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## Bay Area Mineralogists June 2015

Meeting: June 10, 2015, 7:00 pm  
USGS, Building 3, Room 3-237  
345 Middlefield Road, Menlo Park

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### About Us

The Bay Area Mineralogists meet monthly during the school year, on the 2<sup>nd</sup> Wednesday. We meet at the USGS in Menlo Park, on the second floor of Building 3, where the [campus map](#) says "Conference Room." The front doors will be locked so you'll have to come up the stairs on the Middlefield Road side of the building. Parking is free.

IMPORTANT: BAM and this newsletter will be on vacation in July and August. Normal schedule resumes in September.

### June 10 Program Drilling for Magma at the Krafla Caldera, Iceland by Jake Lowenstern, USGS

Jake Lowenstern will discuss the results of recent scientific drilling at Krafla Caldera in Iceland, where molten rock was found at 2,000 meters depth. Not only was the discovery of magma unusual and exciting, the area has tremendous geothermal potential and is the focus of future efforts for drilling and

exploration. Jake was part of a research paper that studied the chemistry of the magma, and he traveled to Krafla for a follow-up meeting last September.

Jake Lowenstern is a research geologist with the U.S. Geological Survey in Menlo Park, CA. He serves as Scientist-in-Charge of the Yellowstone Volcano Observatory. He studies the interaction of magmas and their overlying hydrothermal systems at Yellowstone and elsewhere, and has published about 100 scientific articles. A 1986 graduate of Dartmouth College, he spent the following year on a Fulbright fellowship to Catania Sicily (Italy). He later earned an M.S. and Ph.D. at Stanford University, finishing in 1992, followed by a year at the Geological Survey of Japan. He started with the USGS in Menlo Park, CA in 1993. His research has taken him to many interesting volcanoes around the world.



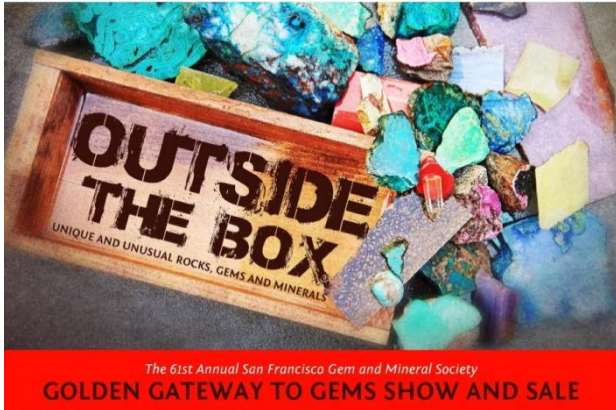
### Show and Tell Suggestions

- Icelandic specimens?
- Your favorite zeolites (from anywhere else too)

## Summer Field Trip

As announced last month, our summer field trip will be to southwest Montana on August 1-8, 2015. On August 9-11, for those who can stick around a few more days, the field trip will continue to northern Idaho, as Stan Bogosian leads us to collecting areas in the Pend Oreille region. Details will be sent in a separate June email.

## SFGMS Show



The San Francisco Gem & Mineral Society will hold its annual show on August 22 and 23, and BAM will again have a notable presence. We'll have a table in the exhibit gallery for mineral and gemstone ID, and it is expected that a number of BAM members will have individual displays and/or participate in a club display at the show. The show theme "Outside the Box: Unique and Unusual Rocks, Gems, and Minerals" is sure to generate some interesting displays. There will also be a follow-on Great Quartz Crystal Face-Off – not as many exhibits as at Tucson, but equally or possibly more spectacular!

## BAM Picnic

Mark your calendar for Saturday August 29, for the annual BAM picnic. This year it will be in San Jose, hosted by Dan Evanich. Details will follow in a special email this summer.

## Calendar

Jun 11-14, Virginia City NV  
Mining History Association Annual Conference  
"Going Back to the Comstock" for MHA's 25<sup>th</sup>  
(Silver) Anniversary, featuring talks and field  
trips at various Virginia City venues  
[www.mininghistoryassociation.org/VirginiaCity.htm](http://www.mininghistoryassociation.org/VirginiaCity.htm)

Jun 12-14, Lodi

CFMS Show & Convention "Rocks & Vines"  
Lodi Grape Festival & Harvest Grounds  
413 East Lockeford Street, Lodi  
Fri/Sat 10am-5pm, Sun 10am-4pm  
[www.cfmsinc.org/2015show/2015Show.html](http://www.cfmsinc.org/2015show/2015Show.html)

## Aug 22-23, San Francisco!!

San Francisco County Fair Building  
9th Avenue & Lincoln Way  
Hours: Sat. 10 - 6; Sun. 10 - 5  
[www.sfgemshow.org](http://www.sfgemshow.org)

## Aug 29, BAM Picnic, San Jose

Aug 29-30, Concord [date change 2015 only]  
Contra Costa Mineral & Gem Society  
Centre Concord, 5298 Clayton Road  
Hours: 10-5 both days  
[www.ccmgs.org](http://www.ccmgs.org)

## Two Michigan Universities Collaborate to Preserve Historic Mineral Collection

May 12, 2015 – Two leading Michigan universities have joined hands to preserve the legacy of an historic mineral collection. The University of Michigan's (UM) mineral collection – including some of the finest specimens of particular significance to Michigan – will have a new home at the A. E. Seaman Mineral Museum (the official mineral museum of the state of Michigan) at Michigan Technological University (MTU) in Houghton, MI. The Seaman Museum already has a nationally recognized mineral collection, containing the finest collection of Michigan minerals, the largest public exhibit of minerals from the Great Lakes region, and outstanding specimens from around the world.

The Seaman Museum will curate and exhibit the UM collection. In addition to a permanent exhibit at the museum in Houghton, select specimens will be exhibited at mineral shows around the country, as well as in satellite locations. One of these satellites will be on the campus of the UM, an exhibit that will be maintained by MTU's Seaman Museum.

The legacy of the UM collection goes back to 1837, when the university moved to Ann Arbor and Michigan became a state. The UM mineral

collection began a year later, in 1838, when the Board of Regents purchased the mineral collection of Baron Louis Lederer, dating to the late 18th and early 19th centuries. The UM collection also includes specimens collected by Douglass Houghton, the first state geologist and the second professor hired by UM. The city of Houghton – home of MTU and the Seaman Museum – was named for him.



From the UM collection, a cut and polished stalactite of bright yellow smithsonite from Masua, Sardinia, Italy. Photo: Chris Stefano



UM Copper Specimen from the Phoenix Mine, Keweenaw County MI. The red color comes from a thin coating of the mineral cuprite. Photo: Debra Wilson

### Who Was Baron Lederer?

“Obituary – It is our painful duty to record the death of Baron Louis Lederer, Consul General for the Austrian States. His death took place on the 22d of December, 1842, at his residence in New York. Baron Lederer has been for many years a resident in this country, and has been long known as a zealous mineralogist. The death of this excellent man will be deeply felt by all who knew him, and particularly by his mineralogical friends in this country, who are under many obligations to him for his uniform kindness, and the important aid he was able to render them by means of his close connection with the imperial cabinet at Vienna. His collection of foreign minerals was purchased three or four years since by the University of Michigan, and his

collection of American specimens in mineralogy, which is believed to be unique in its fullness, was offered by him for sale just before his death.” – The American Journal of Science and Arts, Volume XLIV (April, 1843), Page 216.

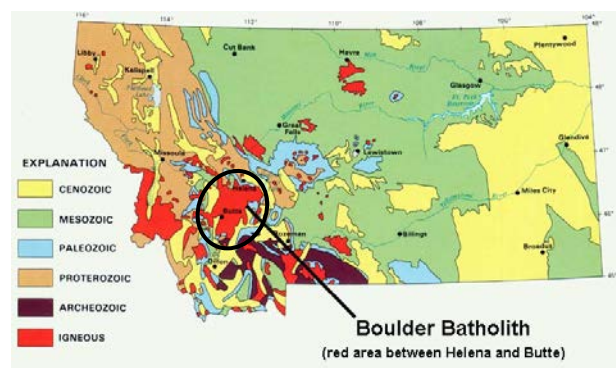
Then: “In 1843, Yale purchased a collection of American minerals assembled by Baron Alois J.X. von Lederer (1773-1842), the Austrian Consul-General to the United States. This collection contained 3,000 specimens that Lederer collected himself or exchanged with noted mineralogists and naturalists of the time. Many of these specimens have been identified based on the labels used by Lederer.”

<http://peabody.yale.edu/collections/mineralogy-and-meteoritics/history>

And finally: The curator of the Yale collection at the time of the Lederer acquisition was Benjamin Silliman (for whom sillimanite is named). Following Silliman’s retirement, James D. Dana took over as curator until 1866.

**Editor’s Note:** Having just returned from a weekend in Butte MT, and with our field trip coming up in August, I decided to include some local information in this newsletter. Enjoy!

### Boulder Batholith



The Boulder Batholith is a relatively small (75 miles N-S by 25 miles E-W) granite (specifically quartz monzonite) batholith in southwestern Montana that is the host rock for rich mineralized deposits at Butte MT and vicinity.

The Boulder Batholith comprises between 7 and 14 discrete plutons that formed beneath the Earth’s surface about 73 to 78 million years ago. Regional uplift brought the deep-seated granite

to the surface, where erosion exposed the rocks and the extremely rich mineral veins they contained.



*The Boulder Batholith is named for the prominent rounded boulders that typify its landscape, the result of spheroidal weathering of the fractured granite.*

Hundreds of millions of dollars of copper, silver, gold, zinc, lead, and other metals have been mined from the batholith using both underground and pit mining methods, and rockhounds have discovered numerous mineral pockets – primarily quartz, including amethyst and dark smoky quartz – throughout the batholith.

### Berkeley Pit

When in Butte, it's hard to miss the Berkeley Pit, a former open pit copper mine one mile long by half a mile wide located adjacent to the town.



*The tan walls of the Berkeley Pit loom next to Uptown Butte.*

Underground mining in the Butte area began around 1870. The underground Berkeley Mine was located on a prominent vein extending to the southeast from the main Anaconda vein system. When open pit mining operations began

in 1955, near the Berkeley Mine shaft, the older mine gave its name to the pit. About 1 billion tons of ore were mined from the Berkeley Pit during its operation from 1955 to 1982. Copper was the principal metal produced, with lesser amounts of silver and gold. A significant amount of silver still exists within the ore body, which extends beneath “Uptown,” Butte’s historic business district.



*Uptown Butte (L) and the Berkeley Pit (R) (Google Earth image)*

When open pit mining ceased, the water pumps used to drain the mine were turned off and the pit began to slowly fill with groundwater. The Berkeley Pit is about 1,780 feet deep and is about half filled with very acidic water (pH of 2.5). The water in the pit combines with pyrite and sulfide minerals in the ore and wall rocks to form sulfuric acid, which then dissolves metals from the rock; as a result the acidic pit water is also loaded with dissolved heavy metals.

The rising water in the pit would eventually impact groundwater and nearby drainages so in the 1990s plans were devised for dealing with the problem. Water flowing into the pit is diverted to slow the rise of the water level. A water treatment plant on the rim of the pit treats up to 5,000 gallons of pit water per minute, using lime to reduce the acidity of the water. As the pH rises, metals precipitate from the water to form sludge. The water and sludge are then separated; some water goes back to the pit and some is recycled in the mining process.

The Berkeley Pit – one of our largest Superfund sites – is also a tourist attraction, complete with a viewing platform and gift shop!