

# The Opal Express

American Opal Society  
P.O. Box 4875  
Garden Grove, CA 92842-4875



**Volume #35 Issue #6  
June 2002**

***In This Issue:***

- OPAL CUTTING FACTORS
- FINDING AND FINISHING AMMONITES
- THE TAGUA NUT
- AGATES RICH IN FIBER

**Board Meeting-Monday, June 10**  
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**General Meeting  
Thursday, June 13**

**Speaker: To Be Announced**

TO:

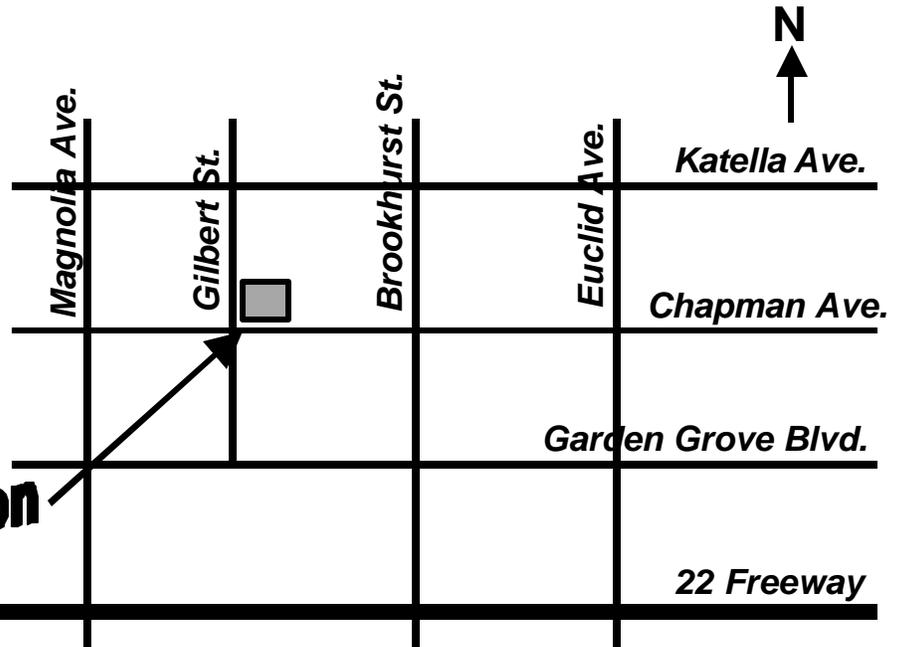
**— GENERAL MEETINGS —  
2nd Thursday 7:00-9:00 PM**

**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

**Meeting Location**



## The American Opal Society

<http://opalsociety.org>

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Jim Pisani	Editor & Webmaster	(562) 797-5239	email: <a href="mailto:webmaster@opalsociety.org">webmaster@opalsociety.org</a>



# American Opal Society Membership Renewal

Thank you for continuing to support your American Opal Society!

TYPES OF MEMBERSHIP (Select one)	DUES / RATES (select one)**	AMOUNT PAID
1) All US Addresses including Alaska and Hawaii	\$25.00	
2) International Members = All addresses outside of US Addresses	\$30.00	
3) Additional Badges/each	\$5.00	
** <u>SENIOR DISCOUNT</u> = Age 65 or over deduct \$5.00	-\$5.00	
Name badge (optional) \$5.00 each -includes engraving (Badge free when joining)	\$5.00	

Please make check or money order payable to "American Opal Society". Mail payment and application to:  
**American Opal Society; PO BOX 4875; Garden Grove, CA 92842-4875**

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

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

**MEMBERSHIP ROSTER & DEALERS LIST:** The AOS publishes a membership directory once per year in its Newsletter, the *Opal Express*. Please check what personal information that you want listed for other members:

- Name   
 Address   
 Phone   
 E-mail   
 Website

- Include my name & address on a list provided to the Dealers selling at our Annual Opal & Gem Show.

If you checked any box above, please sign here: \_\_\_\_\_ Date \_\_\_\_\_

Without your signature here you will not be included in the member info list or included in the dealer roster.

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**Editor-Jim Pisani**  
Please address all inquiries and exchange newsletters to:

**The Opal Express C/O  
Jim Pisani  
P.O. Box 4875  
Garden Grove, CA 92842-4875**

**Email: [webmaster@opalsociety.org](mailto:webmaster@opalsociety.org)**

Article Deadline is the 15<sup>th</sup> of the month prior to each issue

**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.

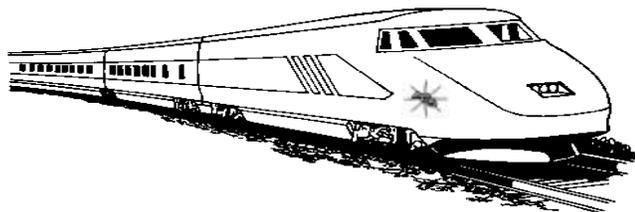
Thank you,  
  
The Editor

# The Opal Express

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by the  
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Volume 35, Issue 5



## PRESIDENT'S MESSAGE

*Mike Kowalsky*

Hi All,

We had a successful display of Opals from the Americas at the Searchers Gem and Mineral Show in Anaheim in early May. It was well received and we had very nice compliments from many of the viewers. Most people are surprised to find the variety of opal found in North, Central and South America. This year our display was enhanced by opal from Arizona as well as Peru. I would like to thank the AOS members that contributed specimens and loaned specimens for the display. Also Dr. Walt Johnson, who loaned a display case for us to use as our case was not available because of construction at Walker Jr. High School.

I am hoping to extend our display for the AOS Annual Show in November to add Opal from other parts of the world. We have some samples of opal from Ethiopia and may be able to get some samples from Tanzania. We have many samples of opal from Australia and we will display some of the opal specimens donated by some of our friends in Australia.

As summer is around the corner, I would like to propose some field trips. We all have busy schedules, but it would be nice to visit some of the western opal mining areas. I have an invitation to visit a blue opal mine in Arizona, which could be considered. I also have standing invitations to several mining areas in Idaho and northern Nevada. I think that late July or August would be prime times for Idaho and Nevada. There is a location in Oregon, which we might consider. Please let me know if you are interested and if you have e-mail that would facilitate communications. I would then set up some tentative itineraries. That would allow others, from different locations, to meet at specific places and times and visit as a group.

Jim Pisani made a very interesting presentation at our last general meeting. He presented slides and a enthusiastic presentation on Andamooka. He has some outstanding samples of the crystal and matrix opal from there.

The interruption of our opal workshop at Walker Jr. H.S. continues. The classroom is being renovated and we don't have a firm schedule as to when it will be completed. We have no alternate temporary location unless someone can suggest one.

Please let me or one of the Board of Directors know of your interests for a field trip this summer or early fall.

Have a great month,  
*Mike Kowalsky*

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## THE MCCONDRA REPORT

*By Barbara McCondra*

I want to address the issue of "muddy stuff". Ironstone matrix, be it Yowah, Koroit, Blackgate, Winton, or any other of Queensland, Australia's boulder opal fields, turn your water

brown and thick fairly quickly when using a traditional "spitter" in the bottom of the water pan. The cutters on the fields use machines with spigots over each wheel pouring fresh clean water over the grinding and sanding process. A hole in the bottom of the tray carries away the muddy water. I always get a better polish in Australia with this system than I do in USA using the "spitter" - even when I change the water in the pan after each grits' grinding session to avoid contamination. Lots of water keeps your view of the stone clean and clear as you cut and saves the diamond grit from wearing away quickly. I understand that Diamond Pacific offers conversion kits for their machines and are well worth the time money and effort if you cut a lot of ironstone matrix.

Opal field cutters are innovative in creating a "source" of flowing water. I have seen several shops in Lightning Ridge with tubing leading from a bathroom into a plumbing-less cutting room, provides the path, and a WALL MOUNTED toilet cistern provides the self-adjusting water flow to the cutting machine. Beats hauling bucketful after bucketful of water to bucket that gravity feed water to the machine!

Ironstone stains remain on whatever you are wearing if not attacked with detergent and water IMMEDIATELY. Therefore, I never wear any "nice" clothing while cutting. Opal field cutters are pretty innovative in what they wear, too, during the cutting process. (Enough so that I am considering a Yowah Opal field Fashion Show for this years' Yowah Opal Festival)

Call it "Extreme Cutting" but those of us addicted to the pleasures of forming an ironstone matrix opal gem out of ancient ferruginous sandstones never let getting dirty keep us from the thrill and it really isn't all that messy when using water that pours over and down the cutting wheels instead of the spitter.

Have you seen our new PEO Opal Forum???

It's a new discussion board for opal, we would love to answer your questions on everything to do with opal from mining to cutting, from buying to setting, or even just to hear how much you love it!!!! Click on or go to:

<http://www.parchedearthhopals.com/wwwboard/wwwboard.htm>

We look forward to your participation!!

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**MORE ARCHIVED NEWSLETTERS ONLINE**

I have been making an effort to put more newsletters in our archive on the web. This month I have published the years from 1994 to the present. There are some missing months, but we have 95%. The years before 1994 are paper copies, and have to be scanned first, the run through a OCR algorithm. This will be done at a low rate.

To view the archives, go to this website:

[http://www.opalsociety.org/aos\\_member\\_login.htm](http://www.opalsociety.org/aos_member_login.htm).

Type the password "opalsrus" (small letters) in the space to the right of the label "Password". This will take you to the archives.

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**WANTED...**

**OPAL & GEM ARTICLES!!!**

The American Opal Society is looking for a few good writers for our newsletter, the *Opal Express*. Members can submit articles for publication on a variety of topics, such as field trips, lapidary interest, jewelry making, gem & minerals, and of course, anything to do with OPAL!!! Please feel free to submit articles by mail at:

**The Opal Express C/O  
Jim Pisani  
P.O. Box 4875  
Garden Grove, CA 92842-4875**

Or e-mail at: [webmaster@opalsociety.org](mailto:webmaster@opalsociety.org)

*Article Deadline is the 20<sup>th</sup> of the month prior to each issue. The editor reserves the right to use or not use a submitted article and to edit it for publication.*

**JUNE GEM SHOWS**

**1-2--ARLINGTON, TEXAS:** 45th annual show; Arlington Gem & Mineral Club; Hereford University Center, U.T. Arlington campus, W. Oak St. at S. Oak St.; Sat. 10-6, Sun. 10-5; adults \$4, children 6-12 \$1, scouts in uniform free; exhibits, live demonstrations, junior activities, silent auction; contact Michael Hartz, P.O. Box 1613, Weatherford, TX 76086, (817) 341-7085; e-mail: [mhartz@prodigy.net](mailto:mhartz@prodigy.net).

**1-2--SAN FRANCISCO, CALIFORNIA:** Show, "The Great San Francisco Crystal Fair"; Pacific Crystal Guild; Fort Mason Center, Laguna and Marina Blvd.; Sat. 10-6, Sun. 10-4; admission \$4, children under 12 free; up to 45 vendors of crystals, minerals, gems, jewelry, mystical and healing arts; contact Jerry Tomlinson, PCG, P.O. Box 1371, Sausalito, CA 94966, (415) 383-7837; e-mail: [sfxtl@earthlink.net](mailto:sfxtl@earthlink.net); Web site: [www.crystalfair.com](http://www.crystalfair.com).

**7-9--MILWAUKEE, WISCONSIN:** Show; Bead&Button Magazine; Midwest Express Center, 400 W. Wisconsin Ave.; Fri. 10-6, Sat. 10-6, Sun. 10-5; admission \$7; more than 175 vendors of pearls, crystals, gemstones, findings, tools, seed beads and art beads, classes commence on June 6; contact Marlene Vail, Kalmbach Publishing Co., 21027 Crossroads Cir., Waukesha, WI 53187, (800) 558-1544, x591; e-mail: [mvail@kalmbach.com](mailto:mvail@kalmbach.com).

**22-23--CASPER, WYOMING:** Show, "Gems of Wyoming 2002"; Natrona County Rockhounds Club; Parkway Plaza Hotel & Convention Center, I-25 and Center St.; Sat. 9-6, Sun. 9-4; admission \$2, children under 12 free with adult; displays, silent auction, grab bags, raffle, daily slide presentations, dealers; contact R.E. (Ed) McKnire, Box 123, Mills, WY 82644, (307) 265-6202; e-mail: [rmcknire@attbi.com](mailto:rmcknire@attbi.com).

**9--POLAND, MAINE:** Show, "PegShop Tailgate Mineral Show";

**OPAL SOCIETY WORKSHOP**

**The workshop at Walker Jr. High is available for the use of AOS members on Wednesday nights. Please call Stan McCall at Gems & Opals (714) 827-5680 if you plan to attend a shop session.**

**WORKSHOP RULES**

1. Shop may only be used by AOS members.
2. Shop users must sign liability waiver.
3. Shop users must sign in. Shop supervisor will maintain sign-in list and collect usage fees.
4. Shop usage fee is \$3 per session.

To assist us in scheduling, please call Stan or a board member in advance to reserve shop time. Thank you!

Maine Pegmatite Workshop; Poland Mining Camps, Rte. 26, 93 Main St. #9; Sun. 8-5; adults \$3, children 12 and under free; outdoors rain or shine, sell, swap, trade or show; contact Ray Sprague, 93 Main St. #9, Andover, ME 01810, (978) 475-8435; e-mail: [rasprague@mac.com](mailto:rasprague@mac.com).

**14-16--DAYTON, OHIO:** 4th annual show; Treasures of the Earth Gem & Jewelry Shows; Hara Arena Complex, 1001 Shiloh Springs Rd.; Fri. 2-7, Sat. 10-6, Sun. 11-5; jewelry makers, goldsmiths, silversmiths, wire wrap, stone beads, stone setting, amber, opal, mineral and fossil dealers, hourly door prizes, grand prize; contact Van Wimmer, 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: [vawimmer@rbnet.com](mailto:vawimmer@rbnet.com); Web site: [www.toteshows.com](http://www.toteshows.com).

**14-16--SAN DIEGO, CALIFORNIA:** Show; Gem Faire; Scottish Rite Center, 1895 Camino Del Rio S; Fri. 12-7, Sat. 10-7, Sun. 10-5; weekend pass \$5; contact Allen Van Volkinburgh, (760) 747-9215; Web site: [www.gemfaire.com](http://www.gemfaire.com).

**15-16--CAYUCOS, CALIFORNIA:** 43rd annual show, "Cayucos Gem, Jewelry & Mineral Show"; San Luis Obispo Gem & Mineral Club; Cayucos Vets Hall at the Pier; Sat. 10-6, Sun. 10-5; free admission; contact Bob Hurlless, 2290 Greenwood Ave., Morro Bay, CA 93442, (805) 772-7160; e-mail: [Richard@mineralofthemonthclub.org](mailto:Richard@mineralofthemonthclub.org).

**21-23--NEWPORT, OREGON:** 39th annual show; Oregon Coast Agate Club; Oregon National Guard Armory, 541 S.W. Coast Hwy. 101; Fri. 10-6, Sat. 10-6, Sun. 10-5; dealers, demonstrations, grab bags, door prizes, raffle, silent auction;

**Workshop Notice**

**Construction work at Walker Junior High has temporarily closed the Opal Society Workshop and it is not known when it will open.**

**Please call Stan McCall at Gems & Opals (714) 827-5680 to find out the status.**

contact Ed Obermeyer, 218 S.E. 98th St., South Beach, OR 97366, (541) 867-6903.

**21-23--BLOOMINGTON, INDIANA:** 37th annual show; Lawrence County Rock Club; Monroe County 4-H Fairgrounds, Airport Rd.; Fri. 10-7, Sat. 8-7, Sun. 8-4; free admission; gems, jewelry, lapidary materials, minerals, fossils, rocks, supplies, silent auctions; contact Margaret Kahrs, 9145 W. U.S. Hwy. 50 E, Seymour, IN 47274-9401, (812) 522-6093.

**21-23--KOKOMO, INDIANA:** 1st annual show; Treasures of the Earth Gem & Jewelry Shows; Johanning Civic Center, 1500 N.

***In Memoriam May 18, 2002***

**John Sinkankas**

***Pillar of Modern Mineralogy***

Born on May 15, 1915, in Patterson, N.J., John Sinkankas passed away 88 years later on May 17, 2002, after a brief stay in the hospital. John was very proud of his 25-year career as a navy flyer (retired Captain); however, he is best remembered for his literary career.

He published 15 books on gems and minerals, as well as numerous articles in various journals, John was a much-requested speaker on these topics, and his world-class library of 13,000 items now resides at the Gemological Institute of America. His monumental work, "Gemology: An Annotated Bibliography," documented a lifetime of work and offered insight into his immense love of books.

John earned an honorary Doctor of Philosophy from William Patterson College in 1982. Sinkankasite was named in his honor in 1984, and in 1988 he received the first individual Carnegie Mineralogical Award. He was a bookbinder, artist, lapidary, historian, and always a raconteur. In short, John Sinkankas was a renaissance man who had a tremendous impact on everyone he met.

He is survived by Marge, his wife of 62 years, and their four children - two sons and two daughters. He will be missed all who knew him.

*Notice written by one of John's friends, Roger Merk; taken from LA Rocks message of Brad Smith forwarded to him by Anne Schafer of the San Diego Mineral & Gem Society.*

Reed Rd.; Fri. 10-6, Sat. 10-6, Sun. 11-5; jewelry makers, goldsmiths, silversmiths, wire wrap, stone beads, stone setting, amber, opal, mineral and fossil dealers, hourly door prizes, grand prize; contact Van Wimmer, 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail:

[vawimmer@rbnet.com](mailto:vawimmer@rbnet.com); Web site:

[www.toteshows.com](http://www.toteshows.com).

**28-30--SANTA FE, NEW MEXICO:** Show; Gem Faire; Sweeney Convention Center, 201 W. Macy St.; Fri. 12-7, Sat. 10-7, Sun. 10-5; weekend pass \$5; contact Allen Van Volkinburgh, (760) 747-9215; Web site: [www.gemfaire.com](http://www.gemfaire.com).

**29-30--ROSCOMMON, MICHIGAN:** 28th annual show; Michigan Geology & Gemcraft Society; Roscommon Middle School; Sat. 9-6, Sun. 9-4; adults \$15, two days \$25, high school students \$3; faceting, wire wrapping, beading, gem tree, silver jewelry and cabochon workshops, demonstrations, lectures; contact Katy Brown, (734) 421-8159.

**Sinkankasite  
should now  
have an  
honored  
place in your  
collection.**

To stabilize chrysocolla: Put 2 packages of 330 epoxy into 1 qt. of acetone as follows:

1. Put two red tubes of epoxy gradually into a jar with enough acetone to dissolve the epoxy, shaking and stirring epoxy as needed.
2. Put two black tubes of epoxy gradually into another jar with enough acetone to dissolve the epoxy, shaking and stirring as epoxy is added.
3. Then pour both mixes together and shake and stir and gradually add acetone until you have a full quart. Put wax paper under the lid and put the lid on tight. Shake the mix thoroughly. Let the mix sit for months. Then put 1 / 2 of the mix into each of two jars. Add rock, making certain that all rock is covered, leaving enough room for the fluid to soak into the rocks. Let both jars sit for two weeks until the rocks are completely saturated. Take stones out of the liquid and put in the sun for one week before cutting.
4. Continue to use fluid until gone.

*(tip from Phil Kaiser of the Wichita Gem & Mineral Society in Quarry Quips 7/96) From The Pegmatite 4/2002*

**AGATES RICH IN FIBER!**

*By Dr. William Cordua  
University of Wisconsin - River Falls*

Sometimes chalcedony, including agate, is described as a fine-grained quartz, but the real case isn't quite this simple. There are lots of clues for this. Arrowheads and other stone tools are harder and more durable when made from chalcedony rather than coarse quartz. On the other hand, coarse quartz is better to grind up as a concrete additive than chalcedony. The chalcedony causes various chemical reactions in the concrete, which can fail, while quartz is unreactive. With the advance of modern analytical tools, the reasons for these differences can finally be investigated.

Chalcedony has a microscopically fibrous structure, made of evenly spaced silica rods. More surprising is the fact that the fibers show a regularly alternating pattern of elongation — some parts being "length fast" and some parts "length slow". This means that in part of a particular fiber, light travels faster parallel to the long axis of the fiber. In other parts of the fiber, the light travels slower parallel to the fiber length. This further implies that the silicon and oxygen atoms for some reason regularly twist or change in orientation as each fiber grew.

Mineralogists are still trying to figure out why the fibers twist and what different forms of silica are intertwined with each other.

It is these intergrown fibers that gives chalcedony its great strength and durability. The peculiar structure also gives chalcedony its unexpected chemical reactivity in concrete.

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**UNTRIED SHOP TIPS**

Orient.

One theory for the growth of the fibers is being developed by two researchers (Yifeng Wang and Enrique Memo) at Indiana University. They envision agate as developing as fingers of silica growing progressively outward into a cavity filled with siliceous "media". They do not specify as to whether this "media" is a solution or a gel. The first step is the formation of a coating of silica around the cavity. The coating (this being the real world) won't be smooth. In some places, the coating will bulge out slightly into the "media". It is these bulges which will grow rapidly outward into the solution to form the fibers. Impurities in the solution (such as iron or copper) will slow the growth briefly until these impurities precipitate as their own minerals on top of or between the silica fibers. Once the impurity's concentration is briefly reduced in this manner, silica growth will proceed again. Withdrawal of silicon makes the solution richer in impurities, causing them to form another layer. This rhythmic precipitation is repeated many times as the agate grows. These layers of impurities show up as the color banding that characterizes agate.

*References:*

Heaney, Peter J., D. Verlen and J. Post, 1994, "Structural disparities between chalcedony and macrocrystalline quartz", *American Mineralogist*, vol. 79, pp. 452-260.

Wang, Yigeng and Enrique Merino, 1995, "Origin of Fibrosity and Banding in Agates from Flood Basalts", *American Journal of Science*, vol. 295, pp. 49-77. (from *Breccia* 02/02)

From *The Pegmatite*, 3-2002

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**Sometimes you feel like a nut...**

**THE TAGUA NUT  
(VEGETABLE IVORY)**

**The tagua nut, a true ivory, known to have been used for over 125 years,** is the exceedingly hard kernel of a nut produced by a palm. It grows in northern South America. Botanical name: *Phytelephas macrocarpe*. Found in dense thickets near or along rivers, the tree may reach heights of twenty to thirty feet. From eight to thirty nuts are massed in large thorny heads, resembling enlarged chestnuts, but may be found growing at ground level, or a few feet above the ground, or in the top of the tree, depending on the species.

About 1859, ships **returning to Germany from South America carried tons of tagua nuts in their holds as ballast.** Some of these found their way into the hands of skilled Austrian carvers, who made beautiful hand-carved buttons of them. By 1860, ivory buttons were in demand, and Schnollen, Germany, became the center of the ivory button industry. By 1864, a factory was established in America, where ivory buttons were made in many forms — dyed and natural, shiny and dull finish, metal rimmed, carved, and stamped. Probably your grandmother or great-grandmother used ivory buttons made from the tagua nut.

**In the early 1900s, experimentation with plastics developed,** and in a few years, cheaper plastic buttons foretold the end of the ivory button industry. The use of tagua nuts for carvings and figurines continued in the

**Today, many would like to work with ivory,** to slab, carve, cab, or scrimshaw, but scarcity, high cost, and endangered species have turned us back to the tagua nut.

**Working with tagua: It handles, cuts, ages, and works just like animal ivory.**

**To cut:** Use any small saw - hacksaw or similar. Cut dry. Do not use your diamond saw - it is a waste of time and the nut may absorb oil. To grind: A worn 80 or 100 belt will remove saw marks.

**To polish:** A worn 400 or 600 belt used dry will polish, or you can use any white polish and your favorite buff. Use a little moisture here.

(brochure from *Western Gem & Mineral Supplies*, via *CHIPS* 11/99) From *The Pegmatite* 4/2002

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**JOGGER'S JEWEL**

In summer 1990, Ms. Darlene Dennis was jogging on a gravel road just after dawn, a quarter-mile from her home outside Craig, Montana. In the gravel she spied what appeared to be a clear, melted plastic coat button. A jeweler in Great Falls identified it: 14 carats, nearly flawless. The jeweler mentioned it to New York antiques dealer Alexander Acevedo, who knocked on Dennis's door and wrote her an \$80,000 check for the stone, which he dubbed the Lewis and Clark Diamond. It was four times the normal price, but it was American, and thus, he felt, extra-valuable. Acevedo extracted the find location from her, then secretly crawled for hours on the road, in a nearby riverbed, and in a gravel pit, looking for more. He received extreme sunburn and, some time later, a bad skin cancer on his nose. I visited Acevedo one afternoon in 1999 at his Madison Avenue gallery. He sat me down on an expensive old couch and let me heft the rough stone in my hand. It is real. (excerpt from the book, *Barren Lands: "An Epic Search for Diamonds in the North American Arctic"*, by Kevin Krajick, published by Henry Holt & Co. Reprinted for educational purposes under the "fair use" provision of the U.S. Copyright Act.) From *The Pegmatite*, 4/2002

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**OPAL CUTTING FACTORS**

*By the House of Tibera*

This outline is not an attempt to repeat what is already in published books. It is an attempt to offer some tips that we have accumulated over the years - many from customers.

Every stone has its idiosyncrasies, including opal. There are positive and negative surprises in every stone, including opal. With that in mind, here are some points to think about.

Generally, the only precautions to observe are:

- DO NOT heat the opal.
- Never hit the opal.
- Use plenty of water in cutting to cool the stone.

- Opal is relatively soft compared to agate, etc. So use an 'opal-light' touch. NOT an "agate-heavy" hand.
- Get control of your equipment. If you use silicon carbide wheels, dress them regularly. Silicon carbide wheels get out of round, then they beat an opal, creating the chance of cracking or crazing - NOW or LATER
- Any stone can fly off the dop or out of your hand. Be sure to have carpets on the floor and other padding on hard surfaces. A professional cutter took all of these precautions when a stone flew out of his hand, hit two walls, and found the ONLY piece of concrete in his shop - Yes, the opal cracked in two! Most of these machines can be adjusted to control the rate of cutting by changing pulleys. Control the rate of cutting by controlling the speed of the wheel. Unless you are a professional cutter who is in a hurry, we recommend that you use equipment where you have speed control, If you use diamond equipment and have a direct drive motor like a Genie, then you have no control over the speed.

## OPAL CUTTING STEPS AND PROCESSES

### MAKE A CUTTING PLAN - ITS LIKE OPENING A BIG PRESENT.

1. The first step is to look at the material as carefully as you can. Look at it inside (candling), outside, wet and dry. Look for the items mentioned earlier, i.e., cracks, inclusions, etc. Looking is cheap. Cutting mistakes are expensive. Do not go any further until you are certain that you have "seen" all of the stone.
  - Peek at the fire bar from all sides by facing or rubbing an edge. Hopefully, an edge that you would lose anyway during the cutting. Consider the following:
  - Does the fire bar extend all around the stone?
  - Does the fire bar show the same all around the stone?
  - Is the quality (how it appears) the same all around the stone? If not, then peek at some other angles. While facing your stone, slightly round off all sharp edges. This reduces internal stresses inside the stone.
2. Orientation and Shaping - Determine what side will be the top, the bottom, etc. by doing steps 1 and 2. A common question is, "Which side should I put on the top?" Answer: put the prettiest side or the side with the best fire pattern and variety of colors on the top if it faces or windows the best.
3. Shapes - Unless you must cut a specific shape for your opal, we suggest that you consider other pleasing shapes. Let the stone "show" you what it will become by making it the shape that it is. Some stones may have pits or indentations, etc. consider sculpting with traditional carving techniques or/and

consider bead blasting the shape. Or do as one of our customers does, use an electric toothbrush with diamond in an oil or Vaseline carrier to get those indentations polished (we will soon try this!). Shape it by drawing lines on it to guide your eye. I use a pencil most of the time, but an indelible pen may be used (Pilot model SCUF).

If you must saw the opal you run the risk of ruining the opal with a bad cut! Draw lines on the opal with the indelible pen. Take a ruler and make the edge of the ruler parallel with the saw blade. Then using an indelible pen, draw a line from the blade on the trim saw table, extending it over the stone. Keep those two lines lined up as you gently push the stone through the saw.

4. Grind, sand and polish. Do it slowly and use a lot of water, Avoid all possible sources of heat. Try using wet n' dry sandpaper to remove flats, grinder scratches or other errors. It is slow, useful and will not harm the stone. 600 mesh wet n' dry sandpaper works wonders on flats. Any hardware store has a selection. This saves me more time and yields a better looking stone. Try it!! We also sell a package of these papers
5. KISS (Keep It Simple Stupid) rules are:
  - Stop, take a minute and relax. Other wise you are almost certain to make a mistake if you're really feeling uptight about cutting that stone.
  - You need some practice to develop your skill. You should use the lower grade, inexpensive opal to practice a lot. Paradoxically, the lower the grade the harder it is to cut the material in comparison to higher grades. But, cheap means more experience at less cost.
  - Use the thinnest trim saw blade possible. I would never use anything thicker than .006" (six thousandths) and the right speed.
6. Polish - Diamond polishes are the most predictable, except for cerium oxide, optical grade #2. We highly recommend this polish and apply it to a thoroughly soaked leather polishing head. Do not use other grades or unlabeled grades of cerium oxide. We also supply cerium oxide. Optical grade #2.
7. Rapid design templates are useful. If used correctly by making concentric ovals with the quadrant guides, you will never have to correct for a lop-sided dome.

### OPAL CUTTING TRICKS AND TIPS

- BE GENTLE - Don't abuse the stone.
- Don't heat the stone - use lots of water while cutting and grinding.
- Use epoxy as your dopping material - never use wax.

- Be sure that if you're using silicon carbide wheels that they are round - a "true" wheel.
- Don't freeze or overheat the opal.
- Be patient - if you're working and come to a point where you don't know what to do, don't do anything. Talk to someone, a dealer or opal friend, and ask what to do.
- Reduce your machinery speed with controls or pulleys
- Do not store opal in glycerin. Glycerin wants to remove water from opal. If you must use something, mineral oil is okay.

## DOPPING

DO NOT under any circumstances dop any opal with any color wax! A popular author on opal states that green dop wax is preferred. With all due respect, it is bad advice. Then, he recommends putting the opal in the freezer for removal of the wax. Perhaps he has no problem, but this is a risky thing to do because of the physics and chemistry of the opal. Green dop wax has a very high melting point and that means you're going to heat your opal to the same point in order to get the wax to stick to the rock. Why do that? Heating any opal increases the probability of cracking because the water molecules in the opal can disconnect molecularly, causing cracks, etc. The same applies to freezing! I know that he claims to have no problems, but why tempt fate?!? When we stopped using green wax (or any other color), our rate of fracturing was cut to nothing.

Then what should opal cutters dop with? Use epoxy! We use five minute epoxy. But buy it at a store that sells a lot of epoxy because it has a shelf life and you want it to be fresh. After you open your tubes of epoxy, put it in the refrigerator because that will slow it's inevitable breakdown. Date the package and discard it in one to two years.

But sometimes, just to get over my rockhound needs, I just have to melt some wax. Melt wax on a dop stick and let it harden so it has a nice flat surface. Then, put the epoxy on the wax and put the stone on it. When finished polishing the opal, cut the opal off the stone with your trim saw. Then dissolve the epoxy that remains on the stone with acetone on a rag. If you don't like acetone, grind the epoxy off of the stone. Warning: do not leave the opal in the acetone for long periods. Theoretically, it could hurt the stone through dehydration. I have not experienced this effect over prolonged periods, but there could be a problem. (Again, conservative advice.)

## CRACKING AND CRAZING

All opal cracks right? WRONG! It will crack if you abuse it, or the opal is molecularly wet from being mined deep in the ground. To reduce the possibility of cracking or crazing:

- Work slowly, take your time.
- Use a feather touch. Opal is relatively *soft*. A color bar can be ground away in no time.
- Use a lot of water to keep the stone cool.
- Dop only with epoxy - avoiding heat. Remove with .006" or .004" trim saw blade.

- Remove patch and or excess opal with .006" or .004" trim saw blade.
- Reduce the speed of your equipment - this avoids heat.
- When in doubt on how to proceed, stop and confer with someone.
- Keep silicon carbide wheels true and round, diamond equipment is preferred but not necessary.
- Buy from a reliable dealer who knows the source, depth area, mine, etc. The more your dealer knows, the better off you are.
- If the stone has sharp edges gently remove them soon after purchase to reduce internal stress.

## RANDOM NOTES

- A thin opal fire band sometimes lends itself to making triplets, doublets, or mosaics or inlay.
- If you have opal that shows fire only from the sides and won't face-up, flatishi-type beads are a good cutting alternative.
- Odd shapes of rough are great for carving or baroque stones.
- Tiny chips make beautiful floating necklaces.
- Small pieces cut standard sized stones for replacement of broken stones, and are inexpensive.
- One creative customer of ours wants opals with irregularities (spider webs, holes, wavy fire bars, etc.) for her very creative settings. She is doing very well.
- You don't need a faceter to cut a flat surface on the back of a stone. What you need is a piece of wet 'n' dry sandpaper and a table.
- Opal is unlucky unless someone gives it to you. That is a myth. OPAL IS YOUR PERSONAL RAINBOW.

ALL OF US OPALHOLICS love our favorite stone because of its endlessly changing beauty. Perhaps these simple tips will help you to enjoy your favorite stone. We hope this booklet was and will continue to be of use. Please call if we can help further.

THERE IS A SURPRISE IN EVERY STONE, and we at TIBARA will do everything we can to make them all positive!!

*Excerpt From:*

### **THE TUCSON OPAL SEMINAR "FROM MINE TO DESIGN"**

*By*

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*The American Opal Society thanks members Tim & Barbara Thomas for allowing the AOS to reprint their excellent Opal Seminars. Stay tuned for more in future issues.*

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## FINDING AND FINISHING AMMONITES

By Dave Daigle

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### COLLECTING AMMONITES

Somewhere in the Lower Middle Devonian, some group of Nautiloids gave rise to a modest group of coiled Cephalopods, the Ammonites. They really picked up their pace in the Mesozoic Period and became more plentiful and varied, and were dispersed almost worldwide. They differed somewhat from their modern day cousins, mainly by internal structure.

As they died on the ocean floor, they were buried in the sea mud. In North America that mud became, for the purpose of this paper, either shale or Ironstone. Normally the mud would be pressed into flat layers of shale by the pressure of sea and mud above it, but the hard bodies kept their shape and became concretions. Those concretions, or roundish UFO shaped nodules of shale and Ironstone, are found in the Aragonite Zones of the Badlands, in Southern Saskatchewan, Southern and Mid Alberta, and Northern Montana and are the geologic structures where Ammonites are found today. You usually find the concretions in the upper sides of banks on existing rivers, such as the Bow River, or in the Badlands banks, which were rivers at one time. Surface collecting is easiest, although some rockhounds have adapted a type of long tined pitchfork for prodding down into the soft Bentonite beds in hope of striking a concretion.

Once found, the trick is to break open the concretion. If cleaned off carefully, one can usually see small fracture lines or, sometimes, a piece of the Ammonite peeking through a spot at the edge of the nodule. A sharp chisel, a hammer, and a steady hand, and most concretions will break in half where the Ammonite is laying usually exposing a concave side of the concretion with shell attached and the Ammonite itself imbedded in the other half. If you are after the Gem... or shell... then you can break the Ammonite out of the now halved concretion. But, if you want a complete Ammonite, if indeed it is complete, then traditional methods of removing a fossil from matrix are used. Thank goodness for Foredoms and Dremels :)

Trivia time...The Ammonites got their name from the chief God of the Triad of Thebes Amun, who was often depicted as a Ram with curved horns.

The area covered by the Bears paw Sea, which included Northern Montana, Alberta and Western Saskatchewan is where we find most of the *Placenticas Meeki* species. The *Meeki* is, in my humble opinion, the best gem quality shell. These concretions with, hopefully, *Meeki* inside of them, can be anywhere from 6" to 3' in diameter! The bigger ones, and most others, are "halved" right there on the spot to see what treasures they hold and to more easily get them back to your transport. Most will fit into a backpack but some we have to "sling" and carry these on our backs also. Heavy?... You Bet!

But alas, sometimes you find the other kind, what we call barren shale, and your efforts of digging them out and breaking them in half are not rewarded.

Hmmm, heavy... reminds me of a time when I was loaded down with a heavy pack full of Ammonite, walking on a game trail at the bottom of a coulee on the way back to my truck. I came around a corner, with my head down... of course, (typical Rockhounding syndrome) and came face to face with a huge Whitetail Buck! Now, it's nice to see nature from a distance, but up close those bucks are huge!!! He startled me and I fell backwards on my pack and watched as the buck took off straight up the side of the coulee like the hounds of hell were chasing it. I recall, as I laid there looking up, that the bank was about 100 feet high and pretty well straight up! Well, after kicking my legs for a while, and laughing at my predicament of looking, for all the world, just like a Turtle flipped on it's back with it's legs wiggling, and rocking my body I finally rolled on my side and managed to get back to my feet. To this day, I still don't know which one of us were scared more, the Buck or me. :)

Do you still want to go hunting for these concretions with that beautiful Ammonite shell inside? A word of warning, you must, at least in Canada, have the appropriate Ammonite permit to collect Ammonites! The fine can be severe for collecting without one. But it doesn't stop with a license; once you have returned home with your collected treasures, you must then fill out a disposition form and take pictures of your finds, which are sent off to the Tyrell Museum, where the experts look things over. If you have not discovered a new species or anything of paleontological value, they send you a reply... and then the Ammonites are yours.

### FROM RAW TO GEM AMMONITE

I will attempt, in my humble way, to describe to you the way in which I work my Ammonite. Please bear with me, as writing is not my forte'.

Once I have gotten my Ammonites home, it's time to clean them and see what I've got. This can involve anything from Muriatic acid baths... remember AAA, Always Add Acid... never add water to acid, to a simple cleaning with a brush and water. Some Ammonite has a thin film of white, or unformed, Calcite on top of the gem, this is when Acid is used in dilute amounts to clean it off. If it's too filmy it usually extends down through the shell and makes it rather useless for Gem Quality pieces. Although with acid, the colors are still there.

Next comes the decision to keep it whole... if indeed you found a whole one in one piece, you should keep it as such... or to "gem it", if it's in many fractured pieces. If it's whole, it's sanded by hand later. I've found no better way to do it, although I've experimented plenty.

Ammonites, it seems, always start their lives with dark colored, blue or green, shells. Probably to aid them in hiding from their many predators. Their shell is in layers, starting from red, to the oranges and yellows and then to the greens and blues of the last layers. So, if you feel brave, you can continue to sand down through the layers to get at the rare greens and blues. But, like an opal, be careful, after the last blue color...there's nothing but shale and you will have lost your color!

But alas, I wander off... Back to it then..) There is much to do before laying on the sandpaper. Firstly, if not whole, you must cut away the excess shale; this can be a tricky process also. You should try and keep about 1/2 " of shale

still attached to the Ammonite Gem. Remember, the Ammonite is a Nautiliod and shaped accordingly, albeit flattened out somewhat from the pressures of time. Therefore there will be gem on "both sides" of the Ammonite, and you have to decide where to cut it. Flat spots are preferred, but they are rare in a Nautiloid shaped body.

Depending upon the color of the shale you probably have to seal the Ammonite. If whole, then you seal the whole Ammonite. But for this paper, let's assume that you have Ammonite pieces. The reason for sealing the Ammonite is to darken the shale down and to seal the gem shell to the shale beneath it. Again, referring to opal, the darker the matrix, such as Black Mintabe Opal, the brighter the color or fire is seen. Same thing with Ammonite gem. The darker the shale below, the brighter the colors of the gem will seem to be.

Sometimes, Ammonites come with the shell sitting loosely on the shale cores. This is where the Opticon Sealer comes in. You need to heat the Ammonite pieces up to about 150 degrees and then apply the sealer to the gem with a brush. I use sheets of 1/2 inch steel and lay them across the burner elements of a kitchen range. But if you're doing a single piece, or just a few, a slow oven will do just nicely. The warm stone will actually draw the sealer down through the gem and into the shale beneath it, thus effectively sealing the

gem to the shale and making the shale darker. Take the pieces off the heat and let them sit for a few days. The sealer never quite seems to harden, but almost.

Now, the pieces have to be cut into your fairly flat pieces or freeforms. Not too small yet as you have to use the Lap wheels next. I guess this part just takes practice, but you can actually find some fairly flat pieces on the Ammonite... you just have to picture flat enough places and sizes to eventually make gems from. Sometimes your pieces are small. But they are flat! :)

The Gem Quality of the pieces are important and could alter your decision for gem or freeform pieces. "A" grade or better have a finely fractured texture with either a multitude of colors or a single brilliant color. The grades differ to c,b, a, aa, and triple a grades. Now that we have formed the AFAC we hope that the grades can be regulated. But for now beware, some peoples ideas of A grade are not always the same as someone else's. Some gem has wide fracture lines and poorer colors and are therefore of lesser quality. After you done it for a while, you can tell this when you first crack open the concretion.

Next comes the flat laps. I usually start with about a 400 grit... carefully... the gem is not that hard. Think of it as a regular shell and you'll be fine. All you want to do in this stage is to "flatten" the piece you are working on. Some of it, of course, can never be flattened and I believe these pieces would be great for intarsia work, but since I haven't got that figured out yet, for freeform pieces. Once you have your piece fairly flat, look at the center of the piece, you'll probably find...if you stopped soon enough... that it's the green or blue color. If you didn't stop soon enough, then you'll find shale,.. Damn! And you start over with a flatter piece. :) Seriously though, keep an eye on it and you'll be fine. This is the stage where you must decide, freeform or gem quality. If you are doing gems instead of freeform, you cut out your gems before you start your 600

stage. The most popular way to cut the gems... which also gives you the least waste...is the rock bandsaw. But, the traditional saw is fine, just plan your gems out carefully as to waste as little of it as possible... it's expensive stuff!! An oval of 10x14 can be \$80.00 or more if it's of "AA" or better!

I dop my gems with a two part 5 min epoxy on to welding rod pieces. Just warm up the metal rods with a torch slightly and stick it to the already placed epoxy on the back of the gem (the shale). I round them into calibrated shapes with a 400 or 600 grit expandable wheel with sc grit.

Finally, the gem must be capped. Some Lappers use glass, some use a product such as Envirotex... a two part sealer/glue that hardens rock solid. These methods are ok, but for rings and high abuse jewellery you still can't beat Spinel or Quartz Caps. I use tempered glass or I make my own caps from Quartz, for Brooches and most of my freeforms.

I hope I have been able to shed some light on the long kept secrets of Ammonite Gems. But if we are going to sell rough, people need to know how to work it properly. It's too precious and beautiful a gem for people to have to learn the hard way, as I did.

*Taken from the Lapidary Digest*

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