

The Mineralogical Cabinet

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

Volume 7, No. 1, July 2022

From the Director's Desk

Greetings Friends,

Here is my last message from the "Director's Desk" as I await the arrival of my successor, Dr. John Rakovan. I am exceedingly pleased that John decided to take my position. Bureau leadership, especially our Director, Nelia Dunbar, and the university administration were willing to go the distance to make it happen. Rest assured, the museum is in most capable hands with Kelsey and John. Even I can sleep at night!

I continue to come to the office quarter time during the transition. I am coordinating the New Mexico Mineral Symposium (which I will co-chair this year with John) and trying to tie up loose ends. Kelsey has a list of things for me to do during my 10 hours per week so we can keep the museum humming, which it is.

Much has changed since I arrived in January 1994 from Tarleton State University in Stephenville, Texas, including myself (and no, I am not just older...). I did not know much about the mineral world back then, I was excited to do more research and try a new job. Thankfully, Bob Eveleth showed me the ropes and Al and Betty Tlush took me under their wings and introduced me to a world I barely knew existed. Since then I have made many friends and acquaintances in the collecting community that have greatly helped me and the museum, far too many to name, but I appreciate them all. It has been a lot of fun.

I am proud to have had a hand in development of the museum these last 28 years. Not many can say they curated their collections in three different facilities! Each one better than before due to the great support of the New Mexico mineral community. I had a number of goals to accomplish concerning the museum and met most of them. A final accomplishment (sorry I have to brag), that we met last year was an aggregate donation value to the museum of over a million dollars! Mineral sales and monetary donations last year were also the highest ever. Thanks to all who helped



set those lofty numbers.

One goal I did not accomplish, but you can still help the museum realize, is endowing the museum's operations. The museum endowment fund is now around \$300,000 and I had hoped to get it to a million. At that amount, the interest would essentially pay for the museum operations which includes half of the curator's (Kelsey) salary, ensuring its continued health and growth. A number of people have made estate plans to help the museum in this manner, perhaps it is something you might want to consider.

I have to admit, I really am enjoying my partial retirement and look forward to doing it full time. I've been occupying myself by spending more time with my grandchildren, working on our farm, and rediscovering full time life with my wife, Lisa. So much to do, so little time.

Salud,

Virgil W. Lueth

Director's Choice

For my final "Director's Choice" I decided to highlight the mineral group that got me interested in miner-



Andradite garnet from Orogrande, NM. Gift of Rex Nelson. Orogrande has always been one of my favorite garnet collecting areas.

alogy in the first place. Thirty-three years ago, on my very first field trip in Physical Geology 101 at UWEC we went to Big Falls County Park, on the Eau Claire River in Wisconsin. The rocks exposed at the falls are Archean gneisses of the Superior Province. The rocks are extremely complicated and I always wondered why they took us there first. The one thing that struck me the most was a large almandine garnet (as big as a fist) with a ring of amphibole around it. The deep red crystal, though fractured, was somewhat gemmy and beautiful. The jacket of amphibole around it was explained to be a “retrograde” reaction product. It was the combination of beauty and the geochemical story it told that hooked me on “hard rock” geology after that. My next garnet encounter was when I was mapping for the USGS between my undergrad and graduate school summer. We were mapping in the Colville area of north central Washington and I ran across the first garnet skarn I ever saw. The multitude of large crystals and the associated minerals made me fall in love with garnets again; so much so that I studied New Mexico skarns for my master’s thesis.

Throughout my career garnets have been a part of my research interest and one that always caught my eye at mineral shows. My first talk at the NM Mineral Symposium as a professional curator was about New Mexico garnets. Later I published papers on garnet resource potential of New Mexico and later papers on garnets of the Four Corners and strawberry garnets at Sierra de Cruces, Mexico. Obviously garnets were recurring theme in my career.

Great garnet specimens continue to be produced



Photograph of a cut garnet crystal from Sierra de Cruces, Coahuila, Mexico. This specimen illustrates the profound chemical variation seen in some garnets from this locality. The tan core is grossular which grades out to a black zone of Ti-rich garnet then capped by Mn-rich red garnet. This specimen was illustrated in a Mineralogical Record article I published with Bob Jones.

worldwide, some of our latest acquisitions involve spessartine from the Pecos area and grossulars (topazolite and tsavorite) from Mexico and Tanzania, respectively. Garnets exhibit the best of what defines a mineral, great colors and symmetry. It is interesting that something that piques interest even at an early age can carry through a long career. Something I always liked about my job in the museum is the opportunity to inspire an interest in minerals in others. Beautiful mineral specimens seem to have a profound effect on many people, a physical manifestation of atomic arrangement and interaction that is truly fascinating. Garnets are one of the best at stirring one’s interest in things mineralogical.



Spessartine in schist from the Pecos area, New Mexico. Gift of Philip Simmons.

Curator’s Corner

Many greetings friends,

It has been quite a while since our last newsletter and since the full-time status of Virgil here in the museum. Don’t worry, the place hasn’t burned down yet! I’m happy to report that the day-to-day museum operation has been going smoothly. Visitor numbers and mineral sales are steady and I have been cataloging and running the XRD non-stop.

We are finally getting back in the swing of things when it comes to shows. Other than forgetting the case liners for the Los Alamos Earth Treasure Show (doh!) in December, we successfully set up displays at the TGMS and Albuquerque shows in the spring.

In March, we had the pleasure of hosting two Nevada DOE scientists to research uranium minerals in the reference collection. Essentially, they were creating a library of uranium mineral spectra by using photographs and non-destructive touch spectrometers. In easier terms, think of remote sensing, but at a very small scale. It was nice to provide the scientists with



We showcased worldwide apatite supergroup minerals for the Tucson show.



New acquisitions were highlighted at both the Los Alamos and Albuquerque show. This particular exhibit is from the ABQ show.



We also highlighted New Mexico fluorescent minerals at Tucson!

worldwide uranium minerals for science, it fulfills part of our Bureau mission and is one of many reasons a reference collection is important!

NEW DISPLAYS

UV Display

As you all may know, our UV display underwent a makeover last fall, right before Mineral Symposium. Shortwave and longwave lights were purchased with Friends of the Museum funds from Ingenious Designs: <https://www.ingeniousdesigns.com/>

Virgil installed all the lamps himself (applause please) and we were very delighted with the results. The lamps provide more even coverage and stronger light to make the pieces pop! If you haven't witnessed the Meow Wolf-like fluorescent minerals exhibit yet, we encourage you to visit!

COMING SOON: The Black Hawk Mining District (aka Bullard's Peak) Display



Close up view of a slabbed section of dolomite with silver from the Alhambra Mine, Grant Co., New Mexico. On loan from Don Musser.



The La Fuente patio seemed to attract many New Mexico inhabitants.



Before and after photos of the fluorescent display under shortwave ultraviolet light.

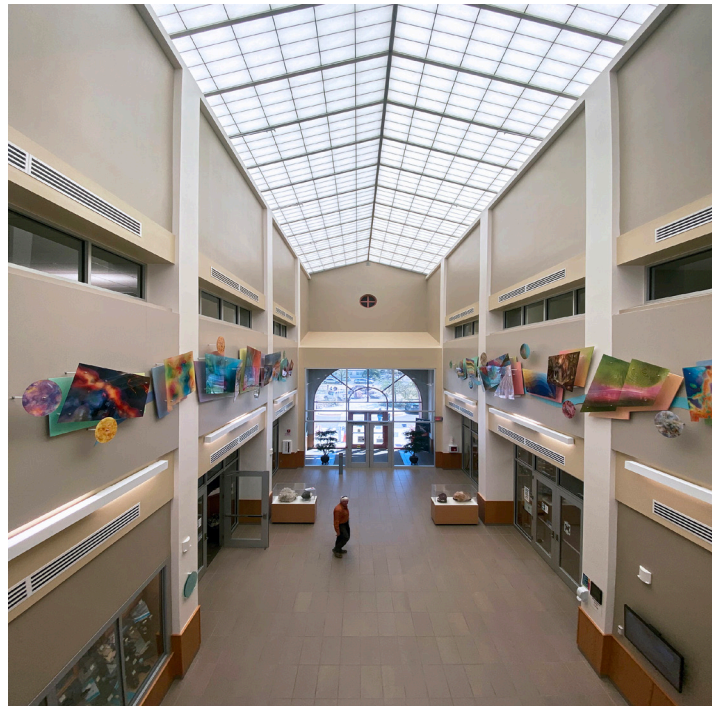
I will be removing our Mont Saint-Hilaire pseudo-morphs to make room for a New Mexico-themed exhibit which highlights the mining history and minerals of the Black Hawk District of Grant County. Don Musser has provided most of the display material as a loan (thank you Don!), along with Chris Cowan (thanks Chris!). Bob Eveleth will contribute some nice stock certificates and is willing to write up the geological and historical information for the display (thanks Bob!). I will be adding splashes of color to this predominantly gray and silver-colored exhibit, in the form of display cards and shelf backdrop(s).

New Art on Bureau Walls

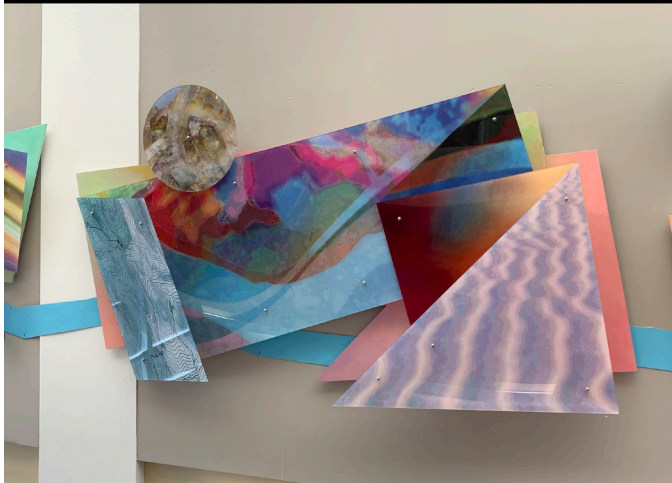
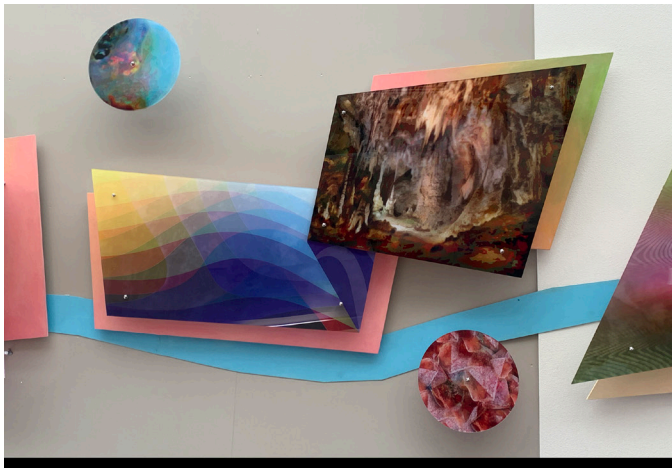
A new geology-themed art installation is now adorning the atrium walls, above both the museum and bookstore. Joseph Bellacera's "The Poetry of Geology" is a multi-paneled piece consisting of two wall reliefs, which include references to cartography, volcanism, minerals, geologic history, geohydrology, energy resources, geological landmarks, and the stratigraphy of New Mexico.

If you look closely enough, you might be able to identify some minerals! The project was funded by New

Mexico's Art in Public Places program <https://www.nmarts.org/art-in-public-places/>.



View of artwork taken from second floor atrium window, with Virgil for scale. Photo taken by Joseph Bellacera.



A series of close-up shots, featuring Carlsbad Caverns, White Sands, and some minerals! Photo taken by Joseph Bellacera.



Fluorite, galena, & quartz, Rogerley Mine, Stanhope, Durham, England. Gift of Martin Zinn III.



Quartz epimorph after fluorite, Deer Trail Mine, Piute Co., Utah. Gift of Martin Zinn III.

NEW ACQUISITIONS

We had a record year for mineral donations in 2021. A total of 14 mineral donations came in at a value of \$1,022,176! This does not include monetary donations. All I can say is WOW! And a big THANK YOU to all of our generous donors. The Mineral Museum just keeps getting better and it is because of your unwavering support! I'll shut up now so you can peruse some of our fine acquisitions.

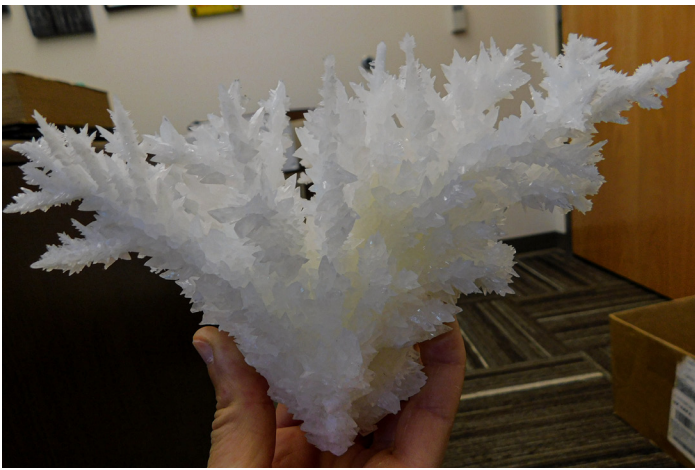
OUTREACH NEWS

NM Science Olympiad State Tournament

The state Science Olympiad tournament is always held in February, usually the weekend after the TGMS show. This year I hosted the Rocks & Minerals event in a virtual format, with a 57 question quiz and some not-so-straightforward questions. I was very proud to see that Socorro schools absolutely rocked the Rocks & Minerals event, with Socorro High School placing 2nd and Cottonwood Valley Charter School placing 1st in their respective divisions!



Brucite, Killa Saifullah District, Balochistan, Pakistan. Gift of George Witters.



Calcite, La Caverna, La Rampa, Buena Tierra Mine, Chihuahua, Mexico. Gift of Dennis Beals



Ferberite & fluorite, Yaogangxian Mine, Hunan, China. Gift of Joan Massagué.



Spodumene var. kunzite (a sizeable & gemmy crystal!), Dara-e-Pech District, Kunar Province, Afghanistan. Gift of Dorice "Dolly" Meieran.



Axinite-(Mg), Merelani Hills, Manyara region, Tanzania. Gift of Nancy Attaway.



Cassiterite & muscovite, Shengus, Gilgit-Baltistan, Pakistan. Gift of Joan Massagué.



Fluorite & dolomite, Shangbao Mine, Hunan, China. Gift of Joan Massagué.



Ludwigite, Spring Mountain District, Lemhi Co., Idaho. Gift of Tony Potucek.

BUREAU PERIODICALS

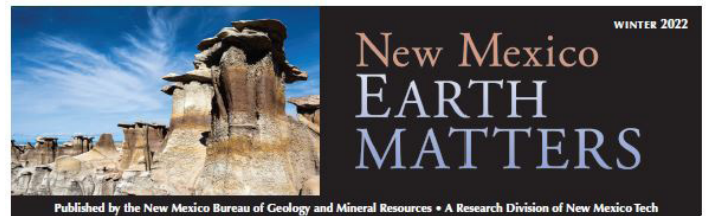
At present there are two new free Bureau publications available for your viewing pleasure. State geologist Nelia Dunbar has been tirelessly working with a handful of climate and water experts on a 50-year projection climate report for New Mexico, which has been condensed into a readable Earth Matters article. In addition, Cynthia Connolly has created a tour of the NMBGMR labs and other facilities for the most current issue of Lite Geology. If you are interested, both

2. (2.00 pts) The pink minerals are _____, or large crystals that are surrounded by finer-grained minerals and groundmass.



- A) phanertic
- B) aphanitic
- C) pegmatic
- D) euhedral
- E) phenocrysts
- F) anhedral

A sample test question for the Rocks & Minerals Event! If you chose E) phenocrysts, you were correct!



Climate Change and New Mexico's Water Resources: A 50-Year Outlook

Planning for Water Management in the 21st Century

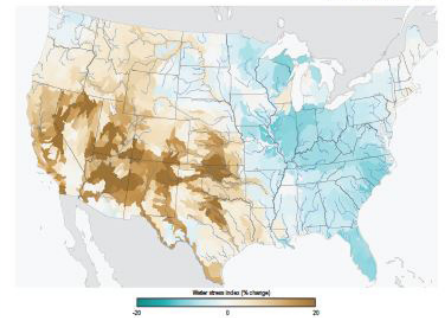
The State of New Mexico is developing a 50-Year Water Plan, scheduled for release in 2022. Recognizing the potentially profound impacts of climate change on the state's water resources over the next 50 years, the New Mexico Interstate Stream Commission tasked the New Mexico Bureau of Geology and Mineral Resources (NMBGMR) to carry out a Leap Ahead Analysis (henceforth "the Analysis") of these impacts to inform policy recommendations in the Water Plan. The goal of the Analysis was to compile, assess, and integrate existing, peer-reviewed, published research, technical reports, and datasets relevant to the broad topic of changes to New Mexico's climate over the next 50 years and resultant impacts on water resources and hydrology. The Analysis is the scientific foundation of the 50-Year Water Plan. The nine authors are prominent scientists with research expertise in climatology, hydrology, ecology, forestry, landscapes, and soils.

The Analysis describes projected climate change impacts but does not propose specific water policy recommendations, which will be developed in the Water Plan itself. In this issue, we summarize the Analysis and highlight how the projected impacts of climate change on water resources vary across different regions of New Mexico. Readers are encouraged to view the full Analysis at <https://geoinfo.nmt.edu/ClimatePanel/>.

Large-Scale Climate Change and Hydrological Impacts

Over the next half century, profound changes in New Mexico's climate will affect water resources all across the state. All evidence suggests that surface temperature will continue to rise throughout New Mexico over the next 50 years. Most projections of statewide annual mean temperature are from 3°F to 7°F warmer than the late 20th century, and some high-end models predict even more warming. The magnitude of change depends on future human-caused emissions of greenhouse gases; the warming associated with even modest projections would generate unprecedented high temperatures and significantly stress our water resources. Increasing temperature is the most pronounced and predictable component of climate change in the Southwest. As temperature rises, the atmosphere can absorb more water, increasing potential evaporation and leading to more arid surface conditions overall.

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Projected change in water stress for river basins by mid-century (2040–2061) compared to historical average (1900–1970). Brown colors represent higher water stress (generally drier conditions). This figure is borrowed from R. Lindsey in "Climate change to increase water stress in many parts of U.S.," 2013, published by NOAA through www.climate.gov.

Dr. Nelia Dunbar and a large group of geoscientists have been tasked with providing the Interstate Stream Commission a detailed report on how climate conditions and water resources will vary across the state over the next 50 years. Let's just say, it isn't looking good. This edition of Earth Matters is a much shortened version of the final product. If you'd like to learn more, please visit <https://geoinfo.nmt.edu/ClimatePanel/> for a link to a full draft and informative video.

