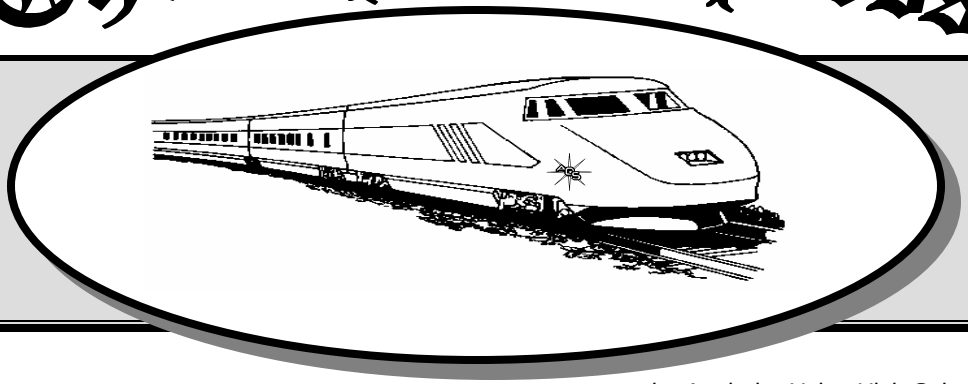
The Opal Express



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President's Message

By Gene LeVan

Holliday time again! Please come to the annual Christmas party on Thursday December 14, 2006 at Women's club meeting place 7:00, this is a potluck dinner for all. Bring your favorite dish to share. No speaker, just a fellowship of opal lover's members. See you there!

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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: "opalmine".

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Opal Society Workshop

The American Opal Society's workshop is open at Ball Jr. High School every Monday from 7:00 to 9:30 p.m. The school is located at 1500 W. Ball Road in Anaheim. This is between Euclid Ave. and Harbor Blvd. If you are traveling east on Ball Rd. the parking lot entrance you need to use is just before the railroad tracks. If you are traveling west, the lot is just after 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. You will need to furnish other equipment you wish to use. 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. Our thanks to Pete Goetz and the Anaheim Union High School District for the use of this classroom for our workshop!

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Woman Finds 1.30-Carat Diamond in Park

From The Associated Press *9/22/2006*

MURFREESBORO, Ark. - A Tennessee woman whose husband predicted she wouldn't have any luck gem hunting at Arkansas' Crater of Diamonds State Park made a sparkling discovery: a 1.30-carat diamond.

"I wasn't expecting to find anything and was just picking up pretty rocks," said Melissa Lacey of Knoxville.

At first, she thought the light yellow diamond was "a piece of dirty quartz." After it was identified by park staff, Lacey said she couldn't wait to show it to her husband.

The diamond was the size of a piece of candy corn. The largest diamond ever discovered in the U.S. was unearthed here in 1924. Named the Uncle Sam, the white diamond weighed 40.23 carats.

A freshly dug trench was opened to the public on Saturday. Soil from the trench was spread out over parts of the diamond field. Lacey found her diamond there Thursday.

The Crater of Diamonds State Park is the world's only publicly operated diamond site where the public is allowed to search and keep any gems found, regardless of their value.

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Opal & Gem Show Was a Success!

By Jim Pisani, Editor

The Opal & Gems Show was a success this year. We had a greater than normal attendance and the dealers were happy with the turnout and purchases. We actually made money for the Society! Let's give show chairmen, Jim Lambert and Jay Carey a big hand in all the hard work they did to make the show a success, along with all of the other volunteers, demonstrators, dealers, and guests. Another big thanks goes to our distinguished seminar speakers.

The AOS Board of Directors faces some hard decisions to make about next year's show. We need to pick a date and place soon. The Clarion Hotel is going to raise rates considerably next year, which will make turning a profit difficult without either raising the dealer rates or increasing the gate receipts. The board is considering all options, which may include changing locations.

If any our members know of a large hall in the Orange County, California area that is for rent, please let the Board know. The Board is looking for a hall in a good area, near major roads and with good access, free parking, and with hotels and restaurants near by. The hall may also be located in a hotel. We would like a reasonable rate under $4000 for a weekend. The hall must be able to hold at least 50 six foot tables.

The Boards phone numbers and e-mail addresses are located on the last page of the newsletter if you can recommend a place.

Famous Opals: The Grawin Rainbow

Shining Seashell - The Grawin Rainbow is 505½ carats of fully opalized mussel shell and a blaze of prismatic colors.

By B. F. Parker

The Grawin Rainbow was mined in 1986 at a level of 27 feet and is what is called a "floater," meaning that there were no other traces of seam opal found when the specimen was discovered.

It is in two pieces, a result of the mining process. However, had the hammer that divided it not also exposed its brilliant color patterns, it might have been missed, because no other opal traces indicated its possible presence.

The Grawin Rainbow

Examination of the specimen, which is opalized all the way through, suggests that it is approximately 100 million years old. The solid opal, measuring 85.0 x 43.8 x32.5 millimeters shows the full spectral range in a large, blocky pattern of bars. It

was found in the Grawin opal fields, New South Wales, and hence was named the Grawin Rainbow in honor of its locality and coloration. The Grawin opal fields are approximately 30 miles due west of the famous black opal mining fields of Lightning Ridge. Grawin has yielded other shell specimens, though not as large and not fully opalized. The area has been mined for opal since 1907. Another notable opal to come from Grawin was called the Light of the World, and many precious opals have been mined from this field.

New opal finds inspire rushes in the adjacent surrounding areas from time to time. The old time miners, though, say there is still opal to be found in the old diggings at Grawin. I thought they might be right - and discovered the Grawin Rainbow as proof that they were.

Collectors may write to Mr. B. F. Parker, Grawin Opal Fields, Via Walgett 2832, NS. W., Australia for information on acquiring the specimen.

From the article titled "Shining Seashell", from The Lapidary Journal, June 1989, Page 31

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Virgin Valley Report

By Shep Koss

Howdy Doody Hounders,

Just got back VERY early pre-dawn Wednesday from a LONG weekend driving to Virgin Valley and back. Went to the Royal Peacock since they're affordable (AND were the only ones still open when I arrived on the 1st!).

Well, like any good trip, this one started with glitches. Did my routine truck safety check Thursday Afternoon intending on leaving dawn Friday. Of course, I find a problem...water pump leak. Since a 750 mile (each way) drive is ill-advised with a leaky water pump, I bought a replacement, installed it, went to put on the fan....it didn't fit. Seems like they sold me the wrong pump. Removed the replacement, re-ordered the CORRECT pump (they're mistake) but it wouldn't arrive until the following morning. After installing the replacement I finally departed Frazier Park early Saturday afternoon, spent the night in Lovelock, Nevada and arrived at the Royal Peacock Sunday mid-morning already missing two hours of digging time. Considering how much mine time I had left for Sunday, I only did the tailings dig.

After a slow start I found my first opal. Raking debris I was suddenly hit with a burst of brilliant rainbow colored glass the size of a quarter. OPAL!!!! And WHATTA opal.....glass clear, brilliant reds, greens and yellows, width of a quarter with twice the thickness. Shortly after I uncovered a small inch and a half long limb cast filled with white and black opal, a couple of nice pieces of fiery black opal, small colorful fragments of fiery opal in clears, reds, whites and tan bases.

Not a bad start. Also found large chunks of dark green chert with opal inclusions. Not sure if this stuff will polish. Well, 4 o'clock arrived calling an end to the day's diggings. Seemed to be a couple of dozen people working the mine wall which they said was about average. I did the math, multiplied the number of people times the mine fees and quickly realized I'm in the wrong business!!! A couple of months back they had around 40 people a day working that wall of opalized conifer wood!

Went back to their campgrounds, set camp, cooked a hot meal and watched the sunset after starting a campfire. When I was ready for my sleeping bag, I searched with my longwave UV flashlight for scorpions and noticed some brilliant neon yellow stones fluorescing in the beam. Seems like the campgrounds were littered with fluorescent opal which I proceeded to collect the more brilliant and brighter specimens. Some glowed from 10 or 12 feet away in the beam of my light. FINALLY, time for bed and sleep. Or so I thought.

After midnight a nice gusty wind sprung up and I awoke to a flapping tent. A couple of hours later I awoke to a hard driving rain beating against my tent sounding like a hailstorm. Quickly dressing I ran out into the dark to secure and cover items I've let exposed to the elements then dove back into the tent and crawled into a warm sleeping bag with fears of what the morning would bring concerning my turn at the mine wall.

It'd stopped raining!

But the clouds.....SHEESH! There went my chance to dig by bright sun. Found many pieces of wood which were coated in a thin layer of fire opal, pieces of black fire, some whites.....but without the sun catching the glare of "broken glass" I'm sure I missed more than I found. Took occasional breaks to the tailings to clear my mind and attitude of frustrations. Found more of what I found the previous day but nothing as large.

After a long frustrating day I returned to the tailings for the last half hour of my final day there (only allowed myself two days) and scooted up and down the tailings raking rock. Then it happened! A 3 inch long 1 inch thick "log" rolled out from between my legs which I uncovered with my butt (No comments please!) From end to end it was solid black fire opal limb cast!!! It still had bark on it and even the bark had layers of clear fire opal. Every way I turned it I was greeted with red and green fire!!!

After a loud exclamation on my part (I think the ancient Greeks would translate it simply as Eureka), a lady from New Jersey digging about 15 feet away asked "What?". I held it up and she exclaimed with a "Eureka" of her own.

Yep, found my "WOW" piece which easily paid for my whole trip and then some. Fifteen minutes later the mine closed for the day. After spending the night camping there again, I broke camp the next morning and having a few hours left before my long drive back, decided to go to a nearby obsidian field. Driving west on SR 140 a few miles I saw the turnoff and the large sign on that road put up by BLM..."Un-maintained road...TRAVEL AT YOUR OWN RISK". Not being deterred by a road sign, I traveled it to discover large, widespread fields of obsidian and apache tears. After collecting

about 30 lbs worth (including rainbow, gold sheens & silver sheens), it was time to bid Nevada a farewell.

EXCEPT for another glitch. It seems like that road had one nail on it. I FOUND IT! Rather, my tire did. Switching tires I was finally able to head out after being watched by three wild burros. I swear one waved at me with his ear!!! Yeah, the whole area has wild burros. Oh, did I mention being serenaded by coyotes during the previous night? Or how the clouds cleared to show me a night sky filled with more stars than I imagined could exist on a single night? Yeah, yet more wonders on this opal expedition.

Now, here I am at 4 am in the drudgery of my work.

Welcome to my world.

Shep

From LA Rocks Yahoo Egroup

http://tech.groups.yahoo.com/group/LA-Rocks/message/6286

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Damascus Steel's Lost Secret Found

By Jeremy Manier

For hundreds of years, some of the keenest minds in science sought in vain to tap the secret of how blacksmiths in ancient India and the Middle East fashioned a supremely tough metal known as Damascus steel.

Legend had it that the metal, stronger and sharper than some steels produced even in industrial times, may have helped Islamic armies repel European crusaders with inferior weapons during the Middle Ages.

The search for the shimmering alloy may now be at an end, thanks to an unlikely alliance between a materials science professor at Iowa State University and a Florida blacksmith who crafts shoes for racehorses. Their apparent recovery of the lost technology just might aid modern steelmakers in the hunt for new steels to make lighter automobiles and tougher engine components, experts said.

The work already has revealed much about the original Damascus steel, prized for its distinctive wavy surface that Persian poets likened to ant tracks or rippling water. Islamic artisans used it for centuries to make swords that spurred envy and myths among Europeans--including the legend that a Damascus blade could slice a falling silk scarf in midair.

But finding what some experts call the Holy Grail of metallurgy took the professor and the blacksmith on a quest that spanned decades. Some of the keys to forging the stubborn metal now appear tantalizingly simple, such as a trace impurity that proved crucial after the team ignored it for years.

"If you just keep at something like this, beating your brains out, eventually you can figure it out," said John Verhoeven, the Iowa State professor. "But it took us an embarrassingly long time to do it." Cracking the puzzle brought the unaccustomed title of scientific pioneer for Al Pendray, the blacksmith who is a former rodeo wrangler.

"A lot of people said it's rare that a so-called country blacksmith could sit down and work with a top metallurgist," Pendray said. "The two of us together got to the answer."

Controversy has tempered their triumph, in the form of a running feud with researchers at Stanford University who believe they re-created the old metal using modern rolling mill techniques.

Yet even their rivals concede Verhoeven and Pendray are the first to recapture both the external beauty and microscopic structure of genuine Damascus blades.

"This technology has been lost for about 200 years," said Ben Bronson, curator of Asian anthropology at the Field Museum of Natural History in Chicago and an expert on Damascus steel. "A real driving force in the development of modern steels was the attempt to replicate ancient Indian and Middle Eastern steels."

Steel not made in Damascus

Early descriptions of the metal date at least to the 1500s, but many scholars believe Muslims from Egypt to India used it for hundreds of years before that. Western traders encountered the steel in the Syrian capital of Damascus, though there is no evidence it was ever made there.

The silk scarf legend comes from the 19th Century English writer Sir Walter Scott, whose fictional tale of the Crusades described the Islamic army's swords as being "of a dull blue color, marked with ten millions of meandering lines." The hallmark pattern became known as damask, or damascene.

Europeans' interest in copying the steel grew around 1800, just as the art of making it was vanishing in the Islamic world.

The original artisans did not leave complete instructions for making their steel, and the few written formulas are less than helpful. Some advise quenching the red-hot blade in the urine of a red-haired boy or of a goat fed nothing but ferns. Another text suggests driving the sword into the belly of a muscular slave.

Chemical tests in the last century began to reveal the swords' composition but only deepened the puzzle of their manufacture. The enigma of Damascus steel boils down to finding a way of making steel that is high in carbon but not so brittle as to be useless.

Verhoeven began testing techniques in the early 1980s, still beguiled by a mystery he had stumbled across as a student decades earlier. But after years of trying to do the job with a modern rolling mill, he decided that a key might be forming the metal by hand, with a hammer.

Before long, Verhoeven had found Pendray--a blacksmith who had also taken an interest in weapons -- and the two men were launched on their mission.

While Verhoeven schooled Pendray on experimental methods and had him read advanced metallurgical texts, the blacksmith gave the professor a tutorial in the art of steel forging.

"Sometimes I'd have to tell him, 'I don't care if you've got a PhD, you don't understand what the hell's going on here,'" Pendray said.

To make the steel, the men used ingredients resembling a witch's brew - glass chips, iron, oyster shells, green leaves and charcoal for carbon.

The work went slowly. They spent a year just figuring out how to keep carbon in the steel ingots from coalescing into graphite, which always robbed the finished product of its strength and surface markings.

The solution? "You heat it up really hot and beat on it really hard," Verhoeven said.

In time, Pendray hit upon a method involving dozens of heating cycles, which would occasionally yield-the right external pattern and the microscopic hallmarks of genuine Damascus. But many batches failed, and the men had no idea why.

"We were stumped," Pendray said. '

What did we do right? It would make you want to tear your hair out."

Overlooked in their reckoning was an element called vanadium, which made up just .003 percent of some iron the team used.

Verhoeven now believes the steel's markings arise from patchy layers of vanadium that form as the metal cools and hardens. Further heating cycles fill those bands with hard, carbon-rich steel, surrounded by a softer, springier material.

Hard but not brittle

That combination, experts said, gives Damascus steel its lasting sharp edge and makes the metal hard but not brittle. Although Verhoeven and Pendray have patented their technique and received some funding from Nucor Steel Inc., they concede the technology in its current, labor-intensive form probably is not a moneymaker.

Their Stanford rivals got closer to finding applications for their version of the metal, including a partnership in the early 1990s with Caterpillar Inc. of Peoria. They still hope that their high-carbon material, which they call "superplastic steel," could allow makers of vehicles such as airplanes to replace riveted sheets with fewer, stronger parts.

The long quest has left Verhoeven and Pendray with a newfound sense of connection to the ancient craftsmen who made the steel for great armies.

Reproduced from The BC Rockhounder, September 2001, via the GMFC Newsletter Winter 2001-2002.

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December Birthstones

This is almost like a Ripley's Believe It Or Not story. There are thirteen, yes thirteen birthstones listed for the December calendar month. Included in the list are turquoise, blue topaz, tanzanite, zircon, lapis lazuli, onyx, ruby and chrysoprase. Also included are agate, garnet, amethyst, sapphire and beryl from the Zodiac signs of Sagittarius and Capricorn. Count them up!!

The traditional birthstone is Lapis Lazuli with a history stretching back to 5000 BC. Deep blue in color and opaque, this gemstone was highly prized by the pharaohs of ancient Egypt. This can be seen by the prominent use in many of the treasures recovered from ancient tombs. It maintains its extreme popularity to this day.

The finest lapis comes from the Badakshan area of Afghanistan. This source may be the oldest worked group of lapis mines in the world. The same mines operating today may have supplied lapis for the pharaohs. During the Soviet invasion of Afghanistan, Afghani resistance fighters disassembled unexploded Russian landmines and ordinance and used the scavenged explosives to help mine lapis and further their resistance efforts.

Lapis has also been found in Pakistan and the Andres Mountains but is of a lesser quality. Lapis is a rock, not a mineral as it is made up of various minerals. To be a true mineral, it must have one main constituent only. The first part of the name is the Latin lapis, meaning stone. The second part, lazuli, is the generative form of the medieval Latin lazulium, a loanword adapted from the Arabic (al-)lazward, itself a borrowed word from the Persians. This was originally a place name, but soon came to mean blue because of its association with the stone. The English word azure also derives from this source. Taken as a whole, lapis lazuli means stone of azure.

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Curing Crazed Opal

Here is a recent thread of discussion from the Orchid Digest on that topic that comes up again and again - how to cure crazed opals. The Editor

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From: Richard Barbare

I have a crazed opal that I need to do something about. Has anyone used Opticon? Does it work? Is there any other remedy? Help!

From: Terry Ogden

Richard

I have used Opticon and it has worked for the stones (mostly quartz based) I use it on, I have not however tried it on Opal. The process I use is to soak the stone in a covering of acetone to make sure all oil is gone, then heat my stone (below 200 F and watch for a thin line to appear around the crack, if it does you still have oil and will have to wash it again), use a nail to put the resin on it following the crack, allow the stone to cool drawing the resin into the crack. Wipe off the excess resin, warm the stone to touch, then apply the hardener with another nail. Letting this sit for 10 minutes or until cool and then wipe it off.

The other method on the instructions is to mix the resin and hardener, apply to the warmed stone and allow it to soak in. I suspect it will work, but for me cleaning would be harder since when performing these actions I am also doing something else and I don't always make it back in a timely manner.

For any residue that sticks on, most the time it will wipe off using a rag, on soft stones I have used a 1500 grit damp wet and dry by hand to get it off and then re-polished. Careful on a mat or semi-gloss finished stone, perform this action before final facing.

I suppose you could use stir sticks, tooth picks or whatever you find handy, I happened to have nails, they make good dop sticks for working small stones, stirring epoxy, wedges, spacers and so on.

Bummer on your opal; let me know how it works. If the cracks are very, very small, wait for another post. Someone may know of a product which gets thinner. Opticon gets thin when warm but I don't know if it will get thin enough to get into extremely fine cracks and it would be a shame to plug the cracks with the wrong stuff. Try and see which will get the thinnest for you and then go with that one.

Terry

From: The Doctor

I've used Opticon on crazed opals with some success. My best results have been by placing the opal, covered in resin, in a casting vacuum that pulls 25 in/Hg for a few minutes, then brush with hardener. Second to vacuuming, heating gently at 250F in a toaster oven yielded good results. I put the resin-covered opal in the oven while cool, set to 250F with the door propped open with a bit of aluminum foil to help with thermal shock. After two hours, ramp the temp down gradually over another hour and leave in place for another hour or so to cool. Finish by brushing with the hardener.

As is usual with opals, anything can and will happen. Some have reacted well to Opticon, others have not. In every case, the opal was a customer's or friend's. I never have, and never will, Opticon an opal unless requested to do so. If I suspect the requester is going to resell the opal as untreated, I refuse.

I've heard of some people using UV curing glues with some success, but I haven't tried it. As a card-carrying opalholic, I have plenty of crazed stones lying around, but I just can't bring myself to experiment with them. I simply bring them out every now and then to enjoy how beautiful they still are even when crazed, and think "Yep, that's opal - ya pays yer money and ya takes yer chances."

James S. Duncan, G.G, in SoFL

From: Stephen Wyrick

I have three crazed Opals that are worth saving if the Opticon works. I will be watching your question very close.

Stephen Wyrick

From: Richard W. Wise

Several years ago I wrote an article that notes work by Dr. Lippman, an opal enthusiast, who experimented with a a polymer, CR39, to "mend" cracked opal. I suggest that anyone contemplating using Opticon or any other polymer take a read. The article can be found at http://www.secretsofthegemtrade.com/articles_10.htm.

Richard, www.rwwise.com.

For Information and sample chapters from my new book: www.secretsofthegemtrade.com

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From: Kevin P. Kelly

There ain't no cure for the crazed opal.

From: Hans Durstling

Hi,

My instinctive response to the "curing crazed opal" is to say "can't be done." Those cracks are so extremely minute already, and they propagate on an atomic scale. So no large-molecule polymer filler seems likely to get all the way in there to the very tip, which is where the active zone is, from which the crack will grow.

That being said, if I remember correctly Orange County CA opal cutter Stan McCall (who I believe is on the Orchid list) claims to have a process that can rescue crazed opal. I know Stan and he is exceedingly capable and conscientious. Stan may respond to your post himself; if not contact me off list and I'll give you his phone number.

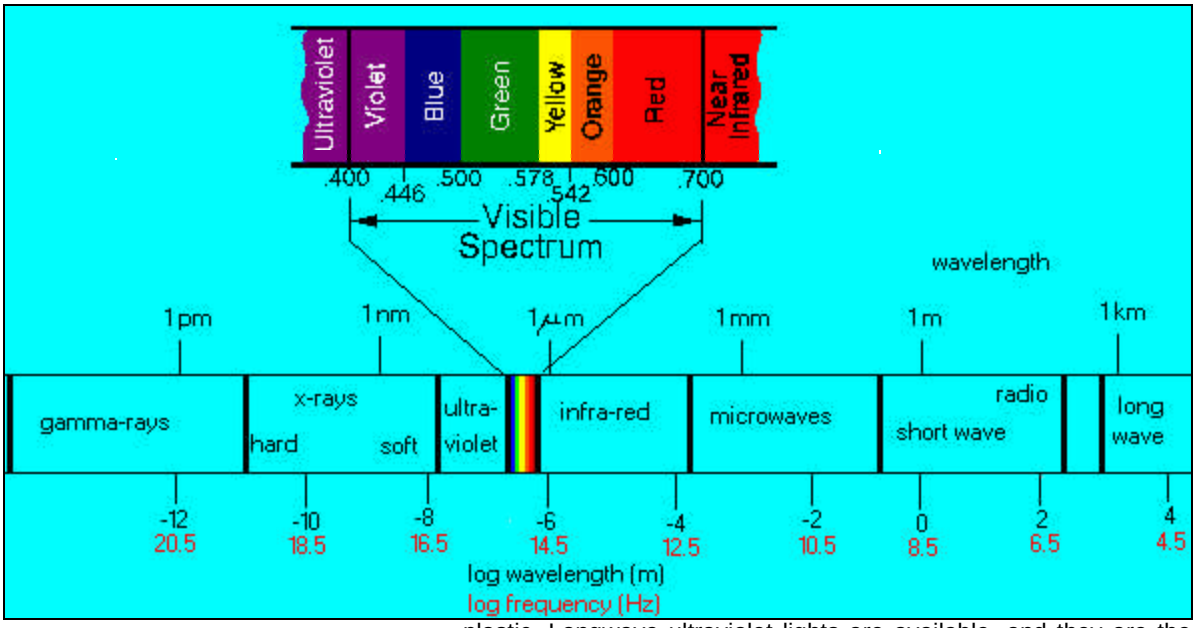
Cheers, Hans Durstling, Moncton, Canada

From the Orchid Digest from http://www.ganoksin.com, dated 3-23-06 to 3-25-06. *Printed with permission of Ganoksin.*

Experiencing Fluorescence

By Bruce H. Fine

We all experience fluorescence more than we realize. Ever notice how *bright* white clothing appears in sunlight? The reason is that many laundry detergents and bleaches contain trace amounts of fluorescent dyes in them. Why? Since there is a component of UV light present in bright sunlight, clothes washed in these detergents appear, due to the fluorescent affect, to be brighter than clothes not washed with fluorescent soaps.



Light is a form of energy. To create light, another form of energy must be supplied. There are two common ways for this to occur, incandescence and luminescence.

Incandescence is light from heat energy. If you heat something to a high enough temperature, it will begin to glow. When an electric stove's heater or metal in a flame begin to glow "red hot", that is incandescence. When the tungsten filament of an ordinary incandescent light bulb is heated still hotter, it glows brightly "white hot" by the same means. The sun and stars glow by incandescence.

Luminescence is "cold light", light from other sources of energy, which can take place at normal and lower temperatures. In luminescence, some energy source kicks an electron of an atom out of its "ground" (lowest-energy) state into an "excited" (higher-energy) state; then the electron gives back the energy in the form of light so it can fall back to its "ground" state.

Phosphorescence is delayed luminescence or "afterglow". When an electron is kicked into a high-energy state, it may get trapped there for some time. In some cases, the electrons escape the trap in time; in other cases they remain trapped until some trigger gets them unstuck. Many glow-in-the-dark products, especially toys for children, involve substances that receive energy from light, and emit the energy again as light later.

Triboluminescence is phosphorescence that is triggered by mechanical action or electroluminescence excited by electricity generated by mechanical action. Some minerals glow when hit or scratched, as you can see by banging two quartz pebbles together in the dark.

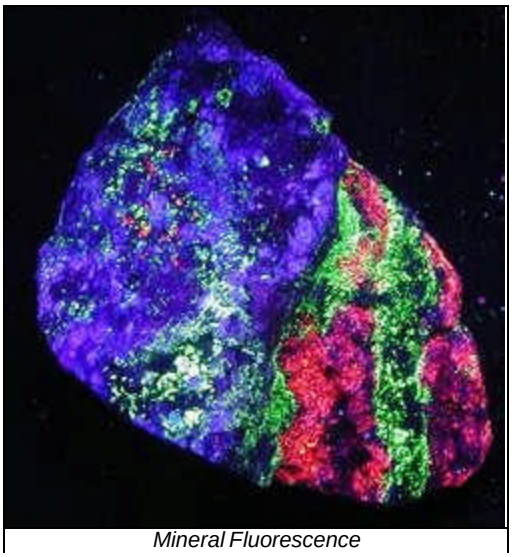
Thermoluminescence is phosphorescence triggered by temperatures above a certain point. This should not be confused with incandescence, which occurs at higher temperatures; in thermoluminescence, heat is not the primary source of the energy, only the trigger for the release of energy that originally came from another source. It may be that all phosphorescences have a minimum temperature; but many have a minimum triggering temperature below normal temperatures and are not normally thought of as thermoluminescences.

Fluorescence and, a related phenomena called phosphorescence, are properties of materials that emit visible light when exposed to UltraViolet (UV) light and/or continue to emit such light after exposure to UV light.

Ultraviolet is closest to and just shorter than visible light in wavelength. Ultraviolet can be subdivided according to wavelength. From lowest to highest: longwave ultraviolet (UVA or near ultraviolet), middle-wave ultraviolet (UVB), short-wave ultraviolet (UVC), and extreme ultraviolet.

Longwave ultraviolet is part of sunlight. It is the lowest-frequency ultraviolet, and thus the nearest to visible light. Longwave ultraviolet passes easily through most transparent types of glass and plastic. Longwave ultraviolet lights are available, and they are the cheapest and longest-lasting ultraviolet lights. They cause some fluorescent minerals (perhaps 15%) to exhibit fluorescence.

Midwave ultraviolet is also part of sunlight. Longer wavelengths of midwave ultraviolet cause suntans, while shorter wavelengths of midwave cause sunburn. Midwave, especially shorter wavelengths, are partially stopped by clear glass. Midwave ultraviolet light is passed thru short-wave ultraviolet filters. Midwave tubes have recently become widely available, some collectors are starting to use midwave to study mineral fluorescence.



Mineral Fluorescence

Short-wave ultraviolet is emitted by the sun, but it is stopped in the upper atmosphere of the earth by the ozone layer. Short-wave ultraviolet can also cause burns resembling sunburns (they are often called sunburns, even though the sun did not cause them). Short-wave ultraviolet is almost completely stopped by most forms of glass or plastic. Quartz or special glasses must be used in short-wave tubes to let the short-wave UV escape the tube. Short-wave ultraviolet over time cause failure in the short-wave filter used in short-wave ultraviolet lights; this process is called solarization. Short-wave ultraviolet is the most popular for seeing mineral fluorescence, causing fluorescence in perhaps 90% of fluorescent minerals.

Extreme ultraviolet is also emitted by the sun, but is stopped in the upper atmosphere, and in so doing forms ozone from the

atmosphere's oxygen. It is this high ozone layer that stops part of the sun's middle-wave ultraviolet rays and all of its short-wave ultraviolet rays, and which may be in danger from some commercial chemicals. Extreme ultraviolet is closest to X-rays in frequency, and as with X-rays there is no practical equipment for its use. Few substances are transparent to extreme ultraviolet, and even air stops it within a fairly short distance.

Fluorescent minerals respond best to either short-wave UV light, which has a wavelength of 254 nanometers (nm), or longwave UV, at 366 nm. Some minerals may fluoresce under both wavelengths with the same or a similar color, while some may show different colors under each. Most respond best to only one of the two. Well over 3600 mineral species have been identified at this time. Something over 500 of them are known to fluoresce visibly in some specimens. Arizona is a excellent location for fluorescent minerals hunting. There are over 140 mineral found in Arizona that have been know to Fluoresce at other locations around the world. Below are some of those minerals.

ADAMITE, ALLOPHANE, ANALIME, ANHYDRITE, ARAGONITE, AUSTINITE, AUSTINITE, BARITE, BASALUMINATE, BUSSAMITE, BAYLEYITE, BECQUERELITE, BERYL, BLODITE, BOLTWOODITE, BRUCITE CALCITE, CALOMEL, CASSITERITE, CELESTINE, CERUSSITE, CHABAZITE, CHLORAPAITITE CHRYSOBERYL, CLINOHEDRITE, COLEMANITE COOKEITE CORUMDUM COTUNNITE COWIESITE CRISTOBALITE DOLOMIT,E DICKITE, DIOPSIDE, DUMONTITE, DUMORTRERITE, EDENITE, ELBAITE, EPSOMITE, ETTRINGITE, EUCRYOTITE, FERRIERIT,E FLUORAPATITE, FLUORITE, GEARKSUTIT,E GLAUBERITE, GMELINITE, GONNARDITE, GREENOCKITE, GROSSULAR, GYPSUM, GYROLITE, HALITE, HARMOTOME, HAWLEYITE, HECTORITE, HELVITE, HEMIMORPHITE, HEVLANDITE, HUNITE, HYDROCERUSSITE, HYDROXYHERDRITEHYDROMAGNESITE HYDROZINCITE JUNITOITE, KUTNAHORITE, LAMONTITE, LEPIDOLITE, LEUCITE, LEVYNE, LIEBIGITE, MAGNESITE, MAMMOTHITE, MANGANOAXINITE, MARGARITE, MARIALITE, MATLOCKITE, MESOLITE, META-AUTUNTIC, METATORBERNITE, META-ZEUNERITE MINUM , MORSSANITE, MONTMORILLONITE, MORDENITE, NATROALUNITE, NEPHELINE, OPAL, ORTHOCLASE, PECTOLITE, PHLOGOPITE, PHOSGENITE, PLAGIOCLASE, POWELLITE,PREHNITE, PYROMORPHITE, PYROPHYLLITE, QUARTZ, REALGEAR, RHODOCHROSITE, SABUGALITE, SANIDINE, SCHEELITE, SCHOEPITE, SCHROCKINGERIT, SEPIOLITE, SODIUM-ZIPPEITE, SPHALERITE, SPINEL, STEVENSITE, STILBITE, STOLZITE ,STRONTIANITE, SULFUR, SWARTZITE, TALMESSITE, THAUMASITE, THENARDITE, THOMSONITE, THORITE, TILASITE, TITANITE, TOBERMORITE, TOPAZ, TORBERNITE, TERMOLITE, TRIDYMITE, URANOCIRICITE, URANOPHAN,E URANOSPINATE, UVORVITE, VANDANITE, WICKENBURGITE, WILLEMITE, WITHERITE, WOLLASTONITE, WULFENITE, WURTZITE, XONOTIME, XONOLITE ZUENERITE, ZINCITE, ZIRCON, ZUNYITE.

The phenomenon known as fluorescence occurs at the subatomic level by a process called electron excitation. Electrons are subatomic particles that orbit the nucleus of an atom at specific distances known as electron shells. These shells are arranged in layers around the nucleus, the exact number of electrons and their shells depending on the type of atom (element). The electrons contained in the shells nearest the nucleus carry less energy than the electrons in the outer shells.

When certain atoms are exposed to ultraviolet (UV) light, a photon (particle of light energy) of UV will cause an electron residing in a lower-energy inner electron shell to be temporarily boosted to a higher-energy outer shell. In this condition, the electron is said to be excited. It will then drop back to its original inner electron shell, releasing its extra energy in the form of a photon of visible light. This visible light is the fluorescent color that our eyes perceive. The exact color depends on the wavelength of the visible light emitted, with the wavelength itself being dependent on the type of atom undergoing the electron excitation. The specific atoms which undergo the fluorescence are known as activators. They are usually present as impurities in the normal molecular structure of the mineral, but sometimes are an intrinsic part of the mineral's composition. In fluorescent minerals, very often the activators are cations, which are atoms or molecules which carry a net positive charge (due to the loss of one or more electrons, each of which display a negative charge). Because the activators are usually impurities, the same mineral species may fluoresce in some locations and not others, depending on whether the activator was present when the mineral was formed. It also may contain different activators depending on location, and therefore fluoresce in various colors. The intensity of the fluorescence depends on the concentration of the activator in the mineral, but too much activator may actually block fluorescence.

There are a few minerals that will fluoresce when pure. These are called "self-activated" minerals, and include scheelite, powellite, and several uranium minerals. Others suspected of being self-activated include benitoite, cerussite, anglesite and perhaps many other lead minerals.

The best time to hunt for fluorescence is at night. Your eyes become adapted to the dark and you can pick up a weak fluorescence at greater distances. Rock hunting at night has a excitement all it own. Walking carefully to place you foot securely on a rocky ledge or backing in to a cactus. By night you discover the real meaning of "invisible" fluorescent minerals. In day light a ordinary rock specimen show several types of minerals of little to no interest , but at night under a UV light certain unnoticed specks or transparent crystals become very dominant. Turn your flash light on it and there are gone, their color blends in so closely with the adjoining rocks they are lost to sight.

As a field collector of fluorescence minerals you have 2 special needs the first is a portable source of ultraviolet light, and the second a means of creating enough darkness to view the minerals around you. The first is easy there are many different kinds of UV light out there. The Second is a little harder a black piece of plastic can be used or a blanket, viewing boxes are not that hard to make but both add extra weight to your pack. Believe me the rocks weigh enough by themselves. I find the best way is just to hunt at night. Fluorescence mineral hunting is much easier for the most part than regular rock hunting. This depends on the quality of the black light and the amount of darkness. Another reason that they are easier to find is that portable UV light are a fairly new thing and were not around when many of the mines were active. Many of the mine dumps are just covered with color.

This article is part of a presentation given by Bruce H. Fine at the February 14, 2003 meeting of the Calgary Rock and Lapidary Club.

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Do You Know that…

Karat is a measure of fineness—24 karat is fine gold. 1 karat equals 1/24 (0.0417). Thus 14 karat gold is 14/24 fine gold and the balance (10/24) alloy. The usual alloy metals are silver, copper, and zinc. Nickel is used in white gold.

Colors of Gold– Yellow, green, red, and white– are produced by variations in the alloy. Silver and zinc tend to give a green color; copper– red and nickel– white.

Gold Filled is made by joining a layer (or layers) of gold alloy to a base metal alloy and then rolling or drawing to the thickness required.

Gold Electroplate is usually made by electrolytic deposition of fine gold on a base metal.

Gold Solders are usually 2 to 4 karats less than gold on which they are used.
Sterling silver is 925/1000 (92.5%) fine silver and 75/1000 (7.5%) copper.
Coin Silver is 900/1000 (90%) fine silver and the balance copper.
Foreign Silverware contains varying percentages of silver. In some cases it is as low as 700/1000 (70%)
Silver plated ware is made by electroplating fine silver on a base alloy—usually nickel silver or Britannia metal, sometimes brass or copper.
Sheffield Plate (original) was made by soldering sheet silver onto copper, rolling, and manufacturing into hollow-ware. Imitations are made by electroplating silver or copper.
Nickel Silver—so called– is a composition of nickel, copper, and zinc. (it contains no silver) **German Silver**– a misleading name– the same as nickel silver. (It contains no silver)
Brittannia Metal is a composition of tin, copper, and antimony.
Pewter (original) was primarily a lead alloy. It is now made in a tin, copper, antimony composition similar to Britannia metal.
Grain originally meant the weight of a grain of wheat. It was later standardized for trading purposes, but it's little used now, most weighing being done in ounces and decimal parts or in pennyweights and decimal parts. *Author Unknown Source: Outcroppings, 1/01; via The Mountain Gem, 9/06.*

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Movie Review - Opal Dream

Big Dreams of a Little Girl, And Her Dad

By Jeannette Catsoulis 11/22/06

A warning to parents everywhere about the dangers of indulging irrational behavior, "Opal Dream" is a sickly sweet tale of deep dysfunction masquerading as family solidarity.

In the Australian outback, in the opal mining community of Coober Pedy, Rex Williamson (Vince Colosimo) hunts maniacally for the perfect stone while his family endures a life of dust and deprivation. Proving that obsession flows downhill, Rex's 9-year old daughter, Kellyanne (Sapphire Boyce), talks incessantly to a pair of invisible friends, insisting that they be fed and acknowledged as part of the family.

Instead of packing her off to therapy, Rex concocts an elaborate plan to "lose" the annoying pals. But it backfires, and he is left with a terminally grieving daughter and a charge of poaching another miner's claim. Therapy would have been so much easier.

Adopting a tone of whimsy and treacle, the director, Peter Cattaneo — whose blue-collar strippers in "The Full Monty" had fancies of their own — fills the screen with lollipops and cute children's drawings, while Robert Humphreys's cinematography bleaches the already lunar landscape to a uniform pallor.

But as the film's sentiment congeals in a mock funeral, with the entire town enabling Kellyanne's disorder, the ghost of a real movie flits across the screen — one capable of acknowledging that Kellyanne's invisible friends are no different from the invisible opals dancing in her dad's head.

"Opal Dream" is rated PG (Parental guidance suggested). It has mild violence and language, and a dangerous amount of sugar.

OPAL DREAM - Opens today (11/22/06) in New York and Los Angeles.

Directed by Peter Cattaneo; written by Mr. Cattaneo, Ben Rice and Phil Traill, based on the novel "Pobby and Dingan" by Mr. Rice; director of photography, Robert Humphreys; edited by Jim Clark and Nicolas Gaster; music by Dario Marianelli; production designer, Elizabeth Mary Moore; produced by Lizie Gower, Nick Morris and Emile Sherman; released by Strand Releasing. In Manhattan at the Village East, Second Avenue at 12th Street, East Village. Running time: 85 minutes.

WITH: Vince Colosimo (Rex Williamson), Jacqueline McKenzie (Annie Williamson), Christian Byers (Ashmol Williamson) and Sapphire Boyce (Kellyanne Williamson).

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Confessions and Tips of a Do or Die Cutter

By Barbara McCondra

Yes, I have been living out in the scrub too long. My metamorphosis from city girl to outback bushie has taken twenty years. You can bring me in out of the bush but I make do in the city in the bushie way anyway. I love my iron skillet whether in the city or in the outback. So as a cutter of ironstone matrix boulder opal known as Koroit and Yowah and Blackgate, I use my iron skillet on my Santa Fe studio stove to dop my opals. I have a copper jello mold full of green dopping wax hunks and I melt the wax by setting the mold in my skillet and heating it up. So much for the wax pots and dopping wick other cutters use. When the wax is melted and simmering and shiny wet looking, not boiling please, I dip the dop stick which has a hard wax blob on it from last use into the hot wax and stick the tip with molten wax onto a flat slice of opal that has been warmed on a pan or on a coffee maker hot plate. You warm the side of the opal that will be stuck upon the hot wax tip of dop stick. (hot wax on hot side of stone)

I like to do my faces of the stone first so these slices have been warming up backside down on the iron skillet. After you take the stone off its hotplate, flip the stone over and lay on a flat table surface. Now touch the dopstick (freshly dipped into hot wax) perpendicular to the flat back and push against stone gently. If too much wax has oozed over the sides of stone, quickly dip your fingers into a bowl of water and pinch back the still warm wax from the sides and down around the stick neck. Leave sitting flat side down with stick pointing up and go on to the next stone. I usually dop up about ten to twenty stones for some production cutting. I leave them standing stick up on a pie pan. So much for cab holders. Give five to ten minutes to harden and cool.

I take the dop stick in my right hand and hold edge of slice to the first 80 grit wheel. I roll the stick in my fingers (thumb and index) to grind a flat edge around the slice. Look at stone to check the flattishness of the edge and also look at the face of the stone to determine what you would like to grind away on the edge to form the shape you want.

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December 2006 Gem & Mineral Shows

1-3--SANTA BARBARA, CA: Show; Gem Faire; Earl Warren Showgrounds Exhibit Hall, 3400 Calle Real; Fri. 12-7, Sat. 10-7, Sun. 10-5; $5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com.

2-3--ORANGEVALE, CA: Show, "Winter Wonderland of Gems"; American River Gem & Mineral Society; Orangevale Grange Hall, 5807 Walnut Ave.; Sat. 10-5, Sun. 10-5; admission $1; contact Evelyn Tipton, (916) 372-3452.

8-10–COSTA MESA, CA: Show; Gem Faire; Orange County Fairgrounds, Bldg. 10, 88 Fair Dr.; Fri. 12-7, Sat. 10-7, Sun. 10-5; $5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com.

9-10–ARCATA, CA: 1st annual show, "Northwest Crystal Ball"; Jahfrey's Gems; Portuguese Hall, 1185 11th St.; Sat. 11-10, Sun. 11-7; local jewelers, mineral dealers, geology, gemology, jewelry design, gem magic; contact Jeffrey Wigginton, (707) 267-5135; e-mail: rift1976@yahoo.com.

915-17–SAN DIEGO, CA: Show; Gem Faire; Scottish Rite Center, 1895 Camino del Rio S.; Fri. 12-7, Sat. 10-7, Sun. 10-5; $5 weekend pass; free shuttle between the Scottish Rite Center and Sheraton Hotel locations; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com.

15-17–SAN DIEGO, CA: Show; Gem Faire; Sheraton Hotel Mission Valley, 1433 Camino del Rio S.; Fri. 12-7, Sat. 10-7, Sun. 10-5; $5 weekend pass; free shuttle between the Sheraton Hotel and Scottish Rite Center locations; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com.

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Aussie-opals has been involved in the opal industry for 14 years and has sold thousands of gems worldwide. We offer a fantastic range of Lightning Ridge solid black opal and Queensland solid boulder opal.

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- To make a purchase you email us the reference number for the opal (s) selected.

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	International Members All addresses outside of US Addresses	**$35**	
ADDITIONAL BADGES $5.00 each (First Badge free when joining)		**$5**	
ONE TIME INITIATION FEE All New members		**$10**	
SENIOR DISCOUNT Age 65 or over deduct $5		**-$5**	
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Please make check or money order payable to "***American Opal Society***". Mail payment and application to:
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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
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Volume #39 Issue #12
December 2006

Some Topics In This Issue:

- **Woman Finds 1.30-Carat Diamond**
- **Famous Opals: The Grawin Rainbow**
- **Virgin Valley Report**
- **Damascus Steel's Lost Secret Found**
- **December Birthstones**
- **Curing Crazed Opal**
- **Experiencing Fluorescence**
- **Gold Facts…**
- **Movie Review - Opal Dream**
- **Confessions of a Do or Die Cutter**

Important Info:
Board Meeting
December 5th

General Meeting
December 14th
Potluck Christmas Dinner at the Clubhouse

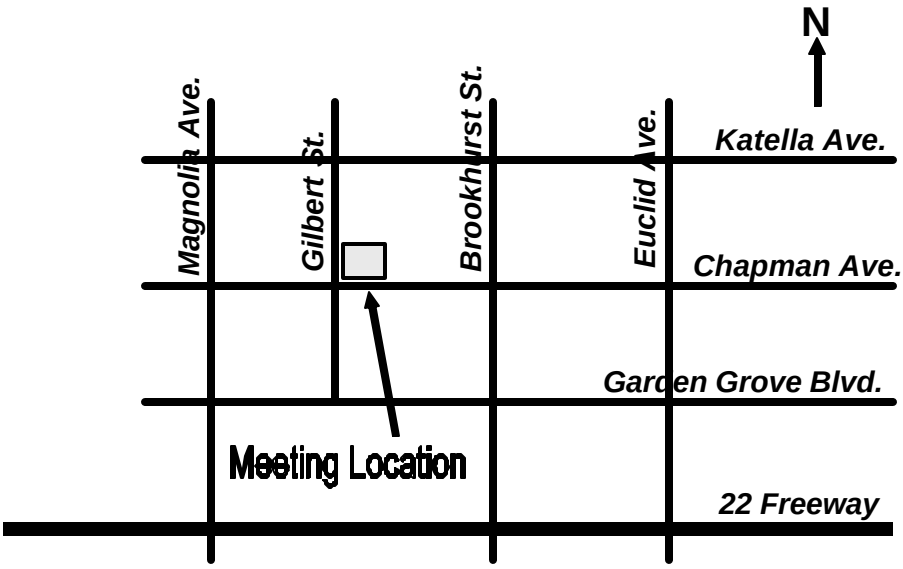
— GENERAL MEETINGS —

2nd Thursday of the Month
7:00 pm - 9:00 PM
Garden Grove Civic Women's Club
9501 Chapman Ave.
(NE corner of Gilbert & Chapman)
Garden Grove, CA

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

TO:

December 14th: Christmas Dinner



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