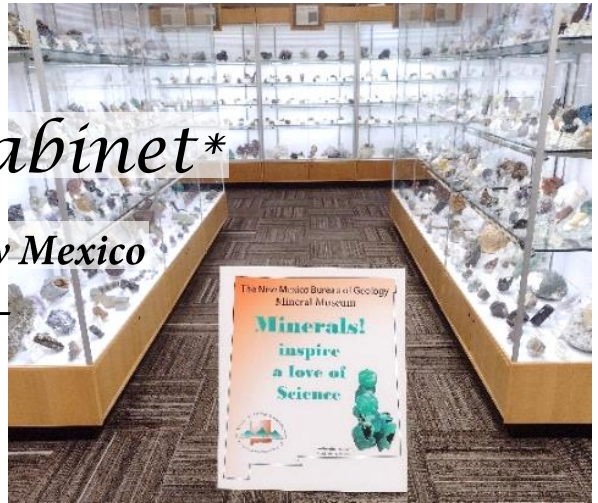


*The Mineralogical Cabinet**

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

Volume 8, No. 2, November, 2023



From the Director's Desk

Dear Friends,

The 43rd annual New Mexico Mineral Symposium is just around the corner. We have a great lineup of speakers this year, and our featured speaker is Dr. Eloïse Gaillou, Curatrix of the Mineralogy Museum of l'École des Mines de Paris.



Dr. Eloïse Gaillou in the Mineralogy Museum of l'École des Mines de Paris.

For full details about the program, talks, and abstracts go to the Symposium webpage at: <https://geoinfo.nmt.edu/museum/nmms/home.cfml>

This year we are introducing a new feature to the symposium, **The Micromineral Aficionados Gathering**. The micromineral Group of the Albuquerque Gem and Mineral Club (AGMC) will host a gathering for all interested in the small but glorious world of microminerals, i.e. specimens that require magnification to be truly appreciated. The gathering will be held in room 253 of the Bureau of Geology building on NM Tech campus from 9-12, Friday November 10.

This will be an informal gathering to look at and talk about (some exaggeration is expected) microminerals and their localities. Bring material you are willing to trade with other aficionados. The AGMC will provide many flats of giveaway material and are looking forward to seeing what you bring to share. They will provide a few extra microscopes and are happy to share, but if you have your own scope it would be a good idea to bring it. The event is free and open to all. For more details or if you have any questions please contact Jay Penn at jaypenn246@gmail.com.

**The Mineralogical Cabinet*: New Mexico Tech (originally the New Mexico School of Mines) was established by the territorial legislature in 1889 (23 yrs before statehood) and in its charter is the mission to “provide mineral and geological cabinets [collections] for...”¹

A special feature of this year's Micromineral Aficionados Gathering will be a **Photomicrography Workshop**. If you were ever awestruck by a beautiful photograph of a micro mineral during a presentation and would like to understand how they were taken; or get started building your own assembly but don't know where to start; or have started putting together an assembly but don't know the next step...this is the workshop for you.

Patrick Rowe, Michael Michayluk, and Scott Braley will host this free 3-hour workshop, from 1-4, on how to take photomicrographs. Patrick is excited to share this information and many of you are familiar with Michael through his Mindat contributions, NMMS presentations, and quality photos taken for Ray DeMark's Symposium presentations over the last several years.

During this workshop Michael, Patrick, and Scott will discuss equipment; provide tips that they learned over many years and go through the complete workflow. They will cover setting up a system, taking the photographs, lighting tips, slabbing and stacking photos, all the way to post-processing. The process will be shown using a high-end assembly, but the principles and processes also apply to beginner and less expensive assemblies.

Once again we will have a **Friends of the Mineral Museum reception** at the museum on Friday, November 10 from 5-7 pm. An informal tailgating session will be held at local motels beginning on Friday and will last through the weekend. Your yearly membership fee for the Friends of the Museum goes to support museum activities. If you are not already a member, please consider joining (go to <https://geoinfo.nmt.edu/museum/friends/ho>

[me.html](#)) and participating in the reception.

Fred Wilda Watercolor Commissioned for the Museum



Photo of the west wall of the museum and 5 of the original Wilda watercolors. The new wire gold painting is the fourth from the right.

The New Mexico Mineral Museum has quite a few pieces of original mineral and mining art hanging on its walls, including fifteen original watercolors of specimens by renowned mineral artist Frederick C. Wilda. This collection included a painting of Harvard's iconic wire gold specimen from the Ground Hog Mine, Gilman District, Colorado.

In the Fall of 2023 Carl Francis, Raquel Alonso Perez, and I wrote an article on the Harvard Ram's Horn gold for the new column "Signature Specimen" in *Rocks & Minerals Magazine*. During this process, I mentioned to Carl and Raquel that "we could include a photo of Fred Wilda's painting in the column. And that we [the Museum] have the original which I could photograph." This immediately captured Raquel's interest and she responded that

Harvard “only has a print copy of the painting and it would be amazing to have the original!!! ☺”, given that the wire gold is, without question, Harvard’s signature specimen.



Fred Wilda working on the painting in his studio, in Hadley Massachusetts

My immediate thoughts were that it would be nice for Harvard to have the original, but it was not my prerogative to give it to them because it was a gift to the Museum from Marty Zinn.

During the Denver show this year I visited Marty at his home, and to my surprise found Fred Wilda and his wife Helen there as well. I told Marty this story and asked him for his thoughts. He said he would be happy to have us give the painting to Harvard, which I suspected would be the case. What I was not expecting, is that he immediately followed with the offer to commission a new original for us!



Photo of Fred’s two paintings the Ground Hog wire gold. Left: in the New Mexico Mineral Museum, Right: on its way to Harvard.

For the next half hour Fred, Helen, and I discussed ideas for the painting. Rather than reproducing the original, we decided that a background to the specimen would be nice, and I had the ideal image in hand. One of the figures from our article for *Rocks & Minerals* is of the old loading bins below the Ground Hog Mine in the Eagle River Canyon. We all decided that painting a background using this image in black and white with a color rendering of the gold horn would lend an appealing contrast. Photos of Fred working on the painting and the final artwork are shown above. Thanks to Marty Zinn’s generosity and Fred Wilda’s artistic talent Harvard now has an original painting of its most iconic mineral specimen and our Museum has one that highlights its associated mining history; very fitting for an institution of mining!

Cheers,

John Rakovan

“Minerals! Inspire a love of science”

Director's Choice

Signature Specimens: Smithsonite

In the mineral collecting community, no mineral is more immediately associated with New Mexico than smithsonite. Although there are several important localities for smithsonite in the state, this recognition is almost solely due to the Kelly and other mines of the Magdalena Mining District. The range of blue to green hues found in smithsonites from the district is both beautiful and almost matchless in the mineral kingdom. In *American Mineral Treasures* (Staebler et al., 2008) Magdalena was the sole locality included from New Mexico (Eveleth & Lueth, 2008). A common misconception about the blue in Magdalena smithsonites is that copper in substitution for zinc (i.e. cuprian smithsonite) is the cause of the color. Rather, it is dispersed micro inclusions of aurichalcite, that cause the color in these specimens.



Minerals of New Mexico display, immediately visible as one enters the museum, prominently showcases the C.T. Brown smithsonite

The mineral collection (then called the mineral cabinet) of New Mexico School of

Mines (today New Mexico Tech) gained world renown by winning a gold medal at the St. Louis World's Fair in 1904. Records from the fair show that of particular note among specimens in this display were the many colorful examples of zinc ore [read smithsonite] from Magdalena Mining District [e.g. Kelly mine] (Eveleth & Lueth, 1997). Many of these specimens came to the collection through Asa B. Fitch and C.T. Brown, two very important figures in the development of the Magdalena Mining District.

Unfortunately, the many beautiful Magdalena smithsonites in the School of Mines collection, which helped to clinch the 1904 World's Fair gold medal, were lost on July 5th, 1928 when a fire burned Old Main Hall and the mineral collection to the ground. Today the NMMM has more than a dozen "Kelly blue" smithsonite specimens on display, all of which were acquired after the 1928 fire. Rather than delving broadly into smithsonite or even more narrowly into Magdalena smithsonite, I want to focus on two signature specimens from the museum in this installment of Director's Choice.



The C.T. Brown Smithsonite, Kelly mine. NMBGMR#793. 61x38x38 cm, 75 lbs. Debra Wilson photo.

The first specimen of note also came to the museum from C.T. Brown. It could have also been lost in the 1928 fire if Brown had not kept it for his personal collection until it was purchased for the Museum in 1938. Known to us as the C.T. Brown smithsonite, NMBGMR Museum #793, it is a 61 x 38 x 38 cm, 75 lb specimen. It is one of the best of the larger blue-green Kelly smithsonites preserved, and for decades has been considered the signature specimen of the NMMM. Contrary to popular belief, it is not the famed “Blarney Stone” (another, now lost Kelly smithsonite) used during annual St. Patrick’s Day ceremonies in the early days at the New Mexico School of Mines (Eveleth & Lueth, 1999).

Another smithsonite, which has more recently reached the status of “signature specimen”, is much smaller in stature, but to many is more appealing with associated aurichalcite and goethite is NMBGMR#16315. Collected and donated to the museum by NMT alumni Roy Johnson, it is a stack of well-developed, three-dimensional, balls in a stalactitic form. It has been used for museum brochures, flyers, paraphernalia, New Mexico Mineral Symposium Programs, and was painted by renowned mineral artist Fred Wilda.

References

Eveleth, R.W., & Lueth, V.W. (1997) A rocky history--The first 100 years of the Mineral Museum in Socorro, New Mexico, USA. *New Mexico Geology*, 19(3):65-75.

Eveleth, R.W., & Lueth, V.W. (1999) St. Pat’s and the Legend of the C.T. Brown Smithsonite.

<https://geoinfo.nmt.edu/museum/CTBrown-Smithsonite.pdf>



Smithsonite, aurichalcite, goethite, Kelly mine. 7.6 cm tall. NMBGMR #16315, a gift from Roy and Pamela Johnson. Jeff Scovil photo.

Eveleth, R.W., & Lueth, V.W. (2008) Magdalena, Socorro County, New Mexico. In Staebler, G. & Wilson (eds) *American Mineral Treasures*, 278-285. Lithographie.

Staebler, G. & Wilson, W. Editors. (2008) *American Mineral Treasures*. Lithographie, Connecticut, 368 p.

Curator's Corner

Hello museum supporters,

The 43rd NM Mineral Symposium is fast-approaching and we are ready to see all of your smiling faces! I have been busy cataloging items, running the X-ray diffractometer, and rotating displays. We've also had increased museum visitor numbers due to the Balloon Fiesta coinciding with the annular solar eclipse, as well as the Trinity Site Open House. The *Oppenheimer* movie definitely caused an increase in customer requests for trinitite! I'm going to keep the text short and highlight our last five months in photos, I hope you enjoy!

GEM & MINERAL SHOWS

This year we set up a display of new acquisitions at the Grant County Rolling Stones Show over Labor Day weekend. Sadly I couldn't attend the show this year, so I have nothing to report! The Silver City show always includes field trips and presentations, something for everyone!

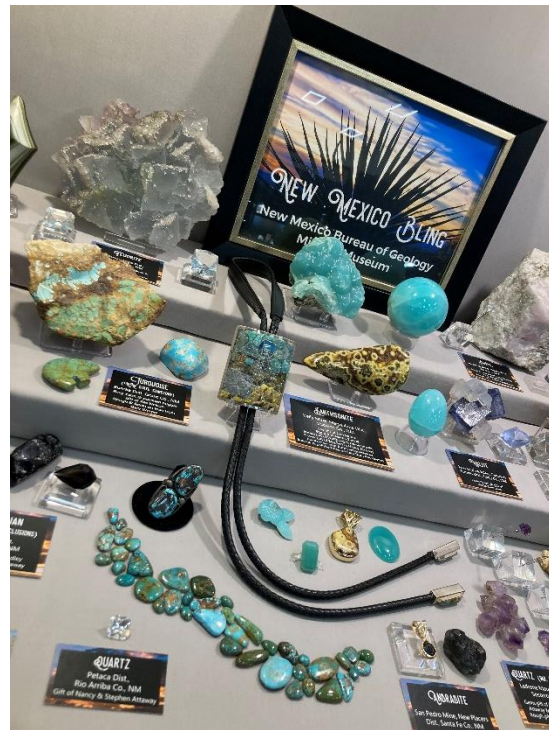
In mid-September, we set up a display of New Mexico lapidary and gemstones for the Denver Club Show, and a display highlighting the new find (the Ice Cream Igloo Pocket) at Hansonburg for the Hardrock Summit. We had a nice time seeing friends, great displays, and of course, minerals!



Display of new acquisitions set up for the Grant County Rolling Stones Show, Silver City, September 1-3, 2023.



John set up a Hardrock Summit display highlighting a new find, the "Ice Cream Igloo pocket", at the Blanchard Mine. All specimens were graciously loaned and we installed a nice digital photo frame with rotating photos and videos. It was well-received!



I set up the Denver club show display of "New Mexico Bling," which was taken to the next level by Pat Haynes Traylor Shaft bolo tie. This piece is made up entirely of Kelly Mine Smithsonian. Excellent!

NEW ACQUISITIONS

Since the last newsletter in June, I've added over 150 minerals to the collection. Whew! These include pieces from a sizable 2021 donation from Jan Stevenson, and more recent (2023) donations from John Laskin, Richard Meese, Rodney Woodcock, David Stoudt & Susan Hoffman, Richard Foist, and Nancy Attaway. I've selected a handful of pieces to show off, but for the rest you will have to visit our "New Acquisitions" display in the museum.



Azurite, Chino Mine, Santa Rita Dist., Grant Co., NM, Gift of Rodney Woodcock.



Quartz, chrysocolla, & malachite from Bagdad Mine, Eureka Dist., Yavapai Co., AZ. Gift of Rodney Woodcock.



A superb and lustrous (think disco ball) cuprite, Milpillas Mine, Sonora, Mexico. Gift of David Stoudt & Susan Hoffman.



A very nice quartz (zoned amethyst) with calcite, Goboboseb Mtns, Brandberg area, Erongo Region, Namibia. Gift of Nancy Attaway.

A lustrous and gemmy Olmiite, N'Chwaning II Mine, Kuruman, Northern Cape, South Africa. Gift of Nancy Attaway.



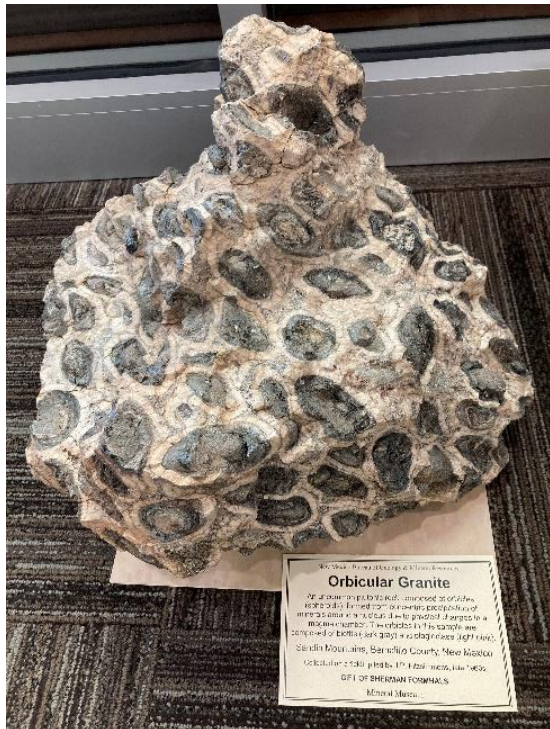
A cute little cigarette tin from the Bullfrog office, ca. 1940s. Gift of the Daughters of Robert L. Foist. You can find this piece in the Fierro-Hanover District case.



Magnetite & calcite, Snowflake Mine, Fierro-Hanover Dist., Grant Co., NM. Gift of the Daughters of Robert L. Foist.

LARGE AND IN-CHARGE

We've had some behemoths moved into and around the Bureau lately, and my back is hurting just typing about it! A large aesthetic chunk of orbicular granite from the La Luz area of the Sandia Mountains was put on display near our lectern. The piece is a gift from Sherman Formhals, who collected it on a geology field trip in the late 1960s. Thanks to Bob Regner for making this happen!



A back breaker-sized orbicular granite from the La Luz area, Sandia Mtns, Bernalillo Co., NM. Collected on a fieldtrip by JK Fitzsimmons in the late 1960s. Gift of Sherman Formhals.

Large mining artifacts with provenance are in the planning process of being moved from Santa Fe and Golden, New Mexico to the Bureau courtyard. However, the following photos show some of the smaller pieces that Bureau staff were able to put in a truck bed. More items are on the list for pickup, but large machinery is required to do so, and

hopefully all items will be placed in the courtyard before the chill of winter sets in! Many thanks to Phil Bové of Santa Fe and to Desiri & Al Pielhau from the Henderson Store in Golden. Extended thanks go to Paul Secord, who will provide a write-up on all of the various implements for an outdoor walking display. And how could I forget? HUGE thanks go to Brian and Greg, Bureau mechanics, carpenters, and the overall muscle to move large pieces with ease.



Brian, Greg, and John using some muscle to get an ore bucket into the truck.



Handyman Brian takes apart a head frame sheave before lifting and transport.



Phil Bové in front of a loaded truck. All of these items are now in the Bureau courtyard. Thanks for your donation Phil!

Finally, “The Beast” made its way into the Bureau at the end of October. For those that don’t know, this fluorite, quartz, & galena behemoth was pulled from the Ice Cream Igloo Pocket at Hansonburg in July 2023 by an excavator (operated by the talented Fred Ortega), weighing in around 1500 lbs. “The Beast” is a loaned piece and now on display in the Bureau atrium. We would like to thank Bradley Culebro and Michael Eggleton (aka TwoGuys OneHole) and The Crystalary for allowing us to display this magnificent piece!



Brian Wheeler, Bureau mechanic and the GOAT on a forklift, moves “the Beast” from the Uhaul.



Bradley cleaned “The Beast” before it was moved into the Bureau atrium.



Like flies on s***, within minutes folks were admiring the beast on display!

OUTREACH NEWS

New Mexico Geological Society Fall Field Conference

The NMGS Fall Field Conference, led by Dr. Lewis Land, was focused on evaporite karst and held in the Carlsbad area of southeast New Mexico, October 4th – 7th, 2023. Lewis did a wonderful job showing and explaining various karst landforms, including sinkholes and caves, in Middle and Upper Permian shelf and basin deposits of the Delaware Basin. These features have a profound effect on the topography and hydrology of the region, as well as creating significant transportation and infrastructure geohazards! (Ever heard of the Carlsbad sinkhole at the Y intersection of US285 & 62-180 from a brine well operation that went bad? They filled it with grout!)



Dr. Lewis Land, expert in karst hydrogeology, explains the geology at Bottomless Lake State Park at the east edge of the Pecos Valley.



Members pose in front of cemented Quarternary conglomerate of the Black River terrace.

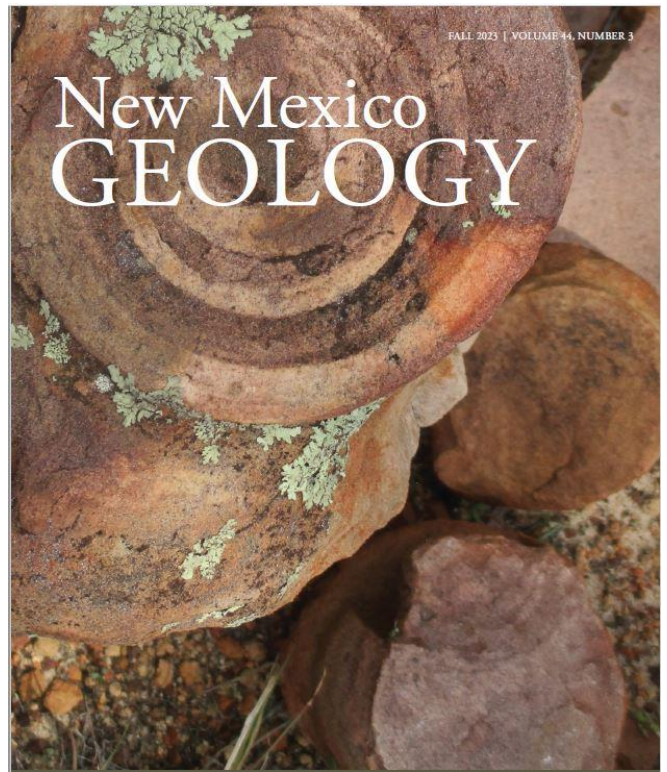
Bureau Periodicals

A few new (and free!) Bureau publications are out and easy to download from the NMGBMR website. Spencer Lucas has written a nice article for *New Mexico Geology* on cylindrical sandstone features present in the Glorieta Sandstone of San Miguel County. Luke Martin and Dana Ulmer-Scholle teamed up on an *Earth Matters* article covering carbon sequestration projects and hydrogen production as low-carbon alternatives in New Mexico.

Large gypsum crystals from the Permian Castile Formation (foot for scale) at the Crystalline Phoenix Mine in Whites City, NM.

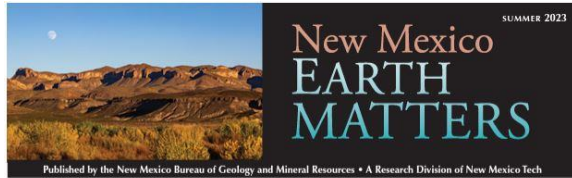


Apparently day two of the conference was “look-alike day,” light green shirts with grayish pants abound!



The current issue of *New Mexico Geology*, available here:

<https://geoinfo.nmt.edu/publications/periodicals/nmg/>



Carbon Sequestration and Hydrogen in New Mexico: Subsurface Resources for a Low-Carbon Economy

THE UNITED STATES IS ON THE VERGE OF A MAJOR PARADIGM SHIFT IN ENERGY PRODUCTION, adding climate mitigation efforts and low-carbon alternatives to traditional carbon-based fossil fuels. New Mexico has the potential to be on the cutting edge of the new low-carbon economy because of our solar and wind energy, geothermal resources, natural gas reserves, underground storage potential, other infrastructure, and an experienced workforce. The state can take advantage of these resources in order to sequester greenhouse gases deep underground to prevent their emission into the atmosphere. Our natural gas resources and solar and wind energy farms position us to take advantage of the coming surge in hydrogen-based energy, which will power the electrical grid, heavy-duty motor vehicles, and fuel cells. These cleaner technologies will be vital to both reducing the nation's greenhouse gas emissions and providing sustainable revenue streams to power the state's economy.

New Mexico is rich in geologic resources and has a long history of extracting those resources from the subsurface. From mining to petroleum production, these materials have provided jobs and fueled the state's economy. Mining processes solid rocks to yield metals or other materials, whereas liquid and gas resources, such as oil and natural gas, are pumped from porous rocks deep underground.

In response to the climate change crisis, there are now environmental and financial incentives to use New Mexico's subsurface resources in new applications beyond the traditional extractive techniques. Depleted oil and gas reservoirs and saline aquifers can be used to provide storage for greenhouse gases, through a processes called sequestration, to prevent their emission into the atmosphere. Hydrogen is poised to become a major source

of clean energy for long-duration energy storage, grid reliability, and heavy-duty transportation. New Mexico is well situated to become a regional hub for the production and distribution of hydrogen due to our subsurface natural resources, access to alternative energy (solar, wind, geothermal), and existing infrastructure. The transition to a low-carbon and sustainable economy will require both short-term subsurface storage for hydrogen and long-term sequestration of carbon dioxide (CO₂). New Mexico can use its subsurface natural resources and existing infrastructure to contribute to our nation's transition to a low-carbon economy.

CarbonSAFE Projects



Carbon sequestration project areas. Source: U.S. Department of Energy National Energy Technology Laboratory. <https://wellbore.gov/carbonmanagement/carbon-storage/carbonfile>

Overview of Greenhouse Gas Emissions

Earth's surface temperature depends on the amount of solar energy that is absorbed relative to the amount reflected back into space. Greenhouse gases, both natural and introduced by human activities, absorb solar radiation absorbed by Earth's surface and prevent it from reflecting back into space. The result of this energy trapped in our atmosphere is a warming Earth. An increase in greenhouse gas emissions produces climate change that can be observed in

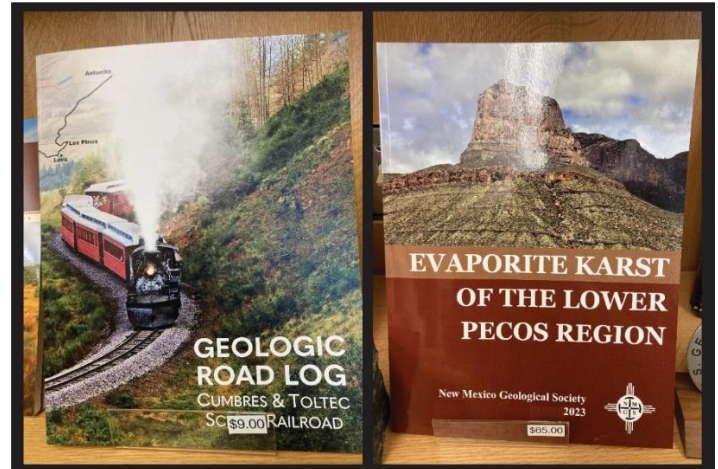
Current issue of Earth Matters, available here:

<https://geoinfo.nmt.edu/publications/periodicals/earthmatters/home.cfm>

PUBLICATIONS STORE NEWS

New Publications

There's a couple new publications and a brand new 2024 Bureau calendar now on sale in the Publications bookstore. These would make great Christmas gifts for any geologist who loves New Mexico geology!



These guidebooks are front and center in the Publications bookstore and Christmas is right around the corner!!



The 2024 NM Bureau of Geology calendar is now for sale, with all photos taken by Bureau staff.

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

Museum Facebook Page

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

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