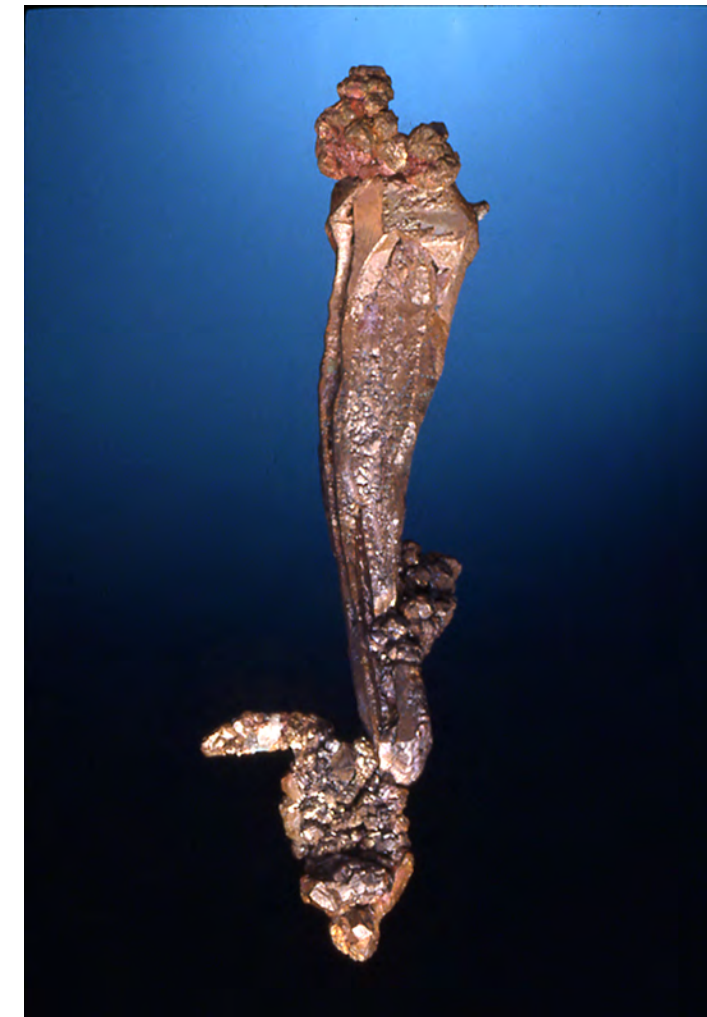
If you go back through the mineral museum catalog since January 4, 1994, starting at number 12810 and look at everything added to the collection up to number 20235 you would see 7,425 Director's Choices. That is averaging 275 minerals per year! Obviously some choices are better than others but the museum has



changed a lot in my 27 years. Pieces we acquired and cataloged in 1994 look quite different than what we often handle today.

I collected a few of them myself (rare stuff...mostly jarosite and tellurates) but they are no more important than any others. We purchased many with the funds generated by visitors and friends. Many of my finest "choices" were made by donors who graciously gave parts of their collections to share with the visitors of the museum. Of course, I had to choose which specimens to keep but that does not diminish the fact that our donors generosity has had a huge impact on the success of the museum.

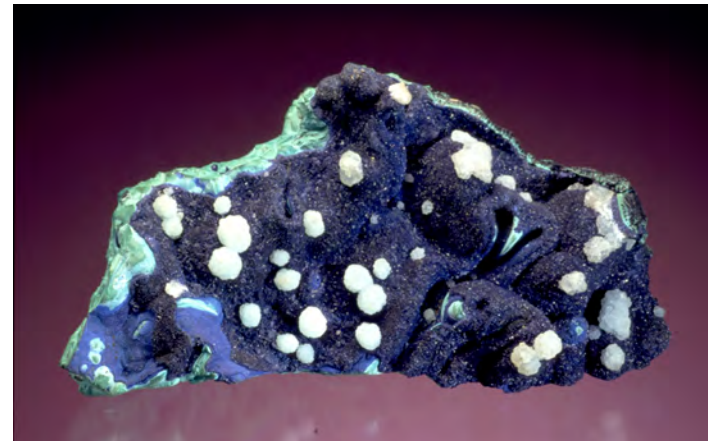
Many of you know, most of the pieces have their own stories...some of which the story is better than the specimen (remember Helen of the Organs?). Walking through the gallery or browsing through the reserve drawers brings back so many memories, some funny



"Chile Pepper" Copper from the Chino Mine. This was a specimen that I felt had to come to the museum because it exemplifies the quality of Chino coppers yet also resembles one of the state's iconic products. Ron Gibbs was gracious in letting us acquire it from him.

and some sad. Others the stories should remain untold for various reasons; discretion is also a very important trait of a good museum director.

For this edition of the newsletter, I have decided to share some images (all taken by Jeff Scovil) of some of my favorite New Mexico pieces in the museum that were acquired during my tenure. Don't read too much into my choices of images (notice no pictures of jarosite). During one of our recent staff meetings we were asked



Azurite and calcite on malachite, Chino Mine. A beautiful specimen we acquired early in my tenure. Another piece, in the collection of Philip Simmons fits on the side of this specimen!



Smithsonite, Kelly Mine. This specimen was collected and donated by Roy Johnson, a New Mexico Tech alumnus. His daughter is also an alum. Truly and iconic New Mexico specimen.



Vanadinite from the Hillsboro district. This specimen was given to us by Jim and Lequita Lett of Bayard, NM. Jim said it came from his uncle who owned "Lett's Bar" in Hillsboro. A miner paid for a bar tab with this piece. It came as a golf ball-size mass covered with clay and only a few crystals sticking through. Alternating episodes of soaking and picking revealed this stunning specimen.



Japan law twinned smoky quartz from the Ortiz Mountains. This piece was collected by Ron Boyd which was donated to the museum on his passing from his collection by way of Gary Young and Joe Dorris.



Chlorargyrite from the Bridal Chamber, Lake Valley. Notice the chisel mark where it was pried off the wall. A truly historic specimen that we acquired by trade, ex Grinnell specimen.



Aphthitalite (Latin for "stable salt") from the potash mines at Carlsbad, NM. Few people appreciate the spectacular aspect of these pieces, this one gifted to us from Philip Simmons. Prior to this find, the largest crystals of this species were on the scale of millimeters. Some recovered from this find attained sizes of over 10 cm! The finest in the world.



Carnellite crystals from Carlsbad gifted to the museum by Gary and Priscilla Young. This piece was probably one of my greatest curatorial failures. After photographing the piece, it went back into the reserve collection. The next time I saw it, all that remained was a "skin" of varnish and a pool of brine, still in the box, that resembled clear syrup. Sometime during handling I must have scraped a hole in the varnish that protected it and it dissolved from humidity to a near eutectic composition of liquid "carnallite." Although a sad result, the end product was fascinating to me, the brine did not even wet the cardboard specimen tray!

to introduce ourselves and perhaps mention our favorite mineral. My answer was, "I don't have a favorite mineral, they are all special in their own way." Like one's own children, picking favorites is a fool's errand. Please enjoy, I've provided some personal annotations about each.



## Curator's Corner

Hello again friends!

It has been since May since our last newsletter, and I can tell you that I've spent most of my time working on donations, donations, donations! Due to the Delta variant and the indoor masking policy back in effect, museum staff haven't had many tour requests or outreach events. However, museum visitation and mineral sales are still going strong.

We have a small army of student assistants that allow the museum and bookstore to be open 7 days a week (minus holidays). The assistants have a variety of tasks, including (but not limited to!): greeting guests, answering questions, cleaning glass, making sales, and stocking the shelves. They allow the museum and bookstore to be open 7 days a week and provide the most direct connection among Bureau staff and the general public. We are so grateful for our hardworking students, who allow us to focus on our workload in both the museum and XRD lab.

So let's talk donations! Since May, the museum has received some nice monetary gifts, as well as a number of aesthetic mineral specimens (thanks to all of our generous donors!). In June we received a call from a woman named Jan Stevenson, who stated her father, Donald Krause, was a mineral collector. It took Virgil and I four trips to Albuquerque to move the sizeable (and I mean SIZEABLE) collection. Currently, we have numbered around 4,000 pieces, and estimate we might be close to the halfway point.

Since then, I have made a trip to Santa Fe to pick up worldwide minerals from the Estate of Bob Dodds III, and to Houston, TX for the rare-earth element-focused collection of Bob McNeill. I successfully avoided COVID by tent camping in Texas. It was uncomfortable, but it worked! All of the aforementioned donations are still being processed. Photos of both catalogued and uncatalogued pieces are included in the subsequent gallery. Enjoy!

We recently set up an exhibit at the Hard Rock Summit show in Denver. The theme this year was fluorite, so we decided to bring a variety of showy and interesting pieces from the Land of Enchantment. Virgil also gave a well-received presentation on the color of fluorite. Please enjoy a photo of the case taken during setup!

*Kelsey McNamara*



A colorful exhibit of NM fluorite, in both raw and gemstone form, at the HardRock Summit in Denver!

### Photo Gallery: Recent Museum Acquisitions



Schorl, Shigar Valley, Gilgit-Baltistan, Pakistan. Gift of Robert Dodds III.



Epidote ps. Orthoclase, Jarilla Mountains, Orogrande District, Otero Co., NM.. Gift of Erin Delventhal & Phil Simmons.



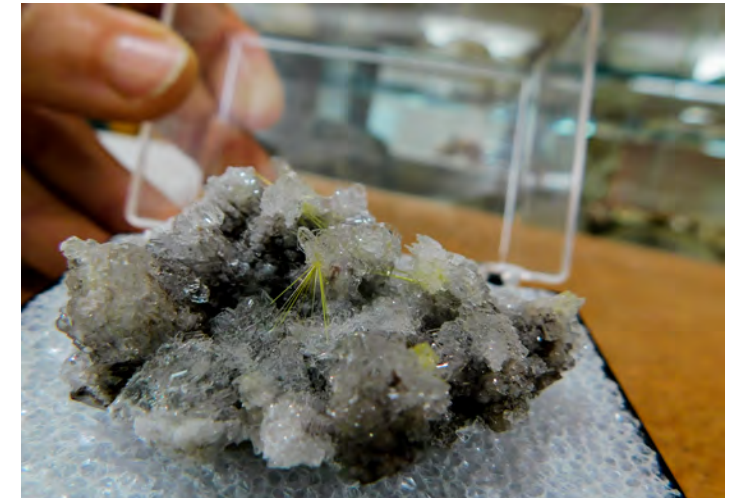
Fluorite, Riemvasmaak fluorite occurrences, Northern Cape, South Africa. Gift of Nancy Attaway.



Beryl var. Emerald, Makarah Outcrop, Sangre de Cristo Mountains, Taos Co., NM.



Fluorite plate larger than Virgil's head, Last Chance Mine, Grant Co., NM. Gift of Mark Kielbaso & Mike Sanders.



Sprays of yellow sklowdoskite with selenite, Naica, Chihuahua, Mexico. Gift of Savannah Bradley, NMT Class of 2022, In memory of her great grandfather CMSgt Donald L. Krause.



Axinite-(Mn), Canta District, Lima, Peru. Gift of Marshall Koval.



Wulfenite & mimetite, San Francisco Mine, Sonora, Mexico. Gift of Savannah Bradley, NMT Class of 2022, In memory of her great grandfather CMSgt Donald L. Krause.





Two views of a favorite! Topaz with hematite ps. garnet, Thomas Range, Juab Co., Utah. Gift of Savannah Bradley, NMT Class of 2022, In memory of her great grandfather CMSgt Donald L. Krause.



Brochantite crystals on anglesite ps. galena, Blanchard Mine, Hansonburg District, Socorro Co., NM. Gift of Savannah Bradley, NMT Class of 2022, In memory of her great grandfather CMSgt Donald L. Krause.



Grossular var. Tsavorite, Merelani Hills, Simanjiro District, Man-yara Region, Tanzania. Gift of Nancy Attaway.



Colemanite & calcite, U.S. Borax Mine, Kramer deposit, Kern Co., California. Gift of Jack & Marty Crawford.



Cadmian smithsonite from the Black Wolf Tunnel, Fierro-Ha-nover District, New Mexico.



Rutile & hematite (measuring roughly 19x11x5cm), Novo Hori-zonte, Bahia Brazil. Held with plastic packing material because of the splinter danger!

### Bureau Periodicals

Would you like to know more about the effects of induced seismicity in the state? Are you interested in Pennsylvanian paleosols of central New Mexico? How does a publication full of geology resources (including virtual tours, citizen science and teaching activities)

**New Mexico EARTH MATTERS**  
SUMMER 2021

**Induced Seismicity in New Mexico**

New Mexico experiences moderate levels of earthquake activity, primarily because of extension along the Rio Grande rift, a large, fault-bounded geologic valley that runs north-south through the center of the state. Geologic studies of ancient earthquakes (known as paleoseismology) show that earthquakes as large as magnitude 6.5 (M6.5) or larger have occurred along the Rio Grande rift within the past several thousand years, and smaller earthquakes of M2.5–3.5 take place in various parts of the state every year. The highest concentration of naturally occurring earthquakes is near the Socorro Magma Body, where a M6.2 earthquake occurred on November 15, 1906. This was the largest historic earthquake in New Mexico and it damaged several buildings in Socorro.

Although there is a long history of naturally occurring seismicity in New Mexico, increasing numbers of earthquakes have been observed over the past several years in some parts of the state that did not experience much seismic activity in the past. These earthquakes are believed to be associated with human activities rather than tectonic or magmatic forces, and are referred to by the term “induced seismicity.” Even though most induced earthquakes are too small to be felt by humans, or to cause any damage, in some places around the world induced earthquakes have damaged buildings and infrastructure. This has led to the installation of new monitoring stations in many areas to better understand the causes of induced seismicity and to minimize its risk.

**What is Induced Seismicity?**

Induced seismicity refers to an earthquake that is generated by human activity. Induced seismicity can be triggered by underground injection and/or withdrawal of fluids, by loading of water onto Earth’s surface (for example, filling a reservoir), or by explosions from mining. Induced seismicity has been of increasing concern as humans develop new ways to use Earth’s resources, including new methods of petroleum production, coalbed methane extraction, geothermal energy development, and carbon sequestration.

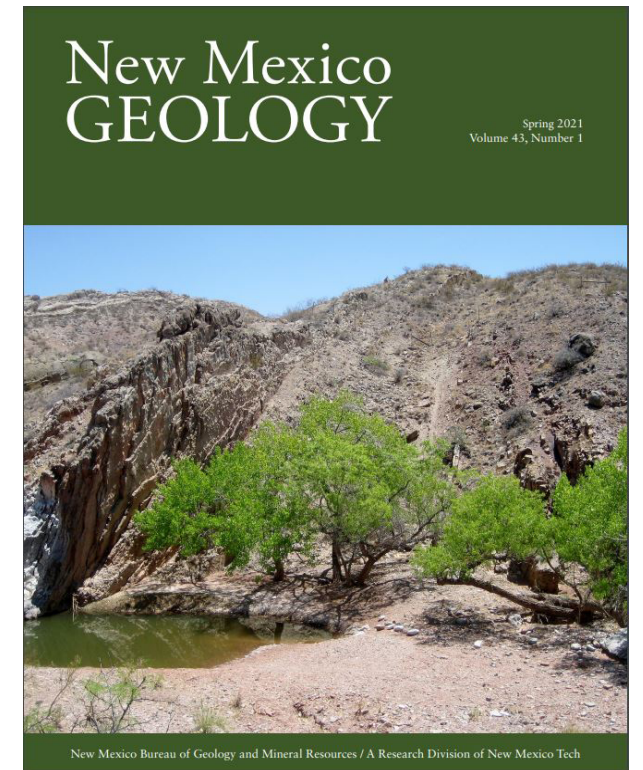
Earthquakes result from the energy released when two sides of a geologic fault slide past one another. The reason that faults slip is because the shear stress along the fault plane becomes large enough to overcome the friction holding the fault in place.

Two common human activities that can affect the subsurface stress state and have been linked to induced seismicity are hydraulic fracturing (or “fracking”), a technique for fracturing petroleum reservoirs to increase oil and gas production) and wastewater disposal. Fracking involves injecting fluids at high pressure for short periods of time, whereas wastewater disposal involves injecting fluids at lower pressure for longer periods of time. Both processes can cause induced seismicity, but fracking-induced earthquakes typically occur soon after the activity, whereas injection induced earthquakes can occur over longer timescales.

Induced seismicity is not a new phenomenon. One of the earliest observations of induced seismicity occurred in the 1920s at the Goose Creek oil field, where the earthquakes were attributed to pumping fluids out of the ground. In the 1960s, subsurface disposal of fluid at the Rocky Mountain Arsenal in Colorado triggered hundreds of earthquakes large enough to be recorded, with the largest being a M4.8. In other locations, seismicity was suspected to be induced, but it was not proven due to lack of sufficient monitoring. With improved monitoring, a clear correlation between

Map of the major oil/gas-producing basins and Rio Grande rift in NM.

Mairi Litherland and Margaret Glasgow have produced an educational write-up on seismicity in NM, including topics of natural vs. induced seismicity, areas of frequent seismic events, and how those events are monitored and measured.



This edition of NM Geology is focused on calcareous paleosols (ancient soils) in the Upper Pennsylvanian Atrasado Formation of central New Mexico. Authors Spencer Lucas and Lawrence Tanner utilized stable isotope, petrography, and paleoflora data to determine paleoclimate.

**Lite Geology**  
Geology Resources

Spring 2021

Vol. 48

The current issue of Lite Geology is focused on earth science teaching and learning resources—including (but not limited to!) a virtual tour of the Jemez Mountains, logging precipitation amounts for citizen science projects, and the geology of Fort Stanton-Snowy River Cave.

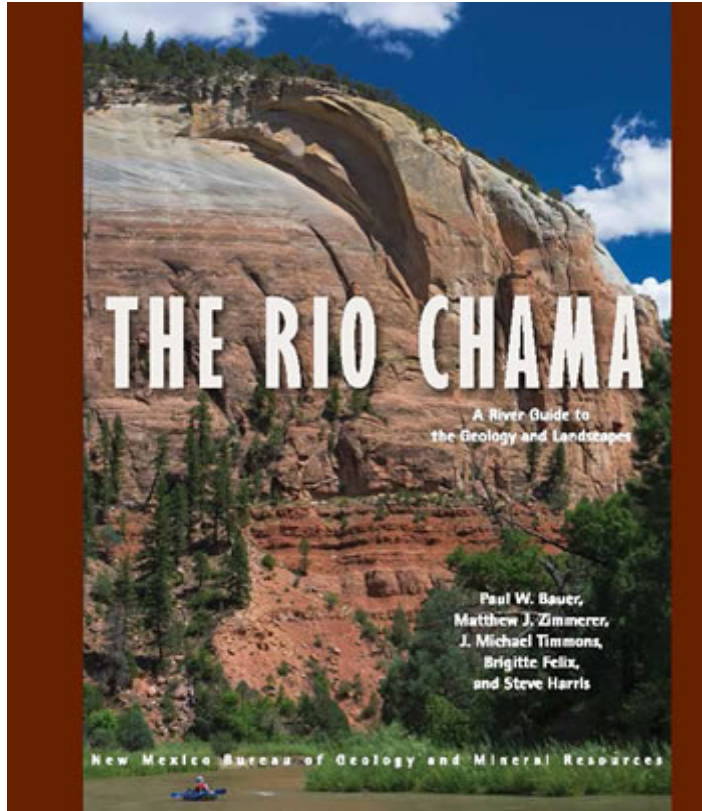


sound? Earth Matters, New Mexico Geology, and Lite Geology are all free periodicals available for download at this site: <https://geoinfo.nmt.edu/publications/periodicals/home.cfml>

For updates and photos on what's happening at the museum, I try to post weekly/bi-weekly on our Facebook page:

[www.facebook.com/NMBGmineralmuseum](http://www.facebook.com/NMBGmineralmuseum)

The New Mexico Bureau of Geology ALSO has a Facebook page! Please check it out at this address: [www.facebook.com/NMBGMR](http://www.facebook.com/NMBGMR)



The Rio Chama guidebook is now up for sale! The little boater in the bottom left is the Mineral Museum curator, floating toward the ominous Chama Wall.

## 2021 Museum Show Calendar

**Dec. Earth Treasure Show, Los Alamos**

**Feb. Tucson Gem & Mineral Show**

**Mar. Albuquerque Gem & Mineral Club Show**

### *“Friendly Reminder”*

***Annual Dues for the Friends of the Museum expire on the weekend of the Mineral Symposium.***

You can pay dues on site or remit payment to:  
**NMT - Mineral Museum Gift Fund**  
and send it to:

NMBGMR Mineral Museum  
Friends of the Mineral Museum  
801 Leroy Place  
Socorro, NM 87801

You can use a credit card too, contact:  
Kelly Luster or Michael Carroll  
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### *Contact Us:*

**Director:** Virgil W. Lueth:

575-835-5140

[Virgil.Lueth@nmt.edu](mailto:Virgil.Lueth@nmt.edu)

**Curator:** Kelsey McNamara

575-835-5418

[Kelsey.Mcnamara@nmt.edu](mailto:Kelsey.Mcnamara@nmt.edu)