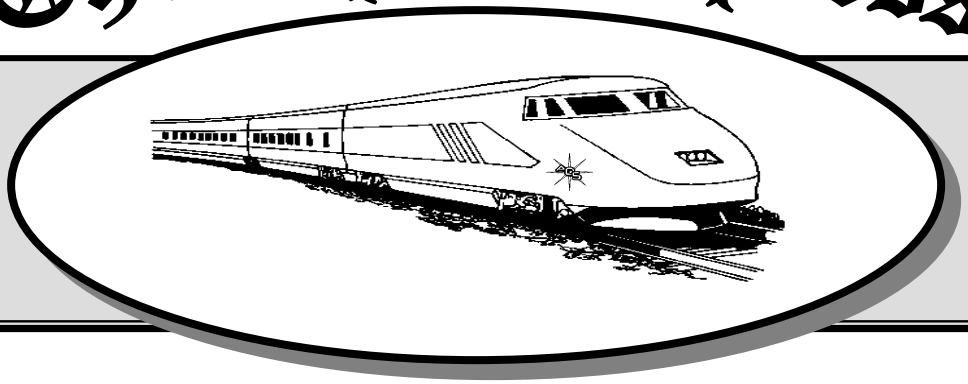
The Opal Express



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President's Message

Happy New Year, AOS Members! I look forward to 2014 and new things to come with the Opal Society. ***Pete Goetz***

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Members Only Website Password

AOS website's members only area: Name: "member" and Password: "opalbug".

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January Speaker – Gregg Bunch on Lab Created Quartz Crystals

The main speaker the General Meeting will be by Gregg Bunch of the Statek Corporation, a manufacturer of quartz crystal. Gregg will discuss how his company grows quartz crystals from a quartz "seed," and will share details on how the crystals are cut to different sizes and mounted to provide accurate oscillation in many different environments.

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Answer to Opal Mystery Shows Red Centre's Links to Red Planet

May 31, 2013 .

(Phys.org) - The dramatic geological events that created opal, Australia's national gemstone, have been described for the first time by a University of Sydney researcher.

The explanation underlines how the geology of Australia's Red Centre is the most similar on Earth to the geology of Mars, to the extent it could yield valuable information on that planet for a fraction of the cost of a space mission.

"Australia produces over 90 percent of the world's supply of opal. Before this we did not know its origin, why it forms at such shallow depths or why it can be found in central Australia and almost nowhere else on Earth," said Associate Professor Patrice Rey, from the University's School of Geosciences.

His findings have recently been published in the *Australian Journal of Earth Sciences*.

"The formation of Australian opal was due to an extraordinary episode of acidic weathering, during the drying out of the central Australian landscape," said Associate Professor Rey.

This occurred when the Eromanga sea, a vast body of water covering 60 percent of Australia, extending from Coober Pedy to the Carpentaria Basin and across to Lightning Ridge, started retreating.

Between 100 million and 97 million years ago this sea came to cover a much smaller area. This meant the previously inundated central Australian landscape started drying out and acidic weathering happened on a massive scale when pyrite minerals released sulphuric acid.

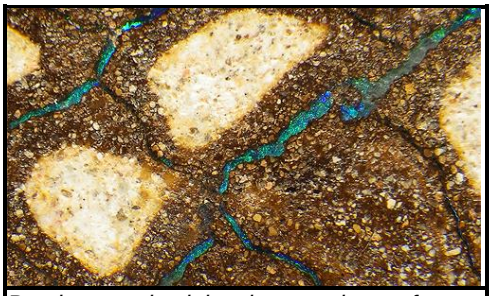
Acidic weathering of the type that took place in Central Australia is unique on Earth at that scale, covering an estimated 1.3 million km2, but it has been described at the surface of Mars.

"The USA and the European community have invested billions of dollars to send orbiters and rovers to Mars in the hope of finding extra-terrestrial life but Central Australia offers a unique natural laboratory where potential Martian bio-geological processes could be studied."

Notably, opaline silica, iron oxides and clay minerals similar to those found in central Australia were discovered at the surface of Mars in 2008, where they were interpreted as the product of acid weathering of volcanic debris covering the red planet.

"Many Australians familiar with the unmistakable features of Australia's Red Centre may not realise, despite their similarly striking red appearance, that it shares many of its remarkable characteristics with Mars, which also appears to be why opaline silica forms there."

To create the precious opal found in Australia, as opposed to opaline silica, demands a switch to alkaline conditions before silica-rich gel trapped in fractures and cavities dehydrates and solidifies. This is only possible when the host rock, as in Australia, has a large acid-neutralizing capacity.



Precious opal veinlets in a sandstone from central Australia

The opal discovery is personally satisfying for Associate Professor Rey who first encountered Australia as a schoolboy in France, through a 1970s documentary on opal mining in Coober Pedy. Thirty years later the Lightning Ridge Opal Miners Association reconnected Patrice with his childhood memory when they rang to ask him about researching the origin of opal. *From http://phys.org/*

The Formation of Precious Opal

By Richard Carew (http://AZopals.com) 1/5/2010

Precious opal is, unlike most minerals, *amorphous* like glass. Most minerals are crystalline in nature but opal is not although precious opal does have a structure to it. It is formed from trillions of submicroscopic spheres of silicone dioxide. That means you can only see them with an electron microscope. The spheres are in what is called a close packed cubic arrangement leaving spaces between the spheres that are sometimes filled with water, opal can be up to 20% water. In fact the formula for opal is SiO2-n-H2O where n stands for any number between 0 and 20 designating the percentage of water. The spaces between the spheres acts like a diffraction grating and breaks out the various wavelengths of visible light. Isn't that amazing, a stone that forms underground interacts with light in such a way as to break out the very spectrum that humans see. The spheres in precious opal range in size from 1500 Angstroms to 3500 Angstroms (150 – 300nm). The smaller the sphere the smaller the wavelength of light is broken out. So small spheres cause a blue light to be broken out while larger spheres break out greens, yellows, oranges and reds. To put it in simple terms an opal works like a rainbow which is made up of millions of drops of water with spaces in between and depending on your angle of view you see a complete spectrum of light which is broken out by the spheres and spaces.

The Formation of Precious Opal is caused by the interaction of an electrolyte and kaolinite clay. Kaolinite is a two layer clay that has one layer of silicone dioxide and one layer of mixed silica and aluminum and trace elements. Kaolinite comes from the mechanical and chemical weathering of *plagioclase* feldspars usually in the form of volcanic ash. In Australia where most opal comes from large pure beds of this mineral were laid down millions of years ago. When the layers were being formed Australia was dominated by a freshwater inland sea, so as the feldspars were settling out the very finest gains of it settled out last forming a thin layer of what was to become "opal dirt" which is a term used by the miners to describe the thin layer of clay where opal is found. This fine grained volcanic ash became kaolinite in a slow process of mechanical and chemical weathering. Then the ground went through some upheavals causing faults and cracks in the ground. By this time the kaolinite was covered by sandstone and the clay was protected and compressed. When the fault lines appeared there was an upwelling of the remnants of the fresh water sea in the form of a great underground aquifer that exists to this day. It is supposedly the largest underground aquifer in the world. When this water moves through the ground it picks up dissolvable minerals like iron and sulfur creating an electrolyte which interacts with the kaolinite clay dissolving the layer of aluminum and other trace metals like magnesium leaving behind the insoluble silica which rolls up and forms a submicroscopic sphere. This is happening in the finest layer of clay where the particles are minute to start with and then the finest clay particles are transported to cracks and crevices. An ion exchange happens with the clay when the sulfide solutions hit it and an opal gel begins to form. Depending on the fineness and regularity of the clay particles of precious opal will form.

Fancy Opal

So, anyway the main difference between my model of opal formation and the standard model which would have us believe that silica saturated water deposits these apparently self-generating spheres into cracks and crevices. How the silica, which is insolvent in anything except fluoric acid, got there is left open and how the spheres form is also not addressed. The main difference between my model and the standard model is that mine is repeatable in a laboratory. In fact I'm not the one who came up with this model. Mr. Len Cram of Lightning Ridge, New South Wales, Australia did the initial work 30 years ago and I read about it in a magazine article. At the time I was cutting opals for a Lightning Ridge miner so I had access to clean usable opal dirt which clung to the outside of knobbies I was working on. At any rate I was able to duplicate Len Crams work in my home lab.

Being able to reproduce his work led me to finding my own opal mine here in Arizona. I had discovered a deposit precious opal that was on state land and was therefore almost inaccessible because of rules and regulations. So I took a geological map of the area and found some rock of the same age and had a fault line running through it at the right angle. I put an X on the map and drove out there the next day and lo and behold there was opal there just lying around on the ground. Most of the rocks I found initially had a play of color and there were some big pieces. I went down to the county recorder's office and found out it was federal land and therefore subject to federal laws and also that the 5 acres that the mine was located on was unclaimed. I had to put up corner posts for a 20 acre parcel of land and that meant stepping on some toes. A gold mining club held most of the property around my little parcel but a lode claim always beats a placer claim so I was able to lay out a twenty acre parcel on top of the clubs claim. I gave them a quit claim deed to the acreage outside of the five acres I needed.

I worked that claim for two backbreaking years trying to get the opal out. The only way I could reasonably expect to move enough rock to make it worthwhile was with dynamite which made the opal come out in little pieces, although I did uncover a seam of opal that was an inch and a half thick and covered a boulder three feet by three feet across and another boulder covered about half way with opal the same size. This opal when it came out of the rock was as transparent as it could be and the color of new blue jeans or darker. When it had a play of color to it the colors swam through the stone like magic. Once it came out of the rock however it began to lose water and became opaque. The opal turned a sky blue to black and the play of color stood out even more. This kind of opal is called a reverse hydrophane. Hydrophane is a type of opal that seems dull and uninteresting until you get it wet and the play of color shows. Unlike most opal that loses water my opal was stable. When I write about the different types of opals I'll cover cracky opal or opal that crazes when it loses water. Suffice it to say I had found a viable mine but It was so hard to get the opal out of the rock and this was before the advent of the commercial internet so I had nowhere to sell the opal. If I weren't disabled now I'd be back out there because all of the opal had value even the potch (opal without a play of color). The blue color was excellent for jewelry making.

Now I don't know for sure but I had an article on the internet back in 94, 95 and 96 about this very same thing and a company in Lightning Ridge used the rock type to find the last big rush they had there. I don't know that they read the article but certainly my information was out there in advance of the discovery that led to the rush. It could be a case of parallel thinking which happens often enough given the right information. I realize that the foregoing diatribe was not directly involved with the formation of precious opal but knowing how it forms helped me to discover a new deposit and it helped the folks in Australia too. So to me the two are forever connected.

Comments:

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dtk December 26, 2010
There would be three ways you get high silica content in solution. 1. Alkaline conditions over pH 9.5. 2. Supercritical water (>375 C) silica solubility to 7,000 ppm. 3. Ultra-supercritical water (>575 C and 2kbar pressure), silica solubility to 15,000 ppm. In terms of sulfides as electrolytes, there is no strong link between the agates, opals, and jaspers, and sulfides except for some with jaspers, rarely. In massive ore deposits with sulfides, the silica content taps out at 1.5%. Often it is a case of changing geologic conditions when sulfides are found with these silicates. All these silicates seem to interact with carbonates to cause precipitation. It would be interesting to hear more about comments on the sulfides. So far, for my study of agates, there is no link. Agates and opals form a continuous series, and common opal is not found with sulfides. Got spectroscopic data on opal with sulfides?

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richardcarew March 8, 2010
Bob,
If you are going to play with your clay, I removed mine from the knobbies by using my old worn out 600 grit silicone carbide belt that was perfect for getting all the scratches out of an opal but made for a long slow process removing the clay. I don't know whether the belt produced small enough clay particles or whether they were in the clay already and the sanding belt just liberated them from the mass. When I tried clay without using the belt I did not have any success. Just thought I'd pass that on.
RC

Bob March 5, 2010
Fascinating description of the process. That also explains why there always seems to be some hot mineral spring activity (past or present) at every opal seam, including the Louisiana sandstone opals (kaolinite between grains of sand). (As for how the silica gets into kaolinite: it is already there. take a look at kaolinite mineral structure, and the platelets of kaolinite are also already the right thickness to become silica spheres. If the potassium in kaolinite is removed by electrolyte, mostly silica remains.) Common Epsom salts might even work, in solution. I hope to play with this a bit, now that you have inspired me!

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richardcarew January 6, 2010
Yleana,
Mexican opal is particularly cracky but if you bezel set it you should have a decent outcome.

Yleana January 6, 2010
Loved your article. I picked up a few Mexican fire opals in matrix on a visit to Queretaro last year, and am just learning how unique these stones are–and how fussy! One false move when setting and boom, crack; bye bye.

Jerry Fowler January 5, 2010
Opal in Arizona? Thanks for letting me know. Interesting article for the novice jeweler and the old hand too. Looking forward to more.
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This is a good procedure for polishing Andamooka Matrix Opal – The Editor

Grinding, Sanding & Polishing Procedures

By Don King 6/25/2013

Still getting "orange peel" effect when grinding/sanding/polishing jadeite etc.?

Besides spraying with vinegar to change surface tension etc. try the following:

When material contains softer material (dirt etc.) than the base mineral it tends to undercut the softer substance which tends to pile up on the surface of the stone causing the surface and edges to appear and feel gummy. You can't always see this when working on a wheel or disk but shows up when hand sanding etc. since the top of the stone is facing you. Generally this is caused by insufficient water to wash off this material which is now loose but still sticking to the stone and piles up on the stone and on the wheel. You can feel it there and the stone looks very cloudy.

Rub your fingers across the stone including the edges and you can feel this gummy material which is on top of the stone and built up in the edges. If the stone doesn't feel smooth this is happening to you.

Remedy: wash the stone with Dawn etc. and using a soft bristle tooth brush to scrub away the material which has been ground / sanded loose but still sticks to the stone. The stone should be feel smoother now. It may be necessary to also wash the wheel or disk to clean it of this material also. Returning to the wheel/disk use less pressure and more water to remedy the condition when returning to work the stone.

Working procedure is better with more rapid removal of surface material if one uses side to side motion of the stone on the wheel/disk incorporating tiny circles in the movement of the stone on the wheel/disk rather than side to side or up and motion of the stone on the grinding/sanding/polishing wheel or disk. One can still use the combination of side-to side- and up and down and turning the stone combining all within the side to side AND tiny circles into the movement of the stone. The above also minimizes the scratching of the stone and makes a more uniform movement of the entire stone on the wheel/disk.

You may have to repeat this "cleaning" procedure with each step of the grinding/sanding/polishing steps if the material being worked is uniform with softer material throughout it's make up. Example: Andamooka matrix opal which is sandstone with opal imbedded therein and includes whatever filled in the pores of the sandstone. Others: tiger-eye etc. Basically any stone which was formed by erosion etc. thus carrying dirt etc. which has not yet been fully petrified or opalized or agatized etc.

From *http://ganoksin.com/blog/richardcarew/2010/01/05/the-formation-of-ps-opal/*

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Cleaning Jewelry in homemade cleaner

NOTE: I'm not sure I would use this on <u>pearls or opals</u> – but it works great on diamonds! - The Editor's Wife.

Never Buy Jewelry Cleaner Again!

1 tablespoon salt
1 tablespoon baking soda
1 tablespoon dish detergent
1 cup water
1 piece aluminum foil

Directions:

1. Heat water in the microwave for 1 or 2 minutes.
2. Cut a piece of aluminum foil that roughly covers the bottom of a small bowl (like a cereal bowl).
3. Pour hot water into bowl. Place salt, soda, and dishwashing liquid into bowl. Place jewelry on top of foil and let it sit for 5 to 10 minutes. Rinse jewelry in cool water and dry jewelry completely with soft cloth. Discard solution after use and make a new batch next time.
4. According to wire-sculpture.com, 'this works well for gold-filled, brass, German (nickel) silver, and sterling silver. I have even cleaned jewelry with freshwater pearls, shell cameos and mother of pearl with no problem."

From the Internet – original source unknown.

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A Kentucky Man Found a 2.95-Carat Diamond in an Arkansas State Park

By Liz O'Connor, Business Insider–Wed, Jul 10, 2013

Terry Staggs of Kentucky was visiting the Crater of Diamonds State Park in Arkansas on July 4th when he saw something in the dirt sparkle in the sunlight.

It turned out to be a 2.95-carat, champagne-colored diamond, according to United Press International. Mr. Staggs has named it the Patriot Diamond in honor of the day it was found.

The Crater of Diamonds is a 911-acre state park in Murfreesboro, Arkansas that contains a 37.5 acre plowed field in which visitors can literally dig for diamonds. It's the world's only diamond-bearing site that's accessible to the public.

A close-up of the diamond. (State Parks of Arkansas)

Terry Staggs holding his "Patriot Diamond" in the field in which it was found.

Staggs holding his diamond and his certificate from the state park.

The world's most perfect diamond (the 3.03-carat D-flawless Strawn-Wagner Diamond) was found there in 1990, and the largest diamond ever discovered in North America (the 40.23-carat Uncle Sam) was found there in 1924. Other gems and minerals that can be found at the Crater include quartz, amethyst, garnet, jasper, and peridot.

Dozens of tiny diamonds are found in the field annually, but the Patriot Diamond is by far the largest stone to be found so far this year. Mr. Staggs, originally of Richmond, Kentucky, had been wandering the park for about 2 and 1/2 hours before he spotted the diamond in the field. He said he's visited the park and its diamond field several times a year for about 28 years.

From http://finance.yahoo.com/news

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Would You Buy a 'Man-Made' Diamond?

By: Sri Jegarajah
Senior Correspondent, CNBC Asia Pacific, 16 Apr 2013

With their polished sales pitch and discrete security, it looks like just another high-end diamond show room in a well-heeled Asian capital.

The stones were probably mined in South Africa; cut, polished and finished in India and shipped to the luxury-hungry markets of Singapore, Hong Kong and Shanghai.

But the source of these precious stones is way closer than you think.

Just yards from the display cases in an unassuming industrial park in northern Singapore, is the city's first 'above-ground' diamond mine owned and operated by privately-held Type IIa Technologies.

But there's not a grim-faced mine worker in sight.

That's because the company claims it can produce - or grow - the purest and rarest grade of rough diamonds (Type IIa) in a laboratory process called Microwave Plasma Chemical Vapor Deposition. Put simply, carbon atoms are layered on top of an initial diamond 'seed,' fast-tracking a natural process lasting many millennia to a matter of months.

And because these stones are lab-made, they're good for the environment and are free of the 'blood diamonds' stigma that's so tainted their traditionally-mined counterparts.

Breakthrough?

According to the company, competitors around the world have been trying to develop the purest Type IIa diamonds, but here, in Singapore, is where the breakthrough has happened.

Technical director DS Misra says eight years of R&D gave them the edge.

"That eight years was enough time for us to understand each and every bit of the technology in the process, to be able to achieve the success, which others have found very hard," Misra told CNBC.

We couldn't film the process as the developers said it was commercially-sensitive. But Managing Director Vishal Mehta says there's increasingly strong demand for its lab-grown diamonds from high-tech industries like semi-conductor makers to heavy industry.

"We are really excited to say that the overwhelming response from customers has been absolutely fantastic," Mehta said. "We bring the ability to use diamonds in many, many different applications beyond the traditional usage of diamonds."

The World Jewelry Confederation defines synthetic diamonds as: "A man-made reproduction of a diamond that has essentially the same chemical composition, crystal structure and physical properties as its natural counterpart."

Prestigious

Steve Benson, communications director at the Confederation says there is nothing illegal about a synthetic diamond, as long as the consumer is expressly informed that this is what he or she is buying.

"If the diamond is not qualified as 'synthetic' then the consumer has not been provided with what is necessary in order to make an informed purchasing decision, and he or can claim to have been deceived," Benson said.

But do lab-grown diamonds command the same recognition, premium and prestige as their traditionally-mined counterparts?

Yes, they do - depending on the market segment - according to the International Diamond Council's Ya'akov Almor.

Man-made diamonds have a critical and growing role to play in industrial applications such as mining, construction and electronics.

"Synthetics have a place in the market and it's completely legitimate market. There is a need for flawless, clean, synthetic diamonds especially for the semi-conductor industry,"Almor said.

In fact, synthetics have a decades-old history in the industrial market.

History

Starting in the 1950s, research scientists at GE began developing near-gemstone quality synthetic diamonds for industrial purposes using an ultra-high pressure system called the 'diamond press.' In 1982, Sumitomo Electric synthesized a 1.2 -carat single crystal diamond, one of the world's largest man-made stones at the time.

And for over 50 years, Element 6 - part of the De Beers group - has been designing, developing and creating what it calls synthetic diamond super-materials. And De Beers sees "very exciting potential" for synthetics in industrial applications, spokesperson Lynette Gould told CNBC.

Naturally, problems arise when synthetic diamonds are mixed in with natural stones. "That's the last thing that jewelers want," remarked the International Diamond Council's Almor.

Such adulteration happened two years ago with the appearance in 2011 of a large batch of synthetic diamonds believed by their dealer to be natural.

"An analysis by a grading lab revealed that the entire batch was synthetic," according to a 2012 report on the global diamond industry by Bain & Co. and the Antwerp World Diamond Center.

"The event was unsettling, raising concerns that high-quality counterfeit diamonds had slipped into the market. The batch in question was created through a process known as chemical vapor deposition (CVD), which produces stones that a diamond dealer cannot distinguish from natural diamonds without special equipment," the report said.

The event highlighted the importance of diamond certificates to ensure the authenticity of purchased stones.

Distinction

De Beers' Lynette Gould is also swift to stress the distinction.

"Diamonds are a natural mineral, created in the earth billions of years ago," she says. "Synthetics aren't the same thing, and to call them diamonds is misleading. Diamonds have captured peoples' hearts and imaginations for centuries and as such have always held their value, both financially and emotionally."

Veterans of the diamond industry are crystal clear on one further matter. Consumers of high-end diamond jewelry want the real deal and are willing to pay up.

"The majority of consumers have told us during extensive independent research that they want the real thing and aren't prepared to settle for anything less," De Beers' Gould said.

IDC's Almor is equally emphatic. "Synthetic diamonds take the emotion out of the equation and put the price point in the center and that's not always what the customer wants."

Shlomo Tidhar, CEO of Singapore Diamond Exchange has the last word.

"I believe that it will be very hard for me as a man to buy a woman I love a synthetic diamond," said Tidhar. "That's going to be difficult for me to do, I'm not sure if she will accept it and me myself would be reluctant to do it."

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Very appropriate techniques for carving opal – The Editor

Carving the Commissioned Sunstone

By Sherris Cottier Shank

In December 2010 I received a piece of sunstone rough from clients who live in Washington State. They had mined the sunstone themselves at the Spectrum mine near Plush Oregon. The owner of the mine suggested that they get the rough carved and recommended me to do the job. I was pleased and honored to be involved in their project.

I have carved sunstone for several other sunstone mining clients in the past and truly enjoy bringing out the best their hard won sunstone has to offer.

Oregon sunstone comes in a variety of qualities and colors and if they are inclusion free, most of them can be carved to great effect. From the deep cherry red crystals to the gems that combine red and green, to the sunset colors with schiller in them, all offer superior carved gem potential. Some of the sunstones I have carved for clients have become sculptures and some have become gems to be set into jewelry. Each one is individual and requires its own special design.

This article details the steps involved in carving a piece of rough for a client, and the artistic decision-making process required to release the best possible carved gem from the raw crystal. I took photos during the process to show the clients why certain sections of rough needed to be removed and to illustrate how the carving evolved into its finished form.

1 - Original Rough

The client's original piece of rough weighed almost 70 cts, and exhibited typical sunstone color distribution with a core of sunset red color in the center surrounded by areas of clear crystal. Most of the clear crystal areas were filled with large planes of inclusions that had to be removed. Fortunately most of the red area was inclusion free.

Because the inclusions were extensive, I was going to have to saw away a lot of the original

2 - Inclusion Planes Outlined

crystal and I estimated that the final gem would weigh 10 cts. This is always a hard pill to swallow when you are looking at a large piece of rough, but after

years of gem carving I know that is best to cut your losses and celebrate the parts of the gem that are whole and workable. I call this "the zen of carving." We were all surprised and delighted when the finished weight turned out to be 16.27 cts. Sometimes the universe is kind.

The clients and I discussed the style of carving they would most like to have. Because the rough did not have a lot of depth it was suitable for one of two styles, either a flat bottom carving or a briolette. A flat bottom carving is cut with a flat bottom like a cabochon but the top is dimensionally carved. A briolette style carving is shaped like a drop and drilled from the top. It can be suspended from a bail with a post that is cemented into the drill hole.

3 - Saw Cut Outlined

The clients chose a briolette style carving because it would show the maximum amount of the finished gem and would be easiest to set.

This is the rough (Photo 1) as I received it. The long white line in the upper left quadrant is the edge of one of the many plane-like inclusions in the clear crystal area. I sent the client several photos showing these inclusions and explained that all of the clear crystal areas would need to be removed.

Here you can see (Photo 2) the major planes of inclusions outlined with a sharpie pen. The inclusions start in the red section of the rough but do not penetrate the whole depth of the stone in that area. They slant down into the white crystal areas where they fill the whole depth of the rough.

4 - After first cut

The curved line running through the included area (Photo 3) shows where I will make the first saw cut. This allows me to saw off all the parts that are fully included, while leaving the included parts in the red area untouched. After the largest included areas in the clear crystal section have been removed I will remove the inclusions in the red area slowly, taking off only as much gem material as is absolutely necessary.

This is the end view (Photo 4) of the rough after I have sawed off the major portions of inclusions in the white crystal area. The black lines outline where there are still inclusions to be removed. I will slice off only the surface sections containing the remaining inclusions, retaining as much of the red areas as possible.

5 - after all cuts

This is the rough (Photo 5) after all the sawing and ready for "preform." Most of the white crystal areas have been removed as well as surface sections of the red area. There are still inclusions in the rough that need to be eliminated but those will be ground out with diamond tools in the pre-forming stage, or in some cases carved through and incorporated into the final design. At this point the rough weighs 43.45 cts.

6 - Sunstone Preform

Here the sunstone has been preformed (Photo 6) into its briolette shape. You can see where there is a long natural indentation that I will develop into a curving groove in the final piece. The preform weighs 26.72 cts.

7 - Preform Side View

This photo (Photo 7) shows the side view of the sunstone preform. The long white line that is visible on the side is the edge of a flat plane inclusion that penetrates about 2 mm into the gem. I will carve through this inclusion and incorporate it into the final design.

8 - Carving Pattern

Here (Photo 8) the carving is marked with the carving pattern. You can see I was working around the large indentation and using that as a design focal point.

This is the carving pattern marked on the other side of the sunstone preform (Photo 9). The two sides are quite different from one another. This side has several inclusions that still need to be removed. The pattern that I have chosen will carve through those inclusions while saving the best parts of the gem.

9 - Carving Pattern Reverse

In this photo (Photo 9) I have lightly sketched in the pattern for the carving with diamond tools on the first side of the briolette. I have also drilled the hole at the top.

9 - Diamond Tool Sketching

This photo (Photo 10) shows the carving pattern lightly sketched in with diamond tools on the other side of the briolette. From this point on it is a matter of opening up those grooves, refining the design, sanding and polishing.

10 - Diamond Tool Reverse

Here is the finished briolette (Photo 11) that weighs 16.27 cts. You can see that all of the grooves are fluid and graceful and the carving circles the entire circumference of the briolette moving gracefully from side to side. The briolette style of carving allowed me to retain more of the gem weight than I

11 - Finished Briolette

12 - Finished Briolette Reverse

originally thought possible, and to show the beauty of the gem from all angles.

This is the other side (Photo 12) of the briolette where you can see distinct schiller in the upper right quadrant. Schiller is caused by copper inclusions within the sunstone that shimmer and glow in the light. This side is distinctly different than the first side and the briolette can be worn to display either direction.

The clients were very pleased with their sunstone briolette, commenting "Wow-We-Wow! We're so impressed with your work. Thank you very much." They note that sunstone mining is very hot, but they now have the bug to do it again.

From the March and April 2011 Pick and Pan Bulletins of the Colorado Springs Mineralogical Society- http://www.csms.us

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January 2014 Gem & Mineral Shows

More shows can be found at http://www.rockngem.com/show-dates-display/?ShowState=ALL

3-5—HILLSBORO, OR: Wholesale and retail show; Gem Faire Inc.; WA County Fairgrounds; 873 NE 34th Ave.; Fri. 12-6, Sat. 10-6, Sun. 10-6; adults $7, children (0-11) free; fine jewelry, gems, beads, crystals, silver, rocks, minerals, exhibitors; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

3-12—QUARTZSITE, AZ: Annual show; Tyson Wells Enterprises Inc.; Tyson Wells Show Grounds; 100 W. Kuehn St.; Daily 9-5; free admission; dealers from around the world; contact Kym Scott, PO Box 60, Quartzsite, AZ 85346, (928) 927-6364; e-mail: tysonwells@tds.net; Web site: www.tysonwells.com

10-12—SANTA ROSA, CA: Wholesale and retail show; Gem Faire Inc.; Sonoma County Fairgrounds; 1350 Bennett Valley Rd.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults $7, children (0-11) free; fine jewelry, gems, beads, crystals, silver, rocks, minerals, exhibitors; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

17-19—DEL MAR, CA: Wholesale and retail show; Gem Faire Inc.; Del Mar Fairgrounds; 2260 Jimmy Durante Blvd.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults $7, children (0-11) free; fine jewelry, gems, beads, crystals, silver, rocks, minerals, exhibitors; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

17-26—QUARTZSITE, AZ: Annual show; Tyson Wells Enterprises Inc.; Tyson Wells Show Grounds; 100 W. Kuehn St.; Daily 9-5; free admission; dealers from around the world on 25 acres; contact Kym Scott, PO Box 60, Quartzsite, AZ 85346, (928) 927-6364; e-mail: tysonwells@tds.net; Web site: www.tysonwells.com

18-19—EXETER, CA: Annual show; Tule Gem & Mineral Society; Exeter Veterans Memorial Bldg.; 324 N. Kaweah Ave.; Sat. 10-5, Sun. 10-4; free admission; kids' Rock Treasure Hunt, Wheel of Fortune, prize drawing, door prizes; contact Pepper Okada, 5924 W. Iris Court, Visalia, CA 93277, (559) 733-5842; e-mail: pepperok@clearwire.net; Web site: tulegem.org

18-19—YACHATS, OR: 3rd Ever Yachats Agate Festival; Yachats Chamber of Commerce; Yachats Commons; 4th and Hwy. 101; Sat. 10-4, Sun. 10-4; free admission; minerals, gems, fossils, special displays, lectures, dealers, demonstrations; contact George Mazeika, PO Box 818, Yachats, OR 97498; e-mail: georgmaze@charter.net; Web site: www.coastagates.org/rock-gem-shows

24-26—SAN RAFAEL, CA: Wholesale and retail show; Gem Faire Inc.; Marin Center; 10 Avenue of the Flags; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults $7, children (0-11) free; fine jewelry, gems, beads, crystals, silver, rocks, minerals, exhibitors; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

1-28—QUARTZSITE, AZ: Wholesale and retail show; Desert Gardens RV Park; Desert Gardens RV Park; 1064 Kuehn St., I-10 Exit 17; Daily 10-6; free admission; AR quartz crystals, rough and polished minerals, fossils, jewelry,

gifts, lapidary equipment; contact Sharon (manager), 1055 Kuehn St., Quartzsite, AZ 85346, (928) 927-6361; e-mail: info@desertgardensrvpark.net; Web site: www.desertgardensrvpark.net

1-28—QUARTZSITE, AZ: Annual show; Desert Gardens Holdings LLC; Desert Gardens Show Grounds; 1055 Kuehn Rd.; Daily 9-5; free admission; hundreds of dealers; contact Dennis Kuehl, 1055 Kuehn Rd., PO Box 2818, Quartzsite, AZ 85346, (623) 606-0053; e-mail: cad53148@yahoo.com; Web site: desertgardensrvpark.net

30-16—TUCSON, AZ: Annual show; Eons Expos; Tucson 22nd Street Show; intersection of I-10 and 22nd Street; Daily 9-6; free admission; minerals, fossils, dinosaurs, meteorites, gems, jewelry, rough rock; contact Christine Perner, 38 Fox Ridge Rd., Sparta, NJ 07871, (516) 818-1228; e-mail: Christine@EonsExpos.com; Web site: www.22ndStreetShow.com

31-2—PROVO, UT: Annual show; Gem Faire Inc.; UT Valley Convention Center; 220 W. Center St.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults $7, children (0-11) free; fine jewelry, gems, beads, crystals, silver, rocks, minerals, exhibitors, jewelry repair while you shop, door prizes; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

31-16—TUCSON, AZ: Miners Co-op Rock Show; independent miners; Kino Sports Complex; 6107 N. Travel Center Dr.; Daily 9:30-5:30; free admission; outdoor show, dealers, jewelry designers and artists, rocks, gems, minerals, jewelry and lapidary supplies; contact Bob Scholl, 6675 Old Ridge Rd., Fairview, PA 16415, (307) 714-0160; e-mail: bob@reallyoldrocks.com; Web site: www.tucsonrockgemmineralshow.com

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AOS Calendar for 2014

Below is the AOS Calendar for 2014.

American Opal Society Calendar	
Date	***General Meeting Topic / Speaker***
01/09/14	**Gregg Bunch on Lab Created Quartz Crystals**
02/13/14	*To Be Announced*
03/13/14	*To Be Announced*
04/10/14	*To Be Announced*
05/08/14	*To Be Announced*
06/12/14	**Live Opal Auction**
07/10/14	*To Be Announced*
08/14/14	**Opal Cutting Seminar**
09/11/14	*To Be Announced*
10/09/14	**Opal & Gem Show Work Session**
11/08/14	**47th Annual Opal, Gem, & Jewelry Show**
11/09/14	**47th Annual Opal, Gem, & Jewelry Show**
11/13/14	**Opal Show Recap / Possible Speaker**
12/11/14	**AOS Christmas Party Potluck**

American Opal Society Membership Application

FILL IN APPLICABLE INFORMATION		DUES / FEES)	AMOUNT PAID
DUES: SELECT ONE	RENEWING MEMBERS	$30	
	NEW MEMBERS	$40	
INTERNATIONAL MEMBERSHIP FEE (All addresses outside of USA)		$10	
PRINTED NEWSLETTER FEE (Paper copy postal mailed instead of PDF file by e-mail)		$5	
ADDITIONAL BADGES (Your First Badge is free when joining)		$10	
TOTAL PAID DUES plus International, Print or Badge Fees if Applicable:			

Please make check or money order payable to "*American Opal Society*". Mail payment and application to:

American Opal Society; PO BOX 4875; Garden Grove, CA 92842-4875

An optional, quicker method of payment is via the Internet. To pay, just visit the membership page on our website at http://opalsociety.org/aos_application_by_web.htm and complete the form. You may pay with a Credit Card or via PayPal account. The transaction is completely secure and the AOS never sees your credit card number. The AOS PayPal account is membership@opalsociety.org.

NAME		
BUSINESS NAME		
ADDRESS		APT # or PO BOX
CITY		STATE
ZIP or POSTAL CODE	COUNTRY (IF OUTSIDE USA)	
PHONE - Home ( )	PHONE - Business ( )	FAX ( )
E-MAIL		
WEBSITE		
OCCUPATION	HOBBIES AND INTERESTS	

NAME BADGE ORDER FORM: PLEASE PRINT NAME AS YOU WISH IT TO APPEAR ON YOUR BADGE using up to two (2) lines of text for your name, nickname, or name of your opal related business.

MEMBERSHIP ROSTER: The AOS publishes a membership directory once per year in its Newsletter, the *Opal Express*. Your name will be included. Please check what additional personal information that you want listed for other members. If it is different from the information above, please note that on the application.

☐ Address ☐ Phone ☐ E-mail ☐ Website

Please sign here: _____ Date _____

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Are Your Dues Due Now?

PLEASE CHECK YOUR ADDRESS LABEL or NEWSLETTER E-MAIL. There should be a date that shows the current month/year of your membership. If the date is older than the current date, your dues are overdue. A warning will be stated if you are overdue.

A Renewal Grace Period of two months will be provided. Please note, however, that as the system is now set up, if your renewal is not received you will be AUTOMATICALLY dropped from membership thereafter. It is your responsibility to assure your dues are current.

Thank you,

The Editor

The Opal Express
American Opal Society
P.O. Box 4875
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Volume #47 Issue #1
January 2014

TO:

Some Topics In This Issue:

- **Opal Mystery Shows Red Centre's Links to Red Planet**
- **The Formation of Precious Opal**
- **Grinding, Sanding & Polishing Procedures for Opal Matrix**
- **Never Buy Jewelry Cleaner Again!**
- **Man Finds a 2.95-Carat Diamond in Arkansas**
- **Carving the Commissioned Sunstone**

Important Dates:

January 9 - General Meeting:

- **Gregg Bunch will give a talk on lab-grown quartz**

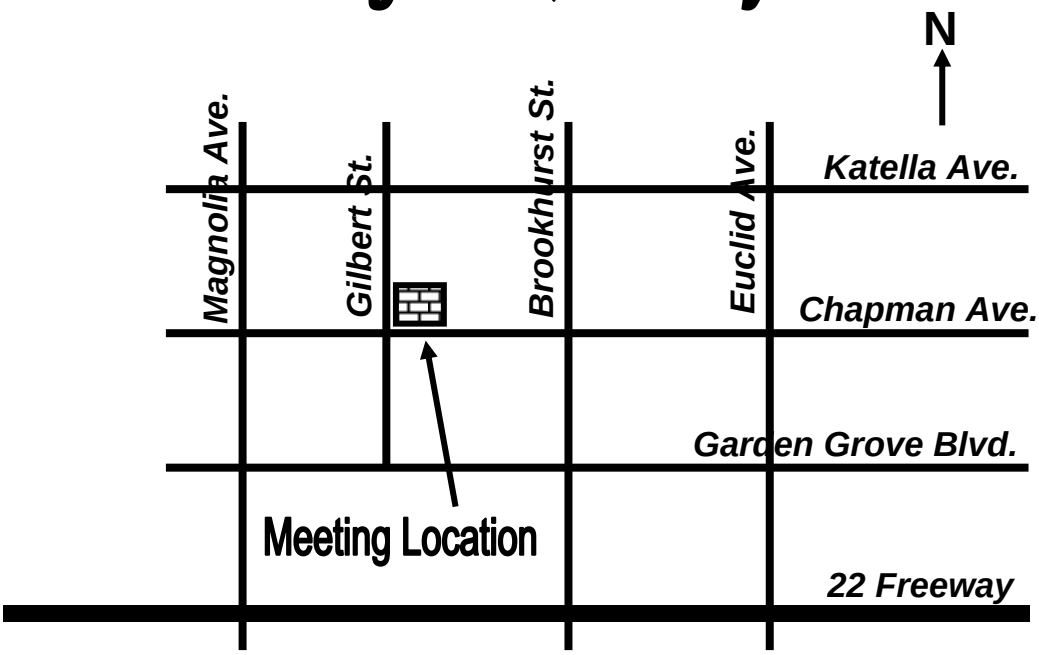
January 9 Speaker:
Gregg Bunch on
Lab-grown Quartz Crystals

— *GENERAL MEETINGS* —

2nd Thurs. of the Month
7:30 pm - 9:30 PM

Garden Grove Civic Women's Club
9501 Chapman Ave.
Garden Grove, CA 92841
(NE corner of Gilbert & Chapman)

MEETING ACTIVITIES
Opal Cutting, Advice, Guest Speakers, Slide Shows, Videos, Other Activities



The American Opal Society
http://OpalSociety.org

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