Bulletin of the Mineralogical Society of Southern California

Volume 93 Number 8 - August, 2020

The 980th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

A ZOOM Meeting

August 14th, 2020 at 7:30 P.M.

Program*:* **Pseudomorphs, Trickster Mineral Specimens** Presented by Howard Heitner

In this Issue:

Remember: If you change your email or street address, you must let the MSSC Editor and Membership Chair know or we cannot guarantee receipt of future Bulletins

About the Program: Pseudomorphs, Trickster Mineral Specimens Presented by Howard Heitner

The word pseudomorph was first used by Hauy in 1801. In Greek it means “false shape” A pseudomorph is a mineral that has the external crystal shape of another mineral. The subject of pseudomorphs was first written about in detail by the 19th century German mineralogist Johann Blum. Pseudomorphs were later classified by the mineralogist Strunz in 1982. The talk covers the various theories of how pseudomorphs form. In some cases the second mineral is similar in composition to the original mineral. In those cases the mechanism is a chemical reaction. In other cases the two minerals are not similar and the mechanism of pseudomorph formation is more complicated. There is still controversy about the formation of some pseudomorphs. The talk is illustrated with pictures of both common and rare pseudomorphs.

Our speaker, Howard Heitner, has collecting minerals for sixty years. He started as a field collector, collecting in New York, New Jersey, Maine and other states. Later he started purchasing specimens .He purchased several old collections and became interested in the history of mineral collecting and dealing in the United States. Other interests include; Fluorescent minerals and pseudomorphs.

He was the president of the Stamford Mineralogical Society for many years. In his professional career he was a chemist specializing in water soluble polymers. Most of his career was spent at Cytec Industries in new Product development of products used to process minerals. His post Retirement mineral time has been spent finally organizing and Cataloging his collection and as a volunteer at the AMNH in New York.

Howard is a registered member of Mindat since 21st Nov 2007 and has uploaded: 56 Mineral Photos and 6 Locality Photos, (Mindat.org is an outreach project)

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From the Editor:

It is strange to have a meeting in August rather that our usual Annual Picnic but thanks to current events, that’s just the way thing seem to happen in 2020. This will be another ZOOM meeting so be sure to read the special announcement on page 7 for the new sign up protocall. Here’s hoping everyone stays safe, healthy and maintains your social distance! Linda Elsnau

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FROM THE PRESIDENT:

Interesting Minerals, A to Z. Round 2, installment 5, the letter “E”: by George Rossman

Eudialyte

Eudialyte was first described by Stomeyer in 1819 from an occurrence in nepheline syenite of the Ilimaussaq intrusive complex of southwest Greenland. Syenite is a coarse-grained rock that is similar to granite, but with little or no quartz. The feldspars in syenite are mostly orthoclase. A number of minerals that are generally uncommon are often found in syenites. Eudialyte is one such mineral.

> Stromeyer F (1819) Summary of meeting 16 December 1819, Göttingische Gelehrte Anziegen 3, 1993-2000

Eudialyte’s name is derived from a Greek phrase meaning "readily decomposable," in reference that is has easy solubility in acids.

Its chemical formula is $Na_{15}Ca_6(Fe,Mn)_3Zr_3SiO(O,OH,H_2O)_3(Si_3O_9)_2(Si_9O_{27})_2(OH,Cl)_2$, although it is sometimes written as $Na_{15}Ca_6(Fe,Mn)_3Zr_3Si(Si_{25}O_{73})(O,OH,H_2O)_3(Cl,OH)_2$. Either way, it a mouthful to say and a lot to memorize.

While many of the component ions in the formula are colorless (Na, Ca, Zr, Si, O, OH, Cl), the iron and manganese will cause color. Iron is often the dominant color-causing component. In such cases, eudialyte is pink to red **(Figures 1-4).**

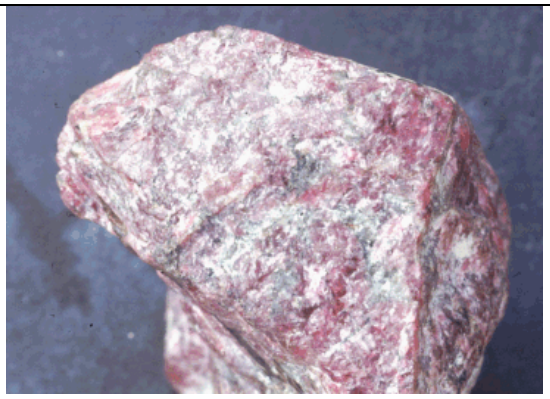

Figure 1. Eudialyte from the Kola Peninsula, Russia GRR photo

Figure 2. Eudialyte from Hibina Tundra, Kola Peninsula, Russia. Photo Credit: Marc Garcia

Figure 3. Eudialyte from Kipawa Alkaline Complex, Kipawa, Tamiskaming County, Quebec, Canada
Photo Credit: Marc Garcia

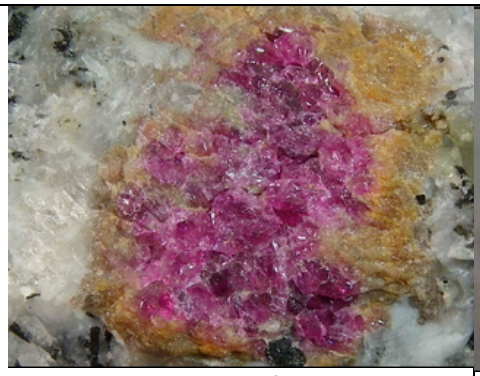

Figure 4. Eudialyte from Magnet Cove, Hot Springs County, Arkansas
Photo Credit: Marc Garcia

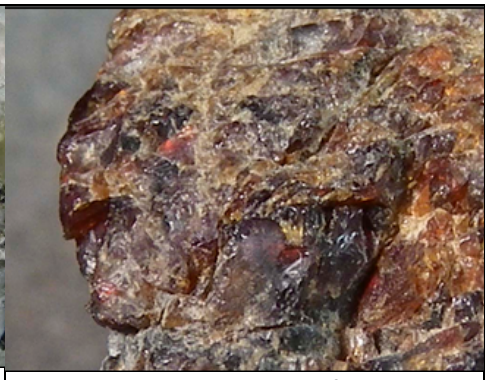

Figure 5. Eudialyte from Langesundfjord, Norway
Photo Credit: Marc Garcia

Eudialyte often has minor amounts of less common elements substituting in its structure. Elements such as niobium, neodymium, dysprosium, cerium, lanthanum or tungsten. The cerium, in particular, can modify the color to a somewhat more brownish hue **(Figure 5).**

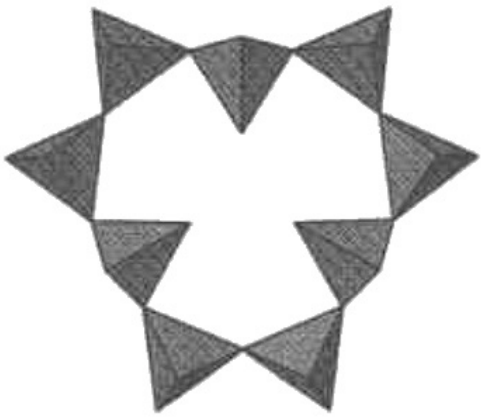

Figure 6. The nine member cyclosilicate ring of tetrahedral silicate ions in eudialyte.

The atomic structure of eudialyte is interesting. It contains an unusual 9-member ring of silicate ions **(Figure 6).**

There are a number of minerals with structures similar to eudialyte, but with different chemical components. Together, they constitute the eudialyte-group minerals. There are about 30 named species in this group plus more than 20 other compositions that occur in nature, but which have not been fully characterized to the point that they have their own species names. The many names of members of this group are ones that most of us have never heard of. I am talking about names such as aqualite, dualite, georgbarsanovite, hydrorastsvetaevite, ilykhinite, mogovidite, taseqite, and voronkovite. Both Johnsen et al. and Rastvetaeva et al. have discussed the nomenclature, chemistry and structural variations in this group. Here are just some of their chemical formulas:

aqualite = $(H_3O)_8(Na,K,Sr)_5Ca_6Zr_3Si_{26}O_{66}(OH)_9Cl$

dualite = $Na_{30}(Ca,Na,Ce,Sr)_{12}(Na,Mn,Fe,Ti)_6Zr_3Ti_3Mn[Si_{51}O_{144}](OH,H_2O,Cl)_9$

georgbarsanovite = $Na_{12}(Mn,Sr,Ce, La, Nd, Pr)_3Ca_6Fe^{2+}{}_3Zr_3NbSi_{25}O_{76}Cl_2 \cdot H_2O$
ilykhinite = $(Na,H_3O)_{15}(Ca,Mn^{2+})_6Fe^{3+}{}_2Zr_3[H_{0-3}Si_3O_9)_2(Si_9O_{27})_2SiO]Cl \cdot 2\text{-}3H_2O$

Johnsen O, Ferraris G, Gault R A, Grice J D, Kampf A R, Pekov I V (2003) The nomenclature of eudialyte-group minerals. The Canadian Mineralogist 41, 785-794

Rastsvetaeva R K, Rozenberg K A, Khomyakov A P (2009) Crystal structure of high-silica K,Na-ordered acentric eudialyte analogue. Doklady Chemistry 424, 11-14

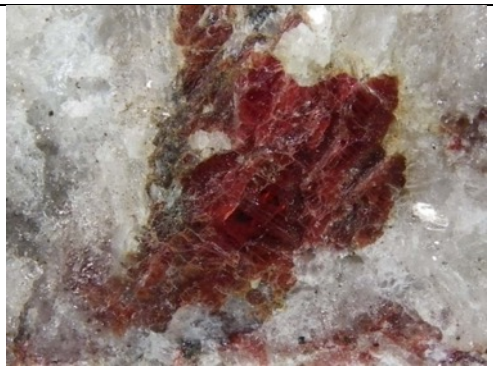

Figure 7. Gillespite from El Rosario, Baja, California, Mexico, GRR photo

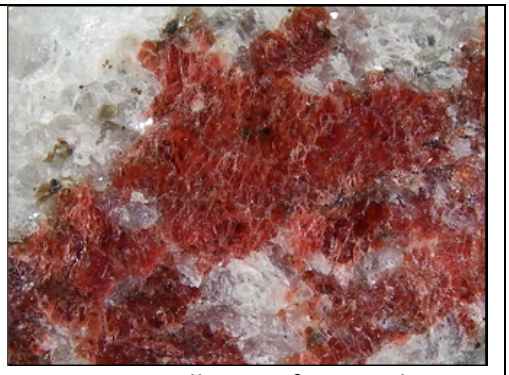

Figure 8. Gillespite from Incline, Mariposa County, California GRR photo

There is another aspect of eudialyte that is of interest. The red color. How many other purely red Fe^{2+} minerals do you know? Not many. Green: yes; brown: yes; but red: not often. Almandine garnet comes close, but it is not as pure of a red color. The red of eudialyte comes from iron in the 2+ oxidation state in an unusual coordination environment. The Fe^{2+} in eudialyte is surrounded by 4 oxygen ions all in a plane. We call this square-planar coordination. And square-planer coordinated Fe^{2+} has red color. Eudialyte and gillespite are the two minerals that have such a coordination environment and both are red when other elements such as the rare earth elements to not add additional colors. Gillespite is found both in California and in Baja **(Figures 7,8).**

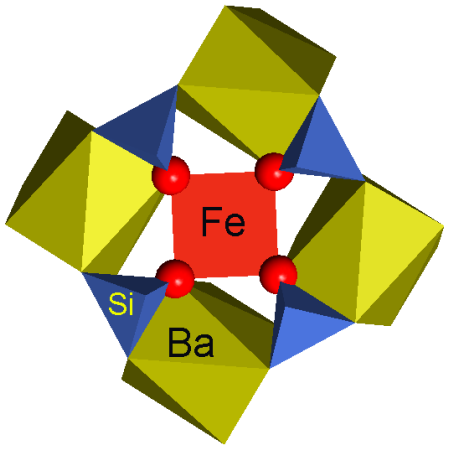

Figure 9. The gillespite structure looking down the c-axis

Gillespite is a barium iron silicate with the chemical formula $BaFe^{2+}Si_4O_{10}$ named in honor of the person, Frank Gillespie, who collected the type specimen in Alaska. **Figure 9** shows the portion of the structure of gillespite with the iron in square planer coordination. In Fresno County, California, gillespite is associated with the barium minerals sanbornite, celsian, and pellyite, among others. Here, you can get a variety of rare minerals speckled with gillespite, an attractive red mineral with iron in a rarely encountered coordination environment.

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MINUTES of the July 10, 2020 ZOOM Meeting

At 7:36 p.m., the 979th Membership Meeting of the Mineralogical Society of Southern California (MSSC) was called to order by President Dr. Rossman, Ph.D. Due to the ongoing Coronavirus (COVID-19) pandemic, the membership meeting was broadcast via ZOOM, an internet conference medium, compliments of Caltech through Dr. Rossman. This was the 2nd MSSC Membership Meeting held via ZOOM. There were 25 or more logged on to the meeting with some having at least 2 people in front of their monitors. Everyone was asked to "mute" their audio in order to proceed with the presentation.

Message from the Chair: Dr. Rossman introduced himself to those in attendance who do not know him or his work. He is president of MSSC, a professional mineralogist and a professor at Caltech. Minerals and chemistry have been a part of his life; however, he is not a collector because he does not want his research to be construed as for personal benefit. He has a research collection of over 3,800 minerals in the laboratory.

Dr. Rossman reports that the number of International Mineralogical Association (IMA) published and approved mineral species is now 5,596. Last year at the end of June, by comparison, there were 5,477 and, at this very moment (July 10, 2020), there are 5,598 approved mineral species. A few of the new one are in the tourmaline group: dutrowite and cellerite. Dutrowite is named in honor of Dr. Barb Dutrow, Ph.D., the mineral was discovered in the Apuan Alps of Tuscany, Italy. Dr. Dutrow is a tourmaline specialist. Cellerite is named after scientist Luigi Celleri (1828-1900). *[Secy Note: dutrowite is the first of 34 tourmaline group minerals named after a woman; the Gem and Mineral Museum on the island of Elba, Italy is named in Celleri's honor.]*

Regular Business

Minutes: Dr. Rossman directed our attention to the Minutes of the last meeting (June 19, 2020 Membership and June 14, 2020 Board meetings. Rossman asked if anyone objected to approval of the Minutes as published in the last (July 2020) *Bulletin*. Seeing none, Rossman declared the Minutes approved.

Operating Rules and Regulations Vote to approve addition: The Operating Rules and Regulations of the Mineralogical Society of Southern California, Inc., require any change or addition to be published in MSSC's *Bulletin* then voted on by the membership. Treasurer Kusely submitted the following addition, which was published in the July 2020 edition. In Operating Rules his proposed addition is under: ARTICLE IV- DUTIES OF CORPORATE OFFICERS, Section 4., Treasurer, k) Ensure that all required Federal and State filings are accomplished:

e. To the California Attorney General: Form CT-TR-1 including any required supplements

1. ***Explanation of "Other Expenses";***
2. ***"Balance Sheet" including assets, liabilities and net worth.***

Dr. Rossman asked if anyone objected to adding the addendum to the Operating Rules and Regulations, and hearing none declared the addition approved.

Announcements and Reports:

a) Updates Picnic and Banquet: Rudy Lopez, Program Chair, announced that the 2020 August Picnic will NOT be held. Instead, there will be a general Membership Meeting, the ZOOM meeting speaker will be Howard Heitner, a chemist by profession and a field collector, and he is a former president of the Stamford Mineralogical Society. His presentation will be "Pseudomorphs, Trickster Mineral Specimens". Also, Rudy reports the Installation Banquet slated for January 2021 is cancelled due to uncertain conditions brought on by COVID-19 pandemic. Instead the January 2021 meeting will be via ZOOM with presenter Denise Nelson, who has new ZOOM presentations;

b) ZOOM meeting notifications: Rudy mentioned he is re-doing the speaker list through the end of the year to ensure all presenters are ZOOM-ready. For the near future, Rudy will e-mail particulars of upcoming MSSC ZOOM meetings. Simply check the *Bulletin* and/or MSSC's website at www.mineralsocal.org for meetings then contact Rudy Lopez to get on the notification list for the next ZOOM meeting;

c) Dr. Rossman states that before this meeting and in the interest of outreach and our shared interests for minerals that other societies broadcast these meetings to their membership. At this time, we are uncertain if any have done so.

d) Field Trip Report: Marek Chorazewicz reports that due to the Coronavirus situation in Arizona, we cannot state for certain that the Red Cloud field trip will take place. The date of October 24, 2020 for the field trip to Red Cloud Mine is tentative; however he will provide updates in the *Bulletin* and via MSSC's website at www.mineralsocal.org;

e) Dr. Rossman asked if anyone had other business to discuss. There was none. He then turned the meeting over to Program Chair Rudy Lopez to introduce our speaker.

Program: Rudy Lopez introduced speaker, Karol McQueary, Past President of the Southern California Paleontological Society, SCPS. Karol presents **A Dinosaur for California**.

Karol McQueary, currently Federation Director for SCPS, was an upper elementary school teacher for LAUSD, then a principal. She retired in 2010 and became a volunteer at Los Angeles County Museum of Natural History working in dino lab for 5 years then as a docent in the dino hall, which brings us to the process of selecting a state dinosaur. Not a typical topic for a mineralogical society, but a fun story nonetheless.

Karol starts us off with a dino tattoo! The tat is a stegosaurus, the official Colorado State Dinosaur. A colleague of Karol's, Misha, thought, why doesn't California have its own dinosaur? That's where this story begins. Misha went to the UC Berkeley paleontology department to get information, Berkeley sent him to NHM in Los Angeles. He wrote a letter and received a reply from Dr. Smith there who said they could assist – and, he had the perfect candidate: *augustynolophus morrisi*. Turns out there were two dinosaur fossils of the 66-million-year-old creature ever found, and only in California. Those two dino fossils are located – where? you guessed it…at the NHM in Los Angeles.

"Auggie" is named to honor two people, Gretchen *Augustyn*, a generous donor and supporter of the HNM and a paleontologist and the second is William J *Morris*, famous dino paleontologist. The *lophus* means crested. "Auggie" was a plant eater with a duck bill mouth and was a contemporary of T-Rex and triceratops.

Caltech crews led by Dr. Chester Stock, Ph.D., first discovered Auggie in 1939 (West Fresno-Panoche Hills) and in 1940, the second was found (San Benito) in the Moreno Shale Formation. Originally, the discoverers thought they had just another saurolophus morrisi, due to the crested head, but then eventually realized it was a different species. A few years ago, a group from the NHM including paleontologists Dr. Luis Chiappe, studied the skeletons of the two specimens and found significant differences in the skull (from saurolophus), enough to merit the creation of a new genus, therefore, a new name.

Misha, armed with background information and encouragement from Dr. Smith (Los Angeles County Natural History Museum), went to his local State Assemblyman, Richard Bloom (Santa Monica). Bloom liked the idea of having a State fossil and since all kids like dinosaurs, it might help them to study science. Auggie would become the official State of California Dinosaur fossil. No small task. Bloom drafted Assembly Bill 1540 (AB1540) to be considered by the Legislature.

Meanwhile, Bloom's assistants were looking for supporters in this effort. Southern California Paleontological Society (SCPS) came to their attention and that was how Karol became involved. She put together a presentation and went to 5th graders who were excited by the project and the process. They wrote letters, created posters, made petitions, gathered signatures and submitted them to Bloom. A couple of the kids were asked to testify before a committee, the kids were thrilled. Eventually, the bill was presented, testimony was given, and it was signed into law (Sept. 2017) by then Governor Jerry Brown. It's official, Auggie is California's State dinosaur fossil. In the process, the children learned about State government including steps on how to pass a bill and all about dinosaurs, particularly, Auggie. Other State of California official designations include denim (fabric), poppy (flower), Eureka! (slogan), benitoite (gemstone) and others.

Karol displayed a geographic slide where Auggie was found and mentioned that shark teeth, bones, claws and other fossils were also located there. Her presentation included a rendering of the 26-foot long dinosaur. Auggie lived around 66 million years ago; there were two found, as mentioned, both were female, an adult and a juvenile. They were found only in California. On the geologic timescale, these dinosaurs were in the Mesozoic era (251mya-65mya), which included the Triassic, Jurassic and Cretaceous periods, actually Auggie lived in the very late Cretaceous. Karol explains that in spite of having active volcanoes, earthquakes plus the fact that California was under water during the entire Mesozoic era, Auggie was the most complete dino fossil found in the state! Over time, rock cover rock, which covers rock, which cover more rock, etc., until Auggie's bones were under many, many layer of rock, sediment, etc., all the way down to Cretaceous period, a million or so years before dinosaur extinction 65 mya.

Today, there is not much of Auggie on display at the Natural History Museum. But, if you go to the Dinosaur Hall, on the 2nd floor you will see documentation and some actual fossil bones (juvenile foot, etc.). By the way, the NHM has a lot of fossils and bones from Caltech and other universities. It's worth the trip.

This was an interesting look at how bills are passed in the state legislature and facts about our official State Dinosaur, *augustynolophus morrisi*, fondly known as "Auggie", how it all came about with thanks to Misha, school children's energy, their interest in science and, to Karol for all her hard work on this lasting accomplishment. Q&A followed including NHM's competition between the Dino Hall and the Mineral Hall – Dino wins with T-Rex absolute #1, according to kids. Thank you, Karol.

The next MSSC meeting will be August 14, 2020 via ZOOM. The General meeting will take place first with the speaker's presentation to follow. The speaker is Howard Heitner who will present "Pseudomorphs, Trickster Mineral Specimens" Please check the August 2020 *Bulletin* and/or MSSC website at www.mineralsocal.org for details on how to log on to join the ZOOM conference.

Dr. Rossman thanked everyone and again expressed his appreciation to Caltech for their contribution of ZOOM for the evening's meeting of the Mineralogical Society of Southern California. Thanks to all who participated. See you next month! The meeting adjourned at 8:40 p.m.

Respectfully submitted by Angie Guzman, MSSC Secretary

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List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	September 11, 2020	Vali Memeti: Super Volcanoes via ZOOM
	October 9, 2020	Karin Rice: Collecting Fossils via ZOOM
	November 13, 2020	Professor Abby Kauner UCLA: Minerals Under Pressure via ZOOM
	December 11, 2020	Renee Newman: Exotic Gems via ZOOM
Board Meeting	October 4, 2020	Via ZOOM
Field Trip	October 24, 2020	Red Cloud Mine in Arizona (See Field Trip Report in Minutes)

Note: Dates and programs shown above are subject to change. Check your bulletins to confirm final information each month.

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SPECIAL ZOOM MEETING NOTICE by Rudy Lopez

Yes, the General Meetings at our normal PCC meeting location have been cancelled. BUT! There will be an internet meeting via ZOOM. Our President, George Rossman is offering a MSSC meeting via ZOOM as follows: He would use Caltech's ZOOM license which allows meetings to last as long as the need. [Caltech has given him permission to do this]

Join us: Friday, August 14, 2020 at 7:30: **Pseudomorphs, Trickster Mineral Specimens. p**resented by Howard Heitner

Members who want to participate must respond to our Programs chair, Rudy Lopez at programs@mineralsocal.org no later than Tuesday August 11th, 2020. Please include "August ZOOM Meeting" in the subject line of your response.

This response date will allow time for us to send you the information needed to participate in the ZOOM meeting and also will allow time to get everything organized at Caltech. If enough people respond positively (minimum: 10 positives), we will go ahead with a ZOOM talk. It is important that we participate in these meetings to assure continued availability of ZOOM,

Rudy says:

I am redoing the speaker list and will have zoom meetings set up for the rest of the year if needed.

I will send an all call email each month to our participating members about the meeting.

--**Non-members**; If you want to participate in our future ZOOM meetings, please go to the MSSC website *www.mineralsocal.org*, read our Bulletin and send me an email at *programs@mineralsocal.org* and I will make sure you are contacted.

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Recent Deaths in the Southern CA Mineral Family

Our Southern California Mineral family has lost three prominent members in the last several months. Our sincere sympathy goes out to family members of each of the following:

Kay Robertson Born: April, 1920 Died March , 2020 (one month shy of her 100th Birthday)

After resisting leaving the warmth of L.A. for years, Kay finally moved to the Puget Sound area in 2019, where family could be a more constant presence in her life. She died peacefully in her sleep in March 2020

Garth Bricker December, 1930 - June, 2020 (age 88)

Donations are being accepted in his honor to the Fallbrook Gem and Mineral Society

Bob Reynolds Passed away: July, 20 20 at Age 76

Memorial services are not feasible at the present time, but will be conducted after this COVID-19 pandemic subsides

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Ride Share Listing

Can You Provide A Ride?
Would You Like Company On The Drive To Meetings?

We have heard from several of our members that they would like to ride-share with someone to the meetings. We will list the names, general location and either a phone number or an email address of anyone who would like to connect for a ride-share. If you would like to catch a ride or would like company for the trip, let me know at msscbulletin@earthlink.net and I'll put the information in this section of the bulletin. After that, any final arrangements made are up to you. Also, If you make a connection that works for you, let me know so that I can remove your information from the bulletin. The Editor

Looking for	Who	Where	Contact at
A Ride home after meetings	Ed Kiessling	Pasadena, CA	*See emailed bulletin*
A ride	Richard Stamberg	North Orange County, near Cal State Fullerton	*See emailed bulletin*

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OTHER FREE THINGS TO DO...by Ann Meister

The **Von Kármán Lecture** on Thursday **August 20** at 7:00 PM. The Thursday event is live on Ustream. http://www.ustream.tv/nasajpl2 Check online for changes and other viewing options. https://www.jpl.nasa.gov/events/lectures_archive.php?year=2020&month=8
The speaker is Sue Smrekar, Rocky Planet Geoscientist. The title of the presentation is **"Venus: Earth's Evil Twin or Just Misunderstood?"** Venus is becoming more attractive to scientists as technology improves for sending spacecraft to survive orbit and even descend to the surface. From orbiters to balloons, we will talk about the great science that can be done, how we can do it and what we hope to learn.

The **Watson Lectures** at Caltech's Beckman Auditorium are on hiatus for the summer. Hopefully, they will return in the Fall.

The **UCLA Meteorite Gallery** is temporarily closed until further notice, however the monthly lecture will be presented on Zoom on Sunday, **August 9** at 2:30 PM.
Zoom Registration: https://ucla.zoom.us/meeting/register/tJEqduyupj0vGd3S0_52FsbHTbPjYr0sZQUj
If you need detailed instructions on how to join a meeting via Zoom please contact our Curatorial Assistant,

Juliet Hook, at jahook@ucla.edu. The speaker is Dr. Meenakshi Wadhwa, Northern Arizona University. The title of the presentation is, **"Radioactive Dating with Isotopes."** Dr. Wadhwa has an extensive record dealing with dating long-lived isotope systems in meteorites. She will describe several of these in a lengthier abstract posted in our upcoming August newsletter (which I had not received as of 7/20. Check the Meteor Gallery website).

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MSSC Advertisement Policy:
Mineral-related ads are allowable in the MSSC bulletin. Below is the price per month

Business Card	$5.00
1/3 page	$10.00
1/2 page	$20.00
Full Page	$35.00

In addition, any advertiser who purchases 12 months of space in advance will receive a discount of 12 months for the price of 10 months. The copy for the ads should be mailed to the editor at bulletin@mineralsocal.org and the payment should be sent to the
MSSC Treasurer 1855 Idlewood Road, Glendale, CA 91202

Calendar of Events:

Only local area shows are listed here. Other CFMS Club shows can be found at: http://www.cfmsinc.org/

These shows may be cancelled pending current COVID=19 status. Check websites shown to verify status

August, 2020

August 15 – 16; TEHACHAPI, CA
Tehachapi Valley Gem and Mineral Society
500 East "F" Street, Tehachapi
Hours: 9 am – 5 pm
Web site: http://www.tvgms

September, 2020

September 26-27; LANCASTER, CA
Palmdale Gem & Mineral Club
Antelope Valley Fairgrounds
2551 West Ave H, Lancaster
Hours: 10-5 Daily
Website: palmdalegemandmineral.org

September 26 – 27; LODI, CA
Stockton Lapidary and Mineral Club
Lodi Grape Festival Grounds
413 East Lockeford Street, Lodi CA 95240
Hours: 10 am – 5 pm daily
Web site: http://stocktonlapidary.org

September 26-27; LONG BEACH
Long Beach Mineral & Gem Society
Long Beach Expo Arts Center
4321 Atlantic Ave., Long Beach 90807
Sat. 10 am – 5 pm, Sun 10 am – 4 pm
Website: http://www.facebook.com/LBMGS

With Knowledge Comes Appreciation!

August Featured Mineral: Wavellite

Formula: $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$

Crystal System: : Orthorhombic

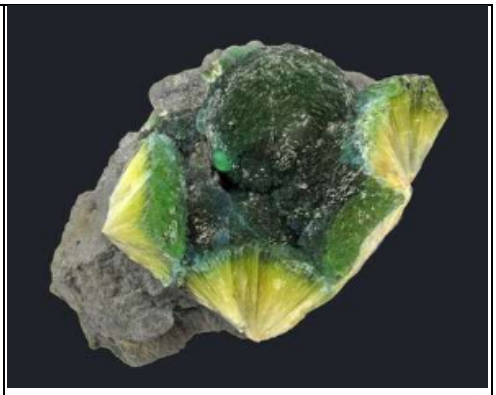
Name: : : Named by William Babington in 1805 in honor of Dr. William Wavell [20 December 1750 England - 15 May 1829 Barnstaple, England, England], a physician, botanist, historian, and naturalist in Harwood Parish, Devonshire, England, who discovered the mineral. Non-contemporary accounts suggest that Dr. Wavell discovered phosphate in the mineral, a constituent that was previously missed in analyses of hydrargilite. Dr. Wavell was educated in Edinburgh and was in medical partnership with Dr. William Curtis [b. 1746 Alton, Hampshire, England, UK - c1825 Branstaple, Devonshire, UK] - on Gracechurch Street, Barnstaple. Dr. Curtis was also an energetic botanist and also a correspondent with many naturalists (Curtis and Hooker, 1827).

© *Irocks*

Wavellite $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$
Locality: de Linde Pits, Dug Hill, Avant, Garland Co., Arkansas, USA
12.3 cm x 7.6 cm x 5.7 c

© *Irocks*

Wavellite $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$
Locality: Ballybunnion, Kerry County, Munster, Ireland
6.0 cm x 5.3 cm x 2.8 cm



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Wavellite $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$
Locality: Lichtenberg open cast, Ronneburg U deposit, Thuringia, Germany
5.4 cm x 3.7 cm x 3.5 cm

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Wavellite $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$ **,**
Quartz SiO_2
Locality: Siglo Veinte Mine, Llallagua, Rafael Bustillo, Potosí, Bolivia 5.7 cm x 3.1 cm x 2.8 cm

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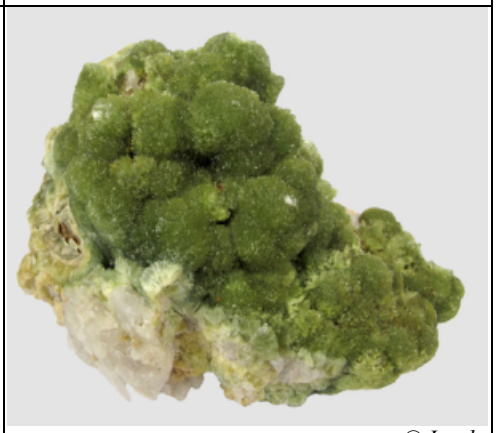
Wavellite $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$
Locality: Siglo Veinte Mine, Llallagua, Rafael Bustillo, Potosí, Bolivia 4.2 cm x 3 cm x 1.6 cm



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Wavellite $Al_3(PO_4)_2(OH,F)_3 \cdot 5H_2O$
Locality: Slate Mountain Mine, Slate Mountain, Slate Mountain District, Slate Mountains, El Dorado Co., California, USA
5.8 cm x 4.2 cm x 2.5 cm

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About the Mineralogical Society of Southern California

Organized in 1931, the Mineralogical Society of Southern California, Inc. is the oldest mineralogical society in the western United States. The MSSC is a member of the California Federation of Mineralogical Societies, and is dedicated to the dissemination of general knowledge of the mineralogical and related earth sciences through the study of mineral specimens. The MSSC is a scientific non-profit organization that actively supports the geology department at Pasadena City College, Pasadena, California. Support is also given to the Los Angeles and San Bernardino County Museums of Natural History. The Bulletin of the Mineralogical Society of Southern California is the official publication of the Mineralogical Society of Southern California, Inc.

The MSSC meetings are usually held the second Friday of each month, January, February and August excepted, at 7:30 p.m. in Building E, Room 220, Pasadena City College, 1570 E Colorado Boulevard, Pasadena, California. The annual Installation Banquet is held in January, and the annual Picnic and Swap Meeting is held in August Due to PCC holidays, meetings may vary. Check the Society website for details.

The Society also sponsors the annual Pacific Micro mount Symposium held at the Fallbrook Mineral Museum during the last weekend of January.

Annual Membership dues for the MSSC are $20.00 for an individual membership, $30.00 for a family membership. Bulletins are delivered by email, there is an additional annual $20.00 fee if you prefer paper bulletins mailed to your address. The Society's contact information:

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To:

With Knowledge Comes Appreciation

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