

Bulletin of the Mineralogical Society of Southern California

Volume 87 Number 2 - February, 2014

The 906th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

February 21st, 2014 at 7:30 pm

**Pasadena City College
Geology Department, E-Building, Room 220
1570 E Colorado Blvd., Pasadena**

Special Note: Our February Meeting is on the THIRD Friday!

Program : THE GEOLOGY OF GOLD and SILVER presented by D.D. Trent

In this Issue:

<i>TITLE</i>	<i>Page</i>
Program: The Geology of Gold and Silver: with special attention to the Mother Lode and the Comstock Lode presented by D. D. Trent	2
Dues are Due	2
From the Editor: Linda Elsnau	2
Meanderings from the President: Ann Meister	2
Minutes of the January, 18, 2014 Meeting	3
Golden State Quicksilver: The Origin of Silica-Carbonate Hg in California by Kyle Beucke Part I	5
MAC Sponsored Short Course – Tucson, AZ, USA	8
February Featured Mineral: Gold	9
Ride Share Listing	9
Did you know: Folliated	9
Calendar of Events	10
2014 Officers	11
About MSSC	11

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

About the Program: “The Geology of Gold and Silver: with special attention to the Mother Lode and the Comstock Lode” Presented by D.D. Trent

To produce gold ore bodies to economic value requires reworking “low-grade” source rocks under special geochemical conditions that increase gold concentrations by some 3,500 times. But such conditions are rare in geologic space and time -- why? How can the gold production of only one Mother Lode mine exceed the total production of some 60 mines at Bodie? Why are the valuable gold deposits so spotty along the Mother Lode Gold Belt? What is the deepest gold mine in California? What is the oldest operating gold mine in California? Why were the westernmost Comstock precious metal mines more profitable than the easternmost? Why does the grade of most precious metal mines decrease with depth? Why does the grade of gold mines in Precambrian host rocks, such as at the Homestake in South Dakota, not decrease with depth? These and other questions will be the topic of Dee Trent’s presentation at the MSSA meeting on February 21st .

Dues are Due:

While your MSSC dues should be paid during the month of January each year, we give you a little more time. However, **you will stop receiving your MSSC Bulletins and your membership will be terminated if your payment is postmarked after March 31, 2014.** If you prefer a paper bulletin mailed to you, don’t forget to include the **additional \$20** for twelve monthly 2014 bulletins . Please note, members who pay their dues after March, will not be included in the club roster.

From the Editor: Linda Elsnau

I am trying something different this month. I have found several excellent articles that I would love to use in our bulletin, but, alas, they are too long! So, this month you will get the first part of an excellent article with the rest to follow in later month’s bulletins. How much of the article that appears in a given monthly bulletin will depend on the space available after the “club business” is inserted. When possible, I will also include a link to the original location for those of you who can’t wait to read the rest of the article.

I want to talk a bit about the Silent Auction at our annual Banquet. It was awesome! We had books, magazines, effemera, mineral specimens, jewelry and paintings and more! I heard it said that we never had so many items before!..A special thanks to Elizabeth Moller for her contribution for the auction. Her generosity resulted in almost half of the total amount collected after the auction! Elizebeth, thank you so much for your contributions. A heartfelt thank-you is also extended to all other contributors even tho I don’t know specifically who you all are. You helped make the auction interesting and successful.

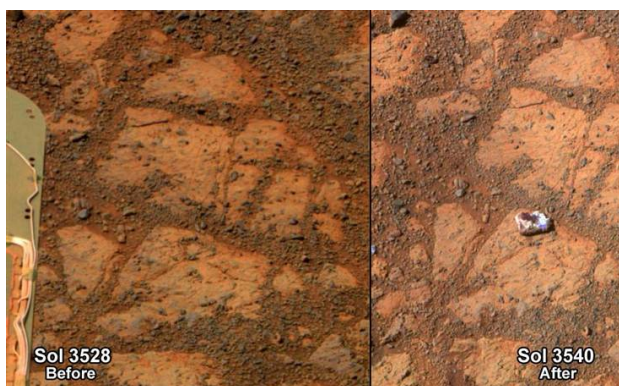
Meanderings From The President by Ann Meister

I would like to thank all of you who attended the Annual Banquet, especially the officers and directors who are continuing their leadership for another year. The silent auction was fantastic and fun. More than 50 items from I-don’t-know-how-many people. I thank you all for your generosity and for making the silent auction an outstanding success. There were mineral specimens, books and crystal models from Bill Moller’s collection donated by Elizabeth Moller; two mineral paintings from Katherine Clarke; books from Janet Gordon, Bruce Carter, and others; jewelry from Linda Elsnau and Annette Pumphrey; and an old mining lamp and other items for which I don’t know the donors. Treasurer Jim Kusely reports we made almost \$900 on the auction. I was please to see that Bruce Carter acquired Katherine Clarke’s painting of benitoite and neptunite for PCC. Since Katherine had taught there, it is appropriate to have her work hang in the Geology Department, even though she taught Art.

The program by Nathan Renfro on “The Micro Art of Gems” was marvelous: an artistic look at gems through various types of microscopes with various filters and lighting, to get excellent pictures of inclusions, light

effects and reflection images from cleavage planes and fractures, and other features which were a delight to look at and well explained by Nathan. What amazing finds in the daily grind of work!

I recently attended JPL's "Happy 10th Anniversary" celebration for the Mars rover Opportunity that landed on January 25, 2004. It is absolutely mind-boggling how a device, supposedly designed for a 90 day mission on Mars, has lasted for 10 years due partially to serendipitous "cleaning events" – Martian winds that removed dust covering the solar arrays. That allowed the solar cells to provide power for much longer than expected. In addition, as several of the speakers commented, how would your car do without 10 years of hands-on maintenance and service? Of course, Opportunity has travel only about 23.6 miles in that time, but the terrain has been challenging and the "drivers" are millions of miles away. Spirit and Opportunity have had their problems, and Spirit went silent in March 2010 after six years (and 4.8 miles), but the problems were creatively solved by clever engineers here on Earth. I applaud those ingenious engineers. Most recently, Opportunity found a mysterious rock where one hadn't been before. It looks like a white jelly donut. Where did it come from? Did the rover's wheel kick it up during a traverse? Did the Martian wind blow it from elsewhere? Did a little Martian elf sneak up and put it there? Ah, the mystery!



NASA/JPL-Caltech/Cornell Univ./Arizona State Univ.

Our new Program Chair, Rudy Lopez, is arranging with JPL for a talk on the Mars rover Curiosity, its tools and scientific instrumentation, and the geology that it has discovered. How would you like to do geology field work and mineral collecting from millions of miles away? You have to plan a day's work, send detailed instructions up to the rover, and wait for the results. There's no real-time, move-the-hand-lens-a-half-an-inch-to-your-right instruction. Both frustrating and challenging.

This before-and-after pair of images of the same patch of ground in front of NASA's Mars Rover Opportunity 13 days apart documents the arrival of a strange, bright rock at the

scene. The rock, called "Pinnacle Island," is seen in the right image on Jan. 8, 2014. The image at left was taken on Dec. 26, 2013.

MINUTES of January 18, 2014 MSSC Meeting and Banquet

The 90th meeting of the Mineralogical Society of Southern California (MSSC) was held on Saturday, January 18, 2014 in the Oak Tree Room, Coco's Restaurant at Colorado Blvd. and Michillinda Avenue, Arcadia. The Mineralogical Society of Southern California and the Los Angeles County Natural History Museum's Gem and Mineral Council held their annual joint Banquet and Meeting. The social hour and silent auction began at 5:30pm.

Call To Order At 6:45pm after announcements regarding the silent auction, President Ann Meister graciously thanked everyone for attending, brought the meeting to order and promptly introduced Banquet Manager, Cindy, who welcomed us again to Coco's and without further ado, the banquet commenced.

Silent Auction: Afterward, President Ann Meister provided the following biography of Ms Clark, an artist whose paintings were part of the silent auction. Born in Honolulu, Hawaii, she began her art studies in Chicago in 1908, during WWII she did weather mapping for Cal Tech (California Institute of Technology) and the crystals she painted were ones she observed in the Geology Department there. After the war, she taught art at the Adult Education Center of PCC (Pasadena City College) among other education institutions for 30 years during which time she had various art shows. The silent auction paintings were donated by her and meant to be auctioned off or sold with proceeds going to the society. The oil paintings are (1) neptunite and benitoite and (2) azurite and malachite crystals. Other paintings of Ms Clark have sold for \$300 or more. These paintings start at a minimum bid of \$50 apiece. Other items for auction: crystal models, jewelry, books, various mineral

and rock specimens and other related items. The silent auction was closed and winning bidders were encouraged to visit with Jim Kusely, Treasurer, to settle up.

The business of the meeting was resumed after dinner and the silent auction was completed.

Minutes: President Ann Meister called for approval of the Minutes of the December meeting as published in the January 2014 Bulletin. She asked for additions or corrections and seeing none, called for the motion: Motion made by Gene Reynolds and seconded by Angie Guzman. The Motion to approve the December 2013 Minutes as published in the January 2014 Bulletin were voted on and passed by the membership.

Installation Of Officers 2014 MSSC officers are all returning officers from the past year so there was no formal installation. The officers introduced are: President Ann Meister, Vice President George Rossman, Secretary Angie Guzman, Treasurer, Jim Kusely, Federation Director Joanna Ritchey, Directors (2014 & 2015): Pat Caplette and Pat Stevens, and [alternating] 2-year Directors (2013 & 2014) Bruce Carter, Bob Housley and Leslie Ogg. Leslie Ogg is also our webmaster. Our Past President is Jeff Caplette [who will remain in that position until Ann Meister is no longer President]. Also, special recognition to our Bulletin Editor, Linda Elsnau who has done a fantastic job and, to both our exiting and new Program Chairs, Bruce Carter and Rudy Lopez, respectively. Congratulations to everyone!

Announcements

- An invitation was extended to anyone in attendance who is not a member to join. Forms are available;
- The 49th Pacific Micromount Conference will be held January 31 and February 1 with a Field Trip planned for Sunday, February 2nd. The conference will be held at the San Bernardino County Museum [2049 Orange Tree Lane, Redlands, CA]. Registration forms are available. This is a fun event, lots of topics and camaraderie;
- May 30, 31 and June 1, 2014 is the California Federation of Mineralogical Society show at Pomona Fairplex and is being sponsored by the Pasadena Lapidary Society. There is information on-line concerning this event;
- March 1 & 2, 2014 is the Monrovia Rock Hounds Show which will be at the Los Angeles Arboretum. The show is free but there is a cost to get into the Arboretum;
- Thanks to everyone who brought things for the silent auction. This is probably the most number of items we've had for the silent auction. This is our only fund raising event and we appreciate it. Thank you for participating;
- For those who are not members, there are copies of December 2013 and January 2014 MSSC Bulletins available here and it is also on line;
- Tony Kampf from Gem & Mineral Council announced a program coming up this Wednesday evening at the Natural History Museum in Los Angeles. The topic: Curiosity Rover Project. The talk covers this past year's activity of the rover and possible life (in the past) on Mars. Event and parking are free. Ann Meister mentioned a talk she recently attended at Cal Tech about the Spirit and Opportunity rovers. It was Opportunity's 10th anniversary. This was astonishing, especially for a piece of hardware that was supposed to last 90 days!;
- Linda Elsnau announced that deadline for the Bulletin items is January 25, 2014;
- Tony Kampf from Gem & Mineral Council announced that they will be conducting a 10-day tour to Europe at end of June, beginning of July 2014. The tour includes stops at several mines, includes all meals and accommodations, cost is \$4,000 but does not include air fare. Contact Kathy of Natural History Museum's Gem & Mineral Council or check on-line for more information;
- Angie Guzman announced the Tucson Show will be February 13, 14, 15 and 16, 2014;
- The February 2014 MSSC meeting will be the 3rd Friday instead of the normal 2nd Friday, in consideration for those who will be attending the Tucson show. Next MSSC meeting will be on February 21, 2014, 7:30 p.m. at Pasadena City College, Geology building, room 220.

Program: *The Micro Art of Gems* was presented by Nathan Renfro, Gemologist with the GIA, Gemological Institute of America. This presentation is a result of personal microscopic inspection, viewing and photography performed by Mr. Renfro.

As a gemologist, Mr. Renfro looks at gemstones under the microscope to determine what the gem is, if it is natural, treated or a synthetic gemstone. These are the parameters his clients want to know. To be the finest gemstone, there are three criteria: they must be durable, rare and beautiful. In the macro world these are important. In the micro world, some of it is quite often unnoticed. However, viewing and photographing gemstones under a microscope is interesting, fascinating, and sometimes, surprising.

Mr. Renfro's slide presentation was arranged in alphabetic order, mineralogically speaking, beginning with amber going on through to opal, quartz, rubies, sapphires, spinel, topaz and winding up with zircon. The photos presented were exquisite - enhanced by polarized light, reflective light and/or other contrasts. Nathan showed several samples of minerals with inclusions and even mineral inclusions within the mineral inclusions, awesome and beautiful gemstone structures! He explained gasses, cracks and other anomalies also contributed to the patterns, colors and fluids captured in the crystals and on the slides. Many of the gemstone samples were from such places as Brazil, Columbia, Ethiopia, Italy, Madagascar, Pakistan and local areas such as Oregon, Washington, to name a few.

The presentation was sprinkled with humor, interesting and informative tidbits and beautiful photographs. We thank Mr. Renfro for a fabulous look at the Micro Art of Gems and gemstone crystals.

The meeting was adjourned at 9:15pm

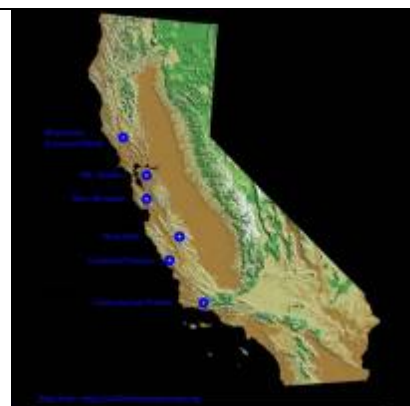
Respectfully submitted, Angie Guzman, Secretary

This is Part I of our first "serialized" article. Look for future installments in upcoming MSSC Bulletins.

Golden State Quicksilver: The Origin of Silica-Carbonate Hg in California by [Kyle Beucke](#)

Introduction

The popular image of mining in California is probably the Gold Rush set amidst the Sierra Nevada foothills, but the Coast Range mountains of California also host their own belt of metallic mineralization. Scattered along this range, from Santa Barbara to Clear Lake, are mercury deposits associated with serpentinite rock that has been hydrothermally altered to "silica-carbonate." These mercury deposits are responsible for most of California's mercury production. Perhaps the best known is [New Almaden](#), located near San Jose, which produced over one million flasks of mercury and was the most important mercury district in the United States (Bailey et al. 1973). Much of the mercury used in amalgamation during the California gold rush came from New Almaden (Bailey 1964). The following map shows the locations of some of the more important silica-carbonate mercury districts in California.



Some important silica-carbonate mercury deposits of California

Silica-carbonate mercury deposits have interested me ever since I moved back to the San Francisco Bay area, partly because they are the most abundant type of hydrothermal metal deposit here. The other reason is that their geology is intriguing. These deposits appear to be relatively young and many are found along the same family of faults responsible for much of California's earthquake activity. They have been classified as a different type of mercury deposit from the "hot spring" mercury deposits that are apparently more widespread across the western United States (Rytuba 1992). There does not appear to be a definitive explanation for how silica-carbonate mercury deposits were formed, especially regarding the source of the water that deposited the mercury. The purpose of this article is to introduce the reader to silica-carbonate mercury deposits and discuss how they may have formed.

What are silica-carbonate mercury deposits?

Rytuba and Kleinkopf (1995) define silica-carbonate mercury deposits as "cinnabar-bearing veins and veinlets and massive cinnabar replacement bodies developed

within serpentine that is hydrothermally altered to a silica-carbonate assemblage."

In California, these mercury deposits are found in Coast Range rocks that represent an old subduction zone. The rocks include the Franciscan complex, the Coast Range ophiolite, and the Great Valley sequence. All of them were later dissected by transform faults of the San Andreas system and intruded and partly covered by volcanic rocks of Tertiary age (Smith 2010).

Approximately 25-29 million years ago, the Pacific-Farallon ridge, a spreading center, contacted the North American trench, a subduction zone. This was the start of the San Andreas transform fault system. The northern boundary of the San Andreas fault is the Mendocino Triple Junction; this is where the San Andreas fault meets the Mendocino fault and the Cascadia Subduction zone. The Mendocino Triple Junction migrated northwestward as the San Andreas fault system lengthened and replaced subduction, leaving in its wake a "lithospheric gap...thought to be filled by asthenospheric flow." (Liu et al. 2012) This upwelling of mantle material is what is supposed to have been responsible for Tertiary volcanism in the Coast Ranges.

Serpentinite, the California state rock, is common in the Coast Ranges and is often associated with fault zones. In certain areas, the serpentinite has been hydrothermally altered to "silica-carbonate;" this alteration is apparently caused by fluids that are rich in gases including carbon dioxide. Silica-carbonate alteration appears to progress from an earlier stage of carbonate alteration to later silicification. This may be responsible for the commonly observed zonation in which a silica-rich core is surrounded by a carbonate-rich zone (Barnes et al. 1973b; Peabody and Einaudi 1992). In some cases, the more silicified silica-carbonate becomes more richly mineralized with mercury, possibly because it is brittle and forms open fractures more readily (Ciancennelli 1981). The mercury mineralization may be one part of a longer silica-carbonate alteration process. Serpentinite textures are often preserved to some degree. For detailed descriptions of silica-carbonate rock, see Bailey (1964) and Peabody and Einaudi (1992).

Silica-carbonate mercury deposits are characteristically lacking in other metallic mineralization. Antimony, in the form of stibnite, is sometimes present. A few of the silica-carbonate mercury deposits in the California Coast Ranges are associated with epithermal gold-silver deposits, but these examples appear to be restricted to areas with volcanic rock; possible reasons for this are discussed below. The main mercury ore mineral in silica-carbonate mercury deposits is the bright red sulfide, cinnabar; metacinnabar and native mercury are often present and are sometimes abundant. Cinnabar occurs in several textures in silica-carbonate rock, for example:

Veinlets. Cinnabar (with quartz) fills fractures in silica-carbonate rock.



Cinnabar

Contact Mine (Walker; Queen group), Castle Rock Springs area, West Mayacmas District, Mayacmas Mts (Mayacamas Mts), Sonoma Co., California, USA

Breccia. Cinnabar, with quartz, forms the matrix of a breccia of silica-carbonate rock fragments.



Cinnabar

Culver-Baer Mine (Culver-Baer Quicksilver Mine; Buckman Mine), North Fork Little Sulphur Creek, Cloverdale, West Mayacmas District, Mayacmas Mts (Mayacamas Mts), Sonoma Co., California, USA



Replacement. Apparently, the richest ore mined at New Almaden was formed through a chemical replacement of silica-carbonate rock by cinnabar (Bailey 1964).

Cinnabar also occurs in other rock types, but silica-carbonate is usually present nearby. Examples of these other host rocks include chert at the [Cloverdale Mine](#) in Sonoma County, shale at the [St. John's mine](#) in Solano County, and andesite at the [Helen mine](#) in Lake County. The following photograph is cinnabar in what appears to be altered shale from the Red Rock mine in Santa Barbara County:

Cinnabar

Red Rock Mine (Acachuma Mine; Eagle Mine), Cachuma Village, Cachuma District, San Rafael Mts, Santa Barbara Co., California, USA

Hydrocarbons are often present, sometimes in large quantities, and range from liquid petroleum filling vugs in quartz veins to yellow crystals of idrialite (Peabody and Einaudi 1992).

Characteristics of silica-carbonate mercury deposits that may pertain to their formation

Textures suggest low temperature and shallow depth of formation

Silica-carbonate mercury deposits have characteristics that suggest they were formed at shallow depths and relatively low temperatures, and could be classed as "epithermal." (see Lindgren 1913) These characteristics include the presence

of low-temperature silica phases, such as chalcedony and opal, and vein textures that show evidence of open space filling. The following photographs are of banded veins from two silica-carbonate mercury deposits; such a texture indicates that the veins were formed as fillings in open space:



Banded vein

Contact Mine (Walker; Queen group), Castle Rock Springs area, West Mayacmas District, Mayacmas Mts (Mayacamas Mts), Sonoma Co., California, USA



Banded vein

New Almaden District, Santa Cruz Mts, Santa Clara Co., California, USA

Compared to the "hot spring" mercury deposits, silica-carbonate mercury deposits appear to extend to greater depths. For example, the New Almaden deposit was mined from the surface to a depth of 2,000 feet. At the Manhattan mercury mine (a "hot spring" type deposit), which is associated with the McLaughlin gold-silver deposit, mercury mineralization was largely restricted to the near-surface sinter blanket. Moiseyev (1971) proposed that a lower thermal gradient could account for a greater continuity of mineralization at depth. A low thermal gradient in a silica-carbonate mercury deposit could result from the deposit forming at a greater distance from the heat source, perhaps in combination with efficient channeling of the hydrothermal fluids through an impermeable conduit such as serpentinite. In contrast, a mercury deposit associated with nearby volcanic activity (as was perhaps the case at the Manhattan/McLaughlin deposit) may be restricted to shallow depths because the fluids were too hot to deposit cinnabar below this zone.

High angle faults

It has long been recognized that silica-carbonate mercury deposits are associated with high-angle faults that are now known to be part of the San Andreas system (see, for example, Bailey 1946). Many of these faults originated as thrust faults during the earlier subduction regime and were later re-activated as strike-slip faults. An example of a fault with this type of complex history is the Mercuryville Fault, upon which the [Culver-Baer](#) silica-carbonate mercury deposit is located (McLaughlin 1981). The association of the mercury mineralization with serpentinite can be explained by the fact that this rock is localized in these fault zones. In addition, the serpentinite probably provided an effective conduit for the flow of mineralizing fluids (see below).

Age of deposits

Potassium-argon (K-Ar) dating is widely used to date potassium-containing minerals in volcanic rocks and hydrothermal veins. For example, adularia is a common gangue mineral in epithermal gold-silver veins, and it can be analyzed to obtain an estimate of the age of the hydrothermal system that produced the vein. A volcanic rock could be dated, setting a maximum age for a hydrothermal vein cutting across it.

Silica-carbonate altered serpentinite and the veins associated with mercury mineralization in these deposits apparently lack identifiable adularia, which means less direct methods of dating must be employed. In addition, volcanic rocks are often not clearly associated with silica-carbonate mercury deposits (Moiseyev 1971). Nevertheless, there are several examples of California Coast Range silica-carbonate mercury deposits with data that can be used to set constraints on their ages. I was selective in that I only chose examples where silica-carbonate mercury mineralization was not apparently associated with precious metal mineralization. This is because there is some evidence that associated epithermal gold-silver deposits may overprint earlier silica-carbonate mercury mineralization (Rytuba 1995); possible examples of deposits with such relationships include the [McLaughlin](#) gold mine (Tosdal et al. 1993) and the [Quien Sabe volcanic field](#) (Drinkwater et al. 1992). Two important considerations regarding dating silica-carbonate mercury deposits are: 1. A key

assumption is that there was only one mercury mineralization event in these deposits, and 2. The mercury mineralization is what is being dated in most of these examples; the silica-carbonate alteration could be a distinct phase.

Oceanic Mine, San Luis Obispo County: Miocene or later. Cinnabar occurs in a sandstone with an estimated age of Miocene (Holmes 1965). Cinnabar also occurs in silica-carbonate rock.

New Almaden, Santa Clara County: Miocene-Pleistocene. Maximum age based on mercury mineralization and dolomite veining of nearby volcanic rock (Miocene). Minimum age based on cinnabar in a stream deposit (Pliocene-early Pleistocene) (Bailey 1964).

The Geysers (silica-carbonate mercury deposits on the fringes of the geothermal field): 2.05-0.5 Ma. Maximum age based on cinnabar-mineralized andesite (average age = 2.05 Ma) at the [Helen Mine](#); cinnabar-mineralized silica-carbonate is also present at this location (Donnelly-Nolan et al. 1981). The minimum age is based on the presence of cinnabar-containing silica-carbonate cobbles in an alluvial deposit with an estimated age of 0.5 Ma (E.J. Helley, in Rytuba, Donnelly-Nolan, and McLaughlin 1993).

Mineralogy

Mineralogical characteristics of silica-carbonate mercury deposits include mercury as the primary metal and an abundance of hydrocarbons. It should be noted that both mercury and hydrocarbons can be transported in a gas. Moiseyev (1971) attributed the dominance of mercury and lack of other metal enrichment in mercury deposits to the "unusual volatility of this metal." The carbon in carbonate veins and the various hydrocarbon phases found in these deposits is often determined to be from an organic source, probably organic-rich sedimentary rock. These sediments could have supplied the mercury as well as the carbon, although Smith (2010) was not able to use mercury isotopes to determine the source rock of this element (Moiseyev 1971; Peabody and Einaudi 1992).

Temperature of hydrothermal systems

There have been few studies on the temperatures of formation of silica-carbonate mercury systems. Peabody and Einaudi (1992) report minimum trapping temperatures of hydrocarbon inclusions ranging from 90-185° Celsius (most 130-145°) in vein material from the [Culver-Baer mine](#). D.H. Sorg and J.M. Donnelly found evidence, in the form of fluid inclusions and liquid hydrocarbon inclusions, for temperatures of less than 120° Celsius in mercury deposits in the Geysers geothermal field; these were probably of the silica-carbonate type (United States Geological Survey 1978).

Watch for Part II in the March, 2014 Bulletin. If you can't wait, check out the entire article on mindat.org :

Editor's Note: My thanks to Kyle Beucke for his generous permission to use his article and pictures in our bulletin. If you would like to see the article in its' original format, please visit:

<http://www.mindat.org/article.php/1683/Golden+State+Quicksilver%3A+The+Origin+of+Silica-Carbonate+Hg+in+California>

MAC Sponsored Short Course – Tucson, AZ, USA

If you are going to the Tucson Show, you may be interested in this special course sponsored by the Mineralogical Association of Canada (MAC): Thanks to Janet Gordon for sending this information for the Bulletin.

Feb 10-11, 2014, prior to the Tucson Gem and Mineral Show™

MAC is sponsoring a pre-conference short course entitled: ***“Geology of Gem Deposits”***

Convened by Lee A. Groat, University of British Columbia, BC, Canada, this short course will be held at the University of Arizona, immediately before the [Tucson Gem and Mineral Show™](#).

This two-day short course will look at gemstones from a geological perspective. Gem deposits are rare because in general the conditions that promote their formation are unusual and thus worthy of scientific study. Recently, modern geological and analytical techniques have been applied to gem occurrences worldwide, and our models and understanding of their formation are being radically altered. This short course will review our current understanding of diamond, ruby, sapphire, and emerald deposits, but will also examine the lesser-known colored gems. For more information, download the [promotional flyer](#).

You can register through the MAC website: <http://www.mineralogicalassociation.ca/devOnline/index.php>

Featured Mineral: Gold Formula: Au

Crystal System: Isometric

Name: Gold is one of the first minerals used by prehistoric cultures. The Latin name for this mineral was "aurum" and Jöns Jakob Berzelius used Au to represent the element when he established the current system of chemical symbols. The Old English word "gold" first appeared in written form about 725 and may further have been derived from "gehl" or "jehl". May be derived from Anglo-Saxon "gold" = yellow. (Known to alchemists as Sol.)



irocks.com photo

Gold: Au
Locality: Majuba placer, Antelope District, Pershing Co., Nevada, USA
 1.2 cm x 0.9 cm x 0.7 cm



irocks.com photo

Gold: Au
Locality: Round Mountain Mine (Round Mountain Gold Mine; Sunnyside Mine; Sphinx glory hole; Great Western tunnel; Rattlesnake; Keane vein; Los Gazabo vein), Round Mountain, Round Mountain District, Nye Co., Nevada, USA
 4.5 cm x 2.5 cm x 0.4 cm

Ride Share Listing

Can You Provide A Ride?

Would You Like Company On The Drive To Meetings?

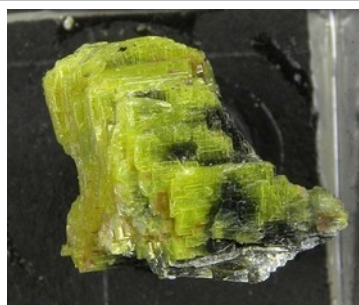
We have heard from several of our members that they would like to ride-share with someone to the meetings. We will list the names, general location and either a phone number or an email address of anyone who would like to connect for a ride-share. If you would like to catch a ride or would like company 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	Richard Stamberg	North Orange County, near Cal State Fullerton	714-524-3577 Please leave a message
A ride	Catherine Govaller	San Bernardino, CA	

Did you know?

When a mineral specimen looks like scales or lamellae, it may be described as:

Descriptions are as defined in Manual of Mineralogy, 15th edition, by: Dana & Hurlbut; published in 1941



Foliated

When a mineral separated easy into plates or leaves.

Autunite :



Locality: Daybreak Mine (Dahl lease), Mount Kit Carson, Spokane Co., Washington, USA

1.3 x 1.2 x 0.6 cm. *irocks.com photo*

Calendar of Events:

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

FEBRUARY, 2014

February 13-16, TUCSON, AZ
Tucson Gem and Mineral Show
Tucson Convention Center
260 South Church Avenue
Hours: Thurs-Sat.: 10 – 6; Sun 10 – 5
Website:
<http://www.tgms.org/2014showinfo.htm>

February 15 - 24: INDIO, CA
San Gorgonio Mineral & Gem Society,
Banning
Riverside County Fair & National Date
Festival
46350 Arabia Street
Hours: 10 - 10 daily

MARCH 2014

March 1 - 2: ARCADIA, CA
Monrovia Rockhounds
Los Angeles Arboretum & Botanic Gardens
301 Baldwin Avenue
Hours: 9:00 - 4:30 daily
Website: www.Moroks.com

March 1 - 2: VENTURA, CA
Ventura Gem & Mineral Society
Ventura County Fairgrounds
10 W. Harbor Blvd.
Hours: Sat 10 - 5; Sun 10 - 4
Website: www.vgms.org

March 8 - 9: SAN MARINO, CA
Pasadena Lapidary Society
San Marino Masonic Center
3130 Huntington Drive
Hours: Sat 10 - 6, Sun 10 – 5

March 29 - 30: TORRANCE, CA
South Bay Lapidary & Mineral Society,
Torrance
Ken Miller Recreation Center
3341 Torrance Blvd (entrance on Madrona
Ave)
Hours: Sat. 10 - 5; Sun. 10 - 4
Website: www.palosverdes.com/sblap

March 29 - 30: TORRANCE, CA
South Bay Lapidary & Mineral Society,
Torrance
Ken Miller Recreation Center
3341 Torrance Blvd (entrance on Madrona
Ave)
Hours: Sat. 10 - 5; Sun. 10 - 4
Website: www.palosverdes.com/sblap

West Coast
GEM & MINERAL SHOW - SPRING
MAY 16 - 18, 2014

Holiday Inn Orange County Airport
2726 S. Grand Ave.
Santa Ana, CA 92705
(Take 55 Fwy exit 8 for Dyer Rd. to S. Grand Ave.)

80 Top Quality Dealers!

*Minerals • Fossils • Gemstones
Jewelry • Beads • Decorator Pieces
Meteorites • Lapidary • Metaphysical*

**FREE ADMISSION • FREE PARKING
WHOLESALE • RETAIL
OPEN TO THE PUBLIC**



Colorado Topaz - Photo by Jeff Scovil©

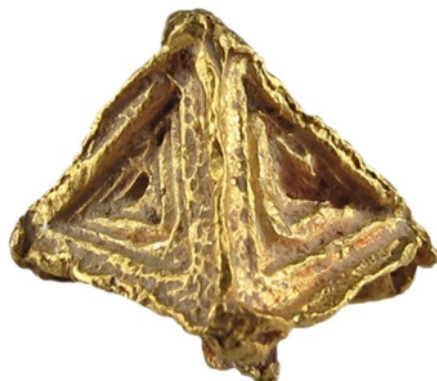
Show Hours:
Fri. & Sat. 10 - 6 • Sun. 10 - 5
www.mzexpos.com

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



irocks.com photo

Gold: Au,
Locality: Mina Zapata,
Santa Elena de Uairen,
Bolívar, Venezuela
1.1 cm x 1 cm x 1 cm

2014 MSSC Officers:

OFFICERS		
President	Ann Meister	president@mineralsocal.org
Vice President	George Rossman	vicepresident@mineralsocal.org
Secretary	Angie Guzman	secretary@mineralsocal.org
Treasurer*	Jim Kusely *	treasurer@mineralsocal.org
CFMS Director	Jo Anna Ritchey	
Past President.	Geoffrey Caplette	
DIRECTORS		
2013--2014	Bruce Carter	
2013--2014	Bob Housley	
2013--2014	Leslie Ogg	
2014-2015	Pat Caplette	
2014-2015	Pat Stevens	
COMMITTEE CHAIRS		
Bulletin Editor	Linda Elsna	bulletin@mineralsocal.org
Hospitality	Laura Davis	
Membership	Jim Kusely	treasurer@mineralsocal.org
Micro Mount Conf. Chairman	Al Wilkins	
Program and Education	Rudy Lopez	programs@mineralsocal.org
Publicity	Linda Elsna	bulletin@mineralsocal.org
Webmaster	Leslie Ogg	webmaster@mineralsocal.org
* Treasurer	Jim Kusely –proviso due to surgery, mid-year, Ahni Dodge and Laura Davis to assist while Jim convalesces	

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 San Bernardino County Natural History 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. The Society's contact information:

Mineralogical Society of Southern California

1855 Idlewood Rd.,

Glendale, CA 91202-1053

E-mail: treasurer@mineralsocal.org

Web: <http://www.mineralsocal.org> The Mineralogical Society of California, Inc.

Permission to reproduce and distribute material originally published herein, in whole or in part, for non-commercial purposes, is hereby granted provided the sense or meaning of the material is not changed, the editor is notified, and the author's notice of copyright is retained. Permission to the material reprinted here in from other sources must be obtained from the original source.

DISCLAIMER: The Mineralogical Society of Southern California, Inc. is not responsible, cannot be held responsible or liable for any person's injuries, damages or loss of property at or traveling to or from any general meeting, board meeting, open house, field trip, annual show or any other MSSC event

Editor's Note: all articles used in our bulletins are with the specific permission of the author. Permission to use in any other document must be obtained from the author for each use.

MSSC Bulletin Editor
3630 Encinal Ave.
Glendale, CA 91214-2415

To:



With Knowledge Comes Appreciation

**Your MSSC
Bulletin Is Here!**