the New Mexico Facetor

March/April 2004

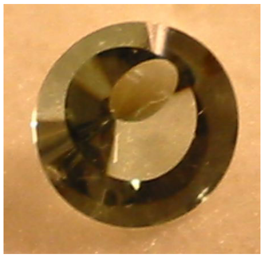
The Official Newsletter of the New Mexico Faceters Guild

NMFG

Show and Tell

Pine cone earrings and necklace made of sterling silver by **Elaine Price**. Elaine is inspired by the beauty of nature and experiments in casting plant materials in silver.

Dylan Houtman presented a variety of gemstones (shown on the cover page), a description of most can be found in the *Show and Tell* column on page 4. To the right is another picture of his Mexican Bytownite in a modified Portuguese cut.



A Hummingbird bail made by **Steve Attaway**. **Nancy Attaway** cut the beautiful kite shaped aquamarine set in this bail. The adjacent pictures shows the Hummingbird design before it was scanned and transferred onto the bail design (note bail waxes for size comparison).

The
New Mexico Faceters Guild

Guild Officers 2004-2005

President: Dylan Houtman
Vice President/Programs: Ernie Hawes
Secretary/Treasurer: Bill and Ina Swantner
Guild Gemologist: Edna Anthony
Guild Mineralogist: Paul Hlava
Workshop Chairman: Ernie Hawes

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Purpose of the Guild: The purpose of the New Mexico Faceters Guild is to bring together persons who are interested in faceting or faceted stones. We promote the art and science of faceting and provide a means of education and improvement in faceting skills. Finally, we provide a means of communication between those persons involved in or interested in faceting as a hobby.

Guild Membership: Dues are $20.00 per calendar year (January through December) for newsletter issues sent by e-mail. Hard copies of newsletter issues sent by US mail are $30. Please see the membership application/renewal form on the last page of the newsletter.

Meetings: The Guild meets now on the second Monday of odd numbered months at 7:00 p.m. at the New Mexico Museum of Natural History, 1801 Mountain Road N.W., Albuquerque, NM. Workshops are generally held in even-numbered months. Date, time, and place are given in newsletter. Also, any change in guild meeting times or dates will be listed in the newsletter.

The next meeting of the New Mexico Faceters Guild will be May 10, 2004.

The New Mexico Facetor

Vol u m e 2 4 , N o . 2 , March/April, 2004

NMFG President Dylan Houtman

In This Issue:

New Mexico Faceters Guild Official Website

We invite everyone to visit our website at: www.attawaygems.com/NMFG for interesting and informative articles on gemstones and faceting techniques.

The Prez Sez:
by Dylan Houtman

Hello,

at the last guild meeting I was asked about faceting Kunzite. A couple of weeks ago, while watching my favorite TV channel, they were showing some large production cut Kunzite. I noticed something about how the stones were cut: The girdles are cut and polished as one surface, with a cam or something similar. Then the girdle line was defined: pavilion and crown will be cut at a slightly greater angle than the pavilion and crown girdle facets.

From my experience cutting material with perfect cleavage, the most difficult part is to form the girdle and the point of the culet. Using the above technique would leave one with just the culet to worry about. With the spindle freewheeling, the dynamic of how the stone cuts changes and reduces the chances of planes cleaving. This would relegate most of us to cutting round stones, though.

On a different note, watching the same channel, I saw a stone cut using a freewheeling spindle, resulting in only one flat facet on the pavilion. It was very beautiful so I tried it on a piece of aquamarine, except I put a flat facet on both the pavilion and crown. This is fast and easy and creates a very interesting stone.

In closing, I would like to encourage everyone to facet whatever material you can find or afford. I cut a piece of agate that I found in my driveway! Every faceting machine on the market has the ability to produce a beautiful gemstone at your hand, so cut away!

In the words of Glenn & Martha Vargas, happy faceting.

Dylan

Minutes of the NMFG Meeting

January 12, 2004

by Nancy L. Attaway

President **Dylan Houtman** called the meeting to order at 7:10pm and welcomed all members and visitors. Everyone introduced themselves to the group so that we could all meet our guests.

Old Business:

Paul Hlava was to be the featured speaker at the Fall 2003 Texas Faceters Symposium, but he had to cancel the festivities due to his foot accident. The Texas Faceters Symposium re-scheduled their symposium for January 23, 24, and 25 so Paul could attend and present several of his interesting and informative gemstone talks.

New Business:

In the last few years, several Guild members have met many times at the Church Street Café in Old Town for dinner before the Guild meeting. Starting in 2004, New Mexico Faceters Guild meetings are now held on a Monday, but the Church Street Cafe is closed on Mondays. Scott Wilson has been searching for another restaurant where we could meet for dinner before the Guild meeting. La Placita in Old Town may become our new place to meet. Guild members meet at 5:30pm for dinner before the Guild meeting. The restaurant where we shall meet will be included in the e-mail that announces the Guild meeting for March 8. Please let Scott know if you plan to attend the dinner before the Guild meeting in March.

A board meeting of the New Mexico Faceters Guild officers is scheduled for February 21 between 9:00am and 10:00am, the morning of the Guild workshop at **Scott Wilson’s** home in Corrales.

The Guild Workshop will begin at 10:00am and run until 4:00pm. Workshop Chairman, **Ernie Hawes** plans to have Guild members facet their stones most of the day. He will address faceting problems and offer solutions.

Many Guild members will be attending the Tucson Show in early February. Please contact **Paul Hlava** or **Nancy Attaway** for information regarding the party that Paul has scheduled during the show.

Refreshments:

Nancy Attaway baked a lemon cake for tonight’s refreshments. Gourmet coffee was also served. Thank you ve

and **Mark Price** volu

to the Guild meeting

Show and Tell:

The Show and Tel

gems and lovely item

Attaway led the disc

display.

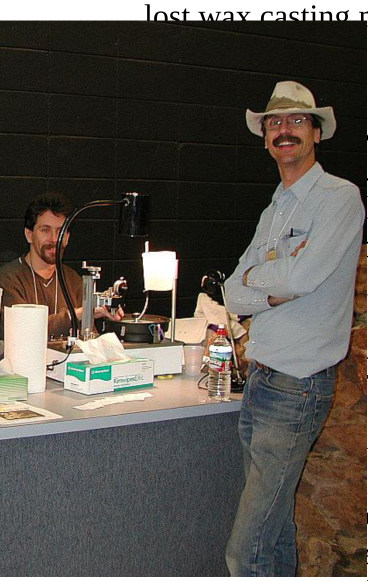
Dylan Houtman

that he recently cut. H

malachite nodule, sev

doublets, and an Australian opal triplet. He showed two absolutely gorgeous kunzite emerald cuts, a tricky gem to facet. Dylan showed a small emerald from the Ural Mountains of Russia, where the gem had been the tip of the large emerald cut stone that he showed at the last meeting. He showed three imperial precious topazes, an emerald cut, a lozenge, and a square. He presented a small round tanzanite, a round Arizona peridot with a nice green hue, a small pearshape tsavorite garnet, a lovely spessartite orange garnet, and a yellow spessartite garnet. Dylan presented a huge round labradorite that he cut in a modified Portuguese cut that was very impressive. He showed a suite of blue sapphires from Ceylon, a green sapphire, and a lavender/pink Montana sapphire. Dylan also displayed a small round triphylite, a lithium iron phosphate. He remarked that the gem was heat sensitive, and that he polished it on a tin lap with Linde A.

Elaine Price displayed several very interesting items of jewelry that she recently made in her casting and jewelry-making class. Looking for a nature theme, Elaine selected sections of a pinecone and made a master mold. She then cast many pieces in sterling silver and assembled these cast links into a necklace and bracelet ensemble. Each piece was given a satin finish. The beautiful necklaces and bracelets that Elaine rendered in the lost wax casting method were most graceful and



ay displayed four stones that she
uare Barion African aquamarine,
lar African aquamarine, an
blue Nigerian tourmaline, and a
rmaline.

y displayed several items of
cently rendered in gold. He
made rings, one set with an
pink Nigerian tourmaline and the
emerald cut Ukranian yellow
w tool, a Roland MDX15, Steve can now scan in the irregularly shaped stones that Nancy has cut, like the kite shapes and the non-calibrated emerald cuts. The new machine probes and scans objects to create numerical representations of the model and then mills out the object. Steve has made (and then cast) many setting parts for Nancy's stones with this machine. Look for more of these items at the March meeting.

Steve made two new bail designs for his pendants. One bail design shows a raised hummingbird in gold on a gold bail, and the other has a raised orchid in gold on a gold bail. Steve showed examples of these bail designs. He displayed a gold pendant that held an emerald cut rhodolite garnet with the orchid bail design. He also showed a gold pendant design that held a large kite-shaped aquamarine with the hummingbird bail design. He will show more of these pendants at the March meeting.

Steve recently rendered a CAD/CAM design and cast for Guild member Bill Wood a unique pendant, a large shield-shaped pendant in gold that incorporated the dragon from the Welsh flag. The dragon was raised on the shield at the top, and Steve set Bill Wood's large round synthetic ruby under the dragon at the bottom of the shield. Steve showed an example of this pendent in sterling silver.

Program Speaker

by Nancy Attaway and Carsten Brandt

Paul Hlava presented an updated version of his very interesting talk on **"Synthetic Gemstones".** Paul began by defining terms and then discussed the history of gem synthesis. He explained the many techniques used over the years for making synthetic gems. Paul included a new section on synthetic diamonds and discussed synthetic yellow diamonds from Apollo and Gemesis.

The following pages give a summary of Paul's talk with additional information taken from references on this subject. Books and websites used in addition to Paul's presentation are listed at the end of the article.

A piece of color change CZ (the color extremes did not reproduce to the full effect here, but they were quite amazing), one of many demonstration pieces brought by Paul for his presentation.

Gemstone Synthesis

A gemstone is by definition "beautiful, rare and durable enough for adornment". These features make such an item desirable and valuable. Not everyone can afford the gemstones they would like to have. Since ancient times, humans have figured out ways to imitate natural gemstones with the use of more readily available materials. The early Egyptians and Greeks produced simulants (see definitions below). The technologies for creating manmade synthetics did not emerge until the Age of Enlightenment.

Gemstone Terminology:
Naturals - material mined from the earth (ruby).
Synthetics - identical to naturals but made in the lab (synthetic, created, or lab-grown "ruby").
Invented - no natural equivalent (CZ, Cr-YAG, langasites).
Simulants - any material with the wrong chemistry and physical properties masquerading as a gemstone (plastic, glass, other minerals).

Until early chemical analytical skills were developed, most gemstones were categorized by their color. For example: emerald, green sapphire, peridot, tourmaline, etc. were all named smaragd/smaragdus; sapphire was originally the name for lapis lazuli. By the end of the 18^{th} century many chemical analytical techniques allowed gemstones to be identified by their elemental composition (diamond, 1797; emerald, 1798; ruby, by 1800).

There are some key requirements for gemstone synthesis: **Heat** is needed to be able to melt or fuse raw materials. Ruby and sapphire synthesis often requires temperatures around 2200^{o}C. **Pressure** is required for most methods, and many diamond synthesis processes require very high pressures (in the range of 60,000 atm). The **raw materials** must be very pure, tiny amounts of impurities give the gemstone its color. Too many impurities may make the gemstone dark and cause cloudiness or inclusions. Geological processes are re-created in laboratory settings in order to produce synthetics.

The Frenchman Gaudin in 1837 created **rubies** using a torch, alum, and Cr-salt, but didn't realize it. He thought they were a glass because the crystals were cloudy and had a low specific gravity. In 1877, Frémy used large crucibles with Pb-oxide flux to obtain small but commercial quality rubies, but these where too expensive to compete with naturals.

Verneuil, a student of Frémy, perfected a special furnace to make ruby, and later sapphire between 1888 and 1891. Commercial mass production began in 1902. The technique is called **Flame Fusion,** or the **Verneuil Process**. The Verneuil process produces single crystals of **corundum** and **spinel** in almost any color desired. Worldwide, thousands of furnaces produce millions of carats of synthetic gemstones every year at low cost (pennies/carat).

A variation of the Verneuil process is the **Czochralski Crystal Pulling** method, which produces large high-quality boules: A small seed crystal on a rotating rod is dipped into a pool of molten ruby. The rod is then slowly pulled up as the crystal grows. The resulting crystals are expensive, huge single crystals, reflecting the difficulty of the technique and the cost of special iridium crucibles required.

Emeralds cannot be made by Verneuil or Czochralski methods, because emeralds melt and crystallize incongruently (i.e. they decompose into other compounds before they melt or form these upon cooling from a melt). They have to be crystallized from solution or flux (**Flux Growth method**). J. J. Ebelman in 1848 used boric acid flux and powdered emerald to grow tiny crystals upon cooling of the flux. A number of researchers found that the best fluxes were lithium molybdenum oxide with extra molybdenum oxide and/or vanadium oxide.

The German company IG Farben was one of the first to create synthetic emerald in 1934 under the trade name Igmerald, but the flux growth method did not become viable until Carroll Chatham refined it with homogeneous nucleation. In 1935 (at age 21) he reported growth of his first crystals, in1938 he refined is protocol, and in the following year tried to sell his emeralds to jewelers, but had trouble convincing them that he had made the gems.

By 1964, Gilson developed this method further and created emeralds grown by heterogeneous nucleation, using seed crystals. The flux growth method is more complicated, as it requires long times (about one year, give or take a few months) at carefully controlled temperatures. The long time at elevated temperature and platinum crucibles make this an expensive process, but the product is of excellent quality.

Humphrey Davy experimented with **quartz synthesis** in 1822, but his first crystals had many inclusions. By 1851, Sénarmont created microscopic crystals; between 1898 and 1908 Gergio Spezia refined his **hydrothermal** technique to grow macroscopic quartz crystals. He published many papers about his research and his reactor design is still used today: His process involves placing natural quartz seed crystals and a sodium silicate solution in a silver-lined vessel under a temperature gradient (320-350°C at the top, 165-180°C bottom).

Today's reaction vessels reversed the temperature gradient (hottest at the bottom). Around WW2, Richard Nacken further developed the mass production of quartz crystals by using an isothermal growth process to take advantage of a supersaturated solution with a vitreous silica supply. During WW2 the US and Britain investigated this process as well, but it was not commercialized until after WW2, taking advantage of German developments.

The **hydrothermal growth** method requires an alkaline (NaOH), aqueous solution, kept at relatively low temperatures (just a bit over 300°C) and pressures (1700 bars), a modest temperature gradient (~40°C) across the reaction vessel and pure feed material. Crystal growth takes about one month. The world production is in the millions of pounds per year range; most quartz is used in the electronic and optical industries. A fraction of the synthesized material is smoky quartz, citrine, and amethyst for the jewelry industry.

Cubic Zirconia is another important man-made gemstone. It has been used to imitate diamond, but is now desired just for what it is – a beautiful stone, not a low cost imitation of one of the most precious stones. Creating CZ requires a different technique, as CZ's melting point is too high for platinum or other containment vessels used in the above-mentioned methods. CZ is created by heating the raw materials (Zirconium oxide and a stabilizer – usually Yttrium or Calcium) using a microwave oven. The material in the center melts first, leaving a crust of zirconium oxide around the melt, containing the liquid. Upon cooling, the CZ crystal remains within a "skull" of zirconium oxide, thus giving this method its name: **skull melting**.

The synthesis of **diamond** followed a difficult road from creating tiny crystals that are only of industrial interest (for abrasives) to making stones of large enough size and quality for use as gemstones.

The first successful synthesis was done in 1950 by a Swedish research team of the Allmanna Svenska Elektriska Aktiebolaget Laboratory in Stockholm. This team did not advertise the results until GE published its success in Nature in 1951. Many techniques have been developed to create diamonds since the 1950s: A variety of compaction methods including special presses, explosives and modern pressure chambers have been used.

Today two companies have come into the spotlight for high volume production of high quality diamonds: Apollo and Gemesis. Both create diamonds of a quality that is very difficult to differentiate from natural diamond.

Gemesis uses high pressure, high temperature process chambers roughly the size of a washing machine to create large yellow diamond crystals. Processing conditions are around 58,000 atm and 2,300^{o}F to convert pure graphite into diamond over a period of about three days.

Apollo uses a CVD method, decomposing methane through a microwave plasma into its hydrogen and carbon constituents. The processing conditions couldn't be more different from Gemesis' technique: the process chamber is evacuated to 1/10th atm and the temperature in the chamber is rather cool, but within the plasma itself, temperatures around 1,800^{o}F are reached. Once the gas has been broken down, the carbon deposits on a wafer seed layer. The growth rate is only about half a millimeter per day, but the resulting diamond is ultra pure and crystal clear (by adding dopants colored diamond can also be made).

While not a technique for the synthesis of diamonds, Diamond Anvil Cells (DACs) are nonetheless very interesting: they have been developed to study geological processes and behavior of materials under extreme pressure and temperature conditions. DACs use two brilliant cut diamonds with flattened culets facing each other, between which the material of interest is placed. Pressure applied to the tables of the brilliants is magnified onto the sample due to the much smaller surface area of the culets (pressure=force/area).DACs can achieve pressures as high as 3.5 million atmospheres at 6273K – similar to conditions at the center of the earth. Because the diamonds are transparent, the sample can be observed easily while being exposed to extreme pressure and temperature.

References:

"Gemstones Synthesis" presentation by Paul F. Hlava, 2004

"Gem Identification Made Easy", Matlins and Bonanno, 1997

a variety of websites – please see below.

Websites about Gemstone synthesis

Please note that many webpages disappear over time, move to new location, or change from being free to a fee. At present these sites are freely available. Keep a hardcopy of useful info for future reference.

Compilation of Verneuil, Czochralski and a few other methods. Includes additional theory on melting/solidification of materials:
http://www.cmat.uni-halle.de/~hsl/PoM-files/Physics%20of%20materials%205%20Phase%20transitions.pdf

Verneuil Fusion method – schematic and picture furnace:
http://www.hawkantiques.com/hawkantiques205.htm

Henri Hureau de Sénarmont:
http://micro.magnet.fsu.edu/optics/timeline/people/senarmont.html

1911 encyclopedia on artificial gemstones
http://89.1911encyclopedia.org/G/GE/GEM_ARTIFICIAL.htm

Hydrothermal Growth of Quartz Technical Brief:
http://www.sawyerresearch.com/Hyd_Growth_qtz_Tech_Brief.htm

Skull melting technique (basic):
http://www.ilpi.com/inorganic/glassware/skull.html

Skull melting (in-depth theory, 2 parts):
http://www.crystalresearch.com/crt/ab34/319_a.pdf
http://www.crystalresearch.com/crt/ab34/329_a.pdf

Gemstone inclusion library (emerald):
http://www.cigem.ca/inclusion/em01.html

Tairus created gems:
http://www.tairus.com/index.html

Ramaura cultured ruby (includes their recipe):
http://www.ramaura.com/

Chatham created gems:
http://www.chatham.com/

Wikipedia on skull melting and CZ:
http://en.wikipedia.org/wiki/Cubic_zirconia

"Your Gemologist":
http://www.yourgemologist.com

Berkeley Geology lecture:
http://socrates.berkeley.edu/~eps2/wisc/Lect3.html#hydrothermal

Emporia State University - Gems and Gemology Class material:
http://www.emporia.edu/earthsci/amber/go340/syllabus.htm

Diamonds:

American Chemical Society – History and background on Diamond Synthesis:
http://pubs.acs.org/cen/coverstory/8205/8205diamonds.html

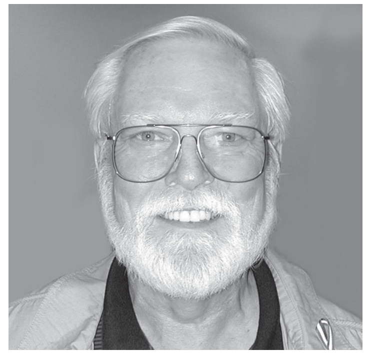
Wired article on Diamond Synthesis:
http://www.wired.com/wired/archive/11.09/diamond.html?pg=1&topic=&topic_set=

Diamond Anvil Cell:
http://www.llnl.gov/str/pdfs/03_96.2.pdf
http://unicorn.mcmaster.ca/beamlines/CHESS_newsletter_2000.pdf
http://researchmag.asu.edu/stories/tactics.html
American Museum of Natural History – The Nature of Diamond:
http://www.amnh.org/exhibitions/diamonds/index.html
Gemesis Cultured Diamonds (Company featured in Wired and ACS article):
http://www.gemesis.com/home.htm
Apollo Diamonds (Company featured in Wired and ACS article):
http://www.apollodiamond.com/
Lifegems (A new take on cremation):
http://www.lifegems.com/
De Beers (for reference):
http://www.debeersgroup.com

Facet Designer's Workshop

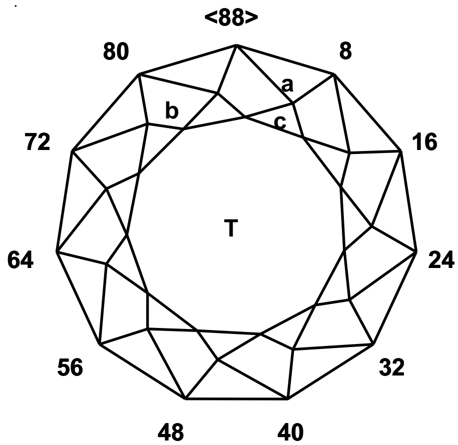
Keep It Simple Usually Works

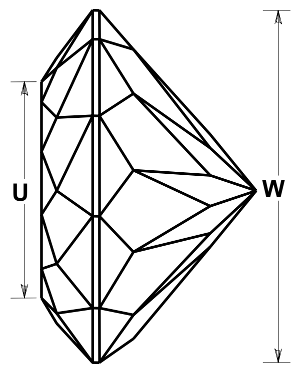
By Ernie Hawes

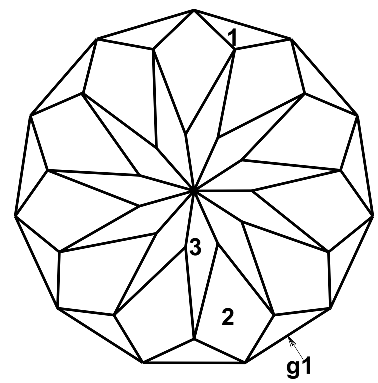


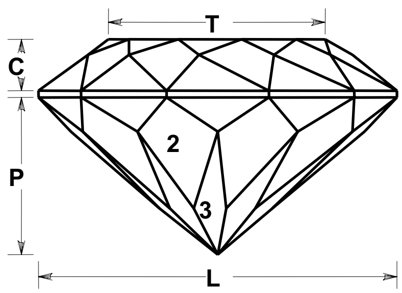
Several times in past columns I have remarked that fewer facets on a design often gives a better overall result than a complex pattern that may look great on paper, but frequently results in a stone that shows nothing more than a bunch of tiny pinpoints of reflection without really showing off the design. This is especially true with stones smaller than eight millimeters in diameter. An artist friend once told me that it had to do with having a balance of positive and negative space. To me, it simply means having reasonable brightness along with an interesting pattern of good scintillation. It should not end up looking like an automobile headlamp. I believe that both of the designs presented in this issue meet that goal.

Kevin Schwebel is a fairly new faceter who has jumped head first into all aspects of faceting. I was very pleased when he sent me a design he had worked out in GemCad for cutting a garnet that he had. Kevin calls his design ***Seeing Stars***, and when you cut it, you'll see that more stars become apparent than the design on paper shows. For me, the pattern has an elegance that is frequently missing in designs that have many more facets. In his email to me, Kevin says "I came up with this because I had a garnet that was pentagonal and I wanted to try my hand at cutting for weight retention (which has been a failure due to lap troubles….). It seems to be a decent design for dark material, but I'll know better when the crown is done. The numbers show good light return at least. I have 150cts of nice, clear, bright red Tanzanian garnet, so I think I'll get plenty of practice."





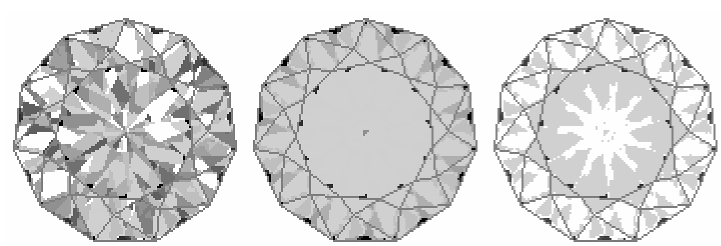




88 SWIRL II

By Ernie Hawes

Angles for R.I. = 1.760
67 + 11 girdles = 78 facets
11-fold radial symmetry
88 index
L/W = 1.010 T/W = 0.617 U/W = 0.617
P/W = 0.446 C/W = 0.141
Vol./W³ = 0.216
Average Brightness: COS = 82.0 % ISO = 91.7 %

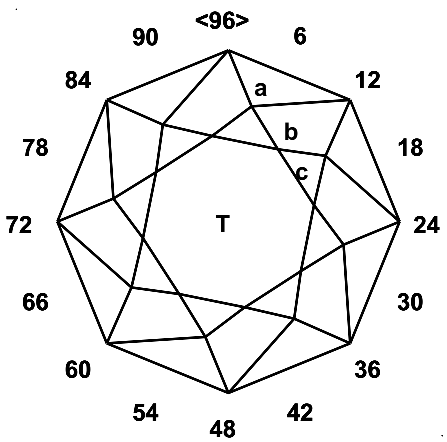


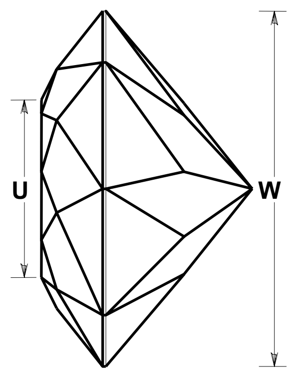
PAVILION

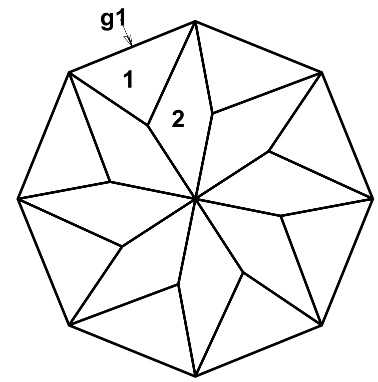
g1	90.00°	04-12-20-28-6-44-52-60-8-76-84
1	54.00°	04-12-20-28-36-44-52-60-68-76-84
2	42.00°	88-08-16-24-32-40-48-56-64-72-80
3	40.00°	02-10-18-26-34-42-50-58-66-74-82

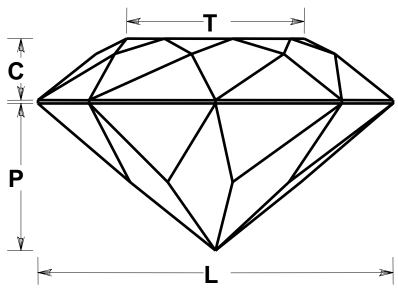
CROWN

a	42.00°	04-12-20-28-36-44-52-60-68-76-84
b	36.00°	02-10-18-26-34-42-50-58-66-74-82
c	26.00°	05-13-21-29-37-45-53-61-69-77-85
T	00.00°	Table





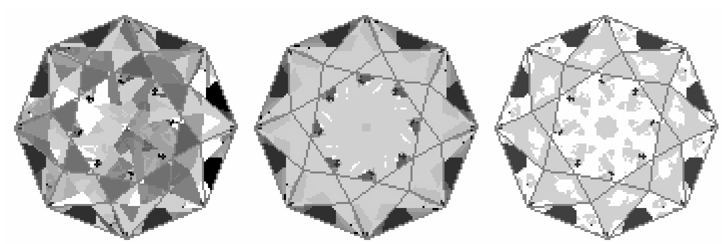




Whirligig

By Ernie Hawes

Angles for R.I. = 1.760
41 + 8 girdles = 49 facets
8-fold radial symmetry
96 index
L/W = 1.000 T/W = 0.500 U/W = 0.500
P/W = 0.411 C/W = 0.171
Vol./W³ = 0.186
Average Brightness: COS = 73.2 % ISO = 85.3 %



PAVILION

g1	90.00°	06-18-30-42-54-66-78-90
1	45.00°	06-18-30-42-54-66-78-90
2	40.00°	09-21-33-45-57-69-81-93

CROWN

a	45.00°	06-18-30-42-54-66-78-90
b	36.00°	09-21-33-45-57-69-81-93
c	22.50°	03-15-27-39-51-63-75-87
T	0.00°	Table

From Kevin's remarks, I assume that the garnets aren't huge, so a design with relatively few facets is a good choice. And I'm sure that for Kevin, it will be doubly exciting when he shows someone one of his cut garnets, and can say that not only did he cut it, he designed the cut as well. I look forward to seeing his garnets, and to more of Kevin's designs. The only caution I would have in cutting this design is to be very careful cutting the star facets on the crown. At 12.1 degrees, the lap should be run very slow and the stone touched gently to the lap. At this low angle it's all too easy for the moving lap to jerk the stone, or worse, cause the stone to be jammed into the lap, and possibly knocking the head out of alignment.

When I first began faceting over thirty years ago, after cutting several round brilliants, one of the first designs I cut was the ***Modified Old Mine***. It was a nice change from the rounds, and I liked the design, especially because it was easy for a beginner to cut. Some years later when I began creating faceting designs, I often practiced learning this aspect of our hobby by creating variations of existing patterns. Over the years, I've come back to this practice from time to time, usually for inspiration in creating an entirely new design. Occasionally, my doodling with an existing design results in something worth sharing with others. Such is the case with the ***Old Mine Variation III***. It's not much different than the ***Modified Old Mine*** design found in various publications. However, there are changes that, in my opinion, make this a better design. I was never too pleased with the ***Modified Old Mine's*** considerable crown height caused by the high angle of the crown girdle facets. Second, I learned from Fred van Sant that when you have pointed corners in a design, it's best to split any facets coming out of those corners in the pavilion. Another thing I've learned is that large tables result in some loss of brightness. The ***Modified Old Mine*** didn't have a huge table, but the row of facets I added makes it a little smaller, and I think gives a more flowing appearance to the design. By lowering the crown girdle facet by five degrees, and consequently the remaining crown facets, there is a significant improvement in optical performance. The split mains in the pavilion corners help with both scintillation and brightness.

The design is easy to cut and should offer few challenges to the beginning faceter. Without any angle changes, the design is suitable for any stone in the quartz, beryl, or feldspar varieties. Mexican opal is another good choice as long as the cutter is careful about not chipping the corners. Some cutters may want to raise the pavilion main angle a bit, especially if you're not absolutely sure of the accuracy of your protractor. Forty one to forty two degrees will still work well, although I personally would want to stay below the traditional forty three degrees often given for quartz.

In the News

True Blue beryl: Canada's New Beryl

Source: Professional Jeweler; January 2004.

True North Gems, a Canadian Mining company, announced that the discovery in Canada's Yukon Territory last August of a new gemstone find is actually a unique gemstone in itself. The new gem, described as a deep blue beryl, closely resembles aquamarine. The company also compares the gem, now called True Blue beryl, to the rare beryl called maxixe. The deposit lies in the Lake Finlayson District of the Yukon Territory. Powder X-ray diffraction determined the new gem to be a member of the beryl family, and a scanning electron microscope determined its trace analysis to contain unusual amounts of sodium, aluminum, and iron. The unique iron content may explain the saturated color seen in the gem, a color that resembles blue sapphire. The material shows a slightly higher refractive index and specific gravity than aquamarine. The new gem is also dichroic in two directions, much like maxixe, but it has been tested to not fade. The deep blue hue of maxixe fades in sunlight, so maxixe must be irradiated and stored in a dark place for the color to remain intact. For that and other reasons, the gem is a new type of beryl.

Pezzottaite: Madagascar's New Dark Pink Beryl

Source: Colored Stone January/February, 2004.

The unique dark pink beryl found recently in Madagascar now sports a new name, pezzottaite. The International Mineralogical Association voted last August to name the new mineral after Dr. Frederico Pezzotta of the Museo Civico di Storia Naturale in Milan, Italy. Dr. Pezzotta is a well-known expert on minerals from Madagascar. Pezzottaite contains cesium and has a much higher refractive index and specific gravity than morganite. Nearly all of the pezzottaite found in Madagascar was chatoyant, resulting from tiny fiber-like tubules of water found in the rough. Continued research hopes to discover what causes the material's unique color, a deep pink hue rarely seen in beryl.

New Disclosure on Beryllium Sapphires

Source: Colored Stone January/February, 2004.

The newly formed Thai Gem and Jewelry Manufacturers Association released a new description for their controversial corundum treatment. The association and eight of Bangkok's ten gemological laboratories agreed on the following definition: Disclosure code HTLE, heat treating with light elements. The new treatment differs from traditional heat-treatment in that the new treatment involves high-temperature heating and inducement of a light trace element, such as beryllium, into the gemstone.

New Hawaiian Pearls

Source: Lapidary Journal January 2004.

After years of research and development, Hawaii's only pearl farm has produced its first harvest. The pearl farm, owned by Black Pearls, Inc., lies next to the Honolulu International Airport. The operation is still in the early stages, but the oysters are currently producing a variety of colors, including a distinctive gold shade.

Dichroic Emeralds from Madagascar

Source: Gems & Gemology Winter, 2003.

A French mineral dealer obtained a parcel of emeralds from an undisclosed location in Madagascar. The lab tested the gemological properties of five of the stones. Most remarkable was that the gems exhibited a very strong dichroism from yellowish green to dark blue.

Guatemala's New Blue Jade

Source: Colored Stone January/February, 2004.

Miners unearthed a large deposit of deep blue jade in the Motagua Valley of Guatemala, home to the historic jade mines of the ancient Mayan Indians. The jade deposit has yielded mostly green stones and some green-blue stones. This mine now produces the first blue jade known in the world. Ventana Mining owns the deposit that now produces blue jade that compares in hue to that of blue sapphire. The jade is translucent to opaque, and it is thought that titanium gives the jade its blue color.

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