



# **Bulletin of the Mineralogical Society of Southern California**

Volume 88 Number 2 - February, 2015

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*The 918<sup>th</sup> meeting of the Mineralogical Society of Southern California*

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*With Knowledge Comes Appreciation*

**February 20<sup>th</sup>, 2015**

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

**If you Haven't Paid your Membership Dues by Jan 31,  
This is the Last Bulletin you will Receive!**

**Be Sure to Pay your Dues NOW!**

***Program : Non Vertebrate Salad of the Puente Formation***

presented by Keith Krzywiec

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**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: Non Vertebrate Salad of the Puente Formation** presented by Keith Krzywiec

About all non backbone fossils from the P.F. Fossil wood, leaves, and shellfish. Fossil Fish of the San Jose Hills of course all about the fish

West Covina Fossil paleontology is dedicated to the study of prehistoric West Covina as part of the San Jose Hills Puente Formation. Surrounding areas of the Los Angeles basin beyond the Covinas are also studied, but West Covina continues to have the most productive sites to explore.

Learn about prehistoric Southern California through one of my live, interactive presentations. Presentation consists of a brief introduction, geological history of the local area, and identification of marine and terrestrial fossils from local dig sites.

Keith Krzywiec – is a local, self-taught, amateur paleontologist. He has been studying, collecting and researching the areas unique rock, plant and animal and marine fossils his entire life. This combined with years of hands on experience working as a volunteer at the Los Angeles County Natural History Museum, gives him a broad Knowledge of Southern California’s Paleontology.

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**From the Editor:**

Where does the time go? I hope everyone that gets to the big events in Tucson and Quartzite, Arizona have a great time. How about a short article about what you saw and hopefully purchased there for our Bulletin?. We would all love to enjoy your trip with you. I have an excellent article on Cleaning Quartz by Rock Currier, but it is quite long. As it is a very interesting and informative piece, we have Part 1 in this month’s bulletin with additional installments to follow.....stay tuned! As I want to get the article off to a good start this month, “Mineral of the Month” is quartz, following the Cleaning Quartz article, but no additional pics are included.

Linda Elsnau

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**MEANDERINGS FROM THE PRESIDENT** by Ann Meister

What a wonderfully fun Annual Installation Banquet and Silent Auction! Thank you to everyone who attended. The food and camaraderie were fantastic. Thank you to the donors of the many items at the auction as well as thanks to the buyers! What a success! A special THANK YOU to the officers, directors, and committee chairs who are continuing their leadership for another year. I really would like to see some new faces next year; it’s not that I don’t like the old, um... current, faces – but we need to spread the opportunity to serve to additional members (hint), even if you have served in the past. You know the saying: “Reuse, recycle, repair...”

Officers and Board member – Please remember to send me your agenda items for the March 1 Board Meeting! That’s on Sunday, March 1, 2015 at 1:00 PM at the home of Bruce Carter. I will be sending out an email reminder and agenda. All MSSC members may attend; it is not a closed meeting.

**Geo-Literary Resource:** Among the many strange and interesting emails directed to the “president” email address was this press release for a new book, *The Collector’s Guide to Herkimer Diamonds* by Michael R. Walter, published by Schiffer Publishing. It claims to be the first published guide to Herkimer diamonds. It is 96 pages with 219 color and 7 black and white photos. If you are interested in reading the glowing description of this book, I will email it to you. I will also have a printed copy at the February meeting. MSSC does not make a habit of giving free publicity in the *Bulletin*.

I know I get on safety meanderings perhaps too often, and here we go again. I was recently involved in an auto accident where my car was hit by a driver who was making an unsafe, and perhaps illegal, u-turn. (I broke my little finger which has made typing awkward.) This was at the top of Lake Avenue in Altadena at the trailhead for Mt. Lowe, the Sam Merrill trail to Echo Mtn. and many other destinations. It is a confined, residential area with street parking only. Many of the hikers and mountain bikers gathering there do not pay attention to traffic laws and pedestrian and pet safety issues. They are so focused on finding a parking place and getting started that

they lose sight of what's happening around them. They stand in the street as they prepare for or unwind from their activities and even though pets are (usually) on a leash, it is often long enough to allow the pet to wander into the traffic lanes. Perhaps this lack of attention is why we have so many rescues and lost hikers and bikers. People are not paying attention to their surroundings, losing the trail, or trying an unsafe short-cut in our decomposing granite mountains. (Note: This area is not part of the new San Gabriel Mountain National Monument nor is the entire Station Fire burn area.) 'Nuf said.

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## MINUTES OF THE JANUARY 10<sup>TH</sup> BANQUET/MEETING

The **917th** meeting of the Mineralogical Society of Southern California (MSSC) was held Saturday, January 10, 2015 at the Oak Tree Room of Coco's Restaurant in Arcadia, CA. President Ann Meister brought the annual Installation Banquet Meeting to order. This annual fundraiser includes a silent auction, banquet dinner, installation of officers for 2015 and program presentation. This year's program features Giant Amethyst and other gems of *The Mines of Minas Gerais* presented by Denise Nelson.

The festivities began with registration, happy hour and perusal of silent auction items.

President Ann Meister greeted everyone and announced that most of the regular course of business will be dispensed with except for the *approval of the December 2014 Membership Meeting Minutes as posted in the January 2015 Bulletin*. **Motion** made, seconded and carried (MSC) by majority vote of the membership.

Ann expressed her delight as to so many attendees. She mentioned that, included in the silent auction, are some paintings by Katherine Clark. She thanked everyone who brought items (rocks, minerals, books, structures, calendars, to name a few) for the silent auction. The silent auction will continue for a short period before dinner, then the installation of officers (continuation of service by the elected slate of officers) to be followed by tonight's program. With that, Cindy of Coco's welcomed MSSC back to the restaurant and opened the banquet for dinner.

After a wonderful meal with great table discussions, Ann gained everyone's attention and introduced the MSSC elected officers for 2015:

| Officers        |                | Directors      |              |
|-----------------|----------------|----------------|--------------|
| President       | Ann Meister    | 2015-2016      | Bruce Carter |
| Vice President  | George Rossman |                | Bob Housley  |
| Secretary       | Angie Guzman   |                | Leslie Ogg   |
| Treasurer       | Jim Kusely     | 2014-2015      | Pat Caplette |
| CFMS            | JoAnna Ritchey |                | Pat Stevens  |
| Past President: |                | Geoff Caplette |              |

Special thanks and acknowledgements to:

Bulletin Editor, Linda Elsnau  
 Webmaster, Leslie Ogg  
 Programs Chair, Rudy Lopez  
 Membership, Cheryl Lopez  
 Hospitality, Laura Davis

Ann expressed her wish to see other MSSC members have the opportunity to participate by running for an office toward the end of the year!

### Announcements:

- Membership dues were due 12-31-14 but have been extended to 1-31-15;
- Pacific Micromount Conference will be January 30, 31 at San Bernardino County Museum in Redlands. Refer to the January, 2015 Bulletin for information and sign-up sheets;
- Next MSSC meeting will be February 20<sup>th</sup> due to Tucson Gem and Mineral Show;

- Tucson Gem and Mineral Show (2/12-2/15);
- Steve (Ventura Mineral Society) will lead a field trip on oil seeps, meet at California Oil Museum in Santa Paula at 9:30am. Event set for the last Saturday in March. Look for more information in the March Bulletin;
- Others: Correspondence from CA State Mining & Mineral Museum, they're looking to go active again and are looking for members; Member report: Re: the CA State Mining & Mineral Museum theft, the outcome is the offenders got 15 years and a fine of \$1,500,000, but the gold was destroyed, never to be recovered.

The silent auction was closed and everyone was asked to visit with Treasurer Jim Kusely to finalize any outstanding financial matters.

## **Program**

Rudy Lopez, Program Chair, introduced our speaker, Denise Nelson. Denise is a Graduate Gemologist (GIA), appraiser and occasional gem hunter. She started her own business, Inner Circle, 23 years ago in Maryland. Inner Circle is a fine jewelry and appraiser provider, which has allowed Denise to travel to different countries including Brazil, Thailand, Malaysia, Japan, China, Germany, France and Argentina. Denise presented to MSSC last year and she is welcomed back tonight.

Denise began by telling us we were going to Brazil, specifically to the state of Minas Gerais.

*The Mines of Minas Gerais* is a fascinating journey to one of the richest areas in the world in search of gemstones such as emerald, garnet, aquamarine, topaz and amethyst. Brazil, a country undervalued for what it is, mines gemstones and minerals. The presentation is based on a trip taken 5 years ago and was accompanied by Tony Kampf of the Los Angeles County Museum of Natural History.

Brazilians in this region are immersed in gemstones! They live and breathe the plentiful gems. There are organized mining operations run by large business and down n' dirty basic, primitive mine operations run by individuals and/or families.

Southern Brazil has agate of high quality but not far away, some of the world's finest agate is found in Uruguay and Argentina's colorful Condor agate is found in Patagonia. The Condor agate has vibrant color bands and is popular with collectors and jewelry designers.

The Brazilian region of Diamantina is named for the diamonds found there. Diamantina was world distributor of diamonds 150 years before the South African discoveries. Historic Ouro Preto has "black gold", imperial topaz crystals and was once the capital of Minas Gerais. Now, Minas Gerais' capitol is Belo Horizonte, home of numerous private gem collections. The nearby cities of Gov. Valadares and Teofilo Otoni are centers of active gem trading, cutting and marketing.

South of Minas Gerais is Rio Grande del Sul known for large amounts of quartz geodes. There are mine tunnels in hillsides that seem unsafe but are mined continuously.

Geodes found in the walls there range from small to enormous, some taller and wider than a full sized man. They are "inspected" by drilling boreholes, inserting a camera into the hole to see the quality of crystal within. Some geodes are heated to produce citrine while some are darkened to the color of purple amethyst. When searching to buy these crystals, take care to do your own inspection. It's a buyer beware situation. In some of the warehouses, there are people hired to glue in "crystals" to make it look natural. The end product is very good and does look natural but you must be careful.

Spheres are made in the area, as well. They vary in size and a rose quartz sphere we saw was the size of about 5' tall/round and is simply amazing!

Another mineral ore mined is iron. The Itabira region is iron rich and is also a producer of emeralds. One of the largest emerald mines in Brazil is the Belmont Mine here in Itabira. It is well run, there is very much security, appointments to enter the mine is required, they are big on recycling and there is much evidence of safety and safety equipment on standby. The mining process has gone from vertical shaft to horizontal tunnel

for safety reasons. High powered hydro jet water is sprayed on the walls to eliminate unwanted material leaving raw emeralds. These are removed and taken for sorting.

The key to locating emeralds is the contrasting white calcite (marble) and black biotitic and chloride schist. What happens in between these stark contrasts is emerald. This mine is well run with modern equipment. Conveyor belts carry the stones to a separation area where the emeralds are sorted out by hand. The process includes puffs of air that force the green gemstones to an even finer sort collection “bin” for later quality grading, sorting, cutting and other end production processes.

Not all mines are technologically advanced. Some mines are vertical shafts that are mined by a single person not associated with a company, but, using a leather pouch, filling it up and bringing it up top for the material to be sorted. It’s a day long process, down the shaft, digging around for suitable material then hoisting the pouch to the top, climbing out of the shaft then preparing for more of the same the next day. Much of the material is not high quality and it is thought these vertical shaft mines are no longer viable emerald producers. [Presenter’s personal view: You can make a choice to buy these gemstones and bring them all home to show your friends and family or you can bring some home and leave some of your money there where it will benefit many of these workers.]

Denise told us of the wide array of mines and their gemstones and processes to get the stones to the consumer from the Minas Gerais region in Brazil. The people associated with the mines, whether employees of major business concern or an individual, are all familiar with mining and the end result of their hard labor, namely the gemstones. She also mentioned gemstone cutting, coloring and other treatments applied to the stones. Lastly, some of the other mines produce feldspar, pegmatite, garnets and many other minerals and gems that are found in the region. In conclusion, amethysts, emeralds, “black gold” topaz, diamonds, agates and others from this area are truly amazing and beautiful. Brazil is bountiful, literally a wealth of minerals and gemstones.

MSSC sends a big “Thank You” to Denise Nelson for an enlightening and interesting presentation. We look forward to seeing you again in the near future.

A good time was had by all! Congratulations to the Officers, Directors, Past President, Editor, Webmaster, Program Chair, Membership Chair and Hospitality maven. Thank you for your commitment to MSSC in 2015.

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)                   |
|------------------|----------------|---|
| General Meetings | March 13 2015  | Denise Nelson: Museums of Europe                          |
|                  | April 10, 2015 | Bethany L. Ehlmann: Mineralogy of the Martian Surface     |
|                  | May 8, 2015    | Gabriel Mososson: African Opals, Welo Opals from Ethiopia |
|                  | June 12, 2015  | Justin Zzyzx: Palos Verdes, Barite, Mines and History     |
| Board Meeting    | March 1, 2015  | Board Meeting at Bruce Carter’s house                     |

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

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### Cleaning Quartz, Part I: by Rock Currier

Editor’s note: This article is being used with Rock Currier’s permission and is as it was published in mindat.org. (<http://www.mindat.org/article.php/403/Cleaning+Quartz> ) However, as we needed individual permission for each photo, I exchanged some of the pictures to those I have permission to use. Same location, same mineral, different photographer.

#### Cleaning Quartz

The same methods described below can also be used to clean other hard durable minerals like beryl, spinel, tourmaline, chrysoberyl etc.

Here are some pictures of quartz crystal specimens, fresh from the mine in Arkansas that need to be cleaned. These are typical examples of "iron stained" quartz specimens that are found in many parts of the world.



Quartz, Arkansas, USA 14cm wide in need of cleaning

Photo © Rockpick Legend Co. & Rick Dalrymple



"Iron stained" quartz can be black, red, brown or yellow or any related color.

Photo by Rock Currier



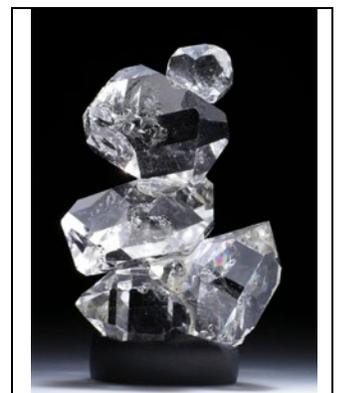
A close up picture of a quartz crystal specimen that needs to be cleaned

Photo by Rock Currier

The offending "iron staining" on the above specimens are fine grained iron minerals that are typically associated with quartz crystals when they are dug from the ground. Quartz crystals are pretty tough customers and you can clean them quite aggressively, both by mechanical and chemical means. By that I mean you can go after most of them with a stiff brush and scouring powder. In addition you can put them in most any strong acid without etching them or dulling the shiny natural luster that many quartz crystals have on their surfaces (however see hydrofluoric acid below). You can even use steel or aluminum bristle brushes if you want since quartz is harder than these metals. You may have some of the metal rub off on the quartz crystals, however, which you will then have to clean off.

Are there any exceptions to this? Yes, if the quartz crystals are loosely joined together, like the cluster of slightly intergrown quartz crystals pictured below from Herkimer, New York. Rough cleaning of crystals of quartz crystal specimens like this, may cause the crystals to separate from each other where they are attached to one another.

If the quartz crystals are intergrown, thin and prismatic like the two specimens below, either from the Jeffrey Quarry, Jeffrey, Pulaski Co., Arkansas, USA or from Huaron, Peru, rough treatment may cause some to break off.



Quartz (Herkimer diamonds), Herkimer Co. New York, USA 6cm tall. More than 99% of these large clusters have been glued back together.

Photo © Terry Burtzloff



Quartz, Jeffrey, Arkansas, USA 10.1cm wide

Photo © irocks.com



Quartz, Huaron, Peru 7.5cm wide

Photo © irocks.com

If the quartz is of the "water quartz" (fenster/jacaree/elestial) variety, the crystals may contain fluid inclusions with bubbles. Subjecting them thermal stress like freezing temperatures or tossing them in hot water may cause cracking.

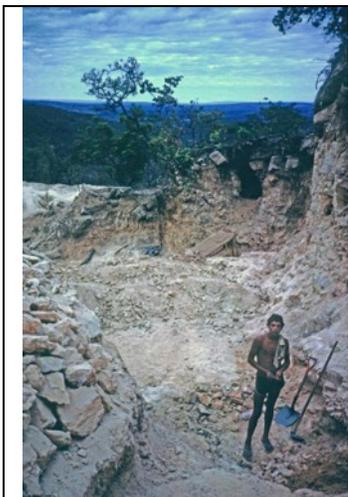
Quartz crystals from some localities seem to be more sensitive to thermal shock than those from others. The quartz from Herkimer, New York appear to be some of these. When removed from the ground, some collectors have learned to quickly wrap them up, mud and all, and put them in an ice chest to let them get used to life outside of the pocket they formed in. Then, in a day or so, they are carefully cleaned with water that is at the same temperature as the quartz. Not doing this risks shattering the crystals or creating internal cracks in some of the often beautifully clear "herks". Crystals from some Herkimer county localities seem to be more sensitive to thermal shock than others. These are the exceptions. Most quartz crystals are tolerant of temperature change; nevertheless this is something to think about when cleaning your quartz crystals. If you clean a lot of quartz from a particular locality, you will quickly learn what they can tolerate and what they cannot. Finally, your cleaning options may be limited if your quartz specimens are associated with delicate associated minerals. These delicate minerals may be damaged by some of the chemicals that might otherwise be used to clean the quartz. A common example would be quartz associated with calcite. If you put the specimen in acid, the calcite would dissolve in the acid. Other than these exceptions, you should feel free to have at them.



Quartz var. "water quartz/fenster/jacaree/elestial", Minas Gerais, Brazil 6.5cm wide [Photo © irocks.com](http://irocks.com)

When you "clean" the specimens you are actually removing a mineral(s) from the specimen that nature put there. A few collectors and mineralogists feel that by removing this "dirt" you are destroying data that would better be preserved for future generations. Historically, this dirt is not often kept intact because of the profit to be made by proper cleaning. If you are worried about this you can leave some of the original "dirt" on the specimen in a place where it will not detract from its "curb appeal". Fortunately, quartz is one of the most abundant minerals on earth, and for every specimen you "destroy" by cleaning, there are plenty more left to study.

For several years during the 1980s, I and some associates ran a little quartz mine in Minas Gerais state in Brazil in the hills just outside of the little town of Joaquim Felício. This mine was not in the great granitic region of the state which also produces many fine quartz crystals, but rather in the part that held part of the vast Itacolomi sandstone formation. It was one of many hundreds of small mines that had been started during the Second World War to provide quartz for the war effort. It produced mostly single quartz crystals measuring less than six inches long, but many contained beautiful green phantoms.



Mining for quartz crystals with phantoms near the little town of Joaquim Felício in Minas Gerais, Brazil. [Photo © Rock Currier](http://RockCurrier.com)



An unpolished quartz xl. including a green phantom ~8.3cm tall from the Joaquim Felício region of Brazil. [Photo © irocks.com](http://irocks.com)



A polished quartz xl including a green and red phantom ~7cm tall, from the Joaquim Felício region of Brazil. [Photo © Rock Currier](http://RockCurrier.com)

Most of the crystals were not very shiny and had a fair amount of damage. We found that the way to market them successfully was to have the surfaces ground down by flat lapping then polishing them polished by standard lapidary procedures. They sold well. I had a number of collectors ask me to bring in some of the natural unpolished crystals, which I did, but even when I priced them less than polished crystals of comparable quality, they did not sell well. Finally, I just told our cutting and

polishing shop to polish them all, though I did save a few in their natural state. So I guess the lesson I learned is

that in reality very few people are concerned with preserving the natural “dirt” or natural etching on quartz crystals. But, for the sake of future generations, you should make sure all specimens you collect are labeled with the mine name, state/province and country; moreover it can't hurt to preserve a few in their natural state. Since there are so many different quartz localities and frequently it is impossible to know the locality of a specimen by just looking at it, you should really glue a label right on the specimen that specifies the locality.

Most of the time a person wanting to clean quartz crystals is trying to remove brown “iron stains” or a white coating from the crystals. Quartz crystals from pegmatitic environments are frequently coated with mica, feldspars and various clay minerals. Quartz from sedimentary environments like those from the sandstones of Arkansas, USA or those in the sandstone areas around Diamantina, Minas Gerais Brazil are often “iron stained”. In these examples and many more, the quartz is covered or stained with other minerals that detract from the nice shiny, sparkling surface of the crystals. Those of us with a practical bent hope that, lurking just below the offending crud, are beautiful, shiny quartz crystals. In most cases you don't have to know exactly what you need to remove, although that is desirable information if you can discover it. Often these fine grained “iron stains” or white coatings are not easy to characterize mineralogically, and it is not worth the effort to analyze them.

Sometimes the cleaning method you choose will depend upon your finances and where you live since this often determines the tools and chemicals available to you. I am a large wholesaler of minerals in the Los Angeles, California area and have easy access to a broad range of cleaning tools and chemicals. Over the years I have tried most of the various cleaning methods described in this article. We will consider first cleaning with mechanical methods before we move on to chemicals.

### **1. Mechanical cleaning methods for quartz crystals**

To a certain extent your cleaning method will depend upon how much quartz you have to clean. If you are running a quartz mine in Arkansas or digging amethyst from the decomposed basaltic soil near Artigas, Uruguay, you will likely have pick-up trucks full of very dirty/muddy specimens to deal with. In this case the easiest way to clean the mud off is to place the specimens on the ground (concrete or asphalt preferred) or perhaps on rectangular screens nailed to 2x4 foot wooden frames. Blast them with water from a hose or a pressure washer with as much force as you can, but being careful not to use so much force that you blast the specimens into each other or cause them to roll over on the cement or the black top. If you can afford an electrically or gas driven pressure washer so much the better. I have heard of some people who don't have a pressure washer and have taken their specimens to one of the coin operated car washer places and used the pressure washers there. If the specimens have a lot of thick mud on them, after the first wash they and the mud on them are left to dry out. This will cause the remaining mud to crack and shrink and subsequent washing will remove more of the mud. This process is repeated until it is clear that further effort along this line will be unproductive. If you have only a few specimens to clean just scrub them up with a brush and soap and water or use one of the little fabric cleaning guns described below to clean off as much dirt as you can.

After you have removed as much of the gross dirt/mud as you can from the specimen, examine it closely and scratch at any remaining "dirt" with a knife blade. See if you can dislodge the offending material by scraping at it. Use the point of the blade if you have to. Don't worry about hurting the quartz crystal since it is much harder than the steel of your knife. Worry more about the blade slipping and cutting your hand. Ideally, you will want to do this under a binocular, reflected light microscope so you can see exactly what is happening and if you are really making any progress in removing the offending coating. Don't be afraid to really go after it. If you don't have a microscope, use a magnifying glass. If you can scrape any part of the surface clean at all, even if it is only in a tiny area, there is a good chance that you will be able to clean the quartz mechanically. If you can't scrape any of the surface clean, then it is likely that the surface of the quartz has been naturally etched or the offending material is intergrown into the surface of the crystal or has growing just beneath the surface. This is what you are trying to observe under magnification. If the material you would like to remove is intergrown or growing just below the surface you are sunk and there is not much you can do to improve the specimen short of grinding away the surface and polishing it using normal lapidary procedures. These lapidary procedures are generally labor intensive and you can't just “buff up” the crystals and make them shine like you can do with brass or copper. I know of no chemical method that makes a dull quartz crystal shiny. Well, wait! I should not say that. I

have seen formerly quite unattractive quartz crystals that have been put in the big, heated stainless steel autoclaves full of concentrated alkali solution that are used to grow synthetic quartz and afterwards new quartz has been grown on top of these crystals and they look quite nice. But, that is the only exception I know about. If you can't make a dent in what it is you want to remove with the point of a knife blade there may yet still be a tiny shard of hope left, but I'll discuss that below. This will be for the real diehards who know something about chemicals and how to use them safely.

## 2. Soap and Water

Use liquid detergent soap, rather than the kind that comes in a bar soap. This is the tried and true first step. This will remove any easily removable dirt and can often give you an indication of to proceed. If your detergent is the kind that has perfume or lemon scent added, your specimens will have the added virtue of smelling nice. Sometimes, experienced cleaners will skip this step and proceed to blasting their specimens with high pressure water to see if that will remove the offending substance. The easiest way to do that is to buy one of the little handheld cleaning guns called fabric cleaning guns. They are commonly used in the dry-cleaning industry for removing spots from fabric. You can buy these for less than \$75. If you Google "spot cleaning gun" you will find a lot of these offered for sale. These little "buzzer guns" used to cost several hundred dollars and still many dealers bought them, because they cleaned specimens so wonderfully and made the dealers so much money. Often, knowledgeable collectors and dealers could and still can pick up old specimens that someone had tried to clean but were unsuccessful because the dirt was down in cracks that they were unable to reach with a tooth brush or other available tools. Five minutes or less working on them with one of these new little buzzer guns would sometimes enable these newly cleaned specimens to be sold for hundreds of dollars more than they would have been sold for in their partially cleaned state. The appearance and availability of these little cleaning "guns" for the cleaning of specimens has been revolutionary. Its impact on cleaning minerals is like the difference between copying a book by hand using a quill and ink compared to printing it with a laser printer.



Getting ready to use a spot cleaning gun  
Photo © Rock Currier



A spot cleaning gun in use  
Photo © Rock Currier



Fabric gun in use. Can you see the very thin but powerful water jet?  
Photo © Rock Currier

These little "guns" have a short barrel. Just below is a bulb like reservoir that the user periodically unscrews and fills with water (hot and soapy if you wish). When you pull the trigger on these handy little devices, a little spring driven piston hammers rapidly back and forth and forces small but powerful jets of water out of the nozzle. It looks continuous but in reality it is intermittent. If you put your finger directly in front of the nozzle, the stream is often powerful enough to drive water under your skin, but the force of the stream quickly diminishes with distance from the barrel because of turbulence. A yard or so from the nozzle, the stream turns into a mist. You can quickly get a feel for just how much force you are applying to the specimen by holding your hand as far away as you can from the nozzle and then bringing your hand closer. Pretty soon you will feel

the water stream against your hand and when you come close enough, it will start to sting. It is a good idea to stop at that point. By doing this little exercise you can quickly tell how far away from the specimen you will need to hold the gun to apply the amount of force you want. You will commonly hold the "gun" in one hand and the specimen in the other. With quartz, you can usually blast away to your heart's content. You may need to be careful with delicate specimens having many tiny thin needles of quartz because, if they are not firmly attached to the specimen, you can sometimes blow them right off. You will find, however, that crystals are often tougher than you might think. Once you gain a little experience, you will find you can scratch at your quartz with the point of a knife and know if it can likely be cleaned with high-pressure water.

When you use these little spot cleaning guns you should use something to protect your eyes. I find that the glasses I usually wear are sufficient to protect my eyes from the little bits of rock and dirt that the spot cleaning gun blasts off of dirty specimens. However if you don't wear glasses, protective goggles are in order. If you are going to be cleaning a number of specimens you will also find that a plastic rain coat will keep your clothes from getting wet and having a lot of tiny bits of rock and dirt blown onto them. I have sometimes used them near my kitchen sink and later found that bits of rock and dirt have been liberally scattered over the sink, counter tops, splash boards, walls and windows, and whatever else is nearby.

Sometimes the high-pressure water will only partially clean the specimen and to finish it you may need to switch to a somewhat more aggressive mechanical cleaning method, namely using an air abrasive tool. Usually however, if we judge that the coating is really tough to scrape off we will skip the high-pressure water and go directly to one of our air abrasive units.

### **3. Air Abrasive Tool Cleaning and Air Scribes.**

If blasting your quartz crystals with high pressure will not remove the offending material, there is yet another mechanical means of cleaning that will almost certainly work, providing of course that you could scrape away a bit of the offending material with a knife blade as described above. This is by using an air abrasive tool. Some people call these sand blasters. These operate by directing a stream of high-pressure air that carries an abrasive medium against the specimen. The abrasive material acts like a scouring powder to remove or abrade away what it is directed against. The trick is that you need to use an abrasive medium that is less hard than the material you are trying to clean in order to avoid damage to the specimen. With quartz I recommend you use tiny glass beads rather than quartz or garnet sand. The glass beads will not visually damage the surface of quartz providing that the air pressure is not too high and that the glass beads are relatively clean and do not contain too many sharp or broken glass or other hard impurities. Quartz or garnet sand will usually remove the shiny surface of quartz crystals and leaving dull. If you do not have access to an air abrasive tool, see if one of your local garages or metal working establishments has one that they use to clean spark plugs or debur metal parts and see if you can borrow some time on it. But make sure that you don't use anything more aggressive or harder than glass beads. Start out with about 60 pounds of air pressure and increase if necessary. Often you can clean up small specimens of quartz (hand size) in a few minutes with this kind of equipment. Air abrasive tools are commonly used with different kinds of abrasive powders to clean and prepare fossils. We have used large and small versions of this equipment for years with different kinds of abrasive media and they have paid for themselves many times over.

If you don't have access to this kind of equipment, you can do it the old fashion way and just keep scraping away with hand tools. Used dental picks make wonderful tools for this type of work and little hand electrical grinders like flexible shaft tools can be handy. But no matter how much time you spend cleaning your quartz by hand, the results will rarely be as good as you can obtain with air abrasive equipment and it will take you ten to a hundred times longer.

Another modern tool that is often handy when "cleaning" quartz specimens is an air scribe. This is a little miniature hand held jackhammer powered by compressed air. They look a little bit like fat pencils and can be used to help shape your specimen or to remove chunks of offending material that may be growing on your quartz crystals. If you take enough time with the air abrasive tool, you can often remove large thick masses of material, but often an air scribe will remove it in seconds rather than minutes or hours. Air scribes are also commonly used to remove saw marks from specimens that have been trimmed to size by diamond saw blades.



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Cobaltian Calcite- Morocco  
Photo by Joe Budd©

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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/>

#### **FEBRUARY 2015**

##### **February 13 - 22: INDIO, CA**

San Gorgonio Mineral & Gem Society, Cabazon  
Riverside County Fair & National Date Festival  
82-503 Highway 11  
Hours: 10 - 10 daily

##### **February 27 - March 8, IMPERIAL, CA**

Imperial Valley Gem & Mineral Society  
Imperial Valley Expo  
200 East 2nd Street  
Hours: Weekends noon - 10 pm; Weekdays 4 pm  
- 10 pm  
Website: [www.IVGMS.org](http://www.IVGMS.org)

#### **MARCH 2015**

##### **March 7 - 8: ARCADIA, CA**

Monrovia Rockhounds  
Los Angeles Arboretum  
301 Baldwin Avenue  
Hours: 9:00 - 4:30 daily  
Website: [www.Moroks.com](http://www.Moroks.com)

##### **March 7 - 8: VENTURA, CA**

Ventura Gem & Mineral Society  
Ventura County Fairgrounds  
10 West Harbor Blvd.  
Hours: Sat 10 - 5; Sun 10 - 4  
Website: [www.vgms.org](http://www.vgms.org)

##### **March 13 - 15: VICTORVILLE, CA**

Victorville Valley Gem & Mineral Society  
Stoddard Wells Road & Hwy 15  
Hours: 9 - 5 daily  
Tele: V.V.G.M.C. (760) 243-2330  
Website: [www.vvgmc.org/tailgate](http://www.vvgmc.org/tailgate)

##### **March 14 - 15: SAN MARINO, CA**

Pasadena Lapidary Society  
San Marino Masonic Center  
3130 Huntington Drive  
Hours: Sat 10 - 6, Sun 10 - 5  
Website: [www.pasadenalapidarysociety.org](http://www.pasadenalapidarysociety.org)

##### **March 21 - 22: LEMOORE, CA**

Lemoore Gem & Mineral Society  
Trinity Hall  
470 Champion Street  
Hours: Sat 10 - 6; Sun 10 - 4

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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 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. 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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**1855 Idlewood Rd.,**

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