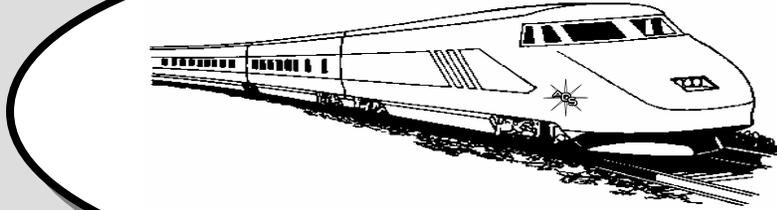


The Opal Express

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Table of Contents:

Opal & Gem Show	1
President's Message	1
Volunteers Still Needed for Show	1
Raffle Donations Needed for Show	1
Gem Carving, Inspiration & Skills	2
Gem Sculpture - Passion for Opals	2
Estate Rock Sale Notice	2
Opal Society Workshop	3
Members Only Website Password	3
What Is Opal?	3
Nevada Mineralogy IV	5
Whitest Whites and Blackest Black	7
Giant Red Spinel Crystal Discovered in East Africa	7
November 2007 Gem & Mineral Shows	8

President's Message

By Gene LeVan

Opal Show November 3- 2007

Dear members and opal lovers! Come to Anaheim to view fine stones and learn more about opals and lapidary products. There will be lots of great dealers and demo's. Here is your opportunity to learn at our lectures on Saturday and Sunday about opals and gems from the expert speakers.

Be sure to bring your friends and rock hounds to this show. We have great door prizes and raffle of fine opals and other items. I will be on hand to greet you inside!

Volunteers Still Needed for Show

The Opal & Gem Show, the AOS's biggest fundraiser, is coming soon. We will need volunteers to man the various posts for the show. Please contact Jim Lambert or Jay Carey or sign up at the Oct. Meeting.

Raffle Donations Needed for Show

The Opal & Gem Show has a large raffle every year. This is a big find raiser for the society. The AOS asks its members for tax-deductible donations for the raffle. Any extra gem, mineral; cut or rough, equipment, books, new or used, etc., would be appreciated. Please bring them to the Oct. meeting or to the Show. Thanks!

IT'S ARRIVED!!!

The American Opal Society's 40th Annual

OPAL & GEM SHOW

The Largest Opal Show in USA!

Sat. & Sun., November 3 & 4, 2007

Saturday 10AM - 6PM

Sunday 10 AM - 5PM

Opal and Gem Dealers from around the USA and Australia. **Rough and Cut Opals**; other gemstones; jewelry & supplies.

Huge Raffle many prizes of gemstones, jewelry, tools, etc.

Free Opal Seminars on Saturday & Sunday with Paid Admission.

Free Demonstrations on gem cutting, jewelry making, etc.

Same Location Since 1991:

Clarion Hotel Anaheim Resort

616 Convention Way **ANAHEIM**, California

Close to DISNEYLAND

One block South of Katella on Harbor Blvd.

near the Anaheim Convention Center

For more information, contact:

Jim Lambert

Phone: (714) 891-7171, e-mail: jlamb777@yahoo.com

Jay Carey

Phone: (714) 525-7635, e-mail: jaycarey@charter.net

Opal & Gem Show Seminar Schedule

Saturday, November 3rd

11:00 am	Helen Serras-Herman	Gem Carving, Inspiration and Skills
1:00 pm	Walt Johnson	Beginning Casting Techniques 101
2:00 pm	Larry Hoskinson & Leslie Neff	A Tourists Guide To Boulder Opal and the Yowah Fields
3:00 pm	Rick Kennedy	The Benitoite Gem Mine - Past, Present and Future

Sunday, November 4th

11:00 am	Stan McCall	Advanced Inlay Techniques
1:00 pm	Jim Pisani	Digging for Virgin Valley Opal
2:00 pm	Helen Serras-Herman	Passion for Opals

Show Seminar Outline Gem Carving, Inspiration & Skills

Lecture by Helen Serras-Herman, Gem Sculptor,
Sculptor MFA, Gemologist FGA

Inspiration and subject themes

- Brief introduction to Gem Art, the unique Fine Art that enters the wearable Jewelry Art world, the functional Objects of Art world, and the Gem Sculpture world.
- Sources and influences for imagination
- Subject theme series

The Skills

1. Educational background
 - a. Advantages and necessities
2. Concept of the Design
 - a. Subject theme, Functionality of carving, Selecting Gem Rough
3. Execution of the Carving – Workmanship Qualities
 - a. [brief discussion of the "Criteria for Evaluating a Gem Carving" as published in the book "Cameos Old & New" by Anna M. Miller and in "The Guide-Gem Market News" May/June 2002]
4. How to get started with Gem Carving
 - a. Essential equipment
 - b. Lists of Websites for Tools, Societies, Magazines, Books

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Show Seminar Outline

Gem Sculpture - Passion for Opals

Helen Serras-Herman is a Gem Sculptor and Jewelry Designer, with over 20 years of experience in unique gem sculpture work featured in several trade magazines and books. Her recent "Wearable Sculptures" explore the connection and transition between the two worlds of Fine Art and Wearable Art.

Helen's unique artwork is inspired by people and mythology, especially from the ancient Greek mythology, and often takes the symbolic shape of gods, nymphs or fantastical creatures. Helen, sharing her husband's "Passion for Opals", features several types of Opal in her artwork, from beautiful Black Opals to amazing Matrix Opals.

In this lecture, created especially for the "2007 American Opal Society Show", Helen will feature the following 4 pieces of her Gem Art and will discuss the inspiration and creative process:

1. "Echoes"
2. "The Omphalos of Earth"
3. "Paccha Mama" (Mother Earth)
4. "Terra Verde- Tribute to the Beauty of our Forests"

1. "Echoes" Jewelry Art

Dimensions: Slide pendant 3" H x 1.5" W

"Echoes" is a one-of-a-kind necklace, which won the 1st prize Award, Jewelry Division, in the People's Choice Competition that took place during the "Gem Galleria Gem Art show" at the Historic Manning House in Tucson, Arizona, in February 2003. It is now in private collection.

The necklace features a carved Lightning Ridge Australian Opal and an eye-catching piece of natural Colombian Emerald crystals in matrix, surrounded by sculptured faces carved in relief and cast in 18KT yellow/green gold, designed to create a feeling of Echoes, of people wanting to talk to us, of our spiritual connections to other people.

The slide pendant is designed to be easily detachable from the braided 5-strand faceted bead necklace of natural Colombian Emeralds.

2. "The Omphalos of Earth" Gem Sculpture

Carved Koroit Matrix Opal, carved and cast Sterling Silver, carved Lapis Lazuli

Dimensions: 4 1/4" x 4 1/2" x 3/4" ?

This Gem Sculpture portrays "The Omphalos of Earth", the Navel or Bellybutton of the Earth.

The natural Opal is carved so that the bright spider-web patterns are featured in the front of the stone. Helen's characteristic engraved lines are traversing the opal front and back, converging in the front center, and creating the Omphalos. The Opal is removable from the Silver cradle and can be held in the palm to pet, fondle, meditate or dream.

Helen's Gem Sculpture "The Omphalos of Earth" received the "Best of Show" Award at the 2006 Fall exhibit of Fine Art titled "Pathways and Portals" at the "Tubac Center of the Arts", in Tubac, AZ.

3. "Paccha Mama" (Mother Earth)

Wearable Gem Sculpture

Height: 6"

This unique gem sculpture in the shape of a human effigy features a Sterling Silver Pendant with 3 matched pieces of carved Australian Opal that rests in a Sterling Silver cradle on the Turquoise base. The Opal pendant resembles the head of a woman and the Turquoise the body of a voluptuous figure, which brings in mind images of very ancient sculptures of Mother Earth.

The figure sits on top of a carved block base of Red Filament Agate, which in turn rests on a square Charoite slab.

"Paccha Mama" was on display at the "Tubac Center of the Arts" in Tubac, Arizona, for the 2007 Fall Member's Exhibit titled "Attitudes & Latitudes".

3. Terra Verde (Tribute to the Beauty of our Forests)

Dimensions: 5.5" H x 4 1/4" W x 3.5" D

Dimensions for Pendant only: 2.5" H x 2 1/4" W x 1/4" D

Helen's newest Wearable Gem Sculpture to premiere at the "2007 American Opal Society Show" features natural Emerald Crystals in matrix, Sterling Silver cast drape and Black Crystal Opals for the sculptural base, and a removable pendant-pin of Carved Koroit Matrix Opal set in 18KT yellow gold and Sterling Silver with Colombian Emeralds.

The pendant is interchangeable on an 18KT yellow gold and Sterling Silver 22" long strand of Emerald beads and Black, Bronze, Gold & Silver-color Fresh-water Cultured Pearls.

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Estate Rock Sale Notice

Hello to all you rockhounds!

Many of you knew Faye McDowell. She belonged to the Anaheim Searchers, The Long Beach Club and the American Opal Society. She passed away on September 4th, 2007.

This is just a note to let you know that there will be a rockhound garage sale. This will include rocks, slabs, minerals, crystals, coral, tools and equipment. This will be held at, 362 Winslow, Long Beach, CA (Bellflower Blvd. and Colorado). Saturday and Sunday, November 10 and 11, from 8:30 am to 4:30 pm. Cash only preferred. Hope you can make it. Norbert and Ana Bernhardt (714-734-9665)

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Opal Society Workshop

The American Opal Society's workshop will re-opened on Sept. 11th after being closed for the month of August. The shop is located at Ball Jr. High School and will occur every Monday from 7:00 to 9:30 p.m. The school is located at 1500 W. Ball Road in Anaheim. If you are traveling east on Ball Rd. the parking lot entrance you need to use is just before the railroad tracks Room 37 is in the center of the campus.

Instruction will be given in cutting opal, wax models, lost-wax casting, fabrication, and setting stones. The workshop will furnish machines to cut and polish stones as well as a centrifuge for casting and a kiln for burnout. Please bring a roll of PAPER TOWELS with you for clean-up as the room is a science lab and needs to be kept spotless.

To attend, membership in the American Opal Society is a must due to insurance. A nightly fee of \$2 is asked to help keep the equipment in good running condition. Please contact Pete Goetz at (714) 345-1449 if you have any questions.

Members Only Website Password

To log onto the website's members only area at: http://opalsociety.org/aos_members_only_area.htm type: Name: "member" and Password: "opalshow".



What Is Opal?

Fourth & Fifth Biannual Australian National Opal Symposia

By Tim Thomas

The House of Tibara Opal Specialist

How Is Opal Formed?

What great programs: four authorities speaking and arguing their points of view. Previously, we held the traditional view that silicon rich water percolated into cracks forming over millions of years and poof, opal forms. We can't believe how misinformed we were. This April in Coober Pedy was something of an extension of what started in Lightning Ridge in 2005. Coober Pedy hosted the event and as far as we could tell, we were the only Americans at both Symposia. Too bad isn't it.

Coober Pedy dedicated most of the program pursuing one central issue: What should we do about the terrible state of the "opal industry?" Supply is down, miners are leaving the fields, prices are up (except what we found), and few are trying to unify the disparate, independent, & isolated miners. There are two exceptions, but that is another article.

The Coober Pedy theme for their program was, "The Future is in Our Hands." Speakers tried to state the problems for the way ahead.

One international trade authority flatly stated that the opal industry had three years get its act together or lose out permanently to all the other gemstone associations who were dealing globally. We found that estimate a significant worry. We must get together and look at taking globalization seriously.

We will have more on this topic later.

Here's what think we learned about how opal is formed.

How does this sound? When we understand how opal is formed, we "**will have a better...understanding of other low temperature silicification processes with the Australian regolith.**" (Dowell, K.M., 7/05) This was reported at the Australia National Opal Symposium, July 2005.

WAIT!!! Keep reading!!!

Lightning Ridge, NSW, was the site of the 4th biannual Symposium. It was an amazing experience for those of us who really want to understand how precious opal forms.

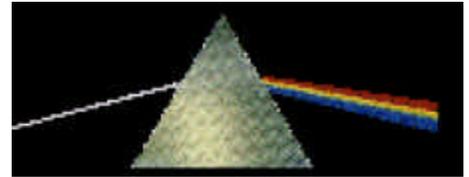
The REAL ANSWER?

No one really knows – exactly. There are some excellent proposals. There were some very technical papers presented at the Symposium – about 50 megabytes on a CD.

One paper, in particular, "The Origin of Precious Opal," by Byron Deveson seems to survey all the others and tries to synthesize the other approaches. I will use Byron's paper as a basis for this synopsis. If you want a copy of his 16-page paper, please email your request to opalinfo@opal-tibara.com. Here we go:

WHAT WE THINK WE KNOW -- NOW

Everyone agrees that precious opal has orderly arrays of silica spheres that are non-crystalline (amorphous), and made of silica, which



is dissolved in water form called gel. These silica spheres have water molecules attached (weakly bonded). The spheres act like prisms and break-up white light into its component colors. At sometime in the process the silica rich fluids have conditions available that cause them to stabilize into what we call opal – either potch or precious depending on their size and arrangement. Byron Deveson calculates that there are enough naturally occurring spheres present in the Lightning Ridge (LR) Olympic sized pool to form as many carats of very precious opal as are found each year at LR. Some important conditions are necessary to this formative process. Silica spheres have been produced in the laboratory for years. In fact, Brown and Bacon produce spheres in a few hours using New Zealand water from a geothermal power plant and some proprietary chemicals. Water pH, silicon content, artesian wells rich in various elements, and other pressure effects combine to cause opal formation, which does not necessarily take millions of years – perhaps as little as 5 to 10,000 years.

Four authorities argued about various features of their models. The arguments centered on these questions:

Here's where the arguments begin.

1. How long does this process take: thousands or millions of years?
2. Is it a deep weathering process, where cracks in the ground have silicated water seeping and ultimately forming opal or is the water forced up geothermally or by artesian processes?
3. Where do the required water pressure come from?
4. Where does the silica spheres come from and how do they form?

5. Are organic biological organisms capable of forming opal?
6. What are the conditions necessary for silicated water to form into opal?

There are three accepted models of sedimentary opal formation:

1. Microbial model: states that bacteria can produce the conditions necessary for the growth and stability of silica spheres, necessary for the “play of color” in precious opal. Algae have also been shown to be capable of living on silicated water. (Dowell, Brown & Dunstall, and Bacon & Brown)
2. Weathering model
3. Syntectonic model, Pecover, S.
- 4.

Then, there’s the Extended Syntectonic model by Deveson, B.

Deveson believes that the three models above have elements that can work together to cause the formation of opal. But, no matter what, three necessary processes must be present:

- A. Growth of silica spheres
- B. Arrangement of the spheres into bundles of a large size and arrangement
- C. Silicated spheres must be filtered, with reverse osmosis under pressure, as found in kidney dialysis.
- D.

Deveson’s conditions to fulfill the above processes are:

- A. **Mound Springs**, which are essentially what we know to be **ARTESIAN WELLS**: It is really curious to see artesian springs gushing large quantities of HOT water in the middle of the ULTRA DRY outback. Artesian water is the source of drinking water at Lightning Ridge and tastes like rotten eggs and is full of minerals – just right for the beginning soup needed for opal formation. This water is centuries old and comes from Indonesia under the ocean. So this water is full of minerals. There are 3000 active mound springs in the Great Artesian Basin (GAB), which was also flooded by the ocean twice, providing even more minerals, and deposition of stuff – trees, pine cones, sea life, and dinosaurs, coral, etc.
- B. **Mound springs with the right chemistry**: Alkaline water with high silica content and low concentration of some other elements. Only a few have alkaline rich water.
- C. **Alkaline (opposite of acidic) hydrothermal fluids**: Carbonates are essential. Your bubbly soda has carbonated water in it. Same idea.
- D. **Mechanical formation of silica spheres**: Acidic ground water with buffers from montmorillonite clay, which is what some “opalers” call “opal clay.” This clay is everywhere in the GAB.
- E. **Ultra filtration and dialysis**: This means that the water needs to be filtered. In the lab we use paper filters, etc, then force the fluid through it. Dialysis is the process the water is filtered and selective components are pushed through the filter against the normal flow.(reverse osmosis).
- F. **Pressurization**: A force that drives the fluids through the filter. This group of processes that unusual to find; however they do exist with some of the mound springs.



HOW DOES THIS OCCUR - (Above is a “blow” at 4 mile at LR.)

Ancient floods produce clay base; dry environment produces cracks in the surface; earthquakes produce major rifts in the subsurface of the GAB; fluids from the subsurface violently force fluids into spaces without an exit; these blows provide pressure that forces fluids through the clay filters; waters while acidic are maintained at an pH range; spheres are formed with the silicated waters; spaces, vugs, and seams of opal form.

So, now you know why opal occurs sparsely in cracks in the earth, blows, etc.

SOME INTERESTING OBSERVATIONS:

1. Carbon 14 dating shows that some LR knobbies are only 5,000 or 10,000 old. This finding is contrary to the idea that deposition of opal took millions of years. In fact, both methods of deposition are possible. (Dowell)
2. Mound springs are associated with breccia pipes that are geologically recent; therefore the carbon-14 dating is not in conflict with this method. Rubble in a blow pipe shows the power of the injection of the upwelling of silicated water from below. Miners like to find these pipes because they have some of the most beautiful opal.
3. Only five parts per million of a surfactant are sufficient for stabilization of suspended silica.
4. Bacteria could make item 3 above occur. (Rohn & Hass, Brown & Bacon)
5. Perhaps, the most interesting finding we



made was NOT at the symposium. We were lucky enough to have a private visit with a resident in LR, who does not want to be identified. He states that he has created REAL OPAL. It took him several years, but he got it. Is the producing this for the market? NO, NO, NO. His process will only be release upon his demise, if his heirs so choose. Why? He does not want to be responsible for spoiling the opal market and destroying the local / Australian opal economy.

This man-made synthetic opal is really beautiful. The cost per ounce of this parcel to the left would be the \$3,500 to 6,000+ per ounce, wholesale, if it were available.

In conclusion, we learned considerable new information and really enjoyed the discussions in the parking lot after the seminar. These folks are very approachable and interested in furthering knowledge about opal. We predict that within three years there will be very scientific methods of exploring for and finding our favorite gem – opal. We wish we could say more, but we’re sworn to secrecy.

SO, WHAT IS OPAL? IN BRIEF...

Opal is a non-crystalline substance more like glass than anything else. It has water molecules bound to the silicon dioxide molecules in varying amounts depending on the mine and depth of extraction. The lower the percentage of water, the more stable the opal. Generally we will not purchase opal with more than 4-5% water as measured by our test method. (Note that we have substituted method because of the carcinogenic nature of the chemicals involved.) This reduces our problems with cracking to virtually zero. The only exception occurs when the cutter punishes the stone with physical about or overheating or any dehydration process (excessive heat, extraction of moisture by mechanical or chemical means.)

Man-made opal is usually not opal. There are two synthetic opal types. One is the Gilson opal, which is no longer made and may contain cubic zirconium (CZ) in the highest quality of black opal; therefore even this great stone is not opal because CZ is man made and is not produced by nature. The other is noted above, but not available to anyone by its creator. And then there's "clown glass," or various attempts at imitation opal. In 1976, Mr. Slocum first introduced his "opal." Later, under the threat of a lawsuit, he was forced to rename it as Slocum Stone. To this date, a good friend and talented jeweler still calls his Slocum Stone, synthetic Opal. He is a reputable person and a truly skilled & talented jeweler. The reason for mentioning our friend is you cannot know if your are being "taken," without doing your homework.

Being "taken" is a fairly simple situation to verify: TAKE A GUT CHECK. If the opal appears to be TO CHEAP compared to other similar pieces, then it is not a steal – but rather a theft of **your** money. We cannot begin to state how often unknown persons come to our booth and ask about a piece of jewelry trying to authenticate if the piece is real. IN **EVERY** CASE, THE PIECE WAS COMPARABLY CHEAP AND fake.

In every case, people said that if it was too good to be true, it...

Today, another jeweler came to the shop to get some info on cutting a piece of opal and authenticating a ring. GUESS WHAT ? More fake opal, which occurs in quantity today.

In practical terms, opal needs to be described in terms that we can understand – for the most part. With that thought in mind, we have compiled the major factors that describe opal visually. Not coincidentally, these are the same general factors used in valuing opal.

Everyone wants to know "what is it worth?" That's the perennial question and there is not easy answer. For now, let's just consider these factors and later in the book, valuation will be discussed. The next page is a general intro to the primary factors when grading, buying, or just appreciating your opal.

OPAL - FACTORS TO CONSIDER WHEN DESCRIBING OUR FAVORITE STONE

1. **Fire type:** harlequin (which type?), flash, broad flash, large or small pin, combinations, or?
2. **Colors:** red (which type, magenta, etc.), green, blue, purple, gold, etc. predominance, combinations (ie., blue green.)
3. **Base color:** black, gray, degree of blackness, crystal, jelly, white, off-white, yellow, brown, etc.
4. **Thickness of the color bar,** consistency all around the piece, interplay of the various color bars, top or side **cutting**.
5. **Brilliance.** We use a 10-point scale. 1= dull and 10 = brilliant.
6. **Degree of translucence:** white, jelly, crystal clear, gray, gradations up to jet black, which is the most valuable base color.
7. **Equipment, etc:** High speed, low speed, diamond vs. Carborundum. How you handled the opal when grinding Heat and amount of water used in cutting.
8. **Your skill as a cutter:** hobbyist, beginner, intermediate, expert, designer, and dealer.
9. **What you want to do with the opal:** standard cabs, free form, inlay, composites, doublets, triplets, sculpt or carve?

10. **Source:** fields, depth of mining, methods of mining: Buy nothing from New Field at Coober Pedy area or Mehi at Lightning Ridge, etc. Essential to know from where the opal was mined and depth. This can only come from a reliable supplier.

11. **Storage and transport methods:** (Safe deposit boxes are not safe for opal when left dry. Call for an explanation.)

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Here's a good thread from RockNet on Rockhounds.com on Nevada Opal – The Editor

Nevada Mineralogy IV

By Steve Kulinski

Hello rockhounds,

For those of you who have been following this thread this will be the last of three installments that looks at the specimen potential of volcanic terrains in Nevada. This is, however, not the last of the geologic settings in the state I plan to portray.

For the sake of those of you who are concerned about terminology, let me be the first to point out that the specimen of focus is indeed not a mineral. Please forgive any ambiguity or confusion that may have ensued from describing this specimen under a title of "Nevada Mineralogy". None-the-less this specimen is coveted by many rockhounds and is highly valued around the world.

Enough preamble, this coveted and valued specimen is precious opal! Nevada is rich with opal, and some of it is regarded as the precious varieties. There are several environments that host opal but in Nevada, many, if not most, opal bearing environments are somehow affiliated with volcanic centers. This relationship will be detailed later but for now it is sufficient to say that it is due largely to the amount of silica that is liberated from rocks composed of volcanic ash as they weather.

Opal is easy enough to come by; the truly rewarding find is a precious opal. So what divides a precious opal from the larger realm of common opals? The answer is opalescence. Opalescence is the play of colors that opal known for. Opal is composed of silica that lacks crystalline structure. The silica of an opal is composed of angstrom size beads of silica. These beads are much like those you might find in those tiny packets of silica gel that are sometimes used as drying agents in the pockets of new clothes. For those of you who are unfamiliar with what an angstrom is, it is a very small unit of distance. Imagine drawing equally spaced lines that divide a millimeter into 10 thousand parts, each of those parts would be 1 angstrom wide. So getting back to opalescence: this phenomena is a result of how orderly the packing of these little silica beads are within the structure of an opal. In opals with a well ordered packing light will diffract as it passes through the planes of void spaces between the silica beads. This will cause some wavelengths (colors) of light to be reflected from within the opal.

Many folks think of Australia as the home of precious opals. Still there are other places around the world where it is found: Mexico, Ethiopia, and yes even Nevada. There is an underlying theme here to each of these places, they are all desert environments with alkaline soils. Perhaps that has something to do with the chemistry of silica solubility, I'm not sure. If any of you geochemist types out there know anything about this relationship, perhaps you could share your thoughts.

So let's take a look at specifically where opal can be found in Nevada. There are three basic locality types where opal is commonly found in the state: 1) as rinds in silica sinter deposits around some hot springs, 2) within late stage veins and cavities in volcanic rocks, and 3) as deposits and/or fossil replacements within sedimentary and pyroclastic rocks. In most instances each of these three types of localities lie directly within or peripheral to areas with volcanic rocks.

In the case of silica sinter deposits, opal is deposited directly from fluids affected by a buried heat source such as a near surface magma chamber. Active or ancient hot springs are essentially surface outlets of waters heated by geothermal energy. The same source of heat that boils the groundwater in these hot springs is

often the source of heat that is responsible for nearby volcanic activity. Thus there is a frequent association between hot springs and volcanic fields in Nevada. Many exploration geologists in Nevada were very interested in using these silica sinter deposits as indicators of gold mineralization so there is quite a bit of data on the distribution of these localities. The limited amount of silica sinter opal I've seen is not remarkable from a collector's standpoint and is usually found as the opaline variety known as hyalite. Interlayered mineral growths as well as coliform and crustiform banding occasionally make for attractive slabbing material.

As discussed in earlier postings of this thread, as a lava begins to solidify, incompatible elements and volatiles are distilled away from the original melted rock. This process ultimately results in late stage fluids (liquids and gasses) that tend to deposit minerals late in the game. Often these fluids are enriched in silica. As these fluids are pushed away while rock forms out of melt these "left over" fluids will localize into gas cavities and cracks in the rock that develop as a lava cools. Eventually these fluids will also solidify. For silica rich fluids this results in some sort of silica deposition. Often times this silica falls out as chalcedony which is crystalline unlike opal. In some other instances opal may be formed. But be it opal or chalcedony in either case, one universal holds true: rock with silica deposited in this way is about as hard as it gets and a labor intensive day can easily be spent with little reward in the end. Still in those lucky few instances the work may be well worth the effort. In some few instances gemmy opal may be recovered.

Volcanic rocks, especially those composed of deposits of ash or volcanic glass (obsidian) are not chemically stable under atmospheric conditions and thus they tend to weather quickly. During weathering some constituents are enriched with respect to the rocks original composition while others, such as silica, are removed. With the right temperature, pH, and other chemical conditions the liberated silica can become very soluble. When waters that carry dissolved or suspended (colloidal) silica encounter new conditions that alter their chemical properties silica can no longer be carried and is deposited. It's this weathering process that sets the stage for the third locality type. Lavas are one thing but the volume of ash deposits often dwarfs lavas by comparison. Cubic miles of ash deposits are not atypical in and around volcanic centers. Think of a river and a small grove of trees somewhere, and now imagine what such a sylvan scene would like after you dump three cubic miles of ash on top of it all, you'll bury it. There are many examples of landscapes that have been buried under volcanic debris in the geologic record. Those of you who recall the Mt. St. Helens eruption can remember a modern example of this when Spirit Lake was overwhelmed and buried by ash.

Ash deposits generally come in two flavors: 1) a rock called a tuff is one composed dominantly of ash. The ash forms rock when hot ash particles weld themselves together or when they glue themselves together as mineral byproducts are liberated from the weathering pile, and 2) In areas that are farther from the eruptive center ash deposits will become inter-stratified with sedimentary rocks. Just for the sake of completeness there are other ash bearing deposits. A nuee ardent, also known as a pyroclastic flow is another type of ash bearing deposit. Mixtures of sediments and ash called that become fluidized by flowing water form what are known as a lahar deposits. The focus will remain on the first two deposit types when discussing potential for finding opal, however, as they tend to occur over a much more vast area than the other types do. It is fair play to expect any ash bearing deposit to be host for opal, however when combing over geologic maps to target potential opal bearing localities those that occur over small areas are less likely to even be represented on a map.

So why all the fuss about ash? As pointed out earlier, deposits of ash are important sources of silica. And silica is, as we know, the stuff of opals. Nevada saw several periods of intense volcanism. Much of the countryside met an untimely demise as layers upon layers upon layers of ash fell from the sky. Complete forests vanished under the heaps of ash. This is an important consideration.

When things die, such as a buried forest, or a lake full of fish, plants, and other aquatic life, they become a hub for a bevy of chemical reactions. Putrefying reactions often cause dissolved minerals to drop out of solution and replace the decaying body. This process is also known fossilization. So taking a look at Nevada's geologic past once again and looking at it terms of opal prospecting we have large sources for silica and nucleation sites (dead organisms) for silica deposition. These are the characteristics that are common of the third locality type.

It's no accident that I spent the most time detailing this last kind of locality. It's in these sorts of places that the largest quantity of gem grade opal in the state is found. Due to the abundance of precious opal in these types of localities Nevada has adopted opal as its state gem. Places like Virgin Valley and the Royal Peacock Mine are famous pay-to-dig sites that represent locality types of the third kind and have yielded precious opal. Fire opal and the most highly prized black opal have been recovered from these fee localities. Petrified wood in such areas is abundant, and there are many well known digs where opalized or agatized pine cones have been recovered in Nevada, Oregon, and Idaho in the vicinity of volcanic fields. Sedimentary rocks that contain ash layers are also good grounds for prospecting. When exploring volcanic deposits not as much heed needs to be paid to the rock since all the rock is a good potential silica source. In sedimentary rocks, however, one needs to look for the look for evidence of volcanic debris. A hand lens is helpful to this end. Look for things like small shards of obsidian, and microscopic crystals, especially if you can identify those crystals as sanidine, mica, or zircon (common minerals in volcanic ash). Deposits of silica in both volcanic and sedimentary rocks can also be hints that you are on the right track.

These famous localities, in all likelihood, do not represent the limit of like occurrences in the state. There is a lot of desolate land in Nevada as well as a lot of surface area that is covered by volcanic rocks. What's even better is that quite a bit of the area that is covered by volcanic rocks is the same area that is poorly explored making for an optimistic potential at finding new sources.

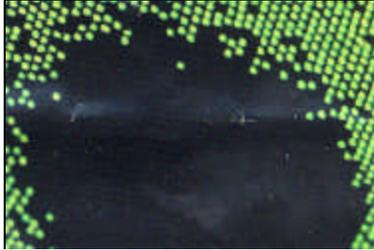
To wind up, I thought I would relate some remarkable examples of the state's potential and give a few refs for those of you who are interested. First of all to give you some idea of how fast fossilization by opal replacement can be there have been reports of ranchers who have pulled wooden fence posts that were planted 20 years previous to find the ends replaced by opal. For those of you who would like to see a nice example of what precious opal from Nevada looks like, I suggest searching for the Roebing Opal on a search engine. The Roebing is a fantastic example of a black opal, and certainly ranks up there with the finest opals in the world. If you do not have the time to spend on doing a lot of exploration, look for Virgin Valley and/or the Royal Peacock Mine on a search engine. I know that there are many sites that link to both of these fee dig opal localities. If you are into exploration a nice place to start is the geologic map of Nevada. This map can be acquired at no charge from the Nevada Bureau of Mines and Geology's web site. If you get the map the orange-brown color in the north-central part of the state represent volcanic rocks. The volcanic rocks in this area host some of the well known localities for precious opal. Gem Trails of Nevada by James B. Mitchell, 1991, ISBN 0-935182-53-5 makes some mention of Nevada opal as well as Where to Find gold & Gems in Nevada by James Klein, 1983, ISBN 0-935182-15-2. To gather more locality specific and detailed information, consult the USGS. I am not familiar with every publication covering opal bearing lands in Nevada that the USGS has published, and those works that due make mention of opal that I am aware of usually do so in passing, as an aside to the theme being discussed. You can, however, search the USGS archives by county. Pershing, Humboldt, Elko, and Lander Counties all have expanses of volcanic rocks with known or probable opal potential.

Happy Hunting!
Steve

Whitest Whites and Blackest Black



Blackest Black: Ornithoptera Butterfly



honeycombed wing scales absorb more light than would a smooth surface, so the black pigment looks blacker still. The hue helps regulate body heat and makes other wing colors stand out in mating displays. Engineers already use microtextures to boost hues in paint and plastic. By aping bug patterns, they hope to develop deep black solar cells (to absorb more rays), paper that gets its whiteness from surface architecture rather than an infusion of minerals, and an uneven coating that'll make teeth sparkle. —Jennifer S. Holland

Figures: You'd need an electron microscope to see the pattern of structures that scatter light on the *Cyphochilus* beetle (for a peerless white) and trap it on the *Ornithoptera priamus* butterfly (for pure black).

Synthetics use similar textures to embolden shade.

From *National Geographic*, August, 2007. Editor – seems like similar science behind opal.

Giant Red Spinel Crystal Discovered in East Africa

October 5, 2007

By David Weinberg

"When the stone finally arrived, the miner's legs were bloodied from holding the heavy sharp-edged rock on the motorcycle".

They dug it out of a farmer's field in Mahenge. An enormous red spinel crystal weighing over 52kgs. It may be the largest red spinel ever unearthed!

Mined at depth of 10 meters, the pyramid shaped rough was discovered by a group of miners in the alluvial deposit. Mining in the

Beyond the Pale Zebras? They're slackers! Insects do far more with black and white. Consider the *Cyphochilus* beetle. Scientists now say it may possess the whitest white of any animal. Pigment alone doesn't make the bug gleam like fallen snow; it's the way its body structure manipulates light. What we see as white is the color spectrum dispersed haphazardly, explains physicist Peter Vukusic of the United Kingdom's University of Exeter. Random pits and columns on the beetle's ultrathin scales scatter light efficiently. The payoff: first-rate camouflage on a white fungus it frequents. At the other extreme are butterflies like *Ornithoptera priamus* — "ultrablack," Vukusic calls it. Again, structure is key. Its



Whitest White: Cyphochilus Beetle



Giant Spinel Crystal – notice cell phone for scale

being lucky, the finders of the really special stones also need to be strong and fast – everybody wants stones like that and they're willing to fight for them too! After escaping into the bush on a motorcycle, the miner and the motorcycle driver were forced to lay low without food and water for several days before making their way on to Morogoro. From there, they traveled on to Arusha to show their rock. The buyer who wishes to remain anonymous said "when the stone finally arrived, the miner's legs were bloodied from holding the heavy sharp-edged rock on the motorcycle".

The impressive crystal has the vibrant orangey pinkish red color that is considered to be top for [spinel](#). Although most of the crystal was included, it was obvious that significant chunks of clean gem material could be cobbled from it. Even though the yield is expected to be as low as 3%, the sheer size of the rough still translates into several thousand carats of gems.

The gemmy chunks are being faceted in Thailand and several clean stones of over 30 carats. have already been cut and sold. Although most of the stones are small, a significant number of stones ranging in weight between 5 and 20 carats have already been faceted and the cutting continues. One piece is expected to cut a near clean stone over 50 carats. Ultimately, this one giant crystal will cut several million dollars worth of stones and dealers have been lining up to buy first. Although the color of Burmese spinels can be exceptional, clean stones as large as these are unheard of in Burma.



One second before the Spinel is gone forever

Many of the stones are expected to be sold in Europe where the strong euro makes gem prices especially attractive right now. As the processing of the rough continues, a good selection of stones will also be available online at www.multicolour.com.

Historically, the [large spinels](#) of the Russian and European Royal collections contained [spinels](#) from the Pamir mountains in Afghanistan and Tajikistan. As gemological science was in its infancy and ruby was yet to be defined as corundum, they were called rubies at the time. Britain went to war with Spain over the Black Prince of Wales Ruby, which is a fine spinel polished en cabochon and a part of the Crown Jewels.

As with so many of the richest gem deposits, every major discovery seems to lead to conflicts and disputes. Nobody cares about the thousands of holes that hardly produce anything but when an important discovery occurs, there is always fighting between

area is normally conducted by loosely organized syndicates of small miners funded by local entrepreneurs.

The discovery almost sparked a riot as hundreds of other diggers moved in for a piece of the action. Besides



claim holders, diggers, land owners, and government officials. For now, this deposit is closed while the ownership of the claims is determined in court. This case will not be settled for at least two years and there will not be any mining in this area until then.

Periodically, colored stones that were always in short supply come onto the market in a mini-glut, as miners stumble across a rich pocket. The glut may continue and give the impression of an abundance of stones but the situation always changes and that stone invariably becomes scarce again.

From <http://www.multicolour.com/spinel/>

+++++

November 2007 Gem & Mineral Shows

3-4--ANAHEIM, CA: 40th annual show; American Opal Society; Clarion Hotel Anaheim Resort, 616 Convention Way, one block south of Katella on Harbor Blvd., near the Anaheim Convention Center; Sat. 10-6, Sun. 10-5; adults \$4, students \$3, children under 15 free; opal and gem dealers, rough and cut opals, raffle, opal symposium, free demonstrations; contact Jim Lambert, American Opal Society, P.O. Box 4875, Garden Grove, CA 92842, (714) 891-7171; e-mail: jlamb777@yahoo.com; Web site: <http://opalsociety.org>.

3-4--CONCORD, CA: 48th annual show and sale; Contra Costa Mineral & Gem Society; Centre Concord, Clayton Fair Shopping Center, 5298 Clayton Rd.; Sat. 10-5, Sun. 10-5; adults \$3; contact Sam W., P.O. Box 4667, Walnut Creek, CA 94596; Web site: www.ccmgs.org.

3-4--LANCASTER, CA: Show, "Rock 'N' Gem Roundup"; Palmdale Gem & Mineral Club; Antelope Valley Fair Grounds, 2551 W. Avenue H, Ave. H and Hwy. 14; Sat. 9-5, Sun. 9-5; free admission; children's activities, field trips, more than 25 vendors, more than 50 displays, dino displays; contact Susan Chaisson-Walblom, 42122-52nd St. W, Quartz Hill, CA 93536, (661) 943-1861; e-mail: slchaisson@yahoo.com; Web site: www.palmdalegems.org.

3-4--RIDGECREST, CA: 52nd annual show; Indian Wells Gem & Mineral Society; Desert Empire Fairgrounds, Mesquite Hall, 520 S. Richmond Rd.; Sat. 9-4, Sun. 9-4; free admission; contact John DeRosa, (760) 375-7905.

3-4--SAN DIEGO, CA: Show, "Gem Diego"; San Diego Mineral & Gem Society; Al Bahr Shrine Center, 5440 Kearny Villa Rd.; Sat. 9:30-5, Sun. 10-4; adults \$3, children under 12 free; more than 40 exhibits, 16 dealers, 10

demonstrators, junior booth, club booth; contact Wayne Moorhead, 8473 Hydra Ln., San Diego, CA 92126, (858) 586-1637; e-mail: waynemfacet@yahoo.com; Web site: <http://sdmg.org>.

9-11--COSTA MESA, CA: Annual show, "Fall West Coast Gem & Mineral Show"; Martin Zinn Expositions; Holiday Inn - Bristol Plaza, 3131 S. Bristol; Fri. 10-6, Sat. 10-6, Sun. 10-5; free admission; 80 dealers, China, Brazil, Russia, India; contact Regina Aumente, P.O. Box 665, Bernalillo, NM 87004, (505) 867-0425; e-mail: mz0955@aol.com; Web site: www.mzexpos.com.

9-11--SACRAMENTO, CA: Show, "Golden Harvest of Gems, Jewelry & Minerals"; Sacramento Mineral Society; Scottish Rite Temple, 6151 H St., across from Sac. State College; Fri. 9-6, Sat. 9-6, Sun. 9-5; adults \$5; more than 30 dealers, fossils, rock slabs, meteorites, gold, silver, rock carvings, beads, findings, gemstones, jade, mineral specimens, Indian jewelry, custom jewelry, exhibitors, lapidary demonstrations, door prizes; contact Keven Beguhl, c/o SMS, P.O. Box 160544, Sacramento, CA 95816, (916) 459-7556; e-mail: webebeguhl@aol.com; Web site: www.sacmineralsociety.org.

10-11--YUBA CITY, CA: 16th annual show, "Festival of Gems & Minerals"; Sutter Buttes Gem & Mineral Society; Franklin Hall, Yuba/Sutter Fairgrounds, 442 Franklin Ave.; Sat. 9-5, Sun. 9-4; free admission; contact Cliff Swenson, (530) 272-3752.

17-18--LIVERMORE, CA: Show and sale, "Lithorama 2007"; Livermore Valley Lithophiles Gem & Mineral Club; The "BARN," 3131 Pacific Ave., east of South Livermore Ave.; Sat/contact Bill Beiriger, (925) 443-5769; Web site: www.lithophiles.com.

17-18--OXNARD, CA: Show, "Beauty of Amethyst"; Oxnard Gem & Mineral Society; Oxnard Performing Arts Center, 800 Hobson Way, off 5th St.; Sat. 9-6, Sun. 10-4; contact Miriam Tetreault, 1134 Sunnycrest Ave., Ventura, CA 93003, (805) 642-5779; e-mail: tetreaultm@infostations.com; Web site: www.ogms.net.

17-18--VICTORVILLE, CA: 32nd annual show; Victor Valley Gem & Mineral Club; San Bernardino County Fair Grounds, 14800 7th St.; Sat. 9-5, Sun. 9-5; free admission; contact JoAnn Beall, P.O. Box 873, Adelanto, CA 92301, (760) 217-2628; e-mail: info@miningandmore.com; Web site: <http://fosse.shema-root.org/vvgmc>.

24-25--SAN FRANCISCO, CA: Show, "San Francisco Crystal Fair"; Jerry Tomlinson; Laguna Ave. and Marina Blvd.; Sat. 10-6, Sun. 10-4; contact Jerry Tomlinson, (415) 383-7837; e-mail: sfxtl@earthlink.net; Web site: www.crystalfair.com.

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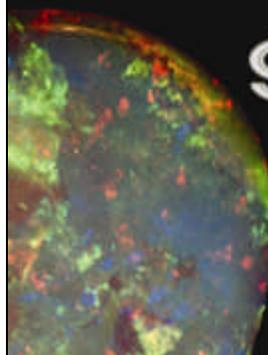
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 Thank you,
The Editor

The Opal Express

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**Volume #40 Issue #11
November 2007**

TO:

Some Topics In This Issue:

- Opal & Gem Show
- Show Seminar: Gem Carving, Inspiration & Skills
- Show Seminar: Gem Sculpture - Passion for Opals
- What Is Opal
- Nevada Mineralogy IV
- Whitest Whites and Blackest Black
- Giant Red Spinel Discovered in Africa
- Estate Rock Sale Notice

Important Info:

Board Meeting - November 1st

Opal & Gem Show – Nov. 3rd & 4th

General Meeting - November 8th

November 3rd and 4th Opal & Gem Show

— GENERAL MEETINGS —

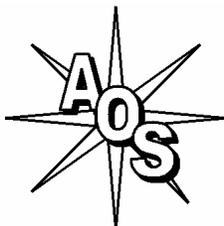
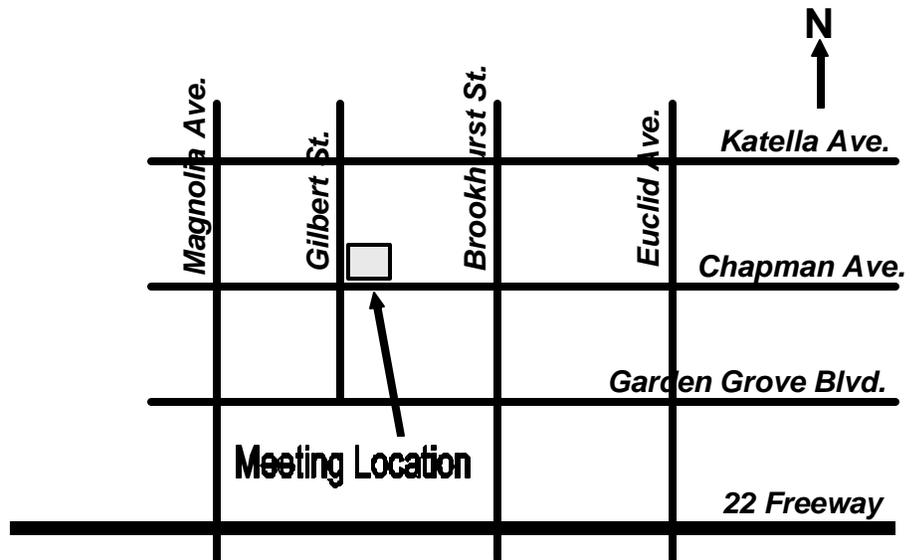
2nd Thursday of the Month
7:00 pm - 9:00 PM

Garden Grove Civic Women's Club
9501 Chapman Ave.
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MEETING ACTIVITIES

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



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