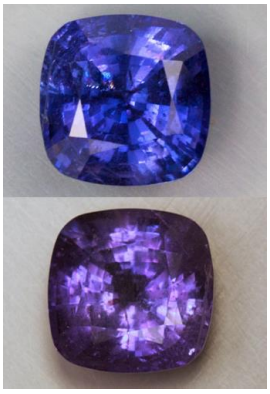
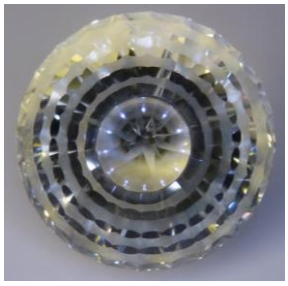
UNITED STATES FACETORS GUILD NEWSLETTER





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Welcome New Members

USFG welcomes all new members!

Adams, John, TX
Lloyd Addie, BC
Elizabeth Allen, OK
Quatian Allen, GA
Mikko Astrom, Finland
Robert Asumendi, OR
Robin Ballard, AZ
Carl Barthuly, MT
Robert Bendelow, NC
Nola Bogie, ONT
Ray Brandon, AZ
Gary Braun, GA
Corey Brenner. ID
Roger Bright, AZ
Richard Brooker, WA
Julie Callahan, UT
Alan Charlton, UK
Steve Clay, AZ
Samuel Coxson, NC
Ron Davis, IA
John DeMain, NC
Tom Dershem, PA
Laurence Dodd. AU
Peter Eddy, GA
Alex Edwards, NC
Wayne Emery, IA
Beau Ewing, CA
George Fairclough, BC
Rose Galante, OR
Doug George, OR
Jason Gieswein, TX
Guillermo Glavis, CA
Bryan Gilles, NV
James Grace, WA
Karl Granzow, OR
Robert Greenway, TX
Larry Hager, TX
Jeff Hapeman, PA
Lita Hardy, SC
Robert Hatfield, OH
Kathy Howie, NC
Dan Hunter, TX
Karen Isley, OR
Lorraine Johnston, MD
Erik Jones, CA
Scott Kelley, MI
Carl Kerstann, FL
Patrick Kleinkort, FL
Michael Knuth, TX
David Landry, MT
William Lawrence, AU
Nico le Roux, So. Korea
Kim Lembke, AU
John McNamara, FL
Jessica Markwell, AU
Marek Mikolaj, Slovakia
Knut Moltu, , Norway
Cleveland Murphy, FL
Jeff O'Malley, TX
Helen Newman, WA
Carmina Orilla, CA
Dan Owens, VA
Joe R. Navarro, CA
Chris Nye, NH
Ian Orrell, AU
William Phaklides, CA
Mark Rampel, NC
Fred Robb, ID
William Rodgers, SC
Johnny Roe, TX
Miriam Rogers, NC
Gregory Rohde, TX
Bruno Ronsmans, Belgium
Gregory Russell, NC
Richard Russell, WA
Don Sabie, AR
David Siemer, KY
Melissa Smith, ONT
Sean Smokovich, CA
Christa Starr, CA
Gjeret Stein, WI
Keith Stone, AR
Henry Swan, TX
Joseph Thompson, WA
Katherine Tokar, NJ
Joseph Trusso, NY
Marie Tsacrios, NC
Catherine von Schroeder, GA
Bill Wax, AZ
Robert Wenning, AZ
Dave Wester, WA
Phillip Woods, MD
Roger Wyatt, AZ
Ben Yost, MI

Letter from the President

Tom Maxwell

First, I want to thank Will Smith for his leadership as our President for the past two years. As your new president, I look forward to continuing on the path that has been laid out, but it will be difficult to fill his shoes.

Second, I need to express my appreciation to Sue Lichtenberger and Jenny Clark for their hard work in handling the large number of new members and renewals as a result of the new website. We have had many positive comments on this long overdue project. Another big thank you to Robert Asmundi and his team at RKA Studio. Also, to Mark Oros, our new newsletter editor, who has done an outstanding job taking the reins from Howard Bromeley.

The USFG-Tucson Faceters Frolic was another successful event. See the full write-up in a separate report.

I would encourage everyone to consider entering the 2016 SSC. A lot of time and effort was put into the new designs, most notably, the relaxing of the size tolerance for the novice stone in an effort to attract more entries. Entrants will receive a detailed evaluation of their stone that will help improve their everyday cutting skills.

Next comes projects for the coming year. A number of committees were established last year, but not much was accomplished due to the magnitude of the website project, the SSC, and other interruptions. There are many things that we can do to grow our organization but we need some help to spread the work.

Our Constitution lists our purposes as (1) to promote the art, skill, and teaching of faceting; (2) to expand the knowledge of natural and laboratory-made crystals; (3) to develop and promote uniform rules for faceting competitions within the US and among other countries; (4) to sponsor or assist in managing competitions; and (5) to serve as a national repository and clearing house for faceting designs, published materials, and general information for faceters everywhere.

This is a big responsibility and we have accomplished a lot in the past two years under the leadership of Will Smith, the officers, and board of directors. That being said, there is still much to do and it takes time to achieve these goals. Volunteers are needed to help the USFG achieve these goals. If you are interested in volunteering your time or talents, please contact me or one of the other officers and let us know what areas you would like to help out with.

Tom Maxwell
President
tmm5111@gmail.com

Letter from the Vice President

B. Diane Eames, GG

May I introduce myself, Diane Eames, the new Vice-President.

Way back in 1984, I got a job in a wholesale fine jewelry showroom in The World Trade Center in Dallas, TX. I loved the diamonds, but it didn't take long for the colored gems to become my favorites. Since then, I've also worked retail and corporate jewelry stores, and in a mom and pop store. After completing my Graduate Gemologist degree in 1999, I spent some years appraising gems and jewelry. Moving to Mason, TX, home of the Texas state gem, topaz, in 2005, got me into gem faceting. I do not know if I am the only classically trained fine jeweler to professionally cut gems, but I haven't met another one yet.

Now that most of my work is gem cutting, as I still work as a fine jeweler and gemologist, it seems I sit on the fence between the jewelry industry and the hobbyist cutters. Most jewelers are unaware there are gem cutters all around them. My training in gem cutting came from the hobbyist cutters primarily, as this training is not offered in the jewelry industry, which is odd.

So, why is a production cutter now an officer in an organization that stresses technical perfection in gem cutting, through their competitions? Maybe it is to bring the cutters and jewelers of America together for mutual benefit, or maybe I was the next person on the list.

Y'all will let me know what you want.

B. Diane Eames, GG
Gems of the Hill Country
Graduate Gemologist
(GIA)
Ingram, Texas

Member Profile

Please do not be shy. We would like to hear about your faceting journey, latest accomplishments, or why you have this passion for faceting. Please contact our Editor and let him know that you would like to participate in our quarterly member profile. We are ready to help you with telling your story, editing, and photography. Please send an email introduction to editor@usfacetersguild.org.

Who Would Have Thought?

Larry Mattos

I was 12 years old in 1970 when I attended my first lapidary class with my grandmother. We entered a giant warehouse full of rows of grinding machines, saws of all sizes, and a separate room full of faceting machines. I didn't have a clue of what I was looking at or how it would change the direction that my life was going to go.

For the next two years, on Tuesday and Thursday nights, I learned how to operate the grinders and use all the different sanding and polishing wheels. For the first few weeks, I just stood and watched my grandmother and her friends grind and polish what looked to me to be pieces of gravel, but once finished were beautiful jade, agate, and opal cabochons. Over that two-year period, I learned a lot about rocks, cutting and polishing, rock shows, and where to find different stones and minerals. But there was one thing that fascinated me that I could never get out of my head and that was standing in the room where the faceters were cutting. They did it as though they didn't even have to think about it -- having a great time, talking to each other, running the stone back and forth on the disc, taking a peek at it now and then. How could anyone take a tiny little chunk of rock and turn it into a gemstone? Truly, these guys were the masters of the world.

How could I become one, too?

In 1972, I bought my own equipment, and did my cab cutting at home. That lasted until 1975, and I really didn't have time to cut anymore. Besides, how many belt buckles and bolo's can one person make?

Fast forward to 1990. The memories of those men faceting never left my mind. I took my kids to a local rock show so they could see the exhibits, equipment, and the finished stones for sale. As we walked through the exhibition hall, we came across a sales representative for Graves Faceting Machines. This was my chance to become a faceter. I bought the Graves machine and used it for about 17 years.

So, let me introduce you to our company, Ashton Gems, which is located in Northern California in the Sonoma Wine Country (about 40 miles north of San Francisco).

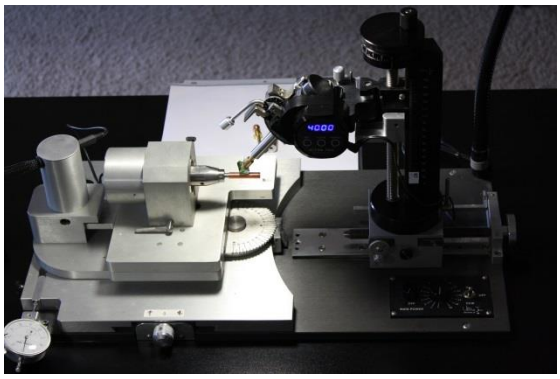
My wife, Morgan Mattos, is the CEO and CFO. I cut the gemstones and empty the trash. Morgan also works full time for the Superior Court. My name is Larry Mattos, and I am a retired custom tile setter and police officer, although I still instruct at the police academy part-time.

The name of the business, as well as the names of many of our gemstone cuts, are based on characters and places from the book, "The Guernsey Literary and Potato Peel Pie Society." This is in honor of Morgan's mother, Mary Ann Shaffer, who wrote the book with Morgan's cousin, Annie Barrows. The overwhelming success of their book afforded us the opportunity to take my love of gem cutting from a hobby to a business.

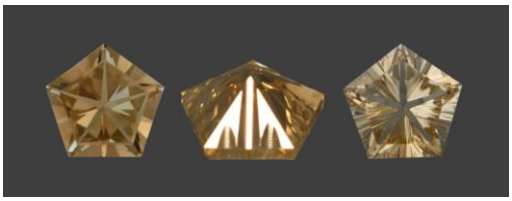
In 2008, right before we started Ashton Gems, I was ready to upgrade to an Ultra Tec Faceting Machine. I took a drive to Southern California (about eight hours each way) to their headquarters. I was given a tour of the facility and I have to say, this is a very interesting company. I was shown how all the parts of an Ultra Tec machine were made, assembled, and tested. What is unique about Ultra Tec is that almost every piece of their faceting machine is made in one location. Very few parts are made by anyone else and none are cast aluminum -- they are all milled from stock. The cost of an Ultra Tec machine is more than most, but after cutting a few stones, you will see that it's worth every penny.

One of the benefits of an Ultra Tec is that if you purchased one of the original models many years ago, it can be easily upgraded. The design is still the same and any new features will fit.

In 2011, Ultra Tec introduced the Fantasy Machine, which is taking faceting to a whole new level.



Fantasy and concave cuts can be made on any gemstone. These unique cuts involve the creative use of refracted light through a gemstone to form unusual effects. Refraction, or the reflection of light as it travels through a gem, can be greatly increased by adding more surfaces (facets). As the gem cutter adds concave facets, dimples or slices in the stone, the light reflects back in entirely different ways. This results in designs not possible using traditional cutting techniques -- pieces that are truly distinctive with no two exactly alike. Another key benefit of Fantasy and concave cutting is that it can increase a gem's brilliance by 5-7 times.



In the above photo of the Morgan's Star Cut (citrine), the stone on the left was cut on a regular faceting machine. The middle is a side view of the same cut with three small concaves in the sides (using the mandrel tool). The stone on the right is the finished concave work. These were both cut from the same piece of citrine, although the concaving makes the stone much brighter.

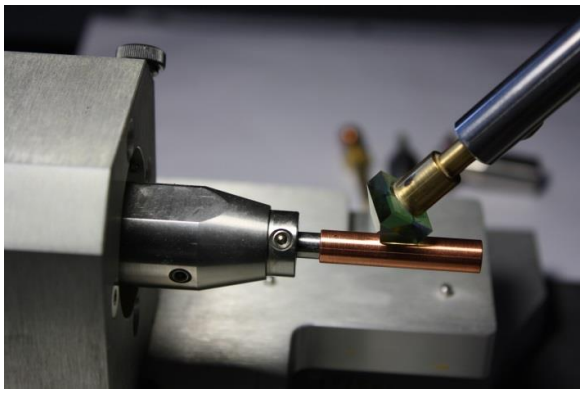
The Fantasy Machine uses 2 motors, the first is for tool rotation, the second provides tool reciprocation (which is adjustable). The motor table plate moves left or right from center, the movement is measured be by a dial indicator. The table will also pivot at a left or right angle, using a protractor for exact placement. Depending on what tool you are using, the motor can be removed from the plate and remounted at 90°.

The tools that come with the Fantasy Machine are:

1) Slice Tool - puts small slices in a flat facet

2) Mandrel - puts concave grooves at any depth or width you like
3) Polishing Tools - comes with wood (maple) tools the same sizes of the cutting tools, these work very good and fast with any of the oxide polishes or diamond.
4) Different size Collets for carving tools.
Round Ball Tool (sold separate) - puts a dimple in a facet and changes where the light goes inside the stone

You will notice in the tool photo, the cutting surface of the tools is copper and you might think that this is too soft to cut stones. The diamond paste that is put on the tool does the cutting, not the copper.



With your gemstone on the mast, set the angle you want to cut at. Like any other faceting machine, install the tool you want to use and cover with a thin film of diamond paste (I like using 1200 paste. It cuts quickly but doesn't leave scratches that are hard to polish out). Lower the gem down slowly onto the tool. Example: You could cut the pavilion of a round brilliant and put a small slice in each main facet -- or perhaps put a dimple in each one -- the optics in the finished stone are incredible.

When I do a concave cut, I start by cutting my pavilion from start to finish on my V5 faceting machine (including polishing). I then transfer the dop stick over to the Fantasy Machine and cut with whichever tool I have chosen to use.

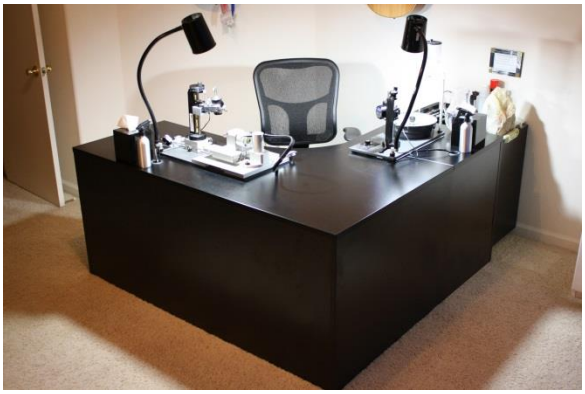
Polishing after will depend on what kind of effect you want.

After you have done all the concave or fantasy work, the dop stick is then put in the transfer jig and reversed for cutting the crown. The photos that I have included in this article have not had any concave work done on the crown, though it is commonly done.

We now offer our DVD, “Secrets to Concave and Fantasy Cutting”. This is a 2 ½ hour step-by-step video of all the functions of the Fantasy Machine, including how to use each tool, where to buy after market tools, polishing, and our concave cutting diagrams.

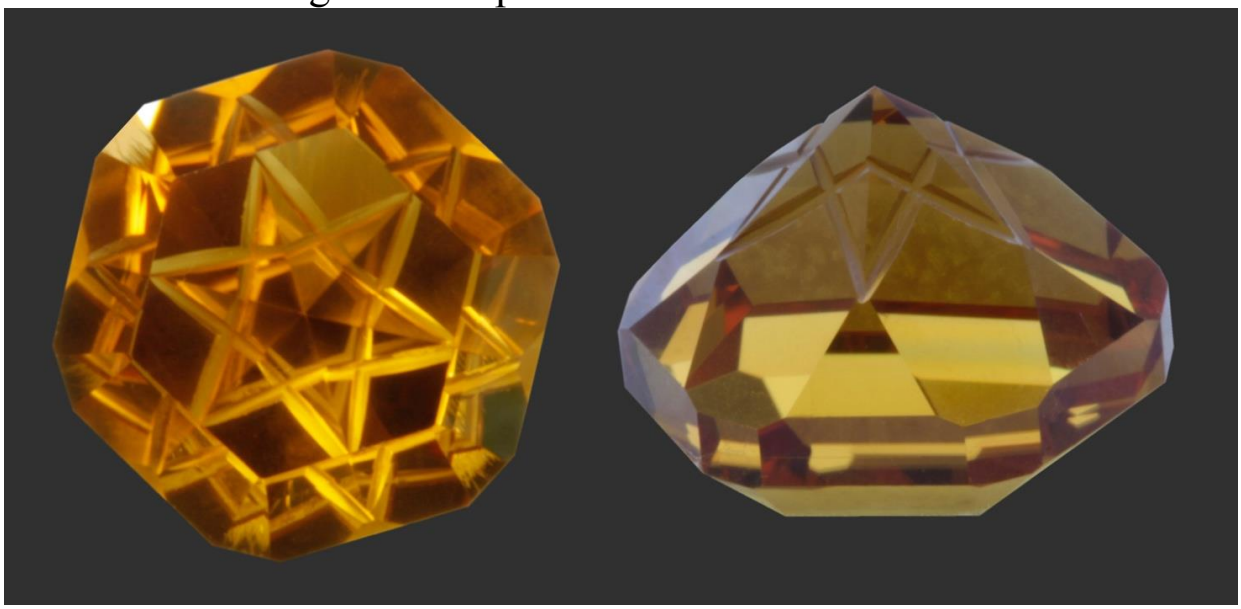
We also offer gemstone-cutting lessons on flat faceting, using the Ultra Tec V5 Machine and concave faceting on the Ultra Tec Fantasy Machine. Please call for availability and pricing and be sure to visit our website at www.ashtongems.com for more photos and cutting diagrams that can be downloaded at no charge. If you have any questions on concave/fantasy cuts, cutting diagrams, or purchasing Ultra Tec Faceting or Fantasy Machines and tools, you can email us at ashtongems@aol.com or phone us at (707) 769-1706.

Happy Faceting!
Larry Mattos

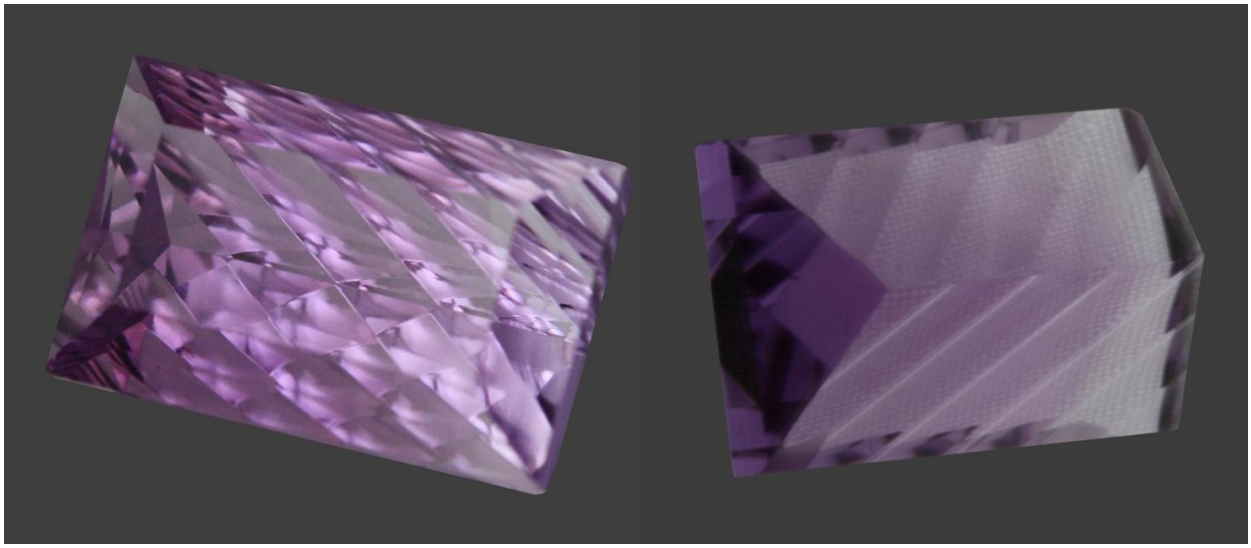


Desk - Custom made desk for the V5 faceting machine and the Fantasy machine.

The following are examples of what the different tools can do:

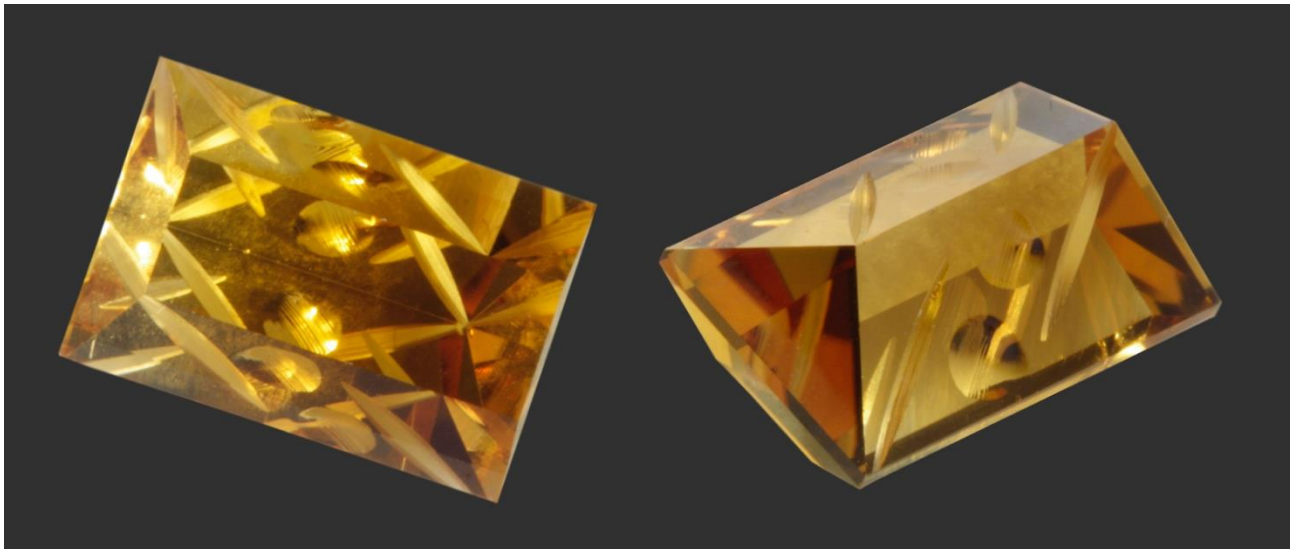


V5 Star - (Bi-Color Citrine) Slice tool; the motor plate was turned at 30°

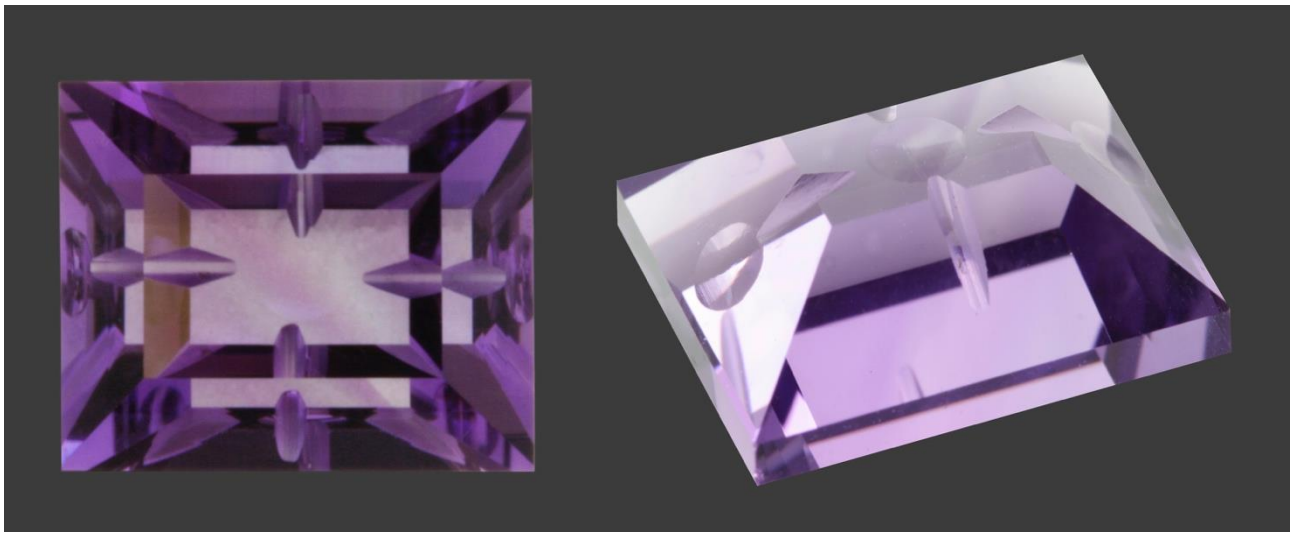


Stark Raving Mad - (Bi-Color Amethyst) Mandrel tool; motor plate turned to 45°

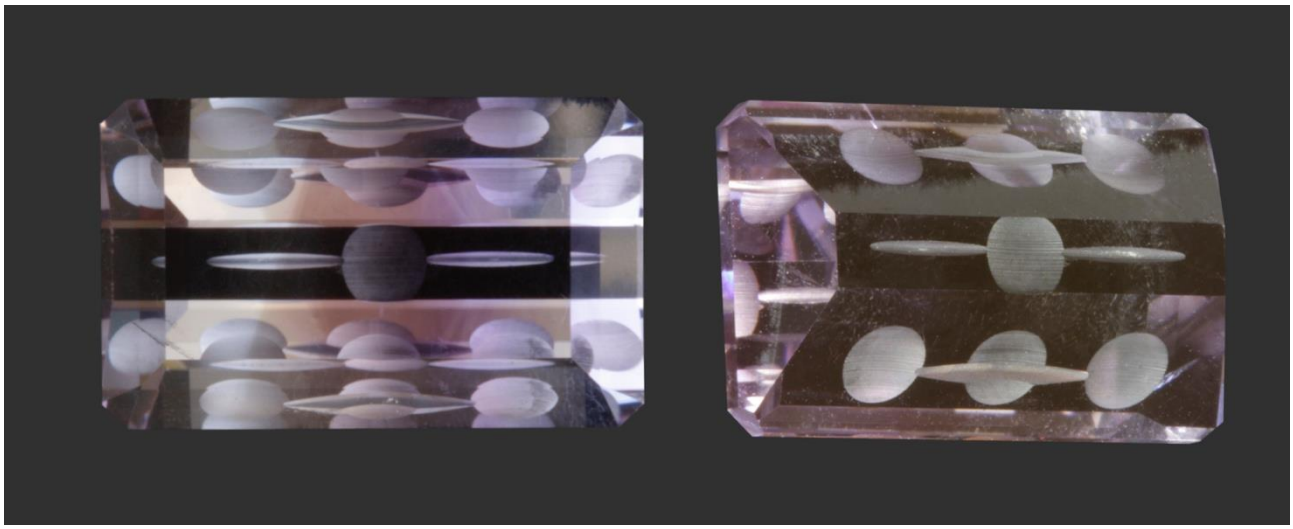
Autumn Blaze - (Sunfire Citrine) Mandrel tool; parallel to facets



Slice of Pie - (Bi-Color Citrine) Slice tool;
4mm ball tool; the motor plate was turned to 30°



Guernsey Maze - (Bi-Color Amethyst) Slice tool;
8mm ball tool; the motor plate was at 90°



Saturn - (Ametrine) Slice tool connecting 8mm dimples

Editor's Corner

Mark Oros

I am delighted to announce that our March 2016 USFG Newsletter is 100% USFG member-contributed content. I would like to thank everybody that contributed to this newsletter and encourage all members to contact me regarding your articles, tips, and designs for future newsletters.

In the past, we have included articles from other faceting newsletters and articles of interest found on the Internet. We still plan to publish these articles when our member-submitted content is thinner that we hoped. In order to keep the newsletter at a reasonable number of pages and still provide these external articles to our members, we will have them easily accessible as live internet links in our new "Link" section of the newsletter.

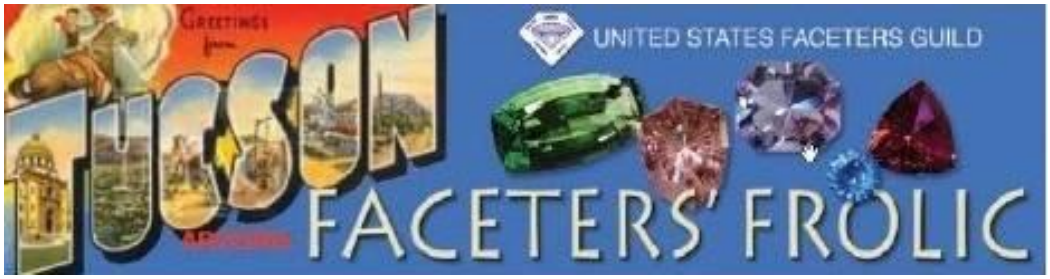
We will also be posting the newsletter to the "Newsletter" section of our new website. After you login to the website, you will now be able to access newsletters without using an additional password. You will also be able to see real-time posting of articles and announcements in the "Recent Articles" section of the new website. This, along with the "Article Archive" and "Search" functions, makes the new website an exciting and excellent resource for your faceting education, library, and inquiries.

Please contact me at the email listed below if you have questions about the newsletter or would like to contribute an article, faceting tip, or design. Keep in mind that we can help you with formatting and editing in order to make your contribution look as professional as possible.

Mark Oros
editor@usfacetersguild.org

USFG Events

Tom Maxwell



The 2016 USFG Tucson Faceters Frolic was another successful event with many returning from last year and many attending for the first time. Thanks go to the Old Pueblo Lapidary Club for the use of their wonderful facilities.

Larry Mattos, of Ashton Gems, and Ron Snelling gave excellent presentations on Fantasy and Concave cutting using the Ultra-Tec Digital V5 and the Ultra-Tec Fantasy machine. Larry shared many of his designs and Ron had a hands-on demonstration of how he uses the Fantasy machine. There is a growing interest in this specialized area of faceting.

Diane Eames and Brad Hodges, of Gems of the Hill Country, demonstrated their methods for cutting and polishing gemstones, especially Texas Topaz. They also gave a hands-on class on how and when to use different tools to identify different gems.

Arya Akhavan led an all-day tour of the Tucson rough dealers again this year for an enthusiastic group of faceters.

While all this was going on, Ernie Hawes and Billy Bob Riley were helping new faceters cut their first gemstone in the OPLC workshop next door.

Tom Herbst was in attendance with his new books, *Amateur Gemstone Faceting* - Volumes I and II. Tom also gave a very interesting presentation on how to facet on your computer using 3D rendering programs.

On Saturday morning, Arya's discussion, "Faceting Tips and Tricks," drew a large crowd and Tom Herbst gave his program on using 3D computer faceting again.

In wrapping up the Frolic, we drew the Grand Prize winner of the Deluxe Polishing Kit, generously donated by Jon Rolfe, of Gearloose Lapidary. The first name we drew was Al Balmer who graciously declined as "he has all of Jon's laps already." The second name was Melissa Smith, who is pictured below. Melissa is a new faceter fresh from the 2-day faceting class and very exited to win!

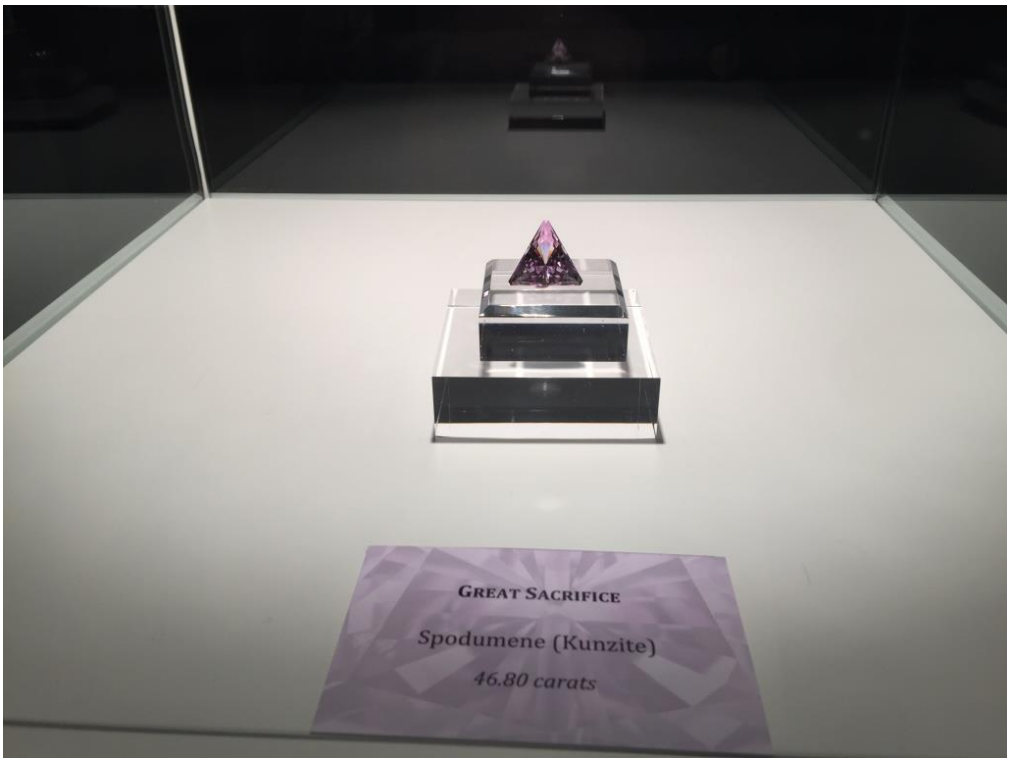
Pictures from the Frolic

Melissa Smith accepting the Grand Door Prize from Tom Maxwell

Some of the Famous Diamond Replicas that were on display at the Tucson Frolic, courtesy of the Texas Faceters Guild.

Victor's display of his fabulous gemstones at the Granada Gallery was a "must see"!

Victor Tuzlykov and Arya Akahavan



One of Victor's many stones on display in the Granada Gallery

Start making plans now to attend next year's USFG Tucson Faceters Frolic!

New Faceters Frolic Announced

Tom Maxwell

Franklin Faceters Frolic 2016

Start making your plans now to attend the Ninth Annual USFG-Franklin Faceters Frolic on July 28, 29 and 30, 2016.

The 2016 USFG Franklin Faceters Frolic is held during the same week as the Macon County Gemboree and several other gem and mineral shows in Franklin, NC. The Frolic is located at The Factory in Franklin, NC.

2016 Dealers - Equipment and Supplies

Marsh Howard – **Lightning Laps and Polishes** – Marsh will have a good supply of all of his latest laps and polishes. The original Lightning Lap, The Beast Diamond Polish, and the Mag-Dop.

Tom Maxwell – **Carolina Custom Gems** –-Tom will have the Graves Mark 5XL digital faceting machine set up and available for demonstration and immediate delivery. Tom is also a representative for Ultra-Tec and will be demonstrating the latest Ultra-Tec V-5 digital faceting machine. In addition, Tom will have a complete line of Gearloose Polishing Laps and Polishing Products and fine facet rough.

Ultra-Tec rep, **Gerald Boykin,** will be demonstrating **the Ultra-Tec Fantasy Machine.**

Charlie Musitano **Jersey Instruments** – Charlie will have the Omni-E and Patriot faceting machine on display,

Faceting Rough

John Garsow – **John E. Garsow Gems and Minerals** – John will have a large selection of fine facet rough from all over the world.

Lisa Elser – Custom Cut Gems – **www.lisaelser.com**

Dan Lynch – Dan will have sunstone, ametrine, zircon, tanzanite, heliodor, amethyst, and tourmaline, plus what he finds on a buying trip to Africa in June.

Preliminary Schedule - Thursday, July 28, 2016

Dealers open for business in the Depot Room from 10:00 am to 4:00 pm

This year, Robert Strickland will offer three GemCad classes: Beginner, Intermediate, and Advanced. The Beginner class will introduce you to the basic commands and features of GemCad. The Intermediate course will be a refresher on the basics and creating and modifying existing designs and creating new designs of your own. The Advanced course is for GemCad users who would like to explore the finer points of GemCad.

The cost is $25.00 per class. To register and pay for the classes, please send a check in the amount of $25.00 for each class you would like to register for made payable to The Faceters Frolic and mail to Tom Maxwell, 1741 Kennerly Road, Irmo, SC, 29063. Or you can send an email to Tom Maxwell – tmm5111@gmail.com – we will email you a PayPal invoice for the classes requested.

9:00 am to 11:00 am – GemCad for Beginners – For those who want to learn the basic How-To of GemCad Software. You should bring your Notebook with GemCad already loaded on it ready to go by 9:00 AM. You can download a free trial of GemCad at www.gemcad.com 30 days before the class. If you do not purchase it before you get there, you may purchase it during the Frolic from Robert. Once you learn how to use GemCad, we believe you will realize the real value in this software tool for any level of faceting you do.

1:00 pm to 3:00 pm – Intermediate GemCad – For those who need a refresher on basic GemCad and further operations.

Friday, July 24, 2014
9:00 am – 11:00 am - Advanced GemCad – Robert will go into advanced capabilities of GemCad for the experienced user.

1:00 pm – 3:00 pm – Lisa Elser – "Going Pro" -Internationally known gem cutter Lisa Elser, of Custom Cut Gems, will speak about how she got started in business and her experiences as a faceter.

3:00 pm- 5:00 pm – Sue Lichtenberger - Kitchen Counter Rock and Gem ID. Sue will explain how to use readily available items to help identify gems and minerals. This is a hands-on discussion and was a popular topic last year.

6:00 in The Depot Room – The Faceters Meet and Pretty Stone Contest. Come and enjoy meeting with the dealers, speakers, and other faceters from around the world. Pizza and soft drinks will be available for $5.00 per person. Bring a stone that you have cut and enter in either the Natural or Simulated Gem division. Prizes will be awarded to the winner in each category. This is a "Beauty Contest" and the winners will be chosen by those in attendance.

Saturday, July 26, 2014
Dealers open for business in the Depot Room from 10:00 am to 4:00 pm.

10:00 am to 12:00 pm – Master Gem Cutter Jerry Call will discuss some of his cutting tips and techniques for **Maximizing Your Rough. Last year,** Jerry's talk turned into a lively question and answer session covering a host of different topics. Don't miss this opportunity to learn from one of the best!

Kitchen Counter Rock and Gem ID

Sue Lichtenberger, MD

This is a continuation of the article from the December 2015 USFG newsletter regarding rock and gem ID. This time the topic is the concept of hardness.

Hardness is a property of rocks and minerals used by field geologists and mineralogists to aid in identification of unknown specimens. Because it is, by nature, a destructive test, it is rarely used by gemologists. However, for a faceter who may have an unknown piece of rough they would like to identify, it can be a valuable tool. It can even help prevent spending too much for a misidentified piece of rough as well.

For further reading, there are many articles discussing the history and techniques involved in hardness testing. In an effort to avoid redundancy, here are some links:

- https://en.m.wikipedia.org/wiki/Mohs_scale_of_mineral_hardness
- http://www.gemologyproject.com/wiki/index.php?title=Hardness
- http://www.rocksandminerals.com/hardness/mohs.htm
- http://geology.com/minerals/mohs-hardness-scale.shtml

For the purposes of this article, we will use the classic Moh's scale. The Moh's scale is a qualitative, ordinal scale, meaning it describes *qualities* of these stones, but the numbers do not mean a "2" is twice as hard as a "1", etc. It is strictly a "comparative" scale...comparing a known item to an unknown. There are charts showing *absolute* hardness if you are interested (see references listed above). The classic scale is as follows:

Moh's Scale of relative hardness

1 Talc
2 Gypsum
3 Calcite
4 Fluorite
5 Apatite
6 Orthoclase/feldspar
7 Quartz
8 Topaz
9 Corundum
10 Diamond

Techniques:
Find a smooth, unscratched area of your unknown. Hold your unknown steady, and try to "scratch" it with one of your known pieces. Be sure to wipe away any mineral bits to decide if you scratched your unknown. Repeat to confirm results. My husband taught me the trick of scratching an "X" rather than just a straight line. This provides the secondary confirmation plus tests for directional hardness (think kyanite, which is 5.5 along the axis and 7 across)

Caveats: Scratches need to be made with some pressure but not with such force as to give inaccurate readings. The "point" should "bite" into a softer material. With experience, you will get the feel of it.

As I was trying to identify some unlabeled rough that I purchased through an estate of a deceased faceter, I wanted to have a way to test hardness. When I looked into commercial options, I found hardness picks were available, but they cost ~$90USD. There were lots of historical references to using commonly found objects, such as, your fingernail (hardness of 2.5), a copper penny (which used to be a 3, but they are no longer pure copper), a common iron nail (4-4.5), pocket knife blade (5.5, or maybe 7 if hardened), brass plates, unglazed porcelain streak plates (7), glass plates (~5.5), etc. It just started getting more and more confusing. Was my pocket knife blade a "5" or was it hardened, and really an "7"?

Instead, I started simply, with a natural quartz point that I had in abundance lying around the house. I then realized I had a topaz crystal that wasn't clean enough to facet, but had sharp edges. Living in KY, I had several small pieces of fluorite lying around that had broken from my husband's specimens. They were either too small to facet or of poor quality, but were perfect for my project. Then I raided my husband's stash for a calcite. I had tried to facet a little yellow apatite but it flew off the dop. It was too small to worry about redopping and rather than throw it out, I added it to my growing collection. For orthoclase, you can certainly use a piece purchased inexpensively at a rock and mineral show or online, but most people have some inexpensive sunstone, moonstone, or bytownite lying around in their collection of rough. Amazonite is another option. The downside of using a non-orthoclase feldspar is that their hardness changes from a pure 6 to 6-6.5, but since we are not doing exact science, this point is trivial.

I added synthetics to the group as well. My cubic zirconia (8-8.5) had nice sharp points as did the synthetic corundum (9).

Another advantage of making your own collection of reference samples, if your reference samples are big enough, is you can test in reverse. The usual way to test the unknown is to scratch it with the series of knowns. But, if you have large enough "knowns", you can take your unknown and try to scratch your knowns to further verify your results.

As a result, I devised my own set of hardness points from rough I had lying around. My little kit fits into a tiny zip lock plastic bag.

I usually just use my apatite preform, the quartz and topaz, and CZ. Total cost for me was nothing. Cheap, simple, easy to take into the field or on rock trips. I didn't think to take it to Tucson with me one year when I purchased what was labeled as clear, synthetic corundum. Since it wasn't a classic split boule, I should've been suspicious. After we got back to our hotel, my husband suggested I go pick up a rock out of the gravel in the parking lot and scratch test it. Sure enough, it was easily scratched, and obviously not corundum. I returned it to the dealer the next day, and got permission to scratch it again, in his presence. He was not intentionally misleading but had mistakenly accepted the label when he purchased it. He then gave me a full refund, apologizing that he had not yet tested it himself.

More to come in the next newsletter...

Member Stones

Mark Oros

USFG Member Stone Profile: Invite to Participate

Thank you to Peter Welty for submitting his stone to be photographed. If you would like to submit your stone to be photographed, please send me an email at editor@usfacetersguild.org and the first 4 entries will have a reserved spot in our next USFG member "Stone Profile" photo session.

1. The faceted gemstones that will be selected to be photographed will be on a first come basis for each three-month newsletter interval and the invitation to reserve a slot will be announced as part of our newsletter.
2. Upon receiving the requests, we will inform the first 4 entries (one per member) of their selection and coordinate a photograph session of their gemstone. Members that have had a stone photographed before may enter, but they will be moved behind entrants that have not been selected before. Entries 5 and up will need to try again at our next announcement.
3. The only requirements are that the stone has been faceted by a member in good standing in the past 24 months and that the member provides us with a paragraph or two about the stone and their interest in cutting the stone.
4. The member submitting the stone to be photographed will need to pay for the shipment and insurance for the stone to be delivered. USFG will pay for the postage and insurance for the stone to be returned. Stones will be returned within four weeks of the announced photo session date.
5. The stone photographs can be used by the submitting member, USFG, and the photographer. The submitting member will receive digital copies of the stone photographs.

USFG Member Stone Profile

Peter Welty

This was my first attempt at a competition stone and I was quite pleased with the results. I've only been faceting for a couple of years, primarily learning through a local guild member, and have cut perhaps 50 stones total. Typically, I get a few hours each week to spend on the machine and find it both very enjoyable and rather relaxing but right now it still takes me 6-10 hours for a typical stone. I really liked the published design for the 2015 premaster contest, and several people, including the person who taught me to facet, have always been very complementary of my work. I felt rather confident in skipping the novice and went straight to the premaster assuming that even if I did not score well I would still end up with a nice stone.

I started by cutting two others of the same design but smaller than specified out of clear quartz just so I could figure out where the gotchas are in the design; the second one that I cut I felt was as nearly perfect as I ever expected and I felt I was ready to start one for the competition. I decided on a fairly nice piece of ametrine because I planned to take more time than normal and initially dopped the rough trying to get the center the dop right on the line between the colors.

Initially, I started by using too fine of a lap, which I thought would slow me down and force me to pay attention, but in reality, it was taking so long to get the preform done that I was not paying as much attention to the depth of cut. The second procedural mistake I made was when I was polishing the pavilion; I think I didn't lock down the cheater but did not catch it until I was nearly done with the polish. This was fairly frustrating because the first change in the finish as I was polishing seemed to jump around to random parts of the facets rather than being consistent but I wasn't sure what was going wrong. It was only after I transferred and was resetting everything that I noticed that my cheater was loose. I think this contributed to many of the .25% meetpoint errors and the very slight (which I hoped would go unnoticed but did not) sawtooth on the lower girdle facets. Once I was on the crown, I had to compensate for a slight shift in transfer, I still got a bit of error when transferring and don't know if this is procedure or if perhaps it's just slop in my transfer block. Once again, I used too fine of a lap, hoping that using a finer lap would allow me to really know what I had to do to get the girdle cuts parallel, so it took quite a while to get the first row of facets in place. I chased the angle with the cheater a little, but when I got down to the final cuts, I realized I was still a little off but close enough to bring it in with polish.

In the end, after spending way too much time fiddling with the cheater, I was still a little off, finding just a small amount of sawtooth. I ended up with close to 28

hours into this one stone but much of that was wasted on preform.

When I submitted the stone, I thought I had fewer errors than I was to learn about once the evaluation came back, but since this was my first submission, that evaluation was really was the point for me so I could compare my work and see where I can further improve my work.

New & Novice

Over the last three months, a few things have happened that made me think about creating a section in the newsletter dedicated to new faceters. The first one being the increase in faceting machines being sold by my vendor friends. The second is the number of requests that I am receiving for lessons by folks interested in faceting. The third was an email conversation where Charlie Moon instructed me to remain true to competition faceting in my new position as editor, but not to forget the instruction needed for new adopters of this wonderful craft. It is with Charlie's charge that I introduce a section of the newsletter dedicated to the new and novice faceters. I ask all of you to please send me tips and suggestions for our new members and beginning faceters.

KISS

"Wing" Ewing Evans

Faceting is hard enough. Don't make the hobby any harder.

1. Selecting Rough
2. Orienting Rough
3. Doping
4. Rough Cutting
5. Fine Cutting
6. Pre-polish
7. Polish
8. Transferring
9. Removing cut stone from dop
10. Cleaning Finished Gemstone
11. Dog and Pony Show

Disclaimer: I will mention various brand names in this article because they are the ones I currently use. I am not endorsing any of these products here. It is possible that these same products will not perform the same for you as they have for me.

Superstitions: There are many techniques, which are advised by faceters for particular problems. Some are real breakthroughs in the faceting hobby; some are just old wives tales and repeated superstition. There is only one way to prove the case. You must test the technique by not using it on one facet and using it on the next. Then you must repeat this procedure. If you can tell the difference, then you can proceed with confidence, using whichever works best for the stone on the dop. Be aware that the next stone may be different. Study the basic physics of the crystal structure of the stone you are faceting. Understanding how the various atoms interact will give you an understanding of why a certain problem exists, and how to solve it. The best example is to think about the planar structure of graphite and the cubic structure of diamond. In your mind, compare the problems to be encountered

when you try to facet either one of these crystals of carbon.

1. Selecting Rough:

Selecting rough is the place for the faceter to start. If the rough material you are working with is flawed, you cannot produce a perfectly cut gemstone. The primary knowledge you must have here is the nature of the crystal you are examining. A very brief description of a few types is all that there is space for here. Use light transmitted through the stone, and rotate to view from all directions. Many internal flaws can be seen by their shadows on frosted surfaces. Use Refractol to enable you to visualize the interior (or some other liquid that nearly matches the refractive index of the rough). Try to see the size and shape of the future gemstone in the piece of rough.

Quartz: The quartz species are fairly easy to view the internal flaws. There are veils, bubbles, cracks and inclusions of other mineral species. Look for clarity in that part of the rough where the future gem is located. Be sure to note the location of color zoning. If you have to cut it off to avoid a flaw, you might not have any color left for your faceted stone.

Topaz: Topaz can be viewed through the natural windows of the cleavage plane. It can contain cracks, which may be serious if parallel to the cleavage plane. Minute bubbles and inclusions of other crystals are possible. Then select for color.

Sapphire: Sapphire has problems with color zoning, and different colors along different crystal axes. It has problems with hardness zoning. It has problems with multiple inclusions. It is the hardest stone we work with.

Tourmaline: The vast majority of the tourmaline on this earth is too dark to be of any use. However, when the color is pale enough for you to tell what color it is, then tourmaline can produce beautiful faceted gems. The dark C axis must be avoided in most of the green varieties.

Beryl: Goshenite, Golden Beryl, Heliodor, Aquamarine, Morganite, Blue Beryl, and Emerald. Beryl, when clean, is a relatively hard material that will not cause any problems for the faceter. When there are small flaws that reach the surface, polishing will be difficult. The emeralds are the only ones of such value that flaws on the surface are tolerated. Study color zoning carefully.

2. Orienting Rough:

Quartz is one of the many gemstones that do not require any particular crystal orientation. Orient quartz for color zoning, for yield and the shape of the cut intended. If acicular tourmaline or rutile crystals are included, be sure to orient for the beautiful patterns they form.

Topaz has that perfect and weak cleavage plane. Try to orient the rough so that no facets are exactly parallel to this cleavage plane. When doping to the cleavage, the joint will be too weak to withstand the

cutting and polishing forces. The cleavage plane will separate at the dop and you will have to start over. Also orient the cleavage plane away from any large facet. Polishing a facet that is nearly parallel to this plane must be done with close attention to the lap direction and hand pressure. After you account for the cleavage plane, then you would proceed to orient for any color zones present. Finally yield and the shape of the cut may be considered.

Some tourmaline has a totally dark C axis. This is usually true for the green varieties. If you cut a gemstone table perpendicular to that axis, it will be seen as black. These stones must be oriented to be perpendicular to either other axis of the crystal. You must look carefully with the light source above the rough to see the approximate color you will see in the cut stone. Finally, when the C axis is dark, any facets perpendicular to this axis must be cut at very high angles, around 70 degrees or more.

Sapphire has several properties that affect the orientation. It has two indices of refraction, it is usually color zoned, and there are always those hard spots, and near them, those soft spots. Considering the cost of the rough, you should usually orient for yield first, color second, and just work around the variable hardness.

3. Doping:

For doping, I have usually used the adhesives cyanoacrylates (Superglue), and epoxies. These adhesives give a much more ridged attachment of the rough to the dop than the traditional doping waxes. They will not soften at any temperature where you can still hold the gemstone.

For the pavilion, I have always used the cyanoacrylates (superglues) to glue the stone to the dop. This requires that you have a flat about the same size as the end of the dop. Holding the rough by hand and using a lap with a lot of water creates that flat. A lot of water would be about 3 drops per second. The lap can be any grit, but 600 works about right for 15 mm rough. Now that you have a flat to glue to, it must be cleaned. Any trace of oil or grease (fingerprint) will act as a release agent, and your bond will fail. I wipe the flat with a piece of paper towel that is wet with denatured alcohol. The alcohol will remove any oil or grease on the flat. Wipe these surfaces dry quickly. Do not allow time for them to evaporate dry. As some alcohol evaporates, the rough is chilled. This causes a very small amount of water to condense on the flat. This very small amount of water helps catalyze the cyanoacrylates polymerization. Also clean the flat on the dop the same way.

Then place a small drop of glue on either the dop or the rough, firmly set the dop on the flat, and the glue will set in a few seconds. If the location of the dop is critical, then the rough should be placed in the transfer block. Hold it in place with some plasticene clay. This allows you to move the rough until it is precisely positioned. Press the dop against the flat

for a perfect fit. Separate slightly, add a drop of glue, and press together again. If you want to begin faceting immediately, then you should use an accelerator. The spray provided is not necessary. It uses way too much accelerator. Take the top off and wave the end of the plastic suction tube around the joint. The fumes are sufficient to cause polymerization of the superglue.

4. Rough Cutting:

Use a trim saw or a blade on your faceting machine to cut off any larger pieces of rough. You will be able to start faceting sooner and you will have the cut off pieces to cut smaller gemstones.

Rough cutting should begin with a lap not coarser than 360. Keep in mind that a diamond point scratching across a gemstone surface will leave cracks that are much deeper than the scratch left by the removed material. These cracks are not visible. If you cut with the next finer lap, you may not remove enough material to totally remove the cracks. These cracks will cause a lot of difficulty when you come to the polishing stage. A breakout of a chip starting with one of these cracks is the most common cause of scratches occurring during the polishing stage. Leave enough material at this stage so that you can cut below these incipient cracks with a finer lap.

Finding the exact center for the culet:

Sometimes it is necessary to place the culet at the exact center. The following procedure will accomplish this task. First cut one of the facets that touch the culet to the approximate center of the rough. Then change the index to the facet most nearly opposite and again cut to the same depth. At this step you will have an edge, or nearly so. Look at the preform edge very carefully. Cut a little more if you do not have an edge. It is very important that you cut these two facets to the same depth. Cut each one a very small amount, go to the other facet and cut it. There should be about four repetitions to randomize any errors. Then turn the index to a facet that is about 90 degrees from these two and cut to almost the same depth. Now change the index to the facet most nearly opposite and cut to nearly the same depth. Repeat the repetitious slow cutting until there is a nearly perfect meetpoint. This procedure will leave a four faceted preform where the culet is very near the center. Note that I did not specify any particular index numbers. The odd number of main facets in some designs precludes using 0, 90, 180, and 270 degrees.

This whole sequence must be repeated at each of the finer stages of cutting, and again while polishing. Be sure to use the same set of facets. After each stage the culet point (or line) will be closer to the axis of the dop and average out any cutting errors such as uneven hand pressure, differential hardness of the rough, etc.

5. Fine Cutting:

Fine cutting should be done with a lap of 600 or finer grit. At this stage you should

be placing the facets very close to the final position. If you have to do any adjusting of the stone orientation, be sure to write down the values of the adjustments. This cutting stage must remove enough material so that you have gotten past any incipient cracks remaining from the rough cutting. This may require removing more than 0.1 mm from each facet surface. Twice this amount would be better if you have enough room to cut that far.

It is the faceter's choice as to the type of lap to use. Solid steel gives a faster and flatter cut, discs with steel facing and composite backing are lighter and usually cheaper, and Dyna Discs do well also. It is a general rule that the less expensive laps will not cut as many gemstones.

6. Pre-Polish:

The pre-polish stage should leave a facet in its exact position and perfectly flat. My approach to this, for stones harder than quartz, is to use a ceramic lap with 14,000 grit diamonds. There should be a small amount of oil to hold the diamond and lubricate the surfaces. This combination will cut relatively quickly. It will leave a surface that looks polished to the naked eye. It can be easily adjusted to make perfect meet points. The surface of the facet will show only very fine parallel scratches. You must adjust the angle of the inspection light and loupe carefully to see these scratches. Again I will say, write down the adjustment values of each facet. These numbers will save you a lot of time when you are polishing.

For quartz and softer stones, I use a Dyna disc, 1200 or 3000. The edge rounding can be corrected in the polishing steps that follow.

Hand Pressure:

Pay attention to your hand pressure! This should be the same during the pre-polish of the whole tier of facets. There are two effects that are at work here. First is the torque on the stone. This torque may cause the dop, quill, and yoke to twist. If you use variable hand pressure, then the twist imparted to the stone will be variable and the facets will not be at exactly the same index. Then you have to use to index divider a lot.

The second effect is flexing the whole system from the support plate, mast, bearings, quill, dop, and adhesive. To be absolutely inflexible, the mast would need to be around 2 inches in diameter, and the other components equally increased in size. Variable hand pressure here will cause the facet being pre-polished to be a curved plane from top to bottom. To adjust for this you will have to adjust the mast height and index divider when you finally get to polish, and you will have to polish a longer time to bring in the meets on the top and bottom.

Both of these effects are markedly affected by the relative lap direction. If the lap direction is at right angles to the dop axis, you will see maximum torque applied for any given pressure. But there will not be much flexing of the mast or

the rest of the system. If the lap direction is parallel to the dop axis, then there will be maximum flex of the mast, and very little torque applied to the stone.

Sometimes you have to add lubricant and/or diamond while polishing. N.B. This will affect the drag between the lap and the stone and that will alter the effective angle that the facet is contacting the lap. Look a lot and you can correct for this small change.

7. Polish:

There are an infinite number of combinations of lap materials, polish compounds, and gems to be polished. I think I have tried a few hundred of them. Since 50,000 to 200,000-diamond boart will polish almost everything, I have quit starting out with any of the other polishes. Should I encounter a stone that will not polish with diamond, I will certainly try some of the other polishes available. For instance, if diamond did not yield satisfactory results, I would first try cerium oxide for a quartz gem.

Lap Materials:

There are many materials that will produce a satisfactory lap. If you are into polishing calcite, use one of the softer materials such as Lucite (a CD is a good source of plastic, it's polycarbonate). But for the gem minerals that will produce a wearable gem, you will usually have to go to harder laps. There is a strong correlation between the hardness of the lap and the degree of edge rounding produced. This effect may not be of much concern until the stone is submitted to a competition where the judges will certainly recognize it as a fault.

The hardest material generally available is the ceramic lap. It will produce very flat facets and almost no edge rounding. But it is nearly impossible to avoid the cat hair scratching on any material except sapphire. With sapphire it is only difficult to avoid the cat hairs. The composite laps, (Fast Lap, Last Lap), are excellent, but there is a definite rounding of the facets. The composite laps need a lot of lubricant and can hold a lot of diamond.

My overall choice for a lap is tin. The best variety I have found so far is the Batt Lap. The Batt Lap is hard enough to give reasonably flat facets with little edge rounding. It also allows a fairly heavy diamond loading.

Lap Lubrication:

Your lap must be lubricated with something, and some kind of oil is the best choice. It will not evaporate like water so that you have some control over the surface without constantly having to adjust the amount of water. Typically, I use the diamond sprays. Since the manufacturer supplies these spray bottles with way too much diamond, I dilute with alcohol at least 5:1. I also add a few drops of oil to the bottle. This is usually enough oil to keep the lap lubricated.

Lap Surface Conditions:
Lap conditions are the limiting factors in your polishing. First you should clean your lap before you start using it. Spraying it with alcohol and wiping with a piece of paper towel as the lap is turning will remove oil, gem swarf from the previous stone, and diamond from the lap. Spray 1 or 2 squirts of the diamond onto the cleaned lap while it is turning and then use a flat to spread the mixture evenly. This flat can be any mineral with a large enough facet that it will not roll when hand held. Postage stamp size works fine. Agate, Quartz, corundum or jade are materials that will work fine.

Lap Speeds:
Generally the speed at which you polish should be in the slow end of the range. Faster speeds will produce a polish faster, but the tendency of the stone to bounce over the higher spots becomes more pronounced. This is one source of rounded facets and some cat hair scratching. Also at higher speeds, the stone will cause uneven wear on the lap. When the lap surface is uneven, you cannot make flat facets. Faster speeds become very risky for the more fragile stones.

Read The Grease:
There is much useful information that the lubricant, diamond and swarf layer on the facet will reveal. When you first are aligning a facet with the lap, place the facet gently on the stationary lap. Then inspect it carefully. There will be a tiny bit of grease on a corner of the facet. Now you can make the small adjustments to the angle and index that will bring the facet into exact alignment. This is the time to make those judgments on how and where the meet points of this facet will come together with the adjacent facets.

Now start the lap turning and test the alignment. Set the facet down on the lap gently for a couple of turns. Inspect the facet without wiping. You should see a series of minute streaks in the direction the lap was turning. Study these carefully. Look for streak size, direction, coverage and diffraction pattern. If the streaking is all uniform in size and the diffraction pattern is uniform and the streaks cover the entire facet, then the alignment is perfect. If the alignment is not perfect, there will be bare areas where the lap is too far from the facet. Remember, the lap itself should not ever contact the gemstone facet. The facet must ride suspended over the lap on a very thin layer of diamond, lubricant and swarf.

Look at the swarf buildup along the leading and trailing edges of the facet. Assume for the first case that the facet edges are perpendicular to the lap direction. The leading edge should be smaller particles, uniform across the edge of the facet. The trailing edge will have a larger amount of buildup. It will be coarser grained than the leading edge. The buildup should look slightly oily. When it gets dusty looking, you do not have enough lubricant or diamond on the lap. If the buildup is greater on one end

of the facet edge, then you should consider why there is more action along that side of the facet. The possibilities are that the edge is not perpendicular to the lap direction. This is no problem. But if there is not "enough" buildup then you can be pretty sure that the adjacent area of the facet is not being polished. A ghost facet will be forming there. You will also be able to see that the streak pattern and the diffraction pattern are slightly different in the area where the ghost facet is residing.

If the facet leading edges are at an angle perpendicular to the direction of the lap, then the buildup will be a long, slender triangle. Since the amount of buildup is proportional to the amount of polishing action, you can use some judgment as to the adjustments needed to complete the polish and bring in the meets.

Diffraction pattern: The diffraction pattern is the tiny rainbow effect caused by the streak size being an increment of the wavelength of that color you are seeing. If one side of the facet is closer to the lap, then the pattern can be a rainbow across the whole area. The blue areas are closer to the lap. The red areas are further from the lap. I have seen bull's eyes, rainbows arching across a facet, and the best to see is a multitude of tiny color bits distributed at random over the whole facet.

Observation of the Facet Polish:
It is in the observation of the facet being polished that most mistakes are made, and it is the only place where you can get the information to correct the fault. First, you must clean the facet perfectly. Wipe with a piece of paper towel, then wipe with a clean washcloth. This two-step series leaves a clean surface with maybe a few specks of cellulose from the washcloth. These specks are useful to aid you in focusing with your loupe, but they do look like pits. Pits can be distinguished from specks on the surface because they seem to change color and reflectivity as the light angle changes.

In order to see a facet's polish, you must have an excellent light source and a good loupe. A 10x loupe is the most powerful magnification that is useful for observing the polish quality. A 50-watt narrow spot tungsten/halide light source is ideal. With these two tools and your eye, you can detect scratches that may be no wider than the wavelength of light. I believe you should spend much more time looking than you do contacting the lap. Patience, patience and more patience. The light rays should be very nearly parallel to the facet. You must move the stone slightly from side to side and up and down, the light should pass over the facet in all four directions. You should see the reflected light go off the facet. Then just as it does, you can best see if there are any scratches.

Cat Hairs:
Cat hairs deserve a whole lot of discussion.

Cat hairs scratches are not those scratches caused by a piece of your gemstone that broke off and tumbled between the facet and lap, gouging more pieces out as it went around. These are usually naked eye visible, deep and sometimes require going back to the pre polish step.

Cat hairs are those almost invisible scratches that can only be seen when the light is strong enough and at exactly the right angle. It is very easy to miss seeing them. But the Judges always will! Why do they happen? My personal theory comes from observing the swirling of the polish compound under a facet as the lap goes by. Then I noticed that cat hairs are most frequently found just after you have made a small adjustment. It was obvious that most cat hairs are on the area of the facet that was just lifted up from the lap by the adjustment, and nearly always on the down-stream side of the facet. My conclusion is that these scratches are caused by a swirl of the polish compound rising upward from the lap into the space left by the adjustment. Imagine breakers in the California surf. This correlates fairly well with my observation that cat hairs can be caused by too much polish compound, and too high of a lap speed.

These facts can be helpful in keeping your facet scratch free and totally flat. Polishing longer will eventually flatten the facet out and the cat hairs will be cleaned up. Or if there is too much polish, wipe some off of the lap, and then reduce the lap speed. If you cannot reduce the motor RPM, then remember that the feet per minute speed of the lap is much slower as you get closer to the center.

Observation of the Facet Meetpoints:
You should use the same techniques to see if the meetpoints are correct that you use to see the polish. The differences are that you usually have many facets at different angles and indexes. Use the light to focus on the point of each facet at a meet point. The best light I have found for this application is a 75-watt narrow spot tungsten/halide. Magnification up to 30x is useful for meetpoint observation. You should look for incomplete meeting, curvature, and tailing. At this stage it is necessary to see if there are any ghost faceting problems. Avoid these by polishing sufficiently long after each adjustment. Make very small adjustments to bring your meets to perfection. Polish a lot between each adjustment in order to bring the whole facet into one plane, instead of two or more planes. If there are cat hair scratches, they will be on the ghost facet that is not being polished. Repeat, repeat, and repeat.

8. Transferring:
For the transfer to cut the crown, I use epoxy. Usually the kind with a 5 min. setting time is used. I have heard many complain about failure of this adhesive. There are several likely causes. First is a film of oil/grease/fingerprint that will act

as a release agent. Second is an incorrect ratio of epoxy to hardener. It is well worth the time to actually weigh the components onto a piece of aluminum foil on a carat scale. Weigh out the same weight of each component. Then you can get the 1:1 weight ratio nearly exactly.

After fixing the two dops in the transfer jig, I wipe dop and gemstone surfaces with a piece of paper towel soaked in alcohol. Wipe these surfaces dry quickly. Do not allow time for them to evaporate dry. Then mix the epoxy for several minutes and apply. Rotate the transfer jig in you hands until the initial set has occurred. This takes about two minutes.

Then I set the jig in the cold kitchen oven, set the thermostat for 225 deg. F and let it bake for ten minutes after the oven has reached 225 deg. F. Heating completes the epoxy curing much quicker and harder. The epoxies can tolerate a temperature just over 300 Deg. F. The cyanoacrylates will weaken just over 220 deg. F. Allow the oven to cool.

9. Removing Gemstone from Dop:

Superglue Joint: When you take the dops out of the jig, a slight rap with a table knife on the dop on the superglue side will cause that dop to drop off. The heating in the oven weakens the cyanoacrylates enough that there is little risk to the stone. If you have one of the very expensive and heat sensitive stones such as emerald, I prefer to use the trim saw and just cut the dop off near the gemstone.

Epoxy Joint: To remove the gemstone from the dop, I soak it in methylene chloride. Methylene chloride is the active ingredient in Attack. It takes hours to completely soften the epoxy, but there is no risk to the gemstone. N.B. Methylene chloride will remove any dye added to the gemstone. If you have a "color enhanced" emerald and soak it in methylene chloride, the result will be a very pale emerald. Finally, as a safety warning, keep the methylene chloride container closed. The vapors are hazardous. A ½" layer of water will prevent the methylene chloride from evaporating.

Methylene chloride cannot reach the epoxy at the bottom of a cone dop. One trick I have learned to accelerate the removal of epoxy is to drill small holes into a cone dop near where the culet will be. You can drill several of these holes since the brass is usually strong enough. For a "V" dop, I saw another "V" groove at tight angles to the main groove. This makes a four-prong dop. Keep in mind that epoxy is relatively strong and not nearly as flexible as waxes are.

Trouble Shooting:

Here is a list of frequently encountered problems and some "what to do statements".

1. There are many parallel cat hair scratches over the whole facet. There is too much diamond for the lap speed. Reduce lap speed, even down to hand lapping. Or

wipe some diamond off of the lap.

2. There are parallel groves in the facet. The lap surface grooving causes these. Oscillating the stone faster and reducing the lap speed can eliminate them.
3. Single scratches appear starting from middle of facet. A small chip detaching from the gem usually causes these. This is caused by the incipient cracks from one of the coarser grinding stages. The solution is to cut a little more at the last prepolish stage. But, that is not practical at this juncture. First effort should go to try to polish it out.
4. Single scratches beginning at the leading edge of a facet. The chip that broke out as described in the previous section usually causes these. Polish it out.
5. A crack goes across a facet edge into 2 facets. This type of crack opens during the stresses of polishing. This flaw was in the rough but imperceptible, much to small to see. Leave it or go back to prepolish.

10. Cleaning Finished Gemstone:

It is necessary to present an absolutely clean stone to the competition judges. The following steps should help obtain a clean gemstone. After the gemstone has separated from the dop in the methylene chloride, there is a three step cleaning process. I wipe and dry it with a piece of paper towel. Do this quickly, before the solvent has evaporated. Then I wipe the gemstone with a piece of paper towel soaked with alcohol. Then finally wipe dry with another piece of paper towel. Use this piece of paper towel to hold the gemstone until you can set it in a safe place.

Always wipe dry before the solvents have evaporated. This keeps any solids dissolved in the solvents from precipitating on the gemstone surface. These solids are always present in trace amounts and the result is like painting the gemstone. Very bad for appearance!

11. Dog and Pony Show:

This story is included to illustrate that challenging the system is always a good learning experience. When you do these in real life, you must understand the extent of all possible consequences, and only then go ahead and try it!

I was very new to the faceting game. I had been the proud owner of a Facetron for several months and everything I knew about faceting was from Soukup's little pamphlet that is included with a Facetron, and experience. I decided I would take a class on faceting from a man who is now one of my heroes in faceting, Charles Covill. One evening Charles was not in the classroom and another student asked about orienting a facet to be polished to the lap. I smarted off and said watch!

I was polishing the pavilion mains of a round double brilliant in quartz. This

stone is 22.8 mm and weighs 41 cts. These mains are just over 15 mm long. I used the old standby magic marker to totally cover the facet I was polishing. Then I changed every setting on the machine. I removed the dop from the quill, lowered the mast, dialed a new angle, reset the index, changed the index divider (cheater), moved the mast back, and took the lap off the machine.

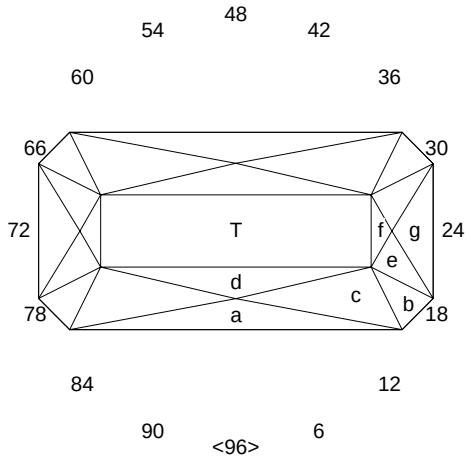
Now the challenge, put everything back and test the orientation. I put the doped stone back in the quill, put the lap back, adjusted the mast location, dialed in the original angle, set the index, set the index divider to the old setting, adjusted mast height using the indicator needle, started the lap turning slowly and touched the facet to the lap. It was just a very light touch and less than one quarter of a turn. When we inspected the facet, it was completely clean, and the adjacent facets were all still blackened. This degree of repeatability is one of the criteria one should use in selecting a faceting machine. If you are going to be cutting competition stones, you really need it

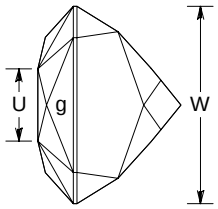
Designs

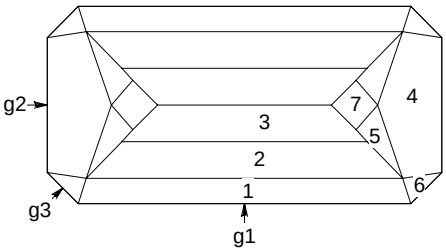
USFG Newsletter Designs

Having designs in the USFG Newsletter has been a long-standing tradition. It is a great place to see both classic and new designs from our members and the faceting community. In this newsletter we have three designs from our website Faceting Diagrams archive and three recent designs from three of our members. I would like to encourage you to use the Faceting Diagram section of our new website in order to discover interesting and classic designs and to send me your own original designs to be shared with our members in our newsletter. I can be reached at newsletter@usfacetersguild.org.

Bar None - Lisa Elser

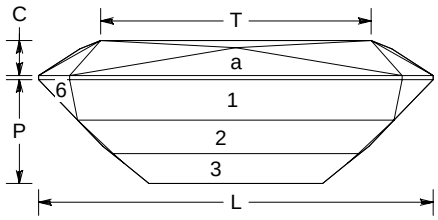






Bar None

Tom Schlegel, May 2009
Angles for R.I. = 1.620
39 + 8 girdles = 47 facets
2-fold, mirror-image symmetry
96 index
L/W = 2.000 T/W = 1.371 U/W = 0.366
P/W = 0.526 C/W = 0.178
Vol./W! = 0.757



PAVILION

g1	90.00"	96-48	Set L/W = 2.0
g2	90.00"	24-72	
1	58.30"	96-48	Cut center line
2	42.07"	96-48	Cut a step so that P1, P2 & P3 are of equal width
3	39.10"	96-48	Cut an equal step
4	46.07"	24-72	Level girdle
5	41.08"	23-25-71-73	Meet 1-2
6	60.00"	12-36-60-84	Meet 1-5-4 and cut corner for uneven girdle
g3	90.00"	12-36-60-84	Level girdle
7	38.80"	24-72	Meet apex 4

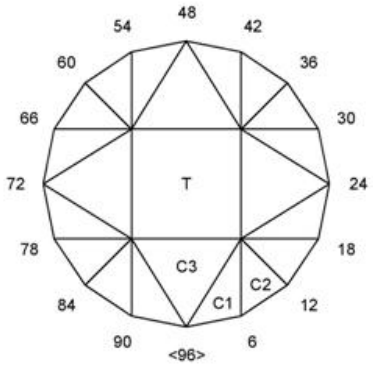
CROWN

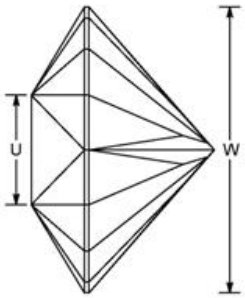
a	42.00"	96-48	Level girdle
b	28.00"	12-36-60-84	Level girdle
c	28.00"	02-46-50-94	GMP
d	13.00"	96-48	Meet apex a
e	28.16"	22-26-70-74	GMP, meet b-c
f	22.27"	24-72	Meet c-b-e, level girdle
g	32.82"	24-72	GMP, meet e-f
T	0.00"	Table	Meet c-b-e-f

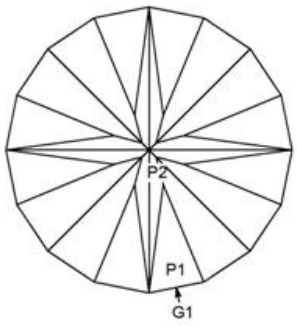
The keeled pavilion adds to the yield, but should darken the finished stone.
Use light to medium material. Uses a classic Vargus scissors crown.
\\.psf\Home\Gem\Facet_Designs\gemcad\barchev_files\barnone.gem

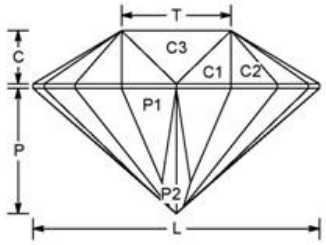
Temple Ruins – Arya Akhavan

Arya Akhavan is a prolific gem designer. Here's one of his designs for you to try - "Temple Ruins." Arya writes: "...I wrote this design is because I wanted a simple round pattern with an obviously square table. Well this accomplishes that very well, and has good light return as well! I like it in red-Orange zircon, but it works in materials from Feldspar to Rutile (RI =1.52-1.62) with no changes. Suggested size = 5-10 mm."









Temple Ruins

by Arya Akhavan (November 2012)
Angles for R.I. = 1.930
45 + 16 girdles = 61 facets
4-fold radial symmetry
96 index
L/W = 1.000 T/W = 0.383 U/W = 0.383
P/W = 0.438 C/W = 0.186
Vol./W^3 = 0.206

PAVILION			
P1	42.30°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93	Cut to centerpoint.
G1	90.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93	Set stone size.
P2	41.30°	01-23-25-47-49-71-73-95	Meet P1, G1
CROWN			
C1	35.00°	03-21-27-45-51-69-75-93	Set girdle width.
C2	39.56°	09-15-33-39-57-63-81-87	Level girdle.
C3	31.05°	96-24-48-72	Meet G1, C1; C1, C2
T	0.00°	Table	Meet C1, C2, C3

The Three Muses - Mark Oros

Article from Rock & Gem - January 2016

I enjoy creating new gemstone designs for several reasons. It could be a request from a jeweler, or having inspiration from a spectacular new piece of rough gemstone, and then again, sometimes I design a just gemstone for fun. So, for the record, this gemstone design is just for fun. This design has been something I have been playing with for over a year. It started with my inclination to do something with the number 3. This desire stems from being a father of triplets. A three-sided stone seemed too edgy and a three main facet pavilion was rejected for poor light return after viewing it in GemRay. I then considered and moved forward with the option of combining/replacing the table with three low angle facets.

I was very happy with the new design and cut it in several types of gemstone material and with increasingly progressive designs. After several escalating designs, all of them becoming exceedingly more complex, up to 171 facets, I stopped designing and cutting variations on my triplet theme. The process of designing and selling this motif was fun, profitable (becoming a favorite with my clients), and educational as the process let me explore the nature of "variations on a theme."

I wanted to share the enjoyment I had on the journey of exploring this design by writing an article about it so I fired up GemCad and revisited this old friend. I thought about how serious the design became over its various iterations and decided to scale back on the complexity and number of facets. I wanted to accomplish three things with the new design.

1. I wanted to make the stone easy to cut by providing a simpler and meet-point design that would allow all facetors a chance to try this fun stone.
2. The stone needed to be unusual and attractive enough to provide both your friends and mine with a fun time holding and viewing the gemstone or receiving it as a gift.
3. I also wanted the facetor to have the ability to make the gemstone unique. This can easily be done by adding

concave facets and matte (frosted) facets. The most attractive and reasonable place to put the small concave facets is in the culet of the gemstone (P4 on the cutting instructions). The matte facets can be played in many combinations. Two of my favorites are [P3 & C2] or [P4 and C1].

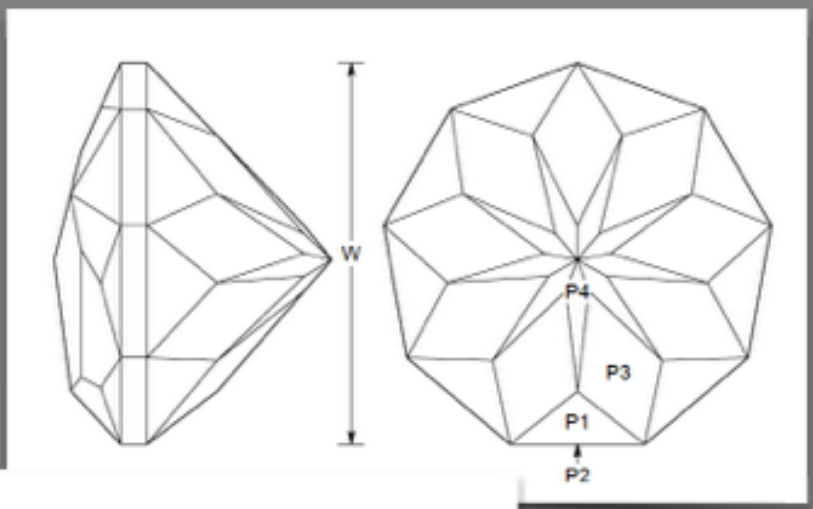
After about 30 minutes of creativity on GemCad and GemRay, I was able to produce a gemstone design that I thought was fun to cut and beautiful. It starts with a somewhat traditional star cut on the pavilion and goes to a rather unusual crown going from nine break facets to a tier of six facets, and then two tiers of three facets with no traditional table. I used quartz as the gemstone material when creating the design because I wanted to cut large natural gemstones in several colors without excessive costs. I hope that you have as much fun cutting this gemstone as I had creating it. The gemstone is named "Three Muses".

Citrine - Brazil
8.29 carats
All facets are polished
Faceted by Michael Rizzo

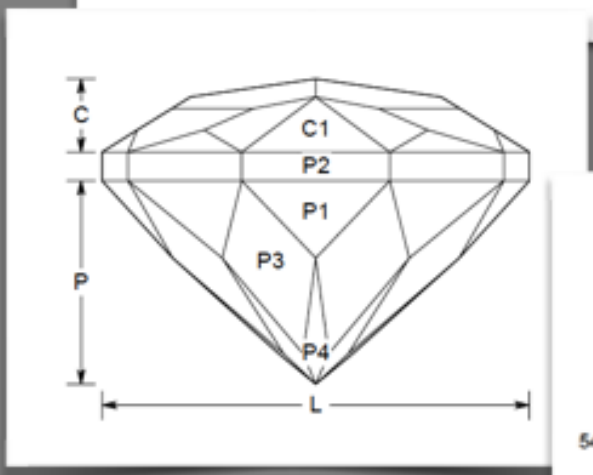
Ametrine - Bolivia
7.87 carats
P4 facets matted
Faceted by Mark Oros

Amethyst - Brazil
8.49 carats
P3 facets are matted &
P4 facets are concave
Faceted by Michael Rizzo

Three Muses

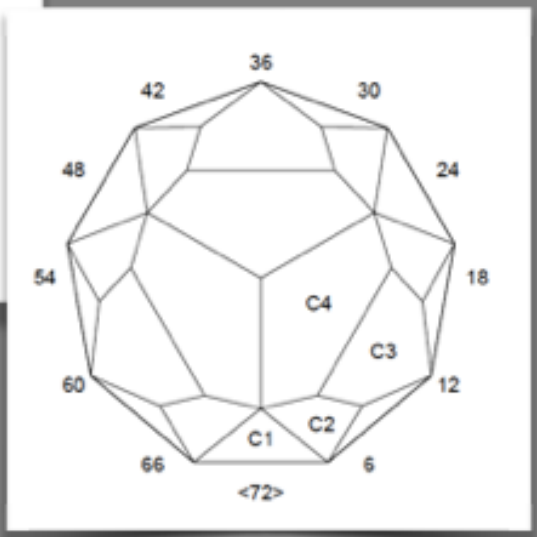


Pavilion View



Side View

Crown View



Diagrams & Instructions
By GemCad

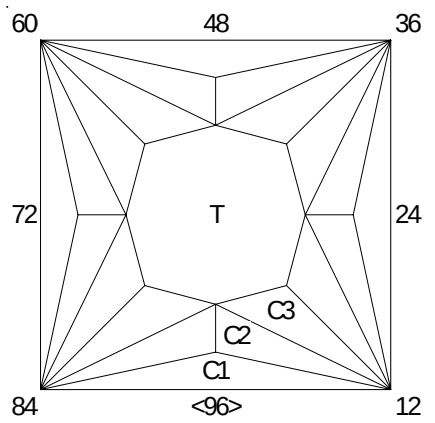
Instructions for 72 Index:

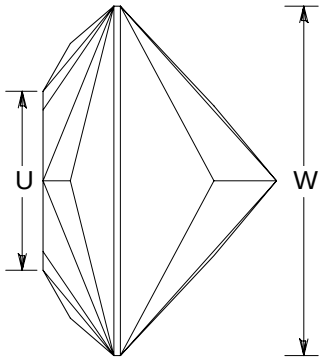
Pavilion

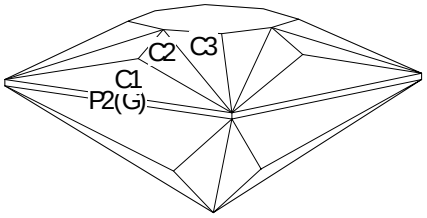
Cut P1 to a temporary center-point at 53° on 72 - 08 - 16 - 24 - 32 - 40 - 48 - 56 - 64
Cut P2 to set stone size at 90° on 72 - 08 - 16 - 24 - 32 - 40 - 48 - 56 - 64
Cut P3 to meet girdle at 44° on 04 - 12 - 20 - 28 - 36 - 44 - 52 - 60 - 68
Cut P4 to meet P1 & P3 at 41° on 72 - 08 - 16 - 24 - 32 - 40 - 48 - 56 - 64

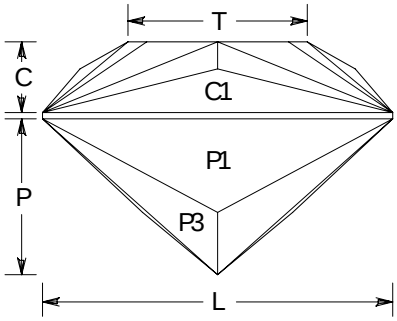
Crown

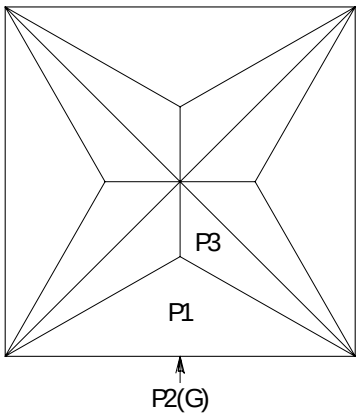
Cut C1 to set girdle depth at 43° on 72 - 08 - 16 - 24 - 32 - 40 - 48 - 56 - 64
Cut C2 to meet girdle at 32° on 06 - 18 - 30 - 42 - 54 - 66
Cut C3 to meet girdle at 24° on 12 - 36 - 60
Cut C4 to meet C1 at 14° on 12 - 36 - 60











Mistress
by Jeff R. Graham, 2003
jeff@faceters.com
Angles for R.I. = 1.560
33 + 4 girdles = 37 facets
4-fold, mirror-image symmetry
96 index
L/W = 1.000 T/W = 0.514
U/W = 0.514
P/W = 0.446 C/W = 0.198
Vol./W³ = 0.292

PAVILION

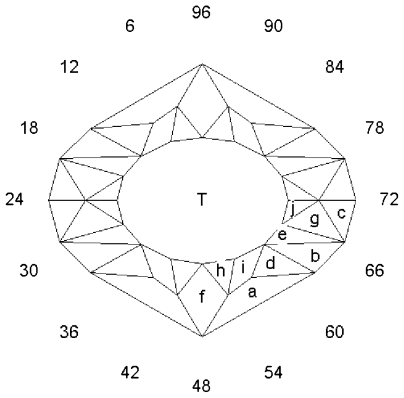
P1	43.00°	96-24-48-72 Cut to center point.
P2(G)	90.00°	96-24-48-72 Cut to meet P1.
P3	40.00°	01-23-25-47- 49-71-73-95 Cut to meet girdle.

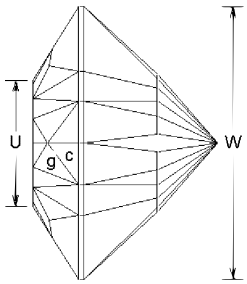
CROWN

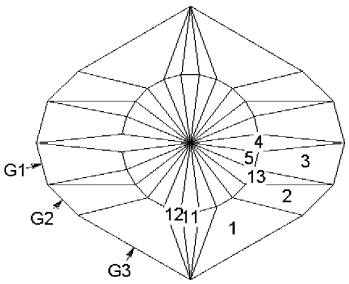
C1	48.00°	96-24-48-72 Cut to meet girdle.
C2	30.45°	03-21-27-45- 51-69-75-93 Cut to meet girdle.
C3	28.47°	04-20-28-44- 52-68-76-92 Cut to meet girdle.
T	0.00°	Table Cut to meet C2, C3.

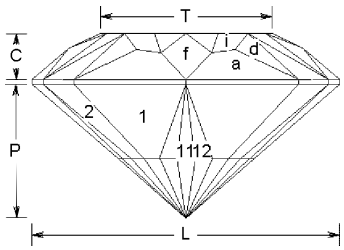
Cutters Notes:
Stone Material – Cutters Choice, light or clear is best.
Stone width to be 12 mm +/- 0.5 mm without deduction.
Girdle width to be 0.3 mm +/- 0.1 mm without deduction.

Originally designed for Beryl
Change culet angle to 40.5 for Quartz









FVS-141 THE EAGLE-EYE CUT

Designed By Fred Van Sant
Angles for R.I. = 2.200
85 + 12 girdles = 97 facets
2-fold, mirror-image symmetry
96 index
L/W = 1.123 T/W = 0.626 U/W = 0.462
P/W = 0.488 C/W = 0.168
Vol./W³ = 0.226

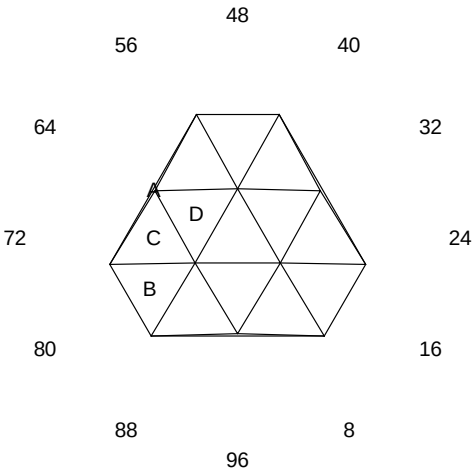
PAVILION

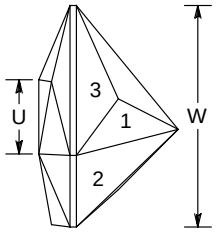
a	42.80°	20-28-68-76	Level Girdle
2	50.17°	12-36-60-84	Level Girdle
1	55.96°	08-40-56-88	
11	47.30°	96-48	Meet 1-G3-G3-1
12	49.30°	04-44-52-92	Meet 1-11-1
13	44.34°	16-32-64-80	Meet 2-G2-G1-3
5	41.00°	96-04-08-12-16-20-28-32-36-40-44-48-52-56-60-64-68-76-80-84-88-92	Meet at culet
4	41.00°	24-72	Meet 3-3 at girdle

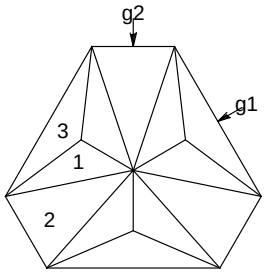
CROWN

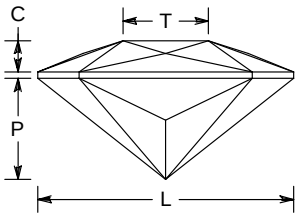
a	47.83°	08-40-56-88	Cut to desired girdle
b	39.66°	12-36-60-84	Level girdle
c	41.20°	20-28-68-76	Level girdle
f	32.00°	96-48	Meet a-G3-G3-a
d	41.01°	10-38-58-86	Meet a-G3-G2-d
e	37.83°	13-35-61-83	Meet b-G-G3-c
g	35.87°	16-32-64-80	Meet b-G2-G1-c
T	0.00°	Table	Meet upper points of facets b-d-e
i	33.95°	07-41-55-89	Meet a-f-h
h	29.67°	02-46-50-94	Meet at Table
j	26.32°	20-28-68-76	Meet g-c-c-g
G1	90.00°	20-28-68-76	
G2	90.00°	12-36-60-84	
G3	90.00°	08-40-56-88	

Editor's Note: Facet "a" on the pavilion is marked "3" on the diagram









Equilateral

Greg Glenn
Angles for R.I. = 1.760
28 + 6 girdles = 34 facets
3-fold, mirror-image symmetry
96 index
L/W = 1.155 T/W = 0.385 U/W = 0.333
P/W = 0.457 C/W = 0.140
Vol./W³ = 0.222

PAVILION

1	44.50°	01-31-33-63-65-95	Meet PCP
2	39.28°	16-48-80	Meet PCP
3	48.49°	96-32-64	Establish size
g1	90.00°	96-32-64	Establish size (sides)
g2	90.00°	16-48-80	Establish size (corners)

CROWN

A	82.75°	96-32-64	Level Girdle
B	22.55°	16-48-80	Level Girdle
C	20.00°	09-23-41-55-73-87	Meet B
D	10.25°	96-32-64	Meet A
	0.00°	Table	Table

Notes from the Secretary

Sue Lichtenberger

The annual membership meeting occurred via email and the new board was approved as follows:

President: Tom Maxwell
Vice President: Diane Eames
Treasurer/Secretary: Sue Lichtenberger

Board members:
Arya Akhaven
Al Balmer
Ernie Hawes
Dan Lynch
Tom Mitchell
Jon Rolfe

The two new members, Al Balmer and Jon Rolfe, take the vacancies left by Jenny Clark and Howard Bromley. Dan Lynch will remain on the board another year, filling the vacancy left by Jim Clark.

Other positions:
Mark Oros has taken over for Howard Bromley as Newsletter Editor.
Jenny Clark is continuing on as Membership Chair.
John Lichtenberger has taken on Stone Handler for the Single Stone Competition.

The Board of Directors met to approve the finances and budget submitted for presentation to the membership at the annual meeting.

Board discussion of the inclusion of private messages on the new website forum was approved.

A large amount of time has been taken up getting the new website and forum up and running. Our thanks to Robert Asumendi for the good work and extra effort. If you haven't logged into the new site, please do.

PLEASE update your personal information in the website. With the addition of PayPal as a method of paying your dues, fewer people are filling out the demographics that were included in the old membership application form. Because of this, we no longer have up-to-date details on our membership. We want to encourage you strongly to fill out as much as possible. You can decide how much is shared on the site, but at least fill out enough that we can reach you if there are problems with your membership or your email. We have a few members with email links that are broken, phone numbers that have changed, or they have moved, and we cannot get them their newsletters

My New Favorite Lap

Mark Oros

I read a lot of books on faceting when I was a beginner and I still do. One of the things that stuck with me was Jeff Graham saying something about his favorite lap was a worn-out 1,200 grit lap. It was not until I wore out my first 1,200 Crystallite solid steel-plated lap that I understood what Jeff was saying. Here was a lap that could still cut, but also gave me a flat, sharp, and matte finish on a facet. Such a facet was a great stepping stone to a pre-polish regardless of what stone I was cutting.

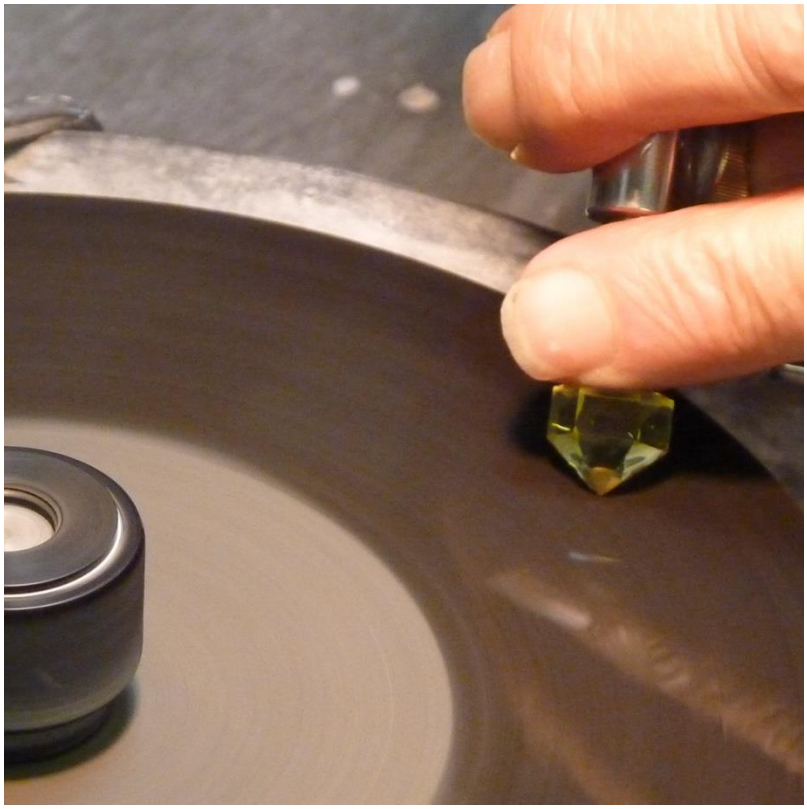
Most of the diamond-plated 3,000 grit laps I tried ended up putting gouges in my stones. Something always seemed to be popping up at the most inconvenient time and sending me back to recut the stone. The worn out 1,200 lap allowed me to by-pass the troublesome 3,000 and move on to one of the many pre-polish systems I had in my studio. Please do not take me for someone that skips laps. I am a dedicated sequential lap faceter. I believe that if you triple-step your grits (i.e. go from a 260 to a 1,200 lap), you are going to pay for it one way or another. I never understood the folks that say they can go from a seemingly rough grit to a polish, unless maybe the stones are exceedingly small. I like to cut big sculptural stones, which take time and no lap skipping.

The worn out 1,200 lap acted like a cross between the 1,200 and 3,000. Unfortunately, a worn out 1,200 plated lap on stays worn out for so long and then it is totally void of diamond grit. A sintered metal lap never really gets worn out because you pay three times the money for it not to get worn out. I recently saw an advertisement for Hyper-Edge laps. Being a lap collector of sorts, I buy every new lap I see and try it. I have yet to be disappointed with any of the new laps. I bought the full set of Hyper-Edge Laps and tried them after watching the informative video where the late, great Stephen Kotlowski explained in detail the use and care of the laps. I like all the laps, but the 1,500 grit lap gave me the same wonderful performance as a worn out 1,200 plated lap, but in a sintered lap.

This lap can cut out 600 grit scratches with ease and finish the stone with a smooth, sharp, and matte finish ready for a pre-polish. The Hyper-Edge lap performed on all materials, from small sapphires to 40 carat pieces of quartz. The Hyper-Edge lap is a proprietary composite lap that you can find more detail about it at this link: http://www.hyper-edge.com/products-faceting.html

This is not an inexpensive lap, priced at $550. However, it is a lap that will save you time and money if you are a steady faceter. It is also versatile in embellishing your gemstones with a nice matte finish and performs well when free wheel rotational cutting. When putting together faceting packages for my students or customers, I always insist that they add the Hyper-Edge 1,500 to their arsenal of laps. After all, it is my new favorite lap.

Using the Hyper-Edge 1,500



Roughing It – Buying at the Source

Lisa Elser

"How hard can it be?"

When I started my gem cutting business, finding rough material that met my standards (and my price expectations) had proved to be difficult. Things I bought from online dealers – both in the US and overseas – were not as advertised and returns were impossible. I'd been pounding the ground in Tucson trying to find high quality gem rough, but the only way to get at the good stuff was to know the dealers. I was new in the business and didn't have the contacts to get me into the private rooms, or behind the counters where the Big Boys bought.

I had, however, years of experience working in Africa. I'd been working for a computer company at the time but felt confident that I could travel safely and navigate the difficulties involved. My husband and I love to travel and are serious bird watchers. We could go to the gem-producing countries, buy rough, look for birds, and do better than I was doing with the dealers I had locally.

That was years ago, and I still travel to buy most of my rough goods. It's enormously satisfying to be "boots on the ground" in the gem producing countries. Tom and I work in some pleasure travel amid the work time and we've made lasting friendships. We find gem rough that we'd never see otherwise.

Figure 1 Buying Gem Rough

I learned on my first buying trip that all of the same problems I'd found buying at home applied. I could not get to see good material until I'd made connections and proven myself. Things were often not as represented. Price negotiations were intense, and once agreed there was no backing out and no returns. We also found a whole collection of other difficulties to navigate. Some of the key things I've learned from my overseas adventures are:

1) Take Time to Prove Yourself

You can't just wander up with cash and expect to be taken seriously. It takes time and effort to prove you deserve a place in the market.

In Madagascar, our contact had arranged for dealers to come to us at our hotel in the capital. We'd gotten use of a large balcony and were able to set up shop there. Most of the cut stone dealers sat at tables, but the rough dealer insisted on taking me into the hotel room. He and 4-5 of his group pushed a kilo bag of horrible Apatite into my hands. "Buy that," they said, "or we won't show you anything else." It took nearly half an hour for me to finally lose patience and get up. Unless they showed me something worth buying I was leaving. Then out came a few pieces of better material and I did end up buying one for a fair price.

Figure 2 Buying in Antanarivo, Madagascar

At the gem market in Ratanapura, Sri Lanka, I was standing on a bridge trying to get a break from the dealers and runners. They were so insistent that I felt like I'd brought Saltines into a petting zoo enclosure! Everywhere I turned someone was pushing stones into my hands. One man came onto the bridge and handed me a sapphire. I could see the curved straiae without a loupe and passed it back saying, "It's synthetic." He kept trying to get me to take it. Finally a well-dressed man speaking excellent English came up and said "You're right. Would you like to see something better?" He and I ended up doing business.

Our broker, however, was offered outstanding Alexandrite. I ended up buying it from him days later – I hadn't seen him being offered the gems right next to me! He's earned his place there and I had not so he got the good stuff even though I'd have paid more for it.

Figure 3 Weighing Rough on the back of a Motorbike in Ratanapura Gem Market

Proving yourself is key to getting anything worth buying. Everyone would like to sell their bad material for a good price (hey, wouldn't we ALL like to do that?) and until you convince them that you know the difference between bad material and good, no good material will come to you.

2) Know Your Stuff

It's unfortunate to hear North American buyers complain about the lack of ethics in other parts of the world. It's not that they LACK ethics, it's that the ethical standards are different. In Canada, I'm obligated as the seller to know and to disclose important information about my gems. In much of the developing world, it's the buyer's obligation to know what she's buying. Outright lying, if you can prove it, is wrong but many of the people showing gems honestly don't know what they have, only what they were told.

I've been buying in the field for a long time, and still sometimes buy something I shouldn't. This was big, cheap and pretty but I didn't pay it too much attention, and it was glass. Fortunately I didn't spend too much money on it.

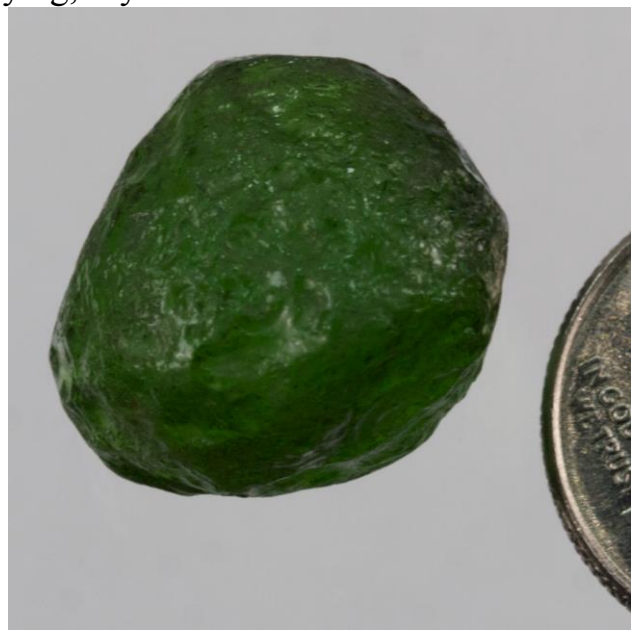


Figure 4 Glass I bought as Tourmaline

I travel with a stealthy little portable lab and test everything before making an offer. It's no one's responsibility but mine to know what I'm buying, and what I should pay for it.

It's well worth taking some gemology courses and investing in a few good tools before a trip. If you can't trust yourself to test the gems you're buying, only buy things as souvenirs. They make great stories in the store.

I've traveled with colleagues who wanted the brokers to guide them, but it isn't fair to expect that. The brokers are local. They bring me the goods and the people, but beyond that can't hold my hand. I'll be long gone, and they will still be there working with these people. They can't be

expected to tell me something is fake, or too expensive, or too included.

When buying in the field, you're making quick decisions and spending large amounts of cash with no recourse. Gem lust affects us all. It's so tempting to buy things, and so easy to get a bad case of Buyer's Remorse when we get home. Making lists of what you buy at home, how much it costs, and what you sell it for can help keep the lust in check.

3) Don't Buy at the Mines

How amazing it would be to go to a remote mine, find gems right out of the ground, and buy directly from the miners? Pretty amazing indeed, but it rarely works that way.

Our first visit to Tanzania saw us spending 5 days at an alluvial mine in the Umba Valley. It was wonderful. We got to work closely with local miners, buy from the miners and the Maasai tribespeople, and even try our own hands at digging.

Figure 5 Sieving Gravel in the Umba Valley

What we didn't get was amazing material. The mine owner sold us some excellent goods, but they were only at the mine because we were. Normally, the miners sell their finds as soon as possible, often to the mine owner. Mine owners or brokers take the rough to the city and keep it there. There's no better place to buy synthetics than at the mine, and the likelihood of finding good gem rough at the mine is extremely remote.

I love going to mines. We've been in remote mining regions all over the world and I never miss a chance to see new mines. I just don't expect to buy much there.

Figure 6 Buying at the mine in Tanzania.

Figure 7 Looking at Sapphire crystals at the mine in Sri Lanka.

4) Build Good Relationships

When choosing a new country to visit, one of the main considerations is who I know there, and how I can work with them.

I was having tea one evening in Tanzania with an acquaintance who asked me why I would work with a broker. It meant I was paying more for the rough gems than I would sitting in the gem market and buying on my own. For me it's an easy answer. By working with one or two brokers and giving them the lion's share - of my business I not only get to see FAR better material than I would on my own, but I can spend a week rather than the month my colleague was spending.

One year, my primary broker in Tanzania asked if I was interested in a high-end piece of sapphire rough. I was. The owner got on a bus and rode 8 hours to bring the goods to me on the strength of my broker's recommendation. He knew I had the money, and that I appreciated fine rough. I did buy it, and cut it into an amazing 7.87ct colour change gem.

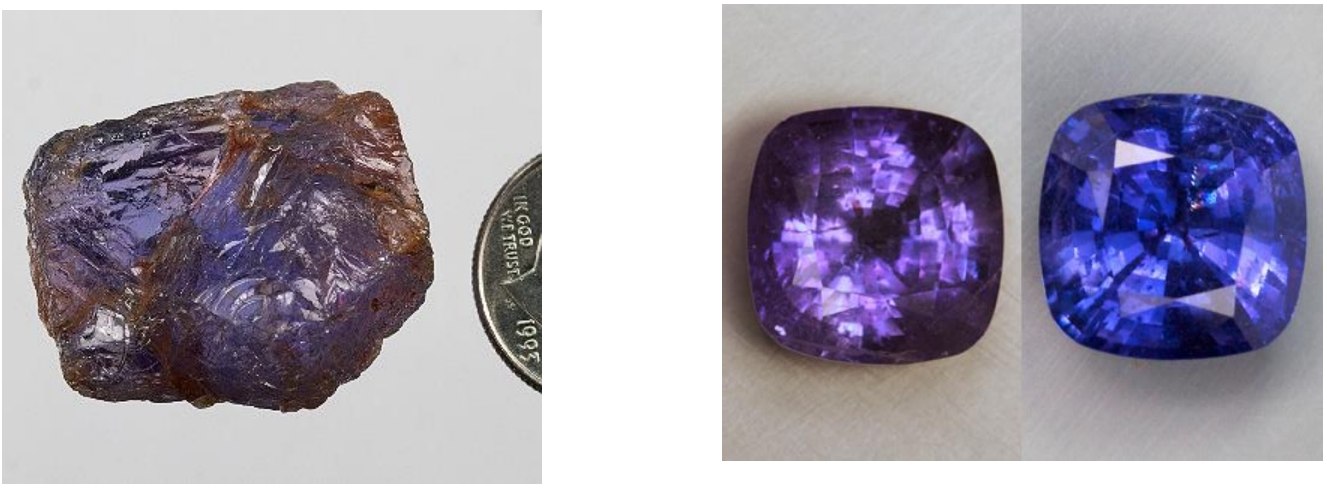


Figure 8 57 Carat Sapphire Rough and the finished gem

My brokers arrange for rough to be waiting for me, gives me a safe, clean, well-lit place to work, let's other brokers, miner owners and dealers know I'm in town, and handles translation and payment for me. A good broker is the difference between an OK trip and a fantastic one.

5) Respect the Local Culture

Of course I respect my brokers, but how I conduct myself in the office, and even in the city reflects on them. My clothing, manners, and trustworthiness all make a difference in my work. Respect for the local culture is an important part of respecting your local colleagues.

Many of the places I travel are tough for women. Dress codes are conservative – I haven't shown my knees, shoulders or upper arms in Africa or Asia in a decade—but a little respect for local mores goes a long way. Last time I flew home from Arusha, the couple next to me at the check-in counter in were wearing short-shorts and beach tops with flip flops. When they left, I commented to the agent that it made me sad to see Americans dressed so disrespectfully. At the beach, sure, but Arusha is a dressy city. She looked at the man behind her, they spoke in Swahili for a moment and then she upgraded me for the first leg of my flight.

Although I buy much of my rough from my brokers directly, I always spend a few days seeing others. People wait often for hours to see me. I owe each of them courtesy no matter what they've brought.

Figure 9 Sellers waiting to see us.

It helps to say, "I hope you have success with that" instead of "are you nuts?" when something is vastly overpriced. Assume that the seller is acting in ignorance when he presents a synthetic. Never bargain in bad faith. Before making any offer, I test the goods. If I make an offer and it's accepted it's too late to test. I'm expected to pay for it regardless. Everyone who takes the time to see me deserves my respect and courtesy.

6) Be Organized

It's always true that only I am responsible for my purchases, but when buying overseas there are even fewer safeguards than at home and the gem lust can be overwhelming.

I keep a spreadsheet that tracks my purchases, and the money I've spent. Many years ago in Tucson I negotiated hard for a parcel of excellent rough, only to discover at the end that I'd made a simple arithmetic error and dropped a zero. It wasn't a $1000 parcel; it was a $10,000 parcel. It was humiliating to say the least, as I backed out of the deal apologizing profusely. The seller thought it was hysterically funny and we've become good friends.

Had that happened in Tanzania, Madagascar or most other places I buy it would have been relationship-ending. It's easy to forget how wealthy we all are compared to most of the people in the developing world. My Tucson friend could enjoy my embarrassment and not mind so much the "loss" of $10k. The person who's been promised $500 in Madagascar has already told several other people who have an interest in the stones during the course of negotiation, and in a country where the average salary is $200 a month, that money is a fortune. Backing out of a deal humiliates the seller and my broker, and represents a real hardship for the people involved.

Have your tools, money, baggies and other important things handy. You may well be working on your feet. Keep excellent notes and record all your purchases. Check your money each day to be sure you know what you have available.

Enjoy the Journey

Don't forget to have fun. Yes, it's a work trip, but make sure to see something of the country. National parks, archeological sites, local eating places and just meeting the people are a big part of the experience of travel.
I love cutting gems, seeing clients, and so many aspects of my work, but my overseas buying trips are by far the most enjoyable and exhilarating parts of the business.

Whether or not it makes financial sense for someone to travel each year to buy going once or twice to experience the countries that provide our gems offers a chance to see first hand just how hard it is to produce high quality gemstones. Meeting the people who mine, broker, and cut those gems, and seeing how they live gives a new appreciation for the gems themselves.

Figure 10 Me making friends with the locals.

SIDEBAR – Do's and Don'ts

Do:

- Know how you're getting your money into the country. If you can wire to a trusted person, that's better than carrying large amounts of cash which must be declared.
- Arrange to have your purchases legally exported and imported. Carrying gems and rough without the right paperwork is smuggling.
- Bring gem bags, pencils, labels, tweezers, flashlights, and batteries… Don't assume you can buy it locally.
- Do your research. What gems are typically found? How do you ID them? What do you pay at home for them?
- Take good notes, both of what you bought and your trip in general.

- Get your immunizations, and travel with any medications you might need. Immodium, Benadryl, and antacids are must haves.
- Bring a camera. You and your customers will love having good photos of your trip.
- Treat the trip as a working vacation. Build in time to enjoy the country!
- Learn about the culture. It will help you make friends, and avoid misunderstandings or even causing offence
- Be careful, but not paranoid.

Don't:

- If you can't ID it, or don't know what it should cost, walk away. Unless you're spending a small amount for a novelty, the odds are you're overpaying.
- Walk at night. I have my hotel get me a cab to the restaurant, and have the restaurant get me a cab back.
- Dress like Indiana Jones. You're just asking to be hounded by souvenir sellers. Wear normal, clean, conservative clothing.
- Drink the water. Even in places that are better developed like Sri Lanka, we're not used to the local bugs.
- Wear jewelry, expensive watches or other signs of wealth. I wear only a simple watch and my wedding ring.

Links

This is a new newsletter section with links to supplemental articles. This allows us to be more informative by providing you with additional content, while hopefully keeping our newsletter under 70 pages.

Aquamarine Color and Heat Treatment *by Jeff Graham*
https://www.gemsociety.org/article/just-ask-jeff-what-is-the-true-color-of-aquamarine-how-is-it-heated/

Burmese Jade: The Inscrutable Gem
http://www.ruby-sapphire.com/jade_burma_part_1.htm

Myanmar's Jade Trade Is a $31 Billion 'Heist,' Report Says
http://www.nytimes.com/2015/10/23/world/asia/myanmars-jade-trade-is-a-dollar31-billion-heist-report-says.html?_r=0

Diamond Rough Bubble Bust
http://www.diamonds.net/Magazine/Article.aspx?ArticleID=53989&RDRIssueID=144&ArticleTitle=Rough%2BBubble%2BBust

Polishing Gemstones For Beginners: Pre-Polishing Advice
https://www.gemsociety.org/article/polishing-gemstones-beginners-pre-polishing-advice/

Financials

United States Faceters Guild
Profit and Loss Statement
1/1/2015 through 12/31/2015

INCOME	
Donations	-100.00
Interest Inc	19.61
Membership Dues	7,282.50
Other Income (Business)	
Paypal coupon	10.00
TOTAL Other Income (Business)	10.00
TOTAL INCOME	**7,212.11**
EXPENSES	
Competition SSC	
Awards	212.90
Judging fees	1,325.00
Postage	54.06
Stone handling	83.97
TOTAL Competition SSC	1,675.93
Fees & Charges	
Paypal fees	72.98
TOTAL Fees & Charges	72.98
Frolic Expences	13.06
Insurance (Business)	1,138.00
Office Expenses (Business)	165.22
Postage and Delivery (Business)	163.66
Utilities (Business)	
Internet (Business)	3,174.29
TOTAL Utilities (Business)	3,174.29
TOTAL EXPENSES	**6,403.14**
OVERALL TOTAL	**808.97**

United States Faceters Guild
Balance Sheet

As of 12/31/2015

ASSETS	
Cash and Bank Accounts	
Advia CD	0.00
Advia Checking	0.00
Advia Money Market	0.00
Advia Regular Savings	0.00
Checking	30,552.70
Faceters Frolic	4,500.93
Old Paypal	0.00
Paypal	224.35
Savings	100.00
TOTAL Cash and Bank Accounts	**35,377.98**
TOTAL ASSETS	**35,377.98**
LIABILITIES & EQUITY	
LIABILITIES	**0.00**
EQUITY	**35,377.98**
TOTAL LIABILITIES & EQUITY	**35,377.98**

Announcements

Volunteers Wanted

The USFG prides itself on being a volunteer-based organization. At this time, we are conducting a search for two mission-critical volunteer positions. Please let Tom know if you are interested in any of these positions by emailing him at president@usfacetersguild.org

Position Title: Volunteer Coordinator
Objective: To create a robust team of diversely talented individuals that can provide volunteer services to the United State Faceting Guild in an organized manner when required and requested.
Duties - Creates the volunteer matrix (spreadsheet) that is the interface for volunteer selection and assignment, takes requests from event and project coordinators, and assigns volunteer resources. Develops a volunteer needs list, recruits volunteers, and retains a team of volunteers.
Reporting - Reports to President

Position Title: Website Manager
Objective: To insure that the USFG website is managed in a professional manner.
Duties - To update, maintain, and monitor the USFG website. Coordinate specifications for website future development. Lead website Committee.
Reporting - Reports to President

USFG Advertising Policies

The USFG Board is currently discussing, documenting, and voting on new advertising polices for the USFG. We look forward to announcing and implementing these polices. Please watch for the advertising policy announcement on our website.

Dues and Newsletter Policy

The USFG Newsletter is a quarterly publication of the United States Faceters Guild, published in March, June, September and December. It is available on the USFG website, to all paid members of the Guild. Membership dues are an incredibly reasonable $18 per year (USD) and are payable to the USFG Treasurer.

Please help us grow the organization by recommending membership in the USFG to fellow faceters.

Opinions expressed are those of the editor, contributing members, or quoted authors, and do not necessarily represent the United States Faceters Guild or its membership.

The newsletter is for the express purpose of sharing information with the members and other faceting guilds, and has no intent to show preference to, or cause damage to, any person, group, product, manufacturer or commercial company.

Newsletter Submissions
Correspondence concerning the content of the newsletter should be sent to the editor. Items submitted for publication in the newsletter should be sent to the editor as well. The e-mail address for the editor is: editor@usfacetersguild.org
We're always looking for new ideas and contributions to the content of the newsletter, so if you would like to make a suggestion or a submission, please e-mail the editor.

Please try to submit newsletter items no later than the 5th of the month preceding the quarterly newsletter publication date, i.e. February 5, May 5, August 5 and November 5.

Office/Board of Directors/Staff

Officers 2016
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Vice President: Diane Eames
Secretary: Sue Lichtenberger
Treasurer: Sue Lichtenberger

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Sue Lichtenberger
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Tom Mitchell

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L. Bruce Jones
Charles Moon
Paul Newman
Jeff White
Will Smith

Appointed Staff
Membership: Jenny Clark
Historian: Glenn Klein
Editor: Mark Oros

Life Members

Congratulations to Our New Life Members!

Alexander Wolkonsky
Glenn Klein
Ralph Mathewson
Billy Stringfellow (d)
Jack Gross
Richard Golden
Brian Maxwell
James Clarke
Robert Long
Charles Moon
Jean A. Marr
Sylvia Czayo (d)
Don Dunn
John Bayer
William Wilkie
Dr. Vincent Bishop
John Cassity
Juris Peterson
Cal Thomas
Austin McThorn
Everett G. Brake
Jenny Clark
Jerry Newman
Jack B. Lewis
John Maine
Ed Romack
Verner Tovrea

Member Application & Renewal

New Members - Go to the USFG website to become a new member https://usfacetersguild.org

Renewing Members - Your membership expiration date and the button to renew your membership can be found at the My Account/Subscriptions web page once you login to the website. You will receive an email reminding you to renew your membership one week before your membership expires.

Questions about your membership can be sent to: membership@usfacetersguild.org