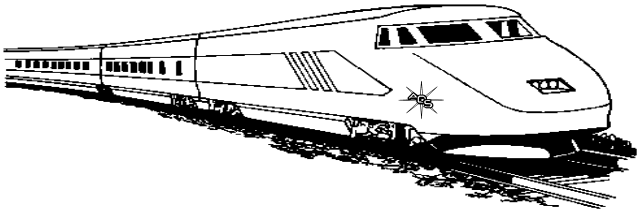
The Opal Express



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President's Message

By Pete Goetz

Hey folks, how is everyone doing? Fine I hope. Well, I hate to sound like a broken record, but..., if you were not at the last general meeting, you missed a lot of fun and quite possibility missed out on a good deal or two. We had another one of our 'infamous' auctions. Jim lamberts auctioning skills(??) kept the bidding at a frenzy. Fun was had by all and just about everybody walked away with a new treasure.

Monday, June 28th, the AOS hosted a Girl Scout troop from Santa Monica, at the Ball Jr High workshop. Lots of discussion and hands-on experience were the keys to keeping the young ladies and the adult supervisors with a lot to do. A discussion of the chemical make-up of OPAL and a demonstration of various types and color bases of Opal lead our evening off to a good start. Stan and Jim elaborated a bit on the physics of light and how it relates to creating color within OPAL. Eva kept a few ladies tied up at the Mexican OPAL tray -go Eve. Lavern Give a talk and provided some show-and-tell pieces of Art/Metal Clay jewelry that seemed to have stirred a high interest level. Stan, Jim, and Cory fired up the pixies and demonstrated how to cab an OPAL. Most of the girls had an opportunity to try their hand at grinding a stone. Several girls, with 'some' help, cut a couple nice stones. And as usual, Stan cut a really nice one from my " junk box'. He does this all the time, maybe I should learn a bit more about OPALS.

Laverne Christenson demonstrates Art Metal Clay to the Santa Monica Girl Scout Troop.

One of the scouts polishes some Oregon blue opal that she and her family had collected.

July's speaker will talk on Diamonds. This should be a really fascinating talk.

Again, its getting close to show time, come-out, come-out were ever you are...

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The AOS Live Auction Was a Success!

The AOS held its fifth AOS live auction, on Thursday, June 10. WE had a great turnout and a lot of money changed hands! Some really good stuff was auctioned off. Corey Kuepper offered some great boulder opal that was very popular. Jim Pisani got a whole lapidary set for $10!

July Speaker – Walt Lombardo on Diamonds Occurrences in North America

Our speaker for the July 8th meeting will be Walt Lombardo on **Diamonds Occurrences in North America.** Here is a synopsis of his talk:

Diamonds are found on a variety of rock types and from a wide range of geologic ages. In a relatively short time, Canada has become one of the world's leading diamond producers. Several diamond-bearing pipes are known in the United States, and more are suspected. This talk will cover the geology of diamond host rocks, indicator mineralogy, areas of known diamond fields, and areas of future potential (including California).

Walter Lombardo is a geologist with over 30 years of experience working with or in the mining industry. For 16 years he managed the Southern Nevada Office of the Nevada Division of Minerals, a state agency which oversees the mining, oil, gas, and geothermal industries. He also worked as geologist for American Borate Company (Death Valley), Cyprus Gold (California Mother Lode), and Desert Research Institute in Las Vegas. More recently he was Manager of North American Exploration for War Eagle Mining Company, where he was involved in projects in Indiana, Illinois, Kentucky and the Czech Republic. In August 2009, Walt relocated Nevada Mineral & Book Company (an earth science bookstore and natural history gallery) to Orange, California.

Walter Lombardo can be reached at Nevada Mineral & Book Company, 342 S. Tustin Street, Orange, CA 92866, phone (714) 633-1549 and www.geologicpublications.com.

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Members Only Website Password

The password for the members only area is "**flash**".

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If any of you have the time, please attend this meeting to show that rockhounds would like to keep our public land open to collecting.
The Editor

Notice of a Public Listening Session on Closing Public Lands

By Dick Pankey, President, American Lands Access Assoc. and CFMS PLAC com

A few days ago I received the following invitation "NOTICE OF A PUBLIC LISTENING SESSION ON THE PRESIDENT'S AMERICA 'S GREAT OUTDOORS INITIATIVE IN LOS ANGELES." The entire invitation is posed on the ALAA web site. I don't know much about it but it seem to be legitimate and something that we as ALAA and CFMS members and rockhounds should know about and be involved with. **John Martin** has found a copy of the original Initiative in the federal Register issued April 16, 2010. It is posted on the ALAA web site.

Glen Miller from the CFMS PLAC committee sent me this memo: I too hope that at least several of the LA folk interested in public access to public lands will become informed about this program and attend.

In reading over the first offerings I noticed several ideas that already have been inserted that seem to be riding along under the great-sounding promotion of reconnection of urbanites to the outdoors.

The mention of establishment and expansion of corridors caught my eye as one ideological extension of the Earth First agenda to fence off most public lands from human access except for narrow transportation byways. That this idea is included in an initiative supposed to promote urban interest and access to the outdoors makes the program suspect to me. I'll be writing in thoughts to the program organizer.

Any and all who can attend this session and any others that get announced, please do so. All rockhound should wear a Rockhound Sticker button, patch or pin to identify who they represent and who they speak for. There are over 10,000 rockhound in 120 societies in the CFMS and over 52,000 rockhounds in 640 societies in the AFMS. These are the affiliated, card carrying rockhounds. There are many millions of unaffiliated rockhounds and users of our public lands. We speak for them and represent their interests, also.

If you attend this "listening session" please give them something to listen to. Speak up and let them know that we the rockhounds, now and for many years, have used our public lands and we plan on doing so in the future. And we hope it will continue without unnecessary complications and restrictions. How our public lands are managed now by the BLM and FS is working. We **DO NOT** need more Wilderness designated land and we **Do Not** need any more monuments.

Who ever attend this meeting please e-mail me a report and let me know what you learned and what you told them. We need to be aware, involved and participate in the process.

Here is the notice:

NOTICE OF A PUBLIC LISTENING SESSION ON
THE PRESIDENT'S AMERICA'S GREAT OUTDOORS INITIATIVE

Please join senior representatives of the U.S. Environmental Protection Agency (EPA), the White House Council on Environmental Quality (CEQ), the U.S. Department of Agriculture (USDA), the U.S. Department of the Interior (DOI) and the U.S. Department of Defense (DOD) for a public listening session and discussion in Southern California on conservation, recreation, and reconnecting people to the outdoors. The session will be held July 8 from 3:00 pm to 7:00 p.m. at Occidental College in Los Angeles.

This past April, at the White House Conference on America's Great Outdoors, President Obama launched the America's Great Outdoors Initiative to develop a 21st century conservation agenda and to reconnect Americans with our great outdoors. The President asked his leadership team to engage the full range of interested groups, including State and local governments, community-based organizations, recreation and conservation groups, sporting organizations, youth groups, and others.

This Los Angeles-based listening session, one of several being held around the country, offers an opportunity to hear and describe the challenges and opportunities we face in land and water conservation, in improving recreational opportunities for a large urban population, and in restoring and conserving our vital natural and cultural resources to enable access to a broad array of outdoor recreation. The July 8th public listening session and discussion is an opportunity for the leaders of the America's Great Outdoors Initiative to hear from you and other voices in the region about solutions for building a 21st century conservation and recreation agenda and for reconnecting people with the outdoors. Here are the details:

Listening Session and Discussion Information:

When:	Thursday - July 8, 2010, 3:00 pm to 7:00 pm
Where:	**Thorne Hall** **Occidental College** **1600 Campus Road** **Los Angeles, CA 90041** (See map at http://www.oxy.edu/x6307.xml)
Who:	Senior national and local leaders from US EPA, CEQ, USDA, DOI and DOD will be present to hear your recommendations and to participate in a conversation with you about America's Great Outdoors.

Please Register:

This event is free and open to the public. For planning purposes, please register by Thursday, July 1st by sending an email to sun.nelly@epa.gov with your name, the name of the organization with which you are affiliated, if any, your telephone number and email address. We will endeavor to accommodate everyone.

In the event you are unable to participate in person, please submit your comments and stories.
If you have questions, please call Nelly Sun at (415) 947-4237. We look forward to your participation – please join us!

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Cutting Precious Australian Opal

By Nova Wells
Photo's by Carl Wells

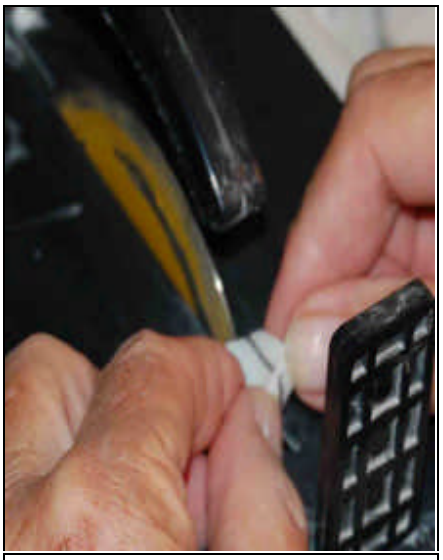
Cutting your first few pieces of precious Australian opal is one of the most exciting and scariest experiences in lapidary! Know before you start that you will spend more time studying and making decisions than actually cutting your stone. Opal is a classic teacher of patience. All opal is softer than any agate, so it cuts very fast and gets out of control quickly. Try to buy some "potch" opal (some with no fire) or get a piece of opalized wood or common opal to use as a practice piece before you start on expensive stones. By the time you get to the high quality opal you will have learned NOT TO USE THE COARSE GRINDSTONE OR THE COARSEST SANDING DRUM until you are very experienced with opal! Both of these wheels cut too fast and may chip the stone. The exception from using the "coarsest" is if your wheels are very well worn from long use.

Australian opal usually forms in layers while Mexican opal forms in pockets. This means the Australian opal you buy will often have a "top" and "bottom" that are fairly flat, and may not show any play of color (fire.) Begin your work in cutting by using the fine grindstone and going all the way around the rough stone, perpendicular to the top and bottom, so you can see how the layer of color lies. You are not trying to remove very much rock, only to expose the edge of the color. The layer or layers of color in Australian opal normally lie fairly flat although it may go through the stone at an angle. These may be as thin as a sheet of paper or as thick as the whole stone itself. The first decision to make is whether the layer of fire is thick enough to be domed into a cabochon. The stone doesn't have to be high dome but at least 1/16 inch is necessary to make doming easy.

Opal on dop stick for final shaping and polish.

If the layer is very thin and especially if there is more than one layer, you must decide whether to split the stone to make doublets or triplets, or cut the stone as is. The rule is **, the larger the stone, the more valuable it is.** A doublet or triplet will not appraise as highly as a solid stone. For the same reason you need to think twice before cutting an opal in half to make a pair of earrings. "Splitting" is done when there are two or more thin layers of fire. The goal is to cut through the "potch", between the layers of color, to make two stones. Hold your stone by hand and use a trim saw with a very thin diamond saw blade. Since a very thin diamond blade will cut your finger, put a very small stone on a dop stick or glue it to a block of wood. Fingers don't grow back.

Now that you've ground your way around the outside of the stone, perpendicular to the layers of color and using only the fine grind stone, it is time to learn what you can about the orientation of the color layer. Always use a single light bulb to check the orientation of your opal. Fluorescents will not give you true information about the way you see the play of color. Most opals show their colors best from one direction. Some are better horizontal and some vertical. When you have determined the best direction, check all four sides because the colors may change or be distinctly brighter from one direction. You can get an idea of this even if all you have showing is a fine line of color around the stone. Knowing something about the orientation will not change the way you cut the cabochon, but it will help you plan whether the stone can be in a ring or should be in a pendant. That may affect the way you shape the cab.

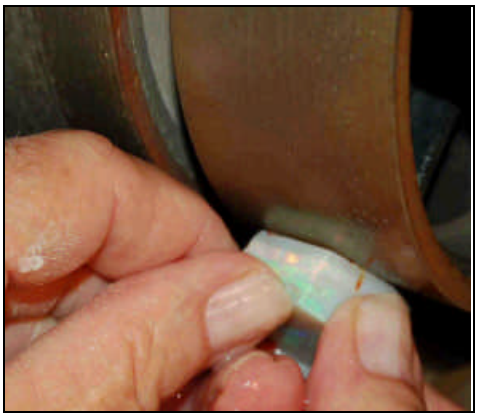


This piece will make two stones. Carefully mark the saw path with a waterproof pen and use a slitter blade to make the cut.

Finally you have made enough decisions to begin cutting your stone. Opal is known as "heat sensitive", which is a bit misleading. It can take a lot of heat and a lot of cold, but **it cannot take a sudden change in temperature**. Use more water than normal when cutting and be careful not to let the stone develop a hot spot from too much pressure. A light touch will also cut slowly enough to avoid losing control and keep your opal safe from chips and cracks.

We are now assuming that your opal is thick enough to cut a cabochon. Making doublets and triplets will not be discussed here. Begin by removing the "overburden" or potch opal from what you have decided will be the top of the stone. Grind down to the layer of fire. Is it as beautiful as you anticipated? The most common error in revealing the layer of fire is thinking the layer is getting brighter and brighter **until the cutter grinds all the way through the fire!** Grind only TO the layer of fire. Then if you can't see clearly, begin sanding and polishing the stone to see how the finished fire will look. Remember, you are learning more patience than you thought possible.

Check for flaws that penetrate the layer of color. If you find a flaw it's time for more questions. Should it be ground out or left? How much will you sacrifice if you grind more? I heard of one cutter who would "drill" out a small flaw and glue a tiny diamond in the hole of the finished opal cab! I have not tried that. If the top is disappointing should you turn it over and remove the potch from the bottom, making it



the new top?

You can dop opal safely if you start the stone at room temperature and heat it while you heat the dop wax. Avoid dropping hot dop wax on a stone that is room temperature! To remove the finished stone from the dop stick, place it in a glass of water and add one ice cube at a time, stirring with the stick and stone until the wax releases. There are other ways to dop such as the two part (blue and yellow) adhesive. You can learn more about those from your catalogue or dealer. Water soluble glue also works.

Determine the shape of the finished stone. Will it make a standard cabochon or will it be more attractive and valuable as a free form? How will you mount the stone? Commercial and hand made silver or gold mounts require a slope from the base for the bezel to grasp, while wire-wrap needs 1/8" straight edge.

Skip the course sander and follow the fine grind with the next three grades of sanding wheels just as you would when cutting an agate. Polish on a very wet felt wheel with tin oxide. Be especially careful to use light pressure and avoid a hot spot that could crack the opal.

I decided to cut an opal just for this article. I selected a very good grade of white, opaque Australian opal my husband had bought from a mine. I carefully followed the steps outlined previously. The rough stone was a little larger than my thumbnail. Two layers of fire were really incredibly beautiful.

The "top" I selected seemed to have pocket of "potch" right in the middle of the stone. The bottom was beautiful but had half a dozen black pits on one end. Using it as the top would mean grinding away a lot of opal. I decided to use my new hand power tool and remove the potch creating a concave stone.

Foiled again. The potch was actually a wedge shaped layer that took up about 25% of the center of the stone with a dull grey smudge in the middle of the fire. At a time like this the wisest choice is put the stone away for a couple of weeks and start a different project. Returning later, I determined the best way to save the stone was to saw off the end of stone with the black pits and cut them as the bottom of a small oval stone. The potch dip became the bottom of a larger, lovely cabochon. I certainly lost value by making two cabs. At least I had two cabs with flawless domes. I never keep opal in water or oil. If it is going to crack from dryness, it is a poor grade of opal and I'm better off without it.

When the stone is finally finished, the fun of designing and making a piece of jewelry begins. This is one of Nova's favorites, featuring the play of color in an Australian opal.

From the 9/2009 issue of The Hound's Tale, newsletter of the Arlington Gem and Mineral Club - http://www.agemclub.com .

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Welo Opal Cutting Tips

By Steve Newstrom

In the last few weeks I've gleaned some new insights for cutting the new Welo opals. So I've updated the previous instructions I've provided on Welo Opal cutting/carving.

Most of the opal from Welo is hydrophane opal. Hydrophane opal quickly absorbs water changing from crystal/semi-crystal to almost water clear. The play-of-color, though not entirely disappearing, fades out. But luckily this is only a temporary problem… when the finished cab or carving is left to dry for 3-4 days, the colors return to normal. Some of this opal goes through a stage when drying, where the base color becomes VERY milky. This opal may require a longer drying time to return to it's original colors... up to 2 weeks.

When cutting this material I use Elmer's Glue-All to glue the stone to a wooden dop stick. Allow the stone dry overnight, then coat the non-waterproof glue with a coating of clear fingernail polish to make it waterproof. I use a 220-grit diamond grinding dry wheel to rough grind the stone…dry. Opal's relatively soft and a 220-grit diamond wheel cuts fast enough and also doesn't leave the deep scratches (and won't be as likely to chip) that an 80 or 100-grit wheel will…especially when working dry. Watch for heat and dust (use a mask if you're doing a lot of opal cutting: opal dust can cause silicosis), but with light pressure on a diamond wheel, opal doesn't heat much. But it is important to check your stones temperature often as Welo opal can be heat sensitive. This opal can also be dopped using super glue and aluminum or brass rods. Stones can be removed easily by heating the dopping rods and loosening the super-glue...careful of stones temp.

I like to rough grind dry, to properly orient the stone. But once that is completed, I go to water-cooled cutting using a 320 grit belt…for more shaping of the stone. 600-grit will remove any flat spots and course scratches…then onto 1200-grit and 3000-grit...polish using your favorite method for opals. Remove the fingernail polish with acetone (careful acetone is VERY flammable). Soak in water 2-3 hours and the stone should fall off of the stick. If not let the stone soak overnight.

Carving Tips: I like to carve Welo dry, using a combination of Cratex points and felt buffs with diamond compound. Cratex can be used dry (careful of heat) and you won't have color change problems found when cutting wet. But the commercial color-coded diamond compound in syringes will dye the opals. The 1200 grit blue compound will produce opals of a nice robin's egg blue...so I mix diamond powder with baby oil for the 1200, 3000, 14,000 and 50,000 grit stages. If you'd like a different consistency try Vaseline, melted bees wax, Crisco or vegetable oil.

Keep in mind this is just one of many cutting techniques that will accomplish the same thing…a beautiful, well cut opal cabochon. The important things to remember are: cut slowly, avoid over-heating your stones, smooth out flat areas and polish your opals well…checking carefully for scratches.

If you have any questions (or comments) don't hesitate to call or e-mail...406-651-4947 or vsmithy@bresnan.net.

From the village smithy opals - http://www.villagesmithyopals.com

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Opal: Delicate Beauty in a Watery Orb

By Victoria Gomelsky
May 20, 2010

PEDRO SEGUNDO, BRAZIL — On a recent trip to this town in the state of Piauí, in "the middle of nowhere in the Brazilian opal fields," Jürgen Schütz, president of Emil Weis Opals, a dealer in Idar-Oberstein, Germany, struggled to send an e-mail dispatch.

"For an unknown reason the computer deleted my first message, so I have to do it again," Mr. Schütz wrote, before recapitulating his point: "Diamonds you buy with your head or brain — you can easily compare the certificates with each other — but opal you have to choose with your heart and your soul."

This conviction, shared by lovers everywhere of the fiery, multihued gem, rests on a number of idiosyncrasies. Start with the obvious one: In opal's most resplendent and recognizable, though by no means definitive, form, it resembles the earth as seen from outer

space, a tempest of blue-green swirls punctuated by unpredictable and otherworldly flashes of color.

The opal's painterly palette reflects its unique chemistry. An amorphous composite of watery silica spheres, it lacks the crystalline quality that allows most stones to be faceted.

On the downside, opal carries heavy spiritual baggage. Saddled with a host of superstitions, it has been often called an unlucky gem, despite also being feted as a birthstone.

In "The Curious Lore of Precious Stones," published in 1919, the gemologist George Frederick Kunz attributed the opal's jinxed reputation to a popular misreading of an episode in Sir Walter Scott's 1829 novel, "Anne of Geierstein," in which an opal's loss of color was associated with death.

Whatever the explanation, a persistent rumor of bad juju has made no difference to designers, who have lately gone crazy for the gem.

"If there were a support group called Opals Anonymous, I'd join," said Ann Ziff, a doyenne of New York society whose Tamsen Z collection features Australian black opals in combination with tanzanite, aquamarine and other gems that pick up on opal's signature "play of color" — the changing patterns of color that occur when light is refracted by the gem's sub-microscopic spheres.

Ms. Ziff is not alone. The designer Victoire de Castellane of Dior says she fell in love with opals at age eight, after spying one set in an antique jewel.

Another devotee is the celebrated artist-jeweler Marilyn Cooperman. "Opal for me is a soothing stone, but far from dull," Ms. Cooperman said. "It has soft fire."

The last time high-end designers flipped for opal on this scale was a century ago, at the height of the Art Nouveau period. In the hands of the master jewelers René Lalique and Louis Comfort Tiffany, opal enjoyed a reputation as a mystical, moody stone in line with the era's longing for nature, fluidity and movement.

That ended when the geometric certainties of the Art Deco age clashed with its delicate sensibilities. Scorned by the high end, opal lost its magic touch.

Now, for its new admirers, its rediscovery carries the charge of an almost religious conversion.

"Opal wasn't something that ever made me say wow," the designer Kimberly McDonald said. "Then I happened to see one set in its matrix and it immediately reminded me of one of my favorite paintings. It was so van Gogh."

That was two years ago. Since then, Ms. McDonald has incorporated two unusual varieties of opal into her collection, both sourced from Mr. Schütz. One is a black-and-white "zebra opal" from a little-known mine close to Andamooka in South Australia. The other is boulder opal from Queensland, which is cut, polished and set inside its host rock, a brown ironstone.

Australia produces upwards of 95 percent of the opal on the world market, from cheap doublets, which typically feature a thin layer of milky opal adhered to a black backing with glue, to extraordinary black opals from a legendary deposit at Lightning Ridge, which can fetch $500,000 at wholesale.

Opal is considered one of the most difficult stones to value because the factors that determine its worth go well beyond the four C's of diamond evaluation: cut, clarity, color and carat weight. Does the opal contain recognizable patterns such as harlequin, peacock tail or pinfire? How thick is the color bar? Can it be domed?

The scarcity of fine Australian opal has driven some designers to experiment with new varieties found in out-of-the-way corners of the world.

The Mexican state of Jalisco, for example, turns out a rich, honey-like variety known as fire opal. American designers, from the Beverly Hills jeweler Martin Katz to Jamie Joseph in Seattle, to the urbane Manhattanite Nicholas Varney and Mish Tworkowski, are smitten with it.

Peru produces ethereal varieties of blue and pink opal, with opaque, silky textures. "I mix them with pearl," Mr. Tworkowski said of the blue Peruvians. "Both have that 'from the sea' quality."

As exotic pedigrees go, it is tough to beat the flaming orangey-brown opals of Ethiopia. Last year, Van Cleef & Arpels introduced the California Rêverie high jewelry collection, a boho-glam lineup of jewels designed to capture the landscapes of the state, circa 1975. One of the collection's star attractions was a $350,000 clip centered on a 100-carat round opal from the Mezezo region in Ethiopia's Shewa Province.

"During a meeting, we were looking at the stones in our safe and someone said, 'This is a sunset, by itself,"' recalled Nicolas Bos, Van Cleef & Arpels's worldwide creative director. "The stone is the design and we just need to make it obvious."

Opals occasionally suffer from instability, meaning they can lose water from their structures and crack, a process known as crazing.

"Opal is a living stone in that it contains water," said Robyn Dufty, owner of Dufty Weis Opals, based in Maysville, Kentucky. "Don't put it in an environment where you wouldn't put your skin. You don't want to shock it, or heat or freeze it too quickly."

One theory is that opal's still often dubious reputation has to do with this fragility. "It really stems from the days when jewelers were liable for breaking the stones," said Solange Azagury-Partridge, the London designer. That kind of word-of-mouth is difficult to transcend, especially when it circulates in a close-knit and far-flung cottage industry.

"The premise of selling is marketing, and poor old opal has never been marketed," said Andrew Cody, director and founder of Cody Opal, one of Australia's largest wholesalers. "There are thousands of miners. They're adventurers, but they're not sophisticated businesspeople."

From http://www.nytimes.com/2010/05/21/arts/21iht-acajopal.html

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Visiting a Mexican Opal Mine

By Robb Pocklington and Ruth Riza, M.S.

Recently our new members, Robb (Doc) Pocklington, Jane Pocklington, and Stephen Bennett visited the Mexican city of Tequisquiapan, (state of Querettaro) to go to the opal mines there. This is an account of their trip.

Robb's daughter's husband's family lives in the city of Saltillo, Mexican state of Coahuila (about an hour west of Monterrey, Mexico), so we always cross at Laredo. You can also cross at Eagle Pass, Texas if you have been shopping in San Marcos, and the drive to Saltillo from Eagle Pass is about 260 miles or a 5.5-hour drive. We buy insurance on the American side, and then we spend an hour or two at the aduana on the Mexican side getting visas.

You will need a Mexican car permit if you are driving in Mexico beyond the Mexican border, except for Baja California. A Mexican car permit will cost $29.70 (December 2008 prices), and they are priced in US dollars. You can sometimes get your Mexican car permit online for $49.50 if the link is up and running, or you can go to the Mexican consulate in Dallas or Fort Worth. If you get the car permit here in Dallas at the Mexican consulate, you can save a little time in the border town. Remember that Laredo and all the border towns are dangerous places. Security looks pretty good, but you never know is being paid by whom. Consequently, the sooner you head south, the better.

Also, remember, it is highly advisable to have a passport to travel into Mexico; after all, Mexico is considered a foreign country and you can never tell when you are going to run into a border guard that is having a bad day and wants to stick to every rule and regulation. If you go out into rock hunting territory and leave your documents behind in a hotel safe, be sure to take copies with you. After spending about a week with our relatives in Saltillo, we drove

south on Mexico 57 to the town of Queretaro, in the state of Queretaro (8 hours from Saltillo, 375 miles). It's about two hours north of Mexico City, an eight-hour drive from Monterrey or a twelve-hour drive from the border. Queretaro is the capital city of the state of Queretaro, and is a beautiful colonial city with spacious squares and parks. Streets can be narrow, so if you're driving something large, look out. We stayed in Queretaro for the night at a small, inexpensive hotel. We don't like to spend money on luxurious lodgings or food.

Our next stop was Tequisquiapan, (still in the state of Queretaro) - a town of about 100,000 just an hour to the east of the city of Queretaro. The region is known nationally for its wines and cheeses, and is famous for it's spas and thermal waters. It is a famous vacation spot for Europeans as well as a weekend getaway for wealthy Mexicans who own second homes there. Getting into Tequis (as the locals call it), as with so many Mexican towns, compares in difficulty to cracking a coconut. The outside is rough, and you have to go through several layers to get to the sweet center. Tequis centers around a cathedral built in the 19th century called the Parish of Santa Maria. Indian families camp out in the cathedral square, where they sell all manner of folkloric products. About a block from the Cathedral are the central markets, called the Plaza Civica, one for food and one for non-food items. You can buy rough opals in glass jars of water in the market. They cost about $10. Some are junk, but you may also find some good stones in those bottles. Children go through the floor sweepings in the mines to fill the jars. It's all material the miners haven't bothered to carry down the mountain. Other tourist attractions include the portals, and a historic bridge built in the 17th century, an aqueduct, and the nearby Pena de Bernal, the second largest monolithic volcanic plug in the world (slightly larger than the Rock of Gibraltar).

We stayed in Tequisquiapan at a little hotel called the San Francisco Garden. It was old, simple, and lovely. There's a garden with a swimming pool, and they have indoor parking. The hosts are a young couple with a baby, whom the man of the house clearly adores. He seldom puts him down.

I recommend that you take a taxi to get to the mining areas of Trinidad and Bernal. There are several major areas, but we had time to visit only one. We went to Trinidad, a small mining town about ten miles from Tequis. The taxi cost about five dollars, and he came back for us at an appointed time. The miner we visited is named Hector Montes Montes. He looks like a young Richard Boone. He and his family have been mining at Trinidad for more than a century.

Hector Montes Montes is a craftsman and jeweler, too. You can watch him cut and polish his opals, and he's more than willing to show you his private stock of rough. If you have time and you look like a prospective buyer, he will take you up to his mines. You don't want to take the mine road in a car. We had a 4-wheel drive F350, and it was tough going even for that. Some other people rode up in the back of a pick-up truck. (I bet they found the local hot springs especially welcome that night). The road is rough! We specifically asked Senor Montes Montes if we could collect at his mine, so he sent us up the mountain about an hour before he arrived, so we would have some time to hunt. We were able to spend about an hour collecting in one mine, and a half-hour in another before he came up to conduct a tour. The scenery was spectacular, and we all found rhyolite with traces of opal in several colors.

Senor Montes Montes is in no hurry. He will let you look through his stock- rough and finished- as long as you like. You can even buy food from his daughters, who cook on a little veranda. We took two days to make our purchase, eventually buying $400 in rough - about 25 pounds. I have yet to cut any of that rough, so I still don't know how good the deal was. Happy opal hunting in Mexico!!

From The Hounds Tale, http://www.agemclub.com , The Rockhound News of The Arlington Gem And Mineral Club
1408 Gibbins Road, Arlington, Texas 76011
Vol.59, Issue 5, May 2009

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Synthetic Opal Synthesis

From http://www.rockhounds.com/rocknet/archive/index.shtml

From July 19, 2007 to Jan 31, 2008

Hi everyone,
I would like to know if there is an easy or inexpensive way to precipitate some colorful opal. I know there are methods such as Stober etc. But I don't know the details and don't want to get into complicate chemistry. But what I am after is a jar full of color to put on my desk. just for a paper weight / conversation piece. I don't have any delusion of trying to harden it. What I am hoping for is something quick, easy, inexpensive, readily available ingredients. No complicated chemistry. Is there such a thing? Anyone have any educated guesses on how Len Cram does it? If Henry Barwood is active here, how about responding? I know from some conversations we had a long time ago that you had some success.
Thanks Y'all,
From mike, Email: geekprime@alltel.net

Hi Mike,
I happened to be passing through and saw a familiar topic! I did indeed synthesize quite a bit of material using a Stober synthesis. Got to the point of actually making some opal about 3 years ago and then had to divert my time to other research. If all you want is a jar of microspheres to show some color, you might buy some prepared material. Monodisperse spheres are (were) available for about $3-400 per kilogram.
BTW, to get the really spectacular color patches, you have to "recrystalize" the opal by supramolecular crystallization. That is the stage I got stuck on and simply have never had time to go back to that work. Unfortunately, they pay me to teach Earth Science, not make opal!
From Henry Barwood

Hi Henry. Thanks for the response and information. I remember you from my yahoo group synthetic gems. Long time ago. Would you do me a favor and drop me an email to geekprime@alltel.net? I'd like to ask you a few more questions about synthetic opal. Details like what chemicals to use, where to get them etc. and what is supramolecular crystallization? I'm a computer programmer by profession, not a chemist so some of the technical stuff is over my head.
From Mike, Email: geekprime@alltel.net

Re: Re: synthetic opal synthesis
This may sound like a stupid question but could they use this process to stabilize opal from Virgin Valley? $$$$$$$$ awaits the person who can come up with a solution to this problem.
Ken
From Ken

Ken,
We use a process to stabilize turquoise that works very well. I'd like to try some of this opal you speak of to see if our process does what you ask. Where can I get some samples to run a test batch with? Is it expensive?
Thanks!
From Phil

Ken,
The pores in turquoise are on the order of microns in size. The pores in opal are less than a micron in size. In other words, it is about 10 times harder to get any hardening agents into opal. Certainly worth a shot, however, if you have some samples to test.
I've infiltrated silica gel with stabilizing agents, but the mismatch in thermal expansion caused them to pop when you put them under a light and they heated up. Lots of things to think about in the silica systems that comprise opal.

From Henry Barwood

Ken,

From what research I have done, opals such as Virgin Valley, Mexican, Honduran, etc. that are gel-like, have micropores that would be extremely difficult to stabilize. I have wondered if the critical point drying the Russian labs use could remove the excess water without disrupting the structure of the opal, but you would likely not have enough porosity to refill the voids and the material would just crack anyway from stress. Might be interesting to try it out if you could get access to one of the high pressure/temperature autoclaves they use.

When photonic crystals first popped on the scene a decade ago, there was a lot of research on making ideal "crystals" out of the microsphere arrays. Most of it got buried in the technical literature and when opal arrays fizzled as practical devices, the research just evaporated. If I were at a research university and had lots of time/equipment, I could probably solve some of these problems. I'm just too old, and there are not enough resources available to tackle the research.

From Henry Barwood

Henry:

I've read about many attempts in the past to stabilize opal from the mines. University of Nevada at Reno has been given probably hundreds of thousands of dollars in grants from various sources to find a procedure to solve this problem - to no avail. Just wondering if synthetic opal synthesis process would work.

Phil:

Not sure where to get some opal for testing. I would contact some of the mine owners at VV and se if they would be interested in donating some for research. Any solution to stabilization would be a boon to them. Chalky turquoise and opal are two different things and what works on one might not work on another.

From Ken

Ken, Very true. But we're developing a new process using silica, so it'd seem natural that it MIGHT work on opal...

Thanks. Any idea how to get a hold of the folks at VV?

From Phil

Just do a Google search on "Nevada Opal". There are quite a few fee dig places up there so I'd like think you can find at least one that might donate opal for your project.

From Ken

Henry, you can also reach me at mcooper@hcbe.net just wanted to try to get more detail on 'how to do it' are the chemicals easy to come by? Inexpensive? Can they be bought by the general public? Not some kind of hazardous chemical? Can I concoct a batch of opal in my kitchen? Or would I need an equipped laboratory? Mainly just wondering how feasible is for me to make a jar of nice color, or is it beyond my resource and ability.

From Mike, Email: mcooper@hcbe.net

Mike,

It is not too difficult to obtain the chemicals. For instance, concrete waterproofing is mostly tetraethyl orthosilicate (TEOS). You can purchase it in a very pure grade from a chemical supplier. Methanol is used in high octane racing formulations and you can (could) get a 5 gallon container shipped for a reasonable cost. Methanol will work as well as ethanol for Stober synthesis. Ammonium hydroxide is a bit harder to get, but there are two amateur sources: Household ammonia and anhydrous ammonia (befriend a farmer!). The formulas for Stober synthesis are widely published on the internet (or you can look up the original paper at a library).

Here is the biggest problem you may face. If you order methanol and go looking for anhydrous ammonia, someone from the DEA is going to check and see if you are running a meth lab! The combination for the two may trigger a carnivore notation to HS. Better to buy some household ammonia and distill off the NH3 to make your own ammonium hydroxide.

Hope this will point you in the right direction.

From Henry Barwood

Henry, thanks for the info, here are a few questions, I'm sure I'll have lots more if I continue to pursue this.

Will concrete waterproofing work or would I need the pure grade of TEOS?

Is methanol required or can ethanol be used? I know where I can get pure ethanol. It's called Everclear at your local package store.

Will household ammonia work 'as is', or does it have to be distilled to get ammonium hydroxide?

Can I do this using normal common sense precautions, or is it really dangerous handling these chemicals?

Presumably it is safe since L. Cram does it in his shed out back, and you've done it at home I suppose. I just don't want to kill myself ;)

I've looked up the Stober method, but could you put it into plain English for a non chemist layman like myself? In other words, what proportions to mix the chemicals, in what order at what temperature etc.? Is there something like a simple step by step recipe that I could follow?

How do you get the correct size silica particle to form, what determines the size of the spheres?

I've read that it can take a year for the particles to settle out, are there any shortcuts to make it a faster process?

Any details from your experience that you're willing to share would be appreciated.

From Mike

Hi Mike,

You want the purest grade of TEOS you can find. Grades below 95% have silica polymers in them and may not produce good spheres. Last I checked (a decade ago), you could get 99% for a reasonable price.

Ethanol is actually preferred, but methanol is usually easier to get. You need to check that it does not contain denaturants, or it will not work.

Household ammonia is about 5% solution. It has to be concentrated to ammonium hydroxide (can't remember the actual percent, but much higher).

Only work with TEOS outside or under a hood. Even then I recommend a chemical respirator be worn. Normal precautions with alcohol and ammonia fumes should be observed. Wear gloves and eyeglasses.

I don't have any formulas on hand (they are all packed up in storage), but will make a note to look them up for you. The terminology in Moles is a bit confusing. I've found that the proportions are not real critical and you can produce good spheres with reasonable attention to measurements. I normally use volume rather than weight.

Once you select a set of conditions, the spheres will form and will be uniform in size and shape automatically.

My suspensions would begin to form diffractive layers in about a week and would settle out a 5-6 mm layer in 4-6 weeks (this was using a 25-30 cm column of suspension).

From Henry Barwood

Hi Henry

Thanks again for the info. I hope you don't mind more questions.

For the TEOS do you know a supplier right off hand? I'll have to do some research to find a source.

FYI Ethanol, Everclear is 95% pure ethanol contains no sugars or impurities.

If you come across the old formulas and could share them with me that would be great.

Question about Len Cram. from what little I've found. it seems he uses soil in his mixtures. Presumably as a sort of seed to help crystal growth. also uses TEOS. and claims that aluminum oxide helps increase harness. Do you have any opinions or educated guesses on his process?
From Mike

Hi Mike,
The names of TEOS suppliers are packed up along with all my other notes. A quick search on Google under TEOS should turn up the names of suppliers/manufacturers for you.
95 % alcohol is not going to work. The other 5% may be denaturants (higher alcohols) or, worse, it may be water. You are going to need anhydrous ethanol or methanol to do a proper synthesis. Fuel grade methanol is 99.9 % methanol.
I've read about Len Cram, but have never corresponded with him, nor do I have a clue what he might be doing. A lot of people have experimented with aluminum hydroxides as hardening agents (me included) and quickly moved on to other things. Soil and aluminum oxide clays can produce a pure silica suspension (very similar to the suspensions developed by Iler many years ago and known as Ludox) which can then be concentrated by boiling to produce microspheres (the original opal patent used something similar).
Most people are unaware that Ralph Iler discovered that silica spheres would settle to form opal before the Jones, et al. paper. Iler did not, however, publish his discovery until it was too late to get original credit for determining that silica spheres diffract light and cause the opal effect.
From Henry Barwood

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July 2010 Gem & Mineral Shows

More shows can be found at
http://www.rockngem.com/showdates.asp

2-4--**PASADENA, CA**: Show; International Gem & Jewelry Show Inc.; Pasadena Convention Center, 300 E. Green St.; Fri. 12-6, Sat. 10-6, Sun. 11-5; adults $8; open to the public, professional jewelers, artists; contact International Gem & Jewelry Show Inc., 120 Derwood Circle, Rockville, MD 20850, (301) 294-1640; e-mail: info@intergem.net; Web site: www.InterGem.com

9-11--SACRAMENTO, CA: Show, "Gem Faire"; Gem Faire Inc.; Scottish Rite Center, 6151 H St.; Fri. 12-7, Sat. 10-6, Sun. 10-5; weekend pass $5; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

9-11--SAN RAFAEL, CA: 2nd annual show, "San Francisco Fine Mineral Show"; FineMineralShow; Embassy Suites Hotel, San Rafael-Marin County, 101 McInnis Pkwy.; Fri. 10-6, Sat. 10-6, Sun. 10-5; contact Dave Waisman, P.O. Box 8543, Spokane, WA 99203; Web site: www.finemineralshow.com

10-11--**CULVER CITY, CA**: 49th annual show, "Fiesta of Gems"; Culver City Rock & Mineral Club; Veterans Memorial Auditorium, 4117 Overland Blvd.; Sat. 10-6, Sun. 10-5; free admission; 27 vendors, rough and polished rocks, minerals, jewelry, beads, demonstrations (glass lampwork bead making, faceting, precious metal clay), half-day classes, kids' games, books, magazines, hourly drawings, grand prize raffle; contact Robert Thirlaway, 28602 Mt. Whitney Way, Rancho Palos Verdes, CA 90275, (310) 213-7677; e-mail: thirlawr@earthlink.net; Web site: http://culvercityrocks.org

16-18--REEDSPORT, OR: Show, "Treasures of the Earth"; Lower Umpqua Gem & Lapidary; Reedsport Community Bldg., 415 Winchester Ave.; Fri. 10-6, Sat. 10-6, Sun. 10-4; contact Bill Hendrickson, (541) 271-6816; e-mail: bamoonman7@msn.com

16-18--SAN RAFAEL, CA: Show, "Gem Faire"; Gem Faire Inc.; Marin Center/Exhibit Hall, 10 Avenue of the Flags; Fri. 12-7, Sat. 10-6, Sun. 10-5; weekend pass $5; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

17-18--SANTA MONICA, CA: Show, "Bead Faire"; Gem Faire Inc.; Santa Monica Civic Auditorium, 1855 Main St.; Sat. 10-6, Sun. 10-5; weekend pass $5; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

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**.

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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.

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Are Your Dues Due Now?

PLEASE CHECK YOUR ADDRESS LABEL. If your label shows **the** current month/year your dues are DUE NOW. If the date is older, your dues are overdue.

A Renewal Grace Period of two months will be provided. If your dues are due now you will receive two additional issues of the newsletter. 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
Garden Grove, CA 92842-4875

Volume #43 Issue #7
July 2010

TO:

Some Topics In This Issue:

- **Notice of a Public Session on Closing Public Lands**
- **Cutting Precious Australian Opal**
- **Welo Opal Cutting Tips**
- **Opal: Delicate Beauty in a Watery Orb**
- **Synthetic Opal Synthesis**

July 8

Diamond Occurrences in North America

By Walter Lombardo

Important Dates:

July 5 - Board Meeting

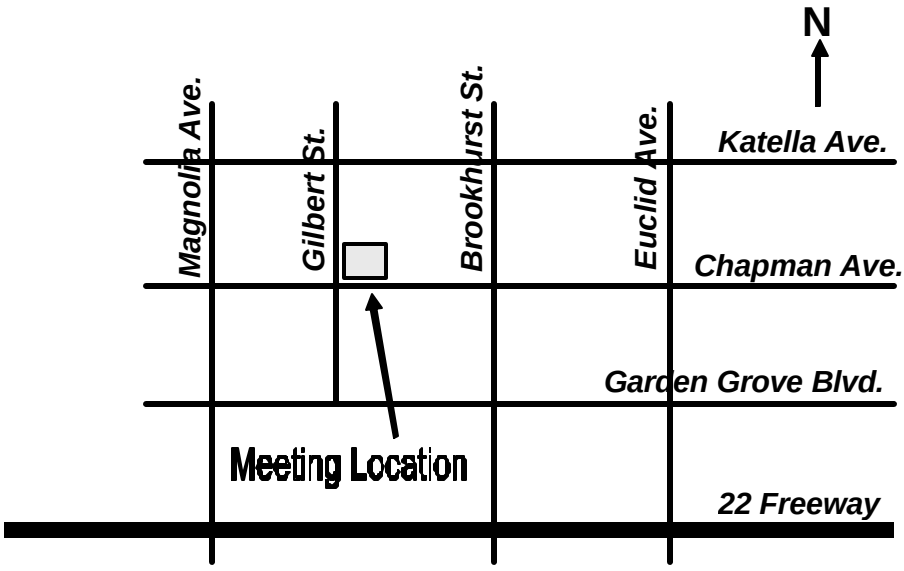
July 8- General Meeting
Diamond Occurrences in North America By Walter Lombardo

— GENERAL MEETINGS —

2nd Thursday of the Month
7:00 pm - 9:00 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



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http://OpalSociety.org

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