Bulletin of the Mineralogical Society of Southern California

Volume 86 Number 7 July, 2013

The 899th meeting of the Mineralogical Society of Southern California

July 12th, 2013 at 7:30 pm

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

Program: "Mining the Pegmatites on Chief Mountain"

In this Issue:

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: Mining the Pegmatites on Chief Mountain by Jeff Hapeman

Jeff will briefly cover the history of mining on Chief Mountain in Pala, California and delve into more detail on recent mining activities there in the Pala Chief, Elizabeth R and Oceanview Mines, as well as several new prospects. Photos of the key finds in recent pockets as well as a selection of specimens will be included, He will also present an overview of the process of underground hard rock mining in the pegmatite, including video clips

Originally trained as a scientist, Jeff last year returned to his true love--gems and minerals after a 15year diversion into finance. In the summer of 2012 he left the corporate world and founded Earth's Treasury, which sells gems, jewelry and gem mineral specimens. At the same time he joined the crew in the Oceanview and was trained and MSHA-certified as an underground hard rock miner. Jeff documents the process for the mine, and has photographed and video-recorded much of the mining process and all of the key finds in the last year.

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From the Editor:

This is the bulletin for the 899th meeting!..That means that August 2013 is the **900th meeting of MSSC**! That's quite an accomplishment for any hobby club and is, I believe, the longest run for anymineral/rock club in the Western US. Since the Fallbrook group has decided not to have a picnic this August, we should be looking forward to a special meeting to celebrate our 900th gathering of members. We only learned of the Fallbrook change in mid June, so our officers are working to put something together for us. Stay Tuned….

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MEANDERINGS FROM THE PRESIDENT: Ann Meister

**** THE AUGUST PICNIC IS NOT IN FALLBROOK ****

We haven't decided yet where or when our picnic will be, but the Fallbrook Society, for various reasons, is not hosting a picnic this year. That gives us the opportunity to celebrate our 900th meeting with a party-picnic in August instead of the 901st at the September "regular" meeting.

The Board and others have made a number of suggestions: The Arcadia Women's Club, Arcadia Wilderness Park, various parks in Glendale, Tournament Park at Caltech, "someone's back yard" (do we have a volunteer?) and more. There's a Sierra Madre Women's Club that has nice facilities from looking at the website and many years ago we were at Farnsworth Park in Altadena, where there are indoor (Davis community building) and covered outdoor facilities. All we have to do is decide...

Based on past experience in August, an air-conditioned in-door facility is more comfortable that outdoors, though a well-shaded, covered outdoor picnic area can also be comfortable. Of course an indoor facility usually includes a kitchen which is convenient for a potluck. At public parks, we have to watch our "stuff" more carefully when we are setting up for a swap, as we usually do. And, if we want to have a program, for example an opportunity for us to look back at society history and remembrances, an indoor facility might be more hospitable, especially if people want to bring old pictures or a slide show from the past. It also seems to me that one year at the Arcadia Wilderness Park, we had to move elsewhere due to fire hazard and closure of the foothill areas. The fire hazard is already high, so that is very likely to happen this year.

So let me know what you would like and watch the August Bulletin for the time and place we decide on. See you there, where ever "there" is!

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MINUTES of the June 14, 2013 898th MSSC Meeting notes

The 898th meeting of the Mineralogical Society of Southern California was called to order by President Ann Meister at 7:35 pm on June 14, 2013 at Pasadena City College, Pasadena, CA.

Regular Business:

A motion was made by George Rossman to approve the minutes of the May meeting as published in the June Bulletin. Second: Ahni Dodge. Approved by members present.

Announcements:

- A thank you to Kay Robertson for the excellent article in the Bulletin on how she became interested in minerals.
- July Bulletin deadline June 24 (7 days prior to end of month)
- Updates to the Roster are not going to be sent out due to member's privacy concerns. If you can't reach someone, contact Jim Kusely or Linda Elsnau to see if there is an update.
- Von Karman Lecture at JPL June 20 and PCC Vosloh Forum June 21 at 7 pm. Forecasting Quakes: Facts, Myths and Possibilities.
- Board Meeting: July 7 at Bruce Carter's house. Final board vote on Bylaws and Operating Rules. Also discussion of disposition of the trailer and its contents. Members are welcome to attend, just let us know that you're coming.
- August picnic with Fallbrook Gem & Mineral Society: Date not yet available.
- Banquet: January 18, 2014. Plan now for your donation to the silent auction.
- 901st meeting in September: Invite any former members to join us.
- MSSC elections are coming up. If you are interested in holding an office please let us know.

Program:

Fred and Linda Elsnau presented *"Getting to know Cubic Crystals: or An Introduction to the Isometric Crystal System."* Creating this talk was an educational opportunity used by Fred and Linda to learn about crystallography and to make it understandable to the rank amateur. They thought the cubic system would be the easiest of the crystal classes since it has three equal axes and three equal angles, but discovered the many variations beginning with the simple cube and tetrahedron through the complex tetrahexahedron and hexoctahedon. The talk was illustrated with cubic minerals such as pyrite, fluorite, galena, bixbyite, gold, copper, demantoid garnet, and diamond and included matching diagrams for crystal faces. After the presentation, we got a chance to see the mineral specimens that were used as examples of the crystal forms. Great work!

The monthly drawing was won by Pat Caplette.

The meeting was adjourned at 8:45 pm. Discussion continued in the coffee room along with refreshments.

Respectfully submitted by Ann Meister, Secretary pro tem

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MSSC BOARD MEETING June 2, 2013

The Board of Directors of the Mineralogical Society of Southern California met Sunday, June 2, 2013 at 1:00pm at the home of Bruce Carter. The meeting was called to order by President Ann Meister at 1:10 pm.

In attendance: President Ann Meister, Vice-President George Rossman, Treasurer Jim Kusely, Secretary Angela Guzman (late), Federation Director Jo Anna Ritchey, Past President Geoff Caplette, Directors Bruce Carter, Leslie Ogg, Pat Caplette, and Pat Stevens. Visitor: Bulletin Editor Linda Elsnau. Absent: Director Bob Housley.

Minutes of the previous board meeting on April 13, 2012 were approved as published in the May 2012 Bulletin.

OLD BUSINESS:

- Nominations for 2014: Suggest you recruit your own replacement and inform Nominating Committee.
- Treasurer's Report and associated questions. Please submit expenses to Jim in a timely manner.
- New website & Pay Pal account – Bob Griffis is still working on website. Leslie Ogg will add Pay Pal information to current website.
- Dorothy Ettensohn was removed as an honorary member since she is no longer with the Natural History Museum and no longer participates in MSSC activities.
- Julie Curtis-Steele's Life Membership from the SCMM is transferred to MSSC.

- Need to decide on disposition of the MSSC trailer and show supplies.

NEW BUSINESS:

- Banquet is scheduled for January 18, 2014.
- Meeting 900 is in August, when we have the picnic with Fallbrook. "Official" celebration at meeting 901 in September. Invite all past presidents and members.

MAIN BUSINESS:

- Discussion of Bylaws. Leslie will submit final draft by email to board.
- Discussion of Operating Rules. Ann will submit final draft by email to board.

NEXT MEETING

The next Board meeting is scheduled for July 7, 2013 at 1:00 pm at the home of Bruce Carter. The Bylaws and Operating Rules will receive the Board approval for publication and submission to the general membership for a final vote.

ADJOURN: The meeting was adjourned at 4:10 pm.

Respectfully submitted, Ann Meister, secretary pro tem

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Keweenaw Point by: Larry Maltby as published in Mindat.org

In 1950, as a young boy, I traveled here on a family camping trip. We saw for the first time the views of the wilderness from the top of Brockway Mountain. We peered into the crystal clear water along the beaches of Lake Superior. We visited many of the "rock shops" that doted the peninsula and saw the colors and intricate patterns within agates. We stopped at the Seaman Museum which, at that time, was located in Hotchkiss Hall at the Michigan Technical University campus. There we saw the amazing geometry of mineral crystals, including crystals of pure metallic copper that came from the mines in the area. Even the famous landmark, the Quincy No. 6 Shaft House with its "many gabled" architecture, was still standing. I was smitten by all of this!

In later years my wife and I frequently returned to the Keweenaw. This article will reflect the mineralogy, geology and natural beauty that kept drawing us back.

Figure 1: Map, Keweenaw Point *Image © Larry Maltby*

As shown on the map (Figure 1), the tip of the Keweenaw Peninsula is a north-south shore line about three miles long. Most maps label the southern extremity as Keweenaw Point. The Keweenaw Co. Plat Book also calls out High Rock Bay north of the Point. The Missile Site is almost never mentioned on maps, however, it is a historically interesting location where experimental rockets were fired out over Lake Superior during the 60's. For more information, conduct an internet search on key words, Keweenaw Rocket Range. For many years collectors have used the term "Keweenaw Point" to refer to the entire north-south shore line and the specimens collected there are usually labeled as such.

Going to the point has always been somewhat of an adventure. During the late 50's and through the 60's, we would make the eight mile trip from the end of the pavement to High Rock Bay in the family station wagon. Due to the long rear overhang on the old station wagons the trip would require about one hour of tense driving trying to position the wheels on the deeply rutted road to keep the rear end from dragging.

On another trip to "The Point" we came to the low spot where we usually had to drive through a small stream of water. The beaver had built a large dam right beside the road producing a pond that rose about five feet above the road. We were able to get through by driving on the remains of the road below the dam. Later the County pulled out the dam and

installed a culvert. This was a great improvement except that vehicles wore a hole in the top of the culvert large enough for a tire to drop into. The crossing was made by placing a handy piece of plywood over the hole and hoping for the best.

The last time we made the trip, the culvert had been replaced and the crossing was a piece of cake. The only remaining concern was the large water filled holes that covered the road. We checked the depth with a stick and ignored the broken car parts lying beside the road and made it to "The Point" again.

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As show in the map to the right (Figure 2), There are three geological formations that outcrop along the north/south shore of Keweenaw Point. From High Rock Bay north, are the basaltic flows of the Lake Shore Traps. They are an integral part of the encompassing Copper Harbor Conglomerate that extends out into Lake Superior to the north of the point. The traps contain abundant agates, datolite and some interesting minerals in vesicles in the flow tops. South of High Rock Bay, are the outcrops of the Copper Harbor Conglomerate. The southern third of the shoreline has exposures of the Portage Lake Volcanics. All of these formations extend eastward under Lake Superior such that Manitou Island, about three miles off shore, has outcrops of the Lake Shore Traps and the Copper Harbor Conglomerate as shown above.

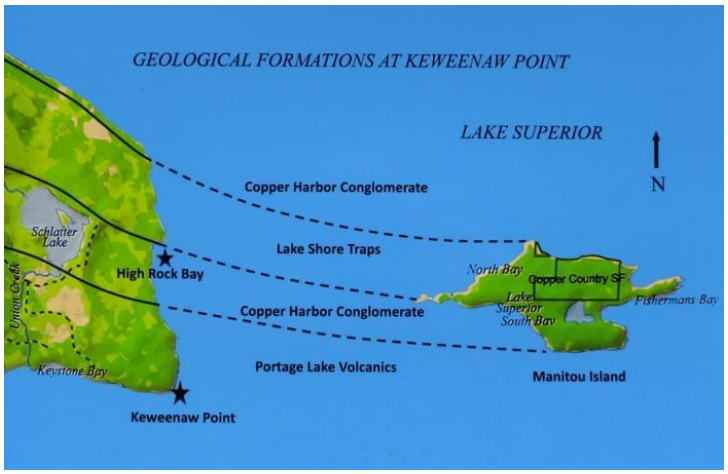


Figure 2: Keweenaw Point, Geology *Image © Larry Maltby*

Accessibility to the outcrops is somewhat limited to the shoreline. Both the peninsula and the island are heavily forested. The area is a wilderness and exposed rocks in the woods are difficult to find.

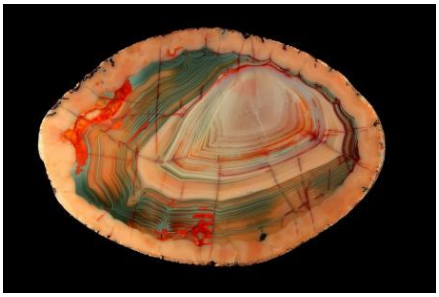
The end of the road at High Rock Bay is as far as a car can go along the ridge shown to the right.

The Copper Harbor Conglomerate at High Rock Bay rises to about twenty feet above the water giving the bay its name.

Collecting agates at High Rock Bay

Over the Last sixty years or so, really good agates have not been easy to find on the beach by the casual visitor. There is a narrow band of gravel at the shoreline that is susceptible to turn over by storm waves. It extends from the tree line to a depth of about six to eight feet under the surface of Lake Superior. Storms do wash up new agates but each collecting season reduces the number of agates available. The number of new agates eroding out of the basalt is a lot less than those removed by collectors.

The beach agates at Keweenaw Point most likely originated in the flow tops of the Lake Shore Traps. The traps between the Point and Manitou Island were crushed by the glaciers and the rubble has weathered for thousands of years freeing agates into the gravel. But the glaciers have also transported rock debris from Canada onto the beaches of the Keweenaw. Once an agate is eroded from its matrix it is impossible to state with certainty where it was formed, however, for agates found at the Point, the Lake Shore Traps would be a good guess.



Agate (3.8 x 2.6 cm) Keweenaw Point, found in the wet beach gravel.

Agate (4.0 x 2.8 cm) Keweenaw Point, found in the wet beach gravel.

Agate rough in basalt (14.5 cm) Keweenaw Point, collected by scuba divers.

Agate rough in basalt (10.0 cm) Keweenaw Point, collected by scuba divers

Agate (1.2 cm) Keweenaw Point

Agate (5.0 x 3.2 cm) Keweenaw Point, found in the wet beach gravel.

In the old days, Virginia would always find some driftwood along the beach that she would arrange to make a table of sorts for our lunch. While I would wade along the shore looking in the "wet" gravel for agates, she would paw through the "dry" gravel near her lunch spot. She found many more agates than I did by a ratio of at least 10 to 1. They were all very small and we put them in quart jars of water and forgot about them.

It wasn't until I started doing micro photography that I took another look. We were surprised at how nice they were. The photographic enlargements show their beauty and detail. None of the agates shown in this section have been polished. They were submerged in water and photographed just as they were found on the beach. The refraction of light through the water suppressed the spectral highlights and provided the color saturation needed for the photos.

Yellow Datolite

Agate (2.4 cm) Keweenaw Point

Agate (0.9 cm) Keweenaw Point

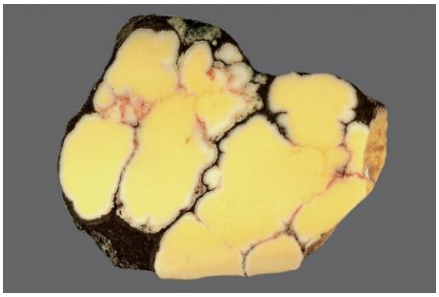
Agate (0.9 cm) Keweenaw Point

Although it is not well known worldwide, nodular datolite has been sought after by Michigan collectors for many years. High quality datolite is translucent and has porcelain like depth of color that can be very beautiful. The yellow color shown here is at the top of the list for desirability. During the past sixty years or so, the Lake Shore Traps at Keweenaw Point have been the most productive location for these specimens. They have not been plentiful and every summer local collectors have pursued them relentlessly.

The colorful, nodular datolite, found in the Michigan Copper Range is unique and we are not aware of any other source in the world. As we move further down the peninsula with this series of articles, we plan to discuss this subject in more depth.

Datolite (3.6 cm) Keweenaw Point

Datolite (2.5 cm) Keweenaw Point



Datolite (2.5 cm) Keweenaw Point

Minerals

Agate detail of the vein from basalt cobble, High Rock Bay. It appears that two tapered crystals have been completely replaced by the agate. Some mineralogists suggest that the original crystals may have been anhydrite. This type of replacement occurs throughout the Lake Shore Traps and the Portage Lake Volcanics. (FOV 2.0 cm)

Most of the collectors that visit the Point are looking for agates on the beach. Some of the local collectors have made the trip in search of the elusive yellow datolite. Over the years there has been some discussion about natrolite crystals being found at the Point, but micro crystals in general, have been largely overlooked. Actually, there are some very nice micro minerals in the Lake Shore Traps and in the large cobbles that line the beach. The cobbles are badly battered and weathered by wave action and do not look like much, but freshly broken material can provide some surprising results.

Another amygdule found in the same basalt (FOV 6.5 mm).
It appears to contain two generations of chlorite. One is heavily stained or perhaps partially replaced by iron oxides.

The chlorite group minerals are very common throughout the Copper Range but identification to the species level is difficult. The chlorite found in the amygdules is likely to be in the clinochlore- chamosite solid solution series but full chemical analysis is required to determine if the mineral is Mg dominate (clinochlore) or Fe dominate (chamosite). For these articles we will use the group name, chlorite, with very few exceptions.

Porphyritic basalt cobble, High Rock Bay

Nice samples of porphyritic basalt can be found in the cobbles along the beach. The specimen to the left shows a dense pattern of feldspar phenocrysts and a few amygdules with epidote and quartz. The primary feldspars are plagioclase but after the lavas solidified, many pulses of hydrothermal activity brought about alterations to the feldspar and the basalt. Hydrothermal solutions with their alterations to existing minerals and their deposition of successive new minerals provide a very interesting study for the collector.

Feldspar phenocryst cluster in porphyritic basalt (FOV 13.0 mm) from beach cobble, High Rock Bay

The two sections right and below show altered feldspar phenocrysts and, on the right, the brecciation of the amygdule wall including the chlorite rim and the adjoining feldspar phenocryst.

This rock found beside the road to the Point is interesting for several reasons. First, it does not belong here. The road at this location passes over glacial till and below that the bedrock is the Copper Harbor Conglomerate. This angular amygdaloidal flow top is a chunk of mine rock from somewhere in the Portage Lake Volcanics. Every year large quantities of mine rock are moved all over the Keweenaw. The most economical source of road fill is the massive piles of poor rock on the mine dumps. This rock, most likely, fell from a road commission truck.

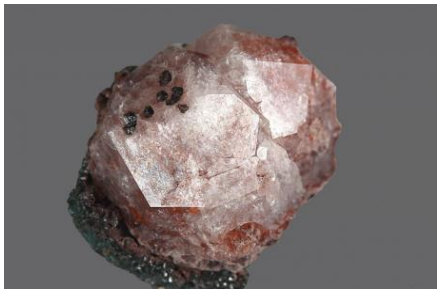
Altered feldspar phenocryst in porphyritic basalt (FOV 13.0 mm) from beach cobble, High Rock Bay

It is also interesting because of its mineralogy. The vesicles appear to contain a variety of micro minerals. The open space in the vesicles is filled with calcite which protects the fragile crystals during blasting and the rough treatment that poor rock piles have experienced over the years. The photos below show the crystals after leaching with acid.

Figures 1 and 2 *(Ed. Note: see the article in mindat to view these pictures)* show an unusual shape for a vesicle. It is apparent that as the tongue of lava flowed out over the landscape, some folding took place. This is sometimes visible in motion pictures of flowing lava. The folds appeared to have distorted the normal oval shape of the vesicle and sheared it into two miss matched haves.

Analcime crystals (FOV 13.0 mm) from Lake Shore Traps, Keweenaw Point.

Calcite with iron stained chlorite (FOV 4.5 mm) Lake Shore Traps, Keweenaw Point

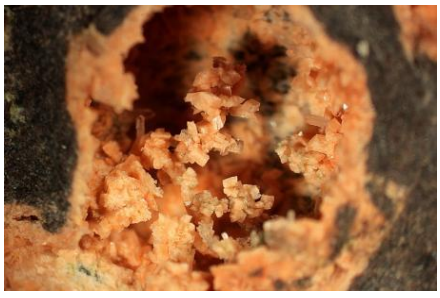


Analcime (2.0 cm) from beach cobbles, Keweenaw Point

Natrolite (FOV 8.0 mm) from beach cobbles, Keweenaw Point

Pumpellyite with epidote and quartz (FOV 5.0 mm)

Calcite on natrolite (FOV 5.0 mm) from beach cobbles, Keweenaw Point



Microcline (FOV 7.0 mm)

Quartz with microcline (FOV 3.6 mm)

Quartz with microcline (FOV 4.1 mm)

Editor's note: I want to thank Larry Maltby for his kind permission to use this article and his find pictures in our bulletin. Due to space limitations within our bulletin, I am, unfortunately unable to put all of the many fine pictures from his article here. Unless specifically noted otherwise, all photos used here are © Larry Maltby and are used with his permission. For those of you with access to the internet, Larry's full article and all pictures are available in mindat.org at:
http://www.mindat.org/article.php/1593/Keweenaw+%28Part+1%29++Keweenaw+Point+

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July Featured Mineral: **Adamite**

Formula: $Zn_2(AsO_4)(OH)$

Crystal System: Orthorhombic

Name: Named by Charles Friedel in 1866 for Gilbert-Joseph Adam (April 7, 1795 Seine-et-Marne, Fontainbleu, France - 1881 Paris, France), French mineralogist, who supplied the first specimens.

irocks.com photo

Adamite
Locality: Ojuela Mine, Mapimi, Mun de Mapimi, Durango, Mexico
2.3 x 2.0 x 2.0 cm

irocks.com photo

Adamite
Locality: Ojuela Mine, Mapimí, Mun. de Mapimí, Durango, Mexico
4.8 x 4.5 x 0.7 cm

irocks.com photo

Adamite
Locality: Ojuela Mine, Mapimí, Mun. de Mapimí, Durango, Mexico
3.9 x 2.9 x 2.3 cm.

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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	Richard Stambert	North Orange County, near Cal State Fullerton	714-524-3577
A ride	Catherine Govaller	San Bernardino, CA	cgovaller@msn.com

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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**	

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Calendar of Events:

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

JULY, 2013

July 13 - 14: CULVER CITY, CA
Culver City Rock & Mineral Club
Culver City Veterans Memorial Auditorium
4117 Overland Avenue
Hours: Sat 10 - 6; Sun 10 - 5
Website: www.culvercityrocks.org

AUGUST, 2013

August 2 - 4: NIPOMO, CA
Orcutt Mineral Society, Santa Maria
Nipomo High School
525 North Thompson Ave.
Hours: Fri/Sat 10 - 5; Sun 10 - 4
Website: www.omsinc.org

OCTOBER, 2013

October 5 - 6: BORON, CA
Mojave Mineralogical Society
Boron Community Building
South End of Boron Avenue
Hours: Sat 9 - 5; Sat, Sun 9 - 4

October 6: FALLBROOK, CA
Fallbrook Gem & Mineral Facility
123 West Alvarado Street
Hours: 10 - 4
Website: www.fgms.org

October 19 - 20: WHITTIER, CA
Whittier Gem & Mineral Society
Whittier Community Center
7630 Washington Blvd
(corner of Mar Vista & Washington)
Hours: 10 - 5 daily

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2013 MSSC Officers:

OFFICERS		
President	Ann Meister	*president@mineralsocal.org*
Vice President	George Rossman	*programs@mineralsocal.org*
Secretary	Angie Guzman	*secretary@mineralsocal.org*
Treasurer*	Jim Kusely *	*treasurer@mineralsocal.org*
CFMS Director	Jo Anna Ritchey	
Past Pres.	Geoffrey Caplette	
DIRECTORS		
2013-	Geoffrey Caplette	
2013-	Leslie Ogg	
2013-	Pat Caplette	
2013-	Bruce Carter	
2013	Pat Stevens	
2013	Bob Housley	
COMMITTEE CHAIRS		
Publicity	Linda Elsnau	*bulletin@mineralsocal.org*
Membership	Jim Kusely	*treasurer@mineralsocal.org*
Program and Education	Bruce Carter	
Webmaster	Leslie Ogg	*webmaster@mineralsocal.org*
Bulletin Editor	Linda Elsnau	*bulletin@mineralsocal.org*
Micro Mount Conf. Chairman	Al Wilkins	
* Treasurer	Jim Kusely –proviso due to surgery, mid 2013, 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//:wwwmineralsocal.org The Mineralogical Society of California, Inc.

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

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Your MSSC Bulletin Is Here!

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

To: