

GEM CUTTERS NEWS

THE AWARD WINNING NEWSLETTER
OF THE GEM CUTTERS GUILD OF BALTIMORE. BALTIMORE, MD



APRIL, 2008
VOLUME 58 NUMBER 4

INTERNATIONAL SHOW DEMO

from Rose Duke

Through the generosity of the folks at Intergem, we've once again been given a booth at the upcoming International Show (April 18 - 20) at the Convention Center. This is our best opportunity to show off who we are and what we do to the public and to recruit new students for our classes.



We plan to have a showcase so we can show off our jewelry and lapidary talents, we'll have a Genie so you can perhaps make some noise and attract the public, or you can bring along your silver, saw blades, pliers etc. and demonstrate a jewelry facet of the hobby.

If you have items that you would be willing to loan for our display, please bring them to the April meeting. Be sure that your name is on the bag!! We'll return all items to you at the May meeting. We especially need examples of things that have been made in our classes.

At our last meeting we asked for volunteers to sign up to be at the booth during the show. Thanks to those who have already volunteered:

Friday, April 18:

12 - 2: Rose Duke, Tricia MacNeal
2 - 4: Charlotte Lindgren
4 - 6: John Purcell

Saturday, April 19:

10 - 12: C. Lindgren, Chuck Duke
12 - 2: Anne Millar, Lois Schwartz

PROGRAM NOTES

by Richard Meszler

April fool's day is probably an appropriate time for this program, so here goes. As I mentioned previously, I think it would be interesting to know more about each other's background and interests so we can get to know each other on a more personal level and perhaps see how our life's experience led us to our present artistic pursuits. Of course that means before I can ask others to talk about themselves, I should be willing to set an example and do the first up close and personal. So, that's what the program is going to be. I am going to talk about moi. (Careful, I can see your eyes rolling!). I will talk very briefly about my early and professional life, discuss my other artistic interest, bonsai, and close with pictures of some of my work since I joined the Guild.



This is an experiment that I hope will be the beginning of an intermittent series of talks by some of our other members. By virtue of our membership in the Guild, we already know we share an interest in lapidary and jewelry making. I am betting that through these talks we will discover in each other many additional areas of common interest.

Our meeting is on April 1 and begins at the Workshop at 7:30 P.M.

2 - 4: Steve Botzum
4 - 6:
Sunday, April 20:
11 - 12: C. Lindgren
12 - 2:
2 - 5: Richard Hoff

As you can see, we have some spots that need to be covered and many times when there is only one person at the booth. Those who volunteer get into the show at no charge, have fun meeting the public, talking about the hobby and fulfill part of their membership commitment to help the Guild.

Take a minute or two and call either Richard or me to volunteer - or sign up at the April meeting.

GOODIES 'N SUCH

by Linda Haddaway & Pam Sliwoski

Thanks to all who brought goodies to the March meeting. They were yummy and sure disappeared quickly.

For April John Purcell, Velina Glass and Charlotte Lindgren have volunteered to bring the goodies. Thanks to all.

Our meeting is April 1...and you know what that is...





The Gem Cutters Guild is a founding member of the Eastern Federation of Mineralogical and Lapidary Societies, Inc. and a member of the American Federation of Mineralogical Societies.

ABOUT OUR GUILD

The Gem Cutters Guild of Baltimore, Inc. was established in order to allow its members to gain knowledge and skills in gem cutting, jewelry making and in identifying and evaluating lapidary materials. Through field trips, exhibitions, and cooperation with other societies, we endeavor to further not only our own knowledge, but also that of the general public.

Our meetings are held on the first Tuesday of each month except January, July and August at our workshop which is located at Meadow Mill at Woodbury, 3600 Clipper Mill Rd, Suite 116; Baltimore, MD 21211. Meetings begin at 7:30 P.M. Visitors are always welcome. Dues are \$30 per year for families and \$18 for individuals. More information and directions to our meetings can be found on our website, <www.gemcuttersguild.com>.

OFFICERS

President - Richard Meszler

Vice President - Wayne Homens

Recording Sec'y - Jeannette Coleman

Corresponding Sec'y - Richard Hoff

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RICHARD'S REFLECTIONS

by Richard Meszler, President



In my last message I started by reporting on events that took place in the February meeting. The point I was trying to make is that it was a good example of the value of our meetings. Yes the formal business is necessary for operating any organization. Interesting speakers or programs are an important component of our educational mission. But the shared experiences and exchange of knowledge among the membership is the glue that makes a club cohesive, viable and energizes the members to want to take an active part in supporting the organization. Seeing each other's work, friendly arguments or teasing, spontaneous plans like "hey let's get together this weekend and look at rocks along this stream", or being able to ask the group about the identity of a rock or how to do something are all informal levels of communication that is the heartbeat of the group. It is this informal communication before, during and after the planned aspects of the meeting that makes a "club, clubby" (thanks Pam J.). After all, who else but fellow rockhounds, lapidaries or jewelry fabricators don't look at you with their eyes crossed and a yawn when you talk about the technical details of how we do things?

This is also what we have in mind for the open shops. For those of us who do not have the space or equipment to cut and polish stones, solder or employ techniques learned in classes, the Guild equipment is available and accessible on many weekends. However it is interesting to me that many of the folks who participate in open shop have well equipped studios of their own and really come to use the open shop as an excuse to work with the other members. When there is a good turnout the atmosphere in the shop is vibrant. There is a lot of sharing, conversation and laughter. I encourage everyone to pay the shop fee and come and join the party.

I would also like to acknowledge our March speaker Dr. Bob Rix. I think we all were impressed by the artistry and beauty of his work. It certainly sparked a lot of interested conversation and stimulated me to give stone carving a try. I know Bob felt it was worth the long trip from southern Maryland on a weekday evening to meet and talk with fellow lapidaries.

Richard

NEW ROSTER

by Carolyn Weinberger

Enclosed with this issue of Gem Cutters News is your copy of the 2008 Guild Roster. Please take a minute and check the entry for yourself to be sure that it is correct.



If there are errors, please send me an e-mail or call me so we can make corrections next month. Also a reminder that it's the Guild's policy (in the interest of security) that we not share the Roster with non club members or give out information from it. If anyone needs to contact one of our members, take their phone number or e-mail and then ask the member to contact that individual.

MARCH MEETING MINUTES

by Richard Hoff, Corresponding Secretary

March 4, 2008

The March meeting of the Gem Cutters Guild was called to order at 7:34 P.M. by president Richard Meszler.

The business portion of the meeting began following an excellent talk by Dr. Robert Rix and the coffee break.

Wayne Homens moved to accept the February minutes as printed in the club bulletin. Motion was seconded and passed.

Steve Weinberger, Treasurer reported that the Guild remains solvent and that the financial records for 2007 had been reviewed by an independent reviewer who found them to be in excellent order.

Our two newest members were welcomed into the Guild by chair Leslie Meszler who also introduced three visitors.

The field trip committee noted that ten members had participated in the trip to Mineral Hill. No trips for the immediate future are planned, but anyone with ideas should contact the committee.

Steve Weinberger presented the Guild with a new certificate from the AFMS Scholarship Foundation noting our new percentage rate - 4500%. The donation kitty was passed around as well.

Rose Duke mentioned that Pam Matheson had knee and foot surgery and is undergoing rehab therapy. Milton Bereson continues to undergo rehab after rotator cup surgery and will be back in Baltimore in early April. Norma Wallis underwent shoulder surgery and is resting at home preparing for rehab.

Richard Meszler reminded members to sign up for the spring classes.



New Business

Rose Duke and Richard Hoff asked members to volunteer to help at the GCG booth at the Intergem Show at the Convention Center on April 18 -20.

Show & Tell was hosted by Virginia Hancock.

Announcements:

Steve Weinberger gave a brief recap of the EFMLS Convention in Jackson, MS. An amethyst that Steve cut and donated for the AFMS Scholarship Foundation was auctioned off. Steve also announced that Gem Cutters News had earned the trophy for the best large bulletin in the recently concluded EFMLS Editors' contest.

The meeting was adjourned at 9:20 P.M.

Submitted by
Richard Hoff
Corres. Secretary

NEW MEMBERS

by Leslie Meszler



It gives me great pleasure to welcome three new members to the Guild. The contact information for each is in the new Roster that's included with this newsletter.

Bruce Dennis, a Baltimore area native, has interests in lapidary, wood carving, flint knapping and metal knife making.

Velina Glass is one of our workshop instructors who specializes in jewelry fabrication including the use of polymer clay and resins. A native of NYC, Velina is semi-retired from the health care industry. Interests besides jewelry include lapidary and web design.

Patricia MacNeal, a Baltimore area native, is an Interior Designer by profession with interests in jewelry fabrication as well as knitting and oil painting.

Welcome to the Guild.

FIELD TRIPS?

from Marcia Rousher, Richard Hoff and Wayne Homans

Now that the weather is getting warmer it's time to start thinking seriously about field trips. The committee is eager to hear your suggestions.

Are you interested in a bus trip to the American Museum of Natural History in NYC or carpooling to the Smithsonian for a visit to the gem and mineral hall? How about a return trip to Mineral Hill...or perhaps a quarry, roadcut or construction site that you know of that we can access with some advance planning?

Give us your ideas and we'll see what we can set up for the coming months.



IT HAPPENED LAST MONTH

from Richard Meszler

Dr. Bob Rix is a former student of mine who became interested in lapidary many years ago. In conversation, I learned that he knew many of our former members - Earl Williams (now living in Florida), Floyd & Val Carpenter (now living in Missouri) as well many others, all now deceased.

A dentist by profession, being handy with a dentists drill led him to explore the idea of carving gemstones. He's now become a master of the technique!

Bob started out carving large chunks of jaspers, rhodochrosite and rhodonite and others because he loved the unique patterns and the way he could make them appear to flow.

Bob's current favorite carving medium is fire agate because of it's very unique flashes of fire and layers of complexity. The small size of the agates also becomes a challenge which he readily accepts.



Bob says that carving relaxes him after a long day in his office. He works on a small table in his living room with an old dentists drill and handpiece fitted with diamond, corundum or wood burrs as well as brushes and polishing tips of various grits. He does not use a water drip to cool the stones, but rather, frequently dips them in a basin of water to prevent overheating and cracking and to wash away the slurry that builds up from carving or polishing.

During his talk, Bob showed numerous slides of his work and also had many completed pieces for members to look at. I know that after listening to Bob and seeing his work, I'm interested in carving stones and wonder how many others were inspired as well.

BIRTHDAYS

from Leslie Meszler

The birthstone for April is diamond. Members having birthdays this month are:

Pam Sliwoski - 1
Gordon Hanna - 11
Pam Jeffries - 14
Lynn Garrison - 19
Pauline Furtaw - 22
Marcia Rauscher - 22
Dennis Bruce (sorry, no date given)

Diamonds are the hardest natural gemstone known, can be used to cut glass, are used on diamond tools for cutting and carving gems, and have a variety of industrial uses. They can be found throughout the world and are coveted in jewelry because of their hardness and sparkle when cut.



SEE PAGES 8 - 11
FOR ARTICLES ON CARVING
& SELECTING FIRE AGATE

SAVE THE DATE!

by Steve Weinberger

The Annual EFMLS Region IV picnic will be held at Lake Anna State Park on June 21, 2008. This is always a laid back, fun event with plenty of good food, lots of socializing, some trading of material, and door prizes. This year, instead of the usual hot dogs, the main entree will be barbecue.

Those attending are asked to bring a covered dish to share with about 10-15 others. Salads, desserts, chips etc. are always good and of course bring along water or soft drinks as well.

Lake Anna is about an hour north of Richmond, VA, just off I-95. There's a lake for swimming, and hiking trails as well. More info will be printed in the next issue, but mark your calendar now.

SHOW & TELL

by Virginia Hancock

Show & Tell is a wonderful way for us to learn what our members are making in classes or in their home workshops. The March meeting was no exception.

Rose Duke brought a wonderful pewter box lid that she had engraved. She also showed us one of the paper rubbing transfers that she uses in her work.

Chris Douglas brought in some of the specimens he collected on the Mineral Hill field trip as well as cabs he cut from the chalcocopyrite he found there.

Linda Haddaway had cabs (crazy lace, obsidian and rhodonite) cut during Donald's lapidary class.

Pam Sliwoski also had cabs from Donald's class (moss agate, obsidian) plus a flame worked bead necklace made during Pam's class.

Melinda Hope brought an American Indian gemstone and silver necklace that she purchased some time ago.

Richard Hoff also participated on the Mineral Hill field trip and brought an albite crystal specimen he found.

Wayne Homens showed his Mineral Hill finds as well as a large chunk of Patuxent River Stone he had found elsewhere.

And what will you bring for our April meeting?

WILDACRES IN SEPTEMBER

by Steve Weinberger

After a long hot summer in Baltimore, September is the perfect time to get away and relax for a week in the Blue Ridge Mountains of North Carolina. We have the perfect place for you - Wildacres Retreat - located just north of Asheville, NC.

I've shared the wonders of Wildacres in the past, but want to add just one more enticement to the mix - Denise Nelson. Denise has traveled extensively for her jewelry and gem business and just recently returned from an exciting trip to South Africa where she was fortunate enough to spend time with the DeBeers organization. One of her talks, as featured guest speaker at the September Wildacres Workshop, will be on that trip. She had access to places that most people never get to see and people that most never get to speak with. Sounds like a terrific talk. In addition, she'll give 5 other talks on things like pearls, and evaluating jewelry and gems.

The dates for the September workshop are the 8th - 14th. Cost for the week is \$330 and you'll not only have the opportunity to hear and meet Denise, but also to take classes in one or two hobby related areas.

Interested? See me at the meeting or visit the EFMLS website <www.amfed.org/efmls/wildacres.htm> for a full list of classes, a registration form and more information.



C o m e join us for a week of fun, relaxation and learning in one of the most beautiful places on the east coast -

BE SAFE — BE WELL

by AFMS Safety Chair Don Monroe from AFMS Newsletter, April 2008

Help from Members

More and more I receive suggestions and assistance with our safety articles. At the recent SFMS annual meeting in Biloxi several people came up with great subjects for future articles. I also read a large number of bulletins from many sources and I want to share one with you that was published in the "Rockhounds Tale" from the Panama City Gem & Mineral Society.



"Vegas On your Mind?"

Would you guess one of our club members would end up needing eight stitches from a shard knocked of a boulder with his own sledgehammer? Odds are, it was bound to happen sooner or later. What are the odds of another club member being peppered with three tiny, sharp & dangerous shards immediately ABOVE his eye (some bleeding, needed pressure to stop it) just three weeks later at another sledgehammer party at a different location? Personal safety begins to invade your conscious mind and makes you wonder, "Well, it's possible, not necessarily probable". Then guess the likely odds of the first injured club member having bought some shin protectors, failing to wear them on dig #2 and ending up with ANOTHER large cut from yet another sharp flake - finally, you can decide the odds of this happening again. If anyone gives you mere even odds this will happen a third time to "scar leg", JUMP on this bet without delay. I'll be dragging my knuckles on the ground before I'll ever put my eyes or legs at risk on a rock dig again. You can take that to the bank while my wife says "well it is about time".

This safety issue is noteworthy only because we now all know someone who has been seriously hurt during a dig. Many times over the years had I not been wearing glasses that were badly scratched at a dig by flying chips and pebbles, the alternative might have been an eye loss. It was only a matter of time. Safety will one day become a paramount issue to our hobby as it grows, leading to more digs and the inevitable injuries; that is a sure bet!"

By Herb Whittington

At the November SFMS meeting, I met Herb Whittington and we discussed his story and I save the scars. They were real and it was scary. As Paul Harvey would say "and that is the rest of the story".



YOU CAN HELP SAVE MONEY!

by Carolyn Weinberger

On May 12th the US Post Office will once again increase the cost of postage. A one ounce stamp will go from 41 to 42¢, two ounces from 58 to 59¢ and so forth. In addition, our printer has increased the cost of reproducing our newsletter by one cent for every 2 pages - from 5 to 6¢. The bottom line of all this for the Guild is

that the cost of printing and mailing our bulletin will increase by 10¢ per issue - \$1.00 per year. With the cost of everything else increasing, even that \$1 would start to add up to considerable savings.

How about saving the club some money and electing to receive your issues via e-mail instead of snail mail? You'll get your issue faster and get to see all the pictures in full color.

OBSERVATIONS ON DIAMOND CRYSTALS

by Jim Hurlbut

One of the 92 stable elements found in nature is the element carbon. Its chemical symbol is "C", the atomic number is 6 in the periodic table. Carbon in its pure form is found in two substances, graphite and diamond.

Graphite crystallizes in the hexagonal system and may be found as crystals or large masses. Diamond crystallizes in the cubic system and has never been found massive, but always as crystals or crystal fragments.

The basic unit to describe the size of Diamonds is the carat weight.

1 Carat = 200 Mgr or 3 grains

3 Carat = 1 gram or 437.5 grains

146 Carat = 1 oz Avoirdupois or 480.0 grains

160 Carat = 1 oz. Troy

16 oz. or 1 lb = 2336 Carats

The largest crystal fragment ever found was the Cullinan, which weighed 1 lb 5 1/2 oz or 3106 Carat. It was found at the Premier Mine, Kimberly, South Africa, on January 25, 1905.

The largest diamond found in Colorado was 28.2 carats which was cut into a 16.87 cushion cut gem of light yellow color. This was from the Kelsey lake mine.

Diamonds grow deep in the earth at high temperature and pressure. These conditions exist about 150 miles below the surface. They grow slowly atom by atom when there is an excess of carbon atoms in the rock. When the carbon is used up they stop growing. If due to convection currents in the molten rocks the temperature or pressure changes there may be an excess of carbon and the diamonds begin to grow again. If due to changes the solution becomes deficient in carbon the diamond will begin to dissolve.

Now we come to a peculiar characteristic of crystals, namely; in certain directions the attraction of the atoms to each other, and therefore

FACTS ABOUT DIAMONDS

author unknown, via *The Dopstick*, November 2007

Most diamonds are over three billion years old, two-thirds the age of the Earth. There are a few "youngsters," though, which are only 100 million years old.

Most diamonds were formed more than 100 miles below the surface of the Earth, some from perhaps 400 miles down.

The most recent kimberlite volcano eruption was approximately 53 million years ago - just a few ticks of the geologic clock - but there is

the tendency of growth, seems to be greater in certain direction than in another direction. On the other hand, in certain directions, the tendency of "solution" (Dissolving Power) is greater than in others. Each crystal form has its own peculiar, preferred direction of growth as well as dissolution.

The crystallography of diamond crystals and the arrangement of the atom in the lattice cause some crystal faces have a stronger attraction for the carbon atoms than others. The directions are crystallographically defined through the faces that lie in those directions. Accordingly, we have main growth as well as main solution faces these are, at the same time, the most important crystal faces. The directions of growth or solution are normal (perpendicular) to the face. On the diamond the main growth is the octahedron face, and the main dissolution face the cube face and the dodecahedron face.

As said before, when the mother liquor (the magma) is neutral, no particles are added or taken from the already formed diamonds when the magma is not neutral, particles are added to the octahedron or taken away from the direction of the cube and dodecahedron faces. (Octahedron with rounded edges so frequently observed).

no reason to believe there will not be more in the future.

Although diamonds are perceived as a white—actually colorless—gem, they come in a spectrum of colors; colored diamonds are called "fancies."

India was the only known source of diamonds before the sixth century and the predominant source for over 2,000 years, until the mid-eighteenth century.

Romans believed that diamonds had the power to ward off evil and wore them as talismans. They inherited this belief from Indian mythology.

A law in thirteenth-century France decreed that only the king could wear diamonds.

Diamonds were not used as gems in European jewelry until the late 13th century. They were initially used for such purposes as engraving other gems, such as sapphire cameos, and for drilling holes in hardstone beads (such beads drilled by diamonds have been dated to archaeological sites as early as 400 BCE).

The most recent diamond discoveries have been made in North America—in the Northwest Territories of Canada and in Colorado—where explorers found diamond pipes in 1990.

Some diamonds are composed of carbon, that is recycled organic matter, previously incorporated in marine organisms.

"One-hour eyeglasses" have only become possible with the use of diamond tools, which can quickly and accurately shape the lenses.

Because diamonds can withstand extremely high temperatures and corrosive conditions, and because they

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FACTS ABOUT DIAMONDS

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are transparent to most forms of light and electromagnetic radiation, they are ideal for use as windows in industry and in space probes, including the 1978 Pioneer space probe to the surface of Venus.

Every copper wire in your computer, television, and house has been shaped with a die—the device that squeezes wire to the desired diameter—made from diamond.

Diamond scalpels are particularly effective because their sharp, hard edges never dull, and, because diamond's hydrophobic surface—its resistance to being wetted—ensures that wet tissue does not adhere to the blade.

The largest rough diamond ever found was the Cullinan, 3,106 carats, discovered on January 26, 1905 in the Premier mine of South Africa. It was cut into nine major stones, including the largest gem diamond, the Cullinan 1, or Star of Africa, 550.20 carats. This is mounted in the British Royal Scepter and housed in the Tower of London.

In the 1950's, Gemological Institute of America developed the first internationally accepted diamond grading system. This system provides unbiased opinions of the quality of polished diamonds by applying uniform criteria to their grading.

The GIA Gem Trade Laboratory Diamond Grading Report has become the benchmark for the international gem and jewelry industry, and can be found accompany diamonds worldwide.



Diamonds from the Smithsonian Institution

Photo ©Chip Clark used with permission

LARGE DIAMONDS MADE FROM GAS ARE THE HARDEST YET

from <www.sciencedaily.com>, 2004. Used with permission.

Producing a material that is harder than natural diamond has been a goal of materials science for decades. Now a group* headed by scientists at the Carnegie Institution's Geophysical Laboratory in Washington, D.C., has produced gem-sized diamonds that are harder than any other crystals. Further, the researchers grew these diamonds directly from a gas mixture at a rate that is up to 100 times faster than other methods used to date.

"We believe these results are major breakthroughs in our field," said Chih-shiue Yan, lead author of the study published in the February 20, online *Physica Status Solidi*. "Not only were the diamonds so hard that they broke the measuring equipment, we were able to grow gem-sized crystals in about a day."

The researchers grew the crystals using a special high-growth rate chemical vapor deposition (CVD) process that they developed. They then subjected the crystals to high-pressure, high-temperature treatment to further harden the material. In the CVD process, hydrogen gas and methane are bombarded with charged particles, or plasma, in a chamber. The plasma prompts a complex chemical reaction that results in a "carbon rain" that falls on a seed crystal in the chamber. Once on the seed, the carbon atoms arrange themselves in the same crystalline structure as the seed. In this case, the seed was a type 1b synthetic diamond plate. They have grown single crystals of diamonds up to 10 millimeters across and up to 4.5 millimeters in thickness by this method.

The crystals produced by CVD are very tough. "We noticed this when we tried to polish them into brilliant cuts," said Yan. "They were much harder to polish than conventional diamond crystals produced at high pressure and high temperature." The researchers then subjected the tough CVD crystals to high-temperature and high-pressure conditions. The diamonds were heated

to 2000° C and put under pressures between 50,000 and 70,000 times atmospheric pressure (5-7 GPa) for ten minutes. This final process resulted in the ultrahard material, which was at least 50% harder than the conventional diamonds as shown by direct measurements carried out in collaboration with scientists at Los Alamos National Laboratory.

"Making diamonds has not been the primary goal of our research," remarked Russell Hemley of Carnegie. "Our group is interested in the behavior of materials at extreme pressures and temperatures. We need large, perfect diamond crystals to create new classes of high-pressure devices for our research and decided to explore whether we could make these crystals by CVD processes. We found that we could, and at a very high growth rate. This has opened up an entirely new way of producing diamond crystals for a variety of applications, such as the next generation diamond-based electronics devices and cutting tools. Our new finding that the diamonds can be supertough and/or superhard was a surprise and will greatly benefit many of these applications."

*This research was supported by the National Science Foundation, the U.S. Department of Energy, the National Nuclear Security Agency, through the Carnegie/ DOE Alliances Center, CDAC, and the W. M. Keck Foundation. It was conducted in collaboration with researchers at the Phoenix Crystal Corporation and Los Alamos National Laboratory. The Carnegie Institution of Washington (<http://www.CarnegieInstitution.org>) has been a pioneering force in basic scientific research since 1902. It is a private, nonprofit organization with six research departments in the U.S.: Plant Biology and Global Ecology in Stanford, CA; The Observatories in Pasadena, CA, and Chile; Embryology, in Baltimore, MD; and the Department of Terrestrial Magnetism and the Geophysical Laboratory in Washington, DC.

SELECTING AND POLISHING FIRE AGATE

by Warren Huges, 1972 via the RockCollector, March 2008

There are several types of fire agates. Most closely resemble the others in makeup except for those with "surface fire" only. You do not want to waste your money or time on these, for it is almost impossible to keep that fire, and you won't if you attempt to shape the top, so select those you can work easily and that show good fire down deep within the stone. A few of these may also show some surface fire, but be sure there is fire INSIDE the stone also. The majority of fire agates you will be offered are of the latter type.



In selecting them, don't be afraid to take a few smaller stones, for their cost is quite small and many make into beautiful gems fine for earrings, tie tacks, smaller ring sets, etc., and by the same token, don't be afraid of the larger stones IF they show enough fire within them that you can make one large cab or two or three smaller ones from the one rough, for their cost then is small. Do NOT purchase a stone the size of your fist with one small spot of fire showing somewhere on it, for these ARE costly since more than 90% is waste.

After purchasing (or finding) your fire agates, the very first rule to remember is NEVER, NEVER slab a fire agate. The extremely thin layers of "fire" that weave their way more or less horizontally across the rough stone move up and down, and all around, so to speak, and almost invariably will be lost to the eye, and extremely hard to relocate, if at all. Save your saw for one purpose only when working fire agate-to remove a finished or partially finished gem from the rest of the rough stone after you have shaped and sanded it (I polish also).

In examining your fire agates, choose those with good bright fire down in the stone at any location-near or at the surface, or perhaps 1/2" down away from the surface. The patch of fire should be large enough that you can be sure of getting fire to make a nice sized cab or set, and not too thin when viewed from the top-unless you can use it for a pendant or other drop type gem, but do remember that you will have to remove the outer "skin" on each side and polish the sides when you get down to where it lies.

SOMETIMES, for ease of polishing, it is more feasible to separate the two or more stalagmites that comprise the main stone, and work each as two smaller gems, but again-careful with that saw-sometimes it is easier to gently tap the stone with a very sharp chisel causing it to split into two parts.

After examining your stone and planning what you want to save as a cab, go to your roughest grinding wheel and while using light pressure, slowly remove the top of the tallest stalagmite that makes up the stone. Immediately LOOK, as in many, many cases, there will be fire you hadn't seen before right there. IF so, begin to shape your first cab. If not, grind on down (horizontally, and just above the brown lines of limonite) for 3-5 seconds, STOP, LOOK at the stone carefully again. If no fire, repeat, over and over until suddenly you do see the fire coming into view. Now go to 220 grit wheel and move a little closer to the fire-trying to not really touch it (no tragedy will result if you do, as a rule), and then shape the outer limits of the cab. It MAY be necessary at this time to "favor" one side or face of the stone a little (usually the front face if needed at all), in order to align the fire best so that it is in alignment with the center line of the finished cab, and shows its

fire best when viewed from directly above, after the cab is finished.

If your stone has multi-layers of fire (and most do have), and you do not like the fire you now see, then grind right on into it and hope for better to show. In most cases you will win the gamble; though you will sometimes lose, of course.

When you have decided on the area of fire you want, shape it again, then move to the sander. I personally go to the 100 grit again, but use very light touch on a well worn cloth, then 220, then 400, and finally 600, which in itself will almost polish the gem. From here polish your gem in any manner you would normally polish any agate or petrified wood. My own preference is diamond, using these meshes: 325-600-14000-50000-100000 for a fine finish.

On the Mexican fire agates, it is not at all uncommon to get two or even three finished gems-one directly below the other, so check for this after you have taken your completed gem off of the rough. Another (and to me first) thing to check for is to roll the gem over and examine that side-hoping to find a good "Starfire", and it happens frequently. IF you have one, you will know it the instant you see it. Those beautiful points of many colored lights speak for themselves. Almost invariably, you will want to make this into the new top.

Of the ones [fire agates] we do have-and they are scarce when compared to other gems, only a certain percentage are truly fine gem quality. When you have a real GEM FIRE AGATE you have something RARE, and more and more people are discovering its beauty and individuality-as well as its durability because of its hardness of 7-7.5, and more people are learning the thrill that comes with the discovery of a true gem within the rough material they are working on.

CARVING FIRE AGATE: TRY IT — YOU'LL LIKE IT!

by Lou Thorpe from *BackBender's Gazette*, January 2008

It's fun! It's excitement! It's a challenge! If it's excitement you want, try carving a fire agate.



Several years ago I read an article in *Lapidary Journal* on the art of carving fire agate. Being involved in a serious love affair with this magnificent stone, I said, "I can do that."

The only problem was that the author neglected to give the reader explicit instructions. He managed to write a long narrative describing the joys and sorrows of carving that mysterious stone, but NO details. It was frustrating.

Being a true rockhound, I launched an extensive search for the answers. This involved calling every rockhound I have ever met, haunting Rock Shops and gem and mineral shows throughout Texas—a pretty sizeable chunk of real estate. I drove hundreds of miles to attend shows, hoping to find someone who could give me some answers. It finally dawned on me that no one was going to divulge any of his or her secrets concerning the carving of fire agate. This made me more determined. Using plain common sense, I purchased a Foredom flex tool, some diamond points, and a few other items that might come in handy. My workshop was stocked with about everything else. I had been accumulating lapidary equipment for many years. With the new acquisitions, the only thing left to do was to back my ears, grit my teeth, say a prayer, and get with it.

Knowing the frustrations I had experienced in trying to break into this aspect of the lapidary field, I made a vow. If ever I became knowledgeable enough, I would go to gem and mineral shows and demonstrate the art of carving fire agate. I would give

advice freely, and teach others what to do and what not to do.

Two extremely happy years were spent doing just that before leaving Texas behind and settling in Port Angeles. The locale is different, but the intention is the same. Rock hounding and the lapidary are universal. I am still demonstrating and spreading the word.

To those interested, hold onto your dream and know it is possible with determination and dedication.

Part 1

We are finally getting into the nitty-gritty of carving that mystical stone known as Fire Agate. The most important thing to remember before you even start is to select a good piece to work with. Carving is a very demanding aspect of the lapidary field. It requires patience, patience, patience. It is a time-consuming venture into the unknown. You do not want to waste days or weeks working on an inferior piece of material. True, there is a chance you may destroy a beautiful layer of fire, but if this happens, then go deeper and you may uncover another layer that is just as sensational. Keep this in mind, and don't be afraid to dive in.

The first step is to remove the layer of chalcedony that usually adorns the top of the fire layer. Remove this carefully. If the layer is thick, you may wish to use a trim saw to partially remove some of the excess. Be very careful about trying to remove too much in this manner as you may be removing some fire also. I always leave some chalcedony - for two reasons. Number one is because you may wish to incorporate a portion of the chalcedony in the design. Number two is that fire agate is botryoidal, and part of the fire "bubbles" could extend up into the chalcedony. After removing as much as possible or as advisable, be sure to clean the stone thoroughly. Just as in any other cutting process, all oil or coolant should be removed.

The next step is to go to the hand tools. I use a Foredom Flex Shaft with a flexible hand piece: #8 AD. There are several very good motors and hand pieces on the market, but in this article I am giving you the machines, tools, and equipment that I work with. Always keep in mind that I am not endorsing any particular product.

Before starting the actual grinding with your hand piece, you must have a bowl or container of water beside your work space. The stone must be worked wet at all times. I automatically dip my stone every few seconds. That may seem like a lot of extra work but my bowl is low and I use a block of Styrofoam approximately 5"x5"x3" high as a support and steadying device. By resting my hands at the "heel" area above the wrist (on the block) it is a very simple matter to swing my hand over to the bowl of water and back to the business of grinding. This is my way of doing it, but if you come up with another solution, then do it—anything that feels right for you is the way to go. Just keep that stone wet!

You must get down to the brown material that encompasses the fire layers. This is accomplished by using a heavy-duty diamond sintered wheel. My preference is a 1/2" wheel. Through experience I have found the sintered wheels do an excellent job and do not have to be replaced as often as other types.

I would also like to note at this point that another reason I use diamond sintered wheels is because they work much faster than the silicon carbide or aluminum oxide points. As a beginner you can use the above mentioned points and turn out a beautifully finished product, but it will just take longer. If you see that carving is for you, something you really enjoy doing, invest in the diamond points. It is an excellent investment.

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You do not need a wide variety of points to begin with. I started with a 1/2" Heavy Duty Wheel; 1-Diamond Thin Disc; 2-Tapered Cylinders-Round Head (1 small, 1 larger); 1-Round Edge Wheel; 2-Knife Edge Wheels (1 small, 1 larger); 1-Cone; 1- Barrel; 2-Flames (1 small, 1 larger). Your inventory can be added to as you progress, but the above will give you a good start.

Once you get to the brown material, remove the heavy duty wheel and insert a barrel point in your hand piece. The barrel point is a versatile point—it clears larger areas in a hurry, but can be used to perform other jobs also. At this point, let me suggest that you take just any piece of agate and experiment with the various points and wheels. This way you can familiarize yourself with each one and learn its capabilities. Never force your points—use an easy stroke—let the point or wheel do the work.

This is where the fun begins! You have now reached the first real stage of wonderful things to come. You should be able to see the contour of the fire lines. Study the piece carefully and try to “see” what the stone contains. It will tell you what you are going to carve from it. There is something waiting to be born, and you can give it life. Get that piece of fire agate that has been pushed aside for so long and start cleaning it up. Between now and next month you should be able to decide just what you will do with it. We will then take you step by step to a beautifully finished carving. Now Get Going And Have Fun!!

Part 2

Are you ready? Do you see the design or object you are going to create? Are your creative juices flowing? Let us begin!

Take a fine-tipped felt point pen or an aluminum point or whatever you use to outline a cabochon and outline what you see. In other words, make a drawing on the stone of what you are going

to carve. When you have outlined all of the main features, study it again. If there are any corrections to be made, now is the time to do it. Using your thin disc or separating disc, follow your “drawing” lines. You will be cutting into the stone, so keep that stone wet. As you cut these initial grooves, you will find it easy to keep your cutting area wet as the water will follow the groove. It may be necessary to go back over this cutting procedure again in order to get the grooves as deep as you want them. It is much better to cut thin grooves to start with. Remember, you have a great deal of grinding and sanding to do to actually shape your carving, so you must allow for this.

Once the initial outline has been cut, you can go on to the business of rounding or detailing your carving. If you will recall, I suggested earlier that you take a rough piece of agate of any kind and practice using each point to familiarize yourself with its capabilities. You now want to make your carving as three-dimensional as possible, giving it a life-like appearance. This will not happen overnight. You will have to work and rework areas until you have achieved the right look for your particular piece. Use caution at all times. You do not want to grind or sand too close to the fire, or you will end up erasing the fire. Fire layers are so thin that they will just disappear before your eyes, so leave enough of the brown layer above the fire to allow for the six to seven polishing stages you will be using.

Work your carving with your various points until you achieve a fairly smooth surface. Now you are ready for the polishing stage.

I use diamond compound in a syringe dispenser—usually 2 grams each, with Mesh equivalent (grit size) of 325; 600; 1,200; 8,000; 14,000; and 50,000.

Diamond compound will go a long way if used properly. I mix a small amount of compound, about the size of a wooden match head, with one drop of Crystallube and make a paste of this. I then take a round tooth pick and apply this paste over the surface of the carving.



Before going any further, let me explain the type point I use in my flex tool to achieve a brilliant polish. I turn my own wooden points in various sizes. They are turned to fit the collet of my hand piece. I go to the lumber yard and buy a 3-foot length of 1/4" doweling (in the hardest wood available), then cut it into 2" lengths. 1" for the shaft and 1" for the point. The shaft is turned to 1/8" diameter, the point being 1/4" (or less) at the base and shaped to a rounded point or cone shaped point. I also use the rounded tooth picks for areas the larger points can't reach. Wooden points are marvelous tools for polishing. They absorb the diamond compound and do not heat the stone as other agents do.

Contamination is one thing that is to be avoided when using diamond compound. Just a minute grain of a coarser compound can cause scratches on the surface that are not readily visible until you reach the final polishing stage. It may well be necessary for you to go back and start from scratch, which is something you want to avoid. After each stage of polishing, your carving must be completely cleaned of all the compound just used. This is the same precaution you use when tumbling stones, and for the same reason.

Start the polishing process with the 325 Mesh and proceed with each of the next five Mesh compounds, following the above instructions. Remember, a fresh point must be used with each grade of compound. In order to avoid

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confusion on which point I had used for which compound, I mark the shaft with a #1 through #6 and store my used points by sticking the shaft end into a large block of styrofoam, point up. This ensures that they do not rub together or contaminate each other.

The polishing process must not be hurried. Take plenty of time with each compound in order to ensure a good polish. There are times when I am not completely satisfied with the final polish, so to give it a higher luster, I will go to a cerium oxide or tin oxide. I soak the wooden point for a few seconds before applying the oxide.

Remember, your stone will heat rapidly with oxides, so keep the stone wet during this operation. If you overheat the stone, it will "scorch" the surface, and you really have a problem. There again, caution and patience apply.

After reading this article, you may think "it's not worth it." I have purposely stressed caution and patience because I want you to achieve good results on your first effort. Believe me, it will all become "second nature" after a few experiments and will become an exciting and rewarding experience. It's like riding a bicycle—once you have learned, it becomes automatic. The joy of seeing a carving come to life far outweighs the time and effort put into a piece.

Good Luck and Happy Carving!!!



THE TRIVA VUG

by R. J. Harris from Rock Buster News, March '08

- Smut is derived from a German word (smutt) and was originally used as an observation about coal dust (die smutt auf der Koal).
- Hard hats were first invented and used in the building of the Hoover Dam in 1933.
- ANFO, a mixture of ammonium nitrate and fuel oil, is used for blasting in copper mines. One blasting hole uses as much ANFO as was used in the Oklahoma City bombing.
- The word 'concretion' is derived from the Latin con meaning 'together' and cresco meaning 'to grow'.
- In California, from 1853 to 1884, "hydraulicking" of placers removed an enormous amount of material from the gold fields, material that was carried downstream and raised the level of the Central Valley by some seven feet in some areas.

Sources: Wikipedia, Launch Radio.

HINTS & TIPS

via RockCollector, March 2008

Paint It Red!

To identify and grind out pits in a cabochon, spray the rough cab with red enamel from an aerosol can, then grind the paint off with a light touch. Pits and lines will stand out as bright red spots, making it unnecessary to wipe the cab to see if the pits are out. This is especially helpful when grinding free-form cabs from fire agate.

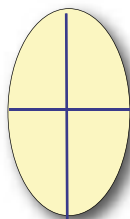


Cutting Tips

Turn your blade around (multi-directional blades only) and sharpen it after every 25 hours of use. This will extend the life of the blade and help prevent dishing and warping. You may find you need to sharpen your blade more often. To sharpen a blade, cut a sharpening stone. These are usually made of aluminum oxide. For blades 10" and smaller, use a 0.5"x 0.5" stone. For blades 12" and larger, use a 1"x 1" stone.

Working Out a Flat Area on a Cab

We all know this hint, but maybe we've forgotten to put it into practice. To work out a flat area in the center of a cabochon mark the pre-form with intersecting lines forming a cross at the center. When you have ground and shaped the stone to its proper curve, the cross will have disappeared and the flat spot along with it. (Sounds easy since flat spots are the curse of making a good cabochon.)





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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
APRIL		1 Guild Meeting 7:30 P.M. Refreshments: J. Purcell, V. Glass, C. Lindgren	2	3	4	5 Open Shop *
6 Open Shop *	7	8	9 Introduction to Wirewrapping class begins	10 Rochester Mineralogical Symposium Rochester, NY	11 Chesapeake G & M Soc. meeting - 7:30 P.M. Women's Club of Catonsville Rochester Min. Symposium	12 Projects in Gold class NO Open Shop Rochester Min. Symposium
13 Projects in Gold class Rochester Min. Symposium NO Open Shop	14	15	16 Baltimore Mineral Society meeting Cockeysville Library 7:00 P.M.	17	18 Guild Demo at the International Show - Convention Center 12 - 6	19 Guild Demo at the International Show - Convention Center 10 - 6 Open Shop*
20 Guild Demo at the International Show - Convention Center 11 - 5 Open Shop*	21	22	23	24	25	26 Faceting class begins Open Shop* begins at 2 P.M.
27 Drilling Holes class NO Open Shop	28	29	30			

* For Those Paying 2008 Shop Fees