

*the
New Mexico*

faceter

September/October, 2006



The Official Newsletter of the New Mexico Faceters Guild

NMFG

Show and Tell

Amethyst with checkerboard crown by **Jeff Jaramillo**.



Aquamarine by **Nancy Attaway**.



Above a wonderful agate pendant with inset diamond by **Steve Attaway**. Steve also created the ring below with several tube set diamonds and a large Mozambique aquamarine center stone in 14Kt gold.



The New Mexico Faceters Guild

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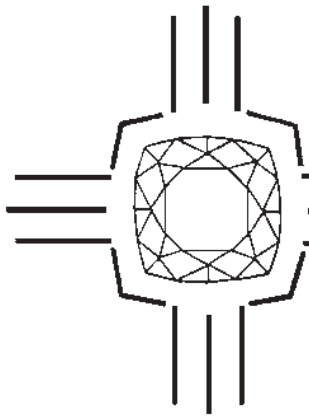
Ernie Hawes

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.

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The New Mexico Facetor

Volume 26, No. 5, September/October, 2006



NMFG President Dylan Houtman

The Prez Sez:

by Dylan Houtman

Hello;

Ever heard of Hanksite? $\text{Na}_2\text{K}(\text{SO}_4)_9(\text{CO}_3)_2\text{Cl}$, it's water soluble but doesn't dissolve quickly. I received a free sample with one of my E-Bay purchases. I was told that it was water soluble and that a white powdery film would form on its surface. After more than six months (and a very wet summer) there was still no change to the surface of the crystal. This encouraged me to dop it up and start cutting. The crystal was fairly clean with the exception of a crack near the center; I decided to ignore this crack, as I didn't expect to remove enough material to cause it to be a terminal problem.

I began cutting using standard operating procedure, water dripping on a 360 grit lap. I watched carefully as I cut looking for signs of dissolution. The girdle was cut and no signs of any dissolving. As I cut the pavilion mains, things were looking good, until I tried to bring the culet to a point. This was the first sign of a problem because a divot formed and wouldn't go away so I decided to start with prepolish. As I began cutting with the 1200 grit lap it became obvious that the stone was dissolving. I needed to change my technique: I tried cutting without water, but on a well-used 1200 grit lap there was nowhere for the grindings to go and I knocked the stone off the dop.

In conferring with my main source of rough, he told me his cutter used sand paper to cut delicate materials. As sand paper has a paper back, I felt this wouldn't hold up very well, but 3M makes something called microfinishing film, aluminium-oxide bonded to a Mylar film. I cut this into 8-inch circles, both 320 and 1200 grit, which I adhered to an aluminium master lap with water. These cut beautifully dry, so I was able to re-rough and pre-polish the stone in short order.

Now for the polish, with a fresh coat of wax on my new Corian lap, I felt confident. I have heard wax laps are the best choice for quite a variety of perfect cleavage, soft and delicate

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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.

materials. In my opinion, a Corian lap coated with a thin layer of floor wax should simulate a wax lap, yet has much greater durability. I prefer Graves K7 Falcon diamond spray as it has a silicone base to carry the diamonds. Using 50,000 grit, amazingly enough, I got an excellent finish very easily. Since polishing was so easy, I can't wait to try this technique on other sulfates like Celestite or barite.

In the transfer I softened some sealing wax in the female dop and pressed gently onto the pavilion, after that I applied some super-glue, just to be safe. I also used a very small dop when I first dopped the stone, to make it easier to remove after the transfer.

With a successful transfer the crown was easy to cut and polish, and I knew the sealing wax would dissolve easily in acetone when I was done, so I didn't have to worry about damaging the stone when I was done.

Back to the crack; I wasn't concerned about it when I first started. As I was doing the pre-polish on the crown I noticed some deterioration and a couple of pieces chipped off. I'm sure this was from my use of water when I began cutting. After the acetone had dissolved all the wax and I had an intact stone in my hand I wet a paper towel with alcohol and proceeded to clean the stone. Unfortunately the crack was terminal and the stone split into two pieces.

I view this cutting as successful because I was able to obtain an excellent polish and a successful transfer, and the pieces of the stone displayed very nice brilliance considering the low refractive index of this material.

I feel anyone out there who cuts soft and delicate materials ought to give a Corian lap a try; I am definitely going to continue using it.

Keep On Cutting,
Dylan.



Minutes of the NMFG Meeting

September 11, 2005

by Nancy L. Attaway

President **Dylan Houtman** called the meeting to order at 7:10pm and welcomed everyone.

Old Business:

Vice-President **Ernie Hawes** reported on the Faceters Workshop that was held at the Home of **Dylan Houtman** on August 26. Ernie began the workshop with a discussion on peridot and provided an information packet on peridot for those attending the workshop. Two sturdy folding tables, purchased by the NMFG, are now kept at Dylan's home for use at workshops. Members cut their gemstones, looked at gem rough for sale, and discussed designing diagrams with GemCad. Host **Dylan Houtman** provided tea, coffee, and an assortment of cheeses and lunchmeats. **Kevin Schweibel** provided gourmet bread, and **Nancy Attaway** baked a chocolate-cherry cake.

New Business:

President **Dylan Houtman** reported that he had renewed the contract for the meeting room with the Museum of Natural History. A copy of the contract was sent to Treasurer **Betty Annis** to sign and send back with a check for room rent for 2007.

Dylan also mentioned that he had donated the very large and wonderful triangular celestite that he cut to the Museum of Natural History. He said that the museum will be re-arranging their display of gems and minerals in 2007. He wanted faceters to cut examples of labradorite to give to the museum.

Both **Nancy Attaway** and **Ernie Hawes** remarked that it was time to consider where to hold the Guild Christmas Party. Nancy mentioned that the Cedar Point Grille can be rented for parties at night

or late afternoon. Even though the Cedar Point Grille is only 2.4 miles north of I-40 from the Tijeras/Cedar Crest exit, we would need to keep track of weather conditions. The restaurant would be totally ours during the time that we would use it for the Christmas Party.

Ernie Hawes began a discussion on andesine, the red labradorite that is reputed to originate from both China (Tibet) and the Congo in Africa. He said that one particular faceter in the US is cutting all of the rough andesine. A dispute remains about the actual source of the material.

Paul Hlava further explained that the red andesine is a plagioclase feldspar, like Oregon sunstone is. He said that plagioclase feldspar contains sodium, calcium, and aluminum, and it is the presence of copper that imparts both the red and the green colors. Colloidal particles of gold may also give the red color. Paul said the six members compose the plagioclase feldspar group: albite, oligoclase, andesine, labradorite, bytownite, and anorthite.

The next Faceters Workshop will be held at the home of Dylan Houtman on October 28.

Refreshments:

Tonight's refreshments were provided by: **Linda Vayna**, who brought chocolate chip cookies and an assortment of grapes, **Phil Rudd**, who brought a box of specialty candy, and **Nancy Attaway**, who baked a chocolate brownie cake. Gourmet coffee was also served. Thank you all very much. **Ernie Hawes** and **Nancy Attaway** volunteered to bring refreshments to the meeting in November.

Show and Tell:

President **Dylan Houtman** served as tonight's Moderator for Show and Tell. The Show and Tell Case was filled with glittering gems and lovely items of jewelry.

Marc and Elaine Price displayed two pieces of bytownite labradorite feldspar that they found while on a field trip to Pueblo Park, New Mexico. They remarked how green everything was from all the summer rains. They said how disappointed they were in only locating a few small pieces of bytownite.

Dylan Houtman displayed seventeen stones that he recently faceted. He displayed a large and lovely light blue topaz that he cut in an interesting pattern that combines the radiant cut with the standard round brilliant. He also displayed a light brown triangular zircon, a triangular pinkish red ruby from Viet Nam, an emerald cut aquamarine, two emerald cut Oregon sunstones and two marquise Oregon sunstones with schiller, a fan cut andalusite, a triangular rose-almandine garnet, a kiteshape reddish-pink sapphire, a round amethyst, a deep red spessartite garnet in the new cut, a long kiteshape reddish orange spessartite garnet, a hexagonal red spessartite garnet, and a pendeloque (pear-shaped) reddish orange spessartite garnet. Dylan also displayed a gorgeous red ruby square with a checkerboard crown that he cut and a platinum ring that he cast for the ruby.

Nancy Attaway displayed nine Montana blue sapphires that she recently cut, two Flasher cut (twelve-sided) rounds, a cushion cut triangle, an emerald cut, four Barion squares, and an oval. She said that the cushion cut triangle is a new design. The gem rough was found near Gem Mountain and Rock Creek and had been heat-treated.

Steve Attaway displayed six rings that he recently cast and set the stones. He displayed a 14Kt. yellow gold ring with a large oval Australian chrysoprase accented with ten small diamonds. He also showed five 14 Kt. white gold palladium rings, one set with an emerald cut blue green Nigerian tourmaline, one set with an oval blue sapphire accented with six small diamonds, one set with a blue sapphire Flasher cut round, and one set with a round cabochon blue sapphire. The fifth white gold palladium ring was a spectacular wedding ring set with ten princess cut diamonds and forty-four small

diamonds in an alternating pattern. Steve also displayed four oval opal cabochons slated for rings.

Steve discussed the casting of palladium and how it required a much higher melting temperature than yellow gold, hence, the need for a special torch, crucible, casting machine, eye protection, and clothing worn during casting. He also showed the new wax (No Wax) that is flexible, stretches, and cures in sunlight.

Scott Sucher brought three new replicas of famous diamonds that he recently faceted. He showed his replica of the very large Great Table Diamond that he cut in pink cubic zirconia, which may be the only replica of this particular diamond known to exist. He also displayed his replica of the Nur-Ul-Ain, which shape combines a round brilliant with an oval, that he cut in pink cubic zirconia. The Great Table Diamond, known as the Darya-i-Nur, the "Ocean of Light", weighed 186 carats before it was dropped and broken. The Nur-Ul-Ain, known as the "Light of the Eye", is one of the larger pieces cut from the 186-carat Great Table Diamond. Scott said that he was currently working on faceting a replica of the other large piece broken from the Great Table Diamond. The Nur-Ul-Ain Diamond is part of the Iranian Crown Jewels.

Scott also showed his replica of the Spoonmaker's Diamond, a very large, quite spectacular, and absolutely gorgeous double-rose pear shape that he cut in clear cubic zirconia. The Spoonmaker's Diamond, known as the Kasikci Diamond, is displayed in the Topkapi Museum in Istanbul, Turkey.

Scott Sucher presented a short program on his diamond replica research into the Koh-i-Noor Diamond. Scott began his presentation by stating that the Koh-i-Noor Diamond, known as the "Mountain of Light", was discovered in India in the 1300's and weighed 186 carats. Scott said that the Koh-i-Noor Diamond was brought to England in 1849. It was subsequently re-cut into a 105-carat oval in 1851 by Coster Diamonds of Amsterdam. The Koh-i-Noor

Diamond was set in the Maltese Cross at the front of the crown made in 1937 for Queen Elizabeth and is part of the British Crown Jewels.

Scott wanted to cut, as accurately as possible, a replica of the Koh-i-Noor Diamond. Scott Sucher is regarded as one of the best diamond replica faceters in the country, and he thoroughly researches each famous diamond that he intends to replicate. Scott contacted Coster Diamonds regarding any information on the Koh-i-Noor Diamond. A company representative sent Scott one of the two glass models of the Koh-i-Noor Diamond known to exist. Steve Attaway made a rubber mold of the glass replica for Scott. Later, a representative of the British Museum in London sent Scott one of the two plaster casts of the Koh-i-Noor known to exist. Scott then took over 600 photos of the plaster cast.

Scott explained that the Koh-i-Noor's flat facets on the crown are not evident from the glass model. He is hoping that the photos will better determine the line drawing of the facet pattern. Scott said that he put his information into GemCad used Adobe Illustrator to analyze each photograph. He added lines as they became visible and verified their placement. He did the same on all sides and aspects of the stone. Scott said that he used a 120-gear index wheel as he put his line drawing into GemCad. After he defined the outline, Scott cut the culet facets and added the other facets of the pavilion. Scott remarked that the Koh-i-Noor is very un-symmetric, and this un-symmetry gave him some serious alignment issues. The un-symmetry of the Koh-i-Noor Diamond has facets slant and change their focal points due to the moving axis of rotation around the pavilion. Scott interpreted this misalignment of facets as a direct result of the diamond having been held by hand during the original cutting and polishing process. He told us to remember that the Koh-i-Noor had originally been cut and polished in India in the 1300's, before the jamb-peg machine was invented.

Scott asked members for help in accurately determining the facet pattern that resulted from the misalignment. He wondered if GemCad could

account for the fractional index angles, as well as the height offsets. Steve Attaway and Ernie Hawes both said that Scott could use their off-set dops. Scott Wilson and Steve Attaway also said that the facets could be measured optically with a horizontal probe and by laser mapping. Steve said that Sunwest Cad has a machine that did laser mapping.

Scott finished his presentation with a great little story regarding the Koh-i-Noor Diamond. The actual mold of the Koh-i-Noor had disappeared in 1850, and no one knew what had become of it. Remarkably enough, the actual mold of the Koh-i-Noor Diamond was found this year, due to Scott's interest in it. (Now, if the Louvre in Paris could just locate the mold that was made of the French Blue Diamond!) Thank you very much, Scott, for another great talk on diamond replicas.



Program Speaker

by Nancy Attaway

Nancy Attaway presented her report on the Smithsonian Hope Diamond Project that was first televised on the Discovery Channel February 10, 2005. Scott Sucher, Steve Attaway, and Nancy, along with Jeffrey Post, Curator of the Smithsonian's gem and mineral collection, comprised the research team that uncovered the "French connection" part of the Hope Diamond's history. The June 2005 issue of *Lapidary Journal* featured Nancy's article that described the project and what was discovered.

Nancy began her story with Jean Baptiste Tavernier, the intrepid gem merchant who obtained, during one of his travels to India, a large tabular blue diamond that was to later become known as the Hope Diamond. The two books written by Tavernier that describe his travels to India are still in print. In 1668, Tavernier sold to King Louis XIV a parcel of fifteen diamonds that included the tabular 112 3/16-carat blue diamond. The French King, in 1673, had his court jeweler Sieur Pitau re-cut the tabular Tavernier blue diamond into an exquisite cushion cut heart

(shield shape) with a seven-rayed star visible from the table facet. Called the French Blue, the 67 1/8-carat diamond was set at the bottom of the plaque for the tricolor "Order of the Golden Fleece" by Andres Jacquemin, another court jeweler. The Order of the Golden Fleece was an ornate item of jewelry worn only by European royalty.

Nancy briefly described the chaotic and horrible time of the French Revolution between September 11 and 17, when the royal French Blue diamond was stolen. The diamond had been placed under guard on the second floor of the Garde Mueble, a government warehouse/museum in Paris and was snatched sometime during the week-long looting of the French Crown Jewels. Among the many golden items and jewels stolen during that time was the 140.5-carat Regent Diamond, but it was later recovered, as were many other items. However, the French Blue Diamond was never seen again. Rumors circulated that the diamond had been smuggled to England and re-cut.

Nancy said that, in 1804, the French Assembly under Napoleon adopted an amnesty law that forgave all crimes that had been committed in time of war after a passage of twenty years, a statute of limitations. She then said that, remarkably enough, a memorandum dated September 19, 1812 suddenly appeared that documented a 45.5-carat oval blue diamond, drafted and illustrated by John Francillion, a partner in the firm of Crips and Francillion Jewelers of London. Nancy said that the 45.5-carat blue diamond was soon acquired by Henry Philip Hope of London, an extremely wealthy businessman (the Hope family members were bankers in Amsterdam and in London). He had an absolutely fabulous personal collection of colored gemstones and diamonds. After his death, the blue diamond, now known as the Hope Diamond, was purchased by Evalyn Walsh McLean two years after her honeymoon. Cartier set the Hope Diamond for Evalyn into a pendant totally surrounded by large old-mine cut diamonds of various shapes. Evalyn also owned the "Star of the East", the 94.80-carat pear-shape diamond that she purchased from Cartier

in Paris for a "wedding present" during her honeymoon.

Nancy explained that Evalyn's father, Thomas Walsh was an Irish immigrant with a great business instinct and the "good luck of the Irish" that allowed him to increase his riches as he traveled across the United States east to west. In 1896, Thomas Walsh' mine in Ouray, Colorado, known as the Camp Bird mine, struck a rich vein of tellurium gold that made Thomas Walsh fabulously wealthy. He, with his young daughter, then moved to Washington, D.C. and entered high society, where Evalyn later married into the wealthy McLean family, who owned, among many of their assets, both the Washington Post and the Cincinnati Inquirer newspapers.

Nancy remarked that the Hope Diamond is surrounded, not only by an outer row of smaller white diamonds, but also by myth mixed with fact. Many stories have circulated about who has owned the Hope Diamond. Some are documented by fact, while others are pure fantasy and total speculation. Several books written about the Hope Diamond, which remain in print, relate many of these interesting stories and scandalous rumors about who wore and actually owned the Hope Diamond.

Nancy then related how the Smithsonian actually acquired the Hope Diamond. After the death of Evalyn Walsh McLean, noted diamond merchant Harry Winston of New York purchased all of the jewels and diamonds from Evalyn's estate in 1947. Harry Winston donated the Hope Diamond in its diamond-studded Cartier setting to the Smithsonian in 1958. Nancy described how there was much public speculation as to the travel routes that the Hope Diamond would take. She said that there were several "leaked" routes to the newspapers of who would carry the Hope Diamond and how it would get to the Smithsonian. However, the Hope Diamond had been wrapped in a plain brown paper package and hand-carried by the postman up the steps to the Smithsonian without any fanfare.

Nancy related the story how the Hope Diamond Project came to be. She said that, at the close of 2003, the Discovery Channel was compiling a television program on diamonds, citing the allure and mystique of diamonds, along with the geology and marketing. When the Discovery Channel met with Jeff Post regarding an episode about diamonds on "Unsolved Mysteries", Jeff pitched his "dream" idea about a show on diamonds. Jeff's idea was to construct and compare virtual models of the Hope Diamond, the French Blue Diamond, and the Tavernier Blue Diamond that could then be used to investigate the relationships of these three historic diamonds. The television director loved Jeff's idea and began his search for information on the Hope Diamond and its precursor stones.

Nancy said that the director called her in January, 2004 looking for Scott Sucher. The director had located Scott Sucher's name from the New Mexico Faceters Guild newsletter archives that is connected to Steve and Nancy Attaway's website for their business High Country Gems (www.attawaygems.com). The director found the article Nancy had written on Scott Sucher's talk about faceting replicas of famous diamonds. After speaking to Nancy, the director called Scott Sucher about the proposed project, and Scott agreed to participate. When asked about positively connecting the Hope Diamond to the French Blue Diamond, Scott Sucher replied that it would require several computer programs, with which he was unfamiliar, to do it right. He knew, however, a person who used these computer programs, Steve Attaway. So, Steve and Nancy Attaway became part of the research team into the Hope Diamond Project with Scott Sucher and the Smithsonian.

Nancy said that to prove lineage, the team first needed to reconstruct models of both the Tavernier Blue Diamond and the French Blue Diamond. Scott, Steve, and Nancy analyzed many historic texts in search of drawings, measurements, and descriptions of the Tavernier and the French Blue. Tavernier's "Travels to India" provided the team with drawings and weights of the original Tavernier Blue Diamond,

a source that greatly aided in composing a faceting design for the Tavernier. The measurements of the French Blue came mostly from Bernard Morel's book and articles. With the help of SolidWorks and GemCad, the team spent weeks throughout 2004 reconstructing as accurately as possible virtual models of the Tavernier and the French Blue.

Nancy explained that the plan was to recreate the geometry of the Tavernier and the French Blue to allow comparisons of the diamonds and eventually yield accurate faceting designs. Historical accounts documented the fact that the French Blue was indeed cut from the Tavernier, however, the team wanted to determine also if the Hope Diamond had been cut from the French Blue and if any small sister stones could exist. Nancy related that composing the faceting diagram for the French Blue proved somewhat more difficult to render than the one done for the Tavernier, due to the limited availability of text and drawings of the French Blue. None of the published replica faceting designs for the French Blue that were found met any of the known constraints of weight, length, width, and depth, nor was the facet arrangement correct in any of these diagrams. Drawings of the French Blue from Baptiste, obtained from lead molds, provided the best representation of the facet arrangement for the French Blue. As there were no side views available, the team used what Steve Attaway termed "forensic gemology" to best compose a faceting design for the French Blue from solid geometry computer models. After twelve attempts at a composing a faceting diagram for the French Blue, "iteration #13" finally proved do-able. Nancy remarked that the cutter of the original French Blue Diamond had fashioned a most elegant outline that displayed a remarkable arrangement of seven equal facets around the pavilion's flat culet facet. She said that the combination of these facets generated a seven-rayed star when viewed through the large table facet.

Nancy related that, after establishing solid objects in three dimensions of the Tavernier and the French Blue, the team could then determine how the Tavernier Diamond had been oriented to yield the

French Blue, or how the French Blue fit inside the Tavernier. The team soon realized how snugly and uniquely the French Blue did fit inside the Tavernier. Nancy said that the two table facets of the tabular Tavernier Diamond had been utilized in the design for the French Blue, and that these facets limited the depth of the French Blue. Nancy stated that she cut the replica of the French Blue, while Scott Sucher cut the replica of the Tavernier. She said that both stones were cut from dark teal-blue cubic zirconia and currently reside in the Smithsonian, to be on display near the actual Hope Diamond. Nancy remarked that the design of the French Blue further evolved as she was cutting it. She related how astonished she was when she held the finished stone in her hand, how truly lovely the design was, and how wonderful the seven-rayed star played through the table facet. Nancy stated that an 84-gear index wheel is required to cut the diagram of the French Blue.

Nancy said that the next step was to determine how the Hope Diamond could fit inside the French Blue. She remarked that Scott Sucher had cut the most accurate replica of the Hope Diamond known to exist at that time, and it was used as a model. However, Scott's replica was found not to be accurate enough for the project, and a trip to the Smithsonian was planned to measure the actual Hope Diamond.

Nancy observed that two trips had been taken to the Smithsonian to work with Jeff Post and Russell Feather, measuring and photographing the Hope Diamond. Scott Sucher flew to Washington, D.C. during February 2004, and Steve and Nancy traveled during December 2004. In photographing the Hope Diamond, Nancy explained that Steve wanted to use digital photography with PhotoModeler software, a computer software that solves for the location of points in three-dimensional space using common points marked on the different photos. PhotoModeler software first solves for the camera location and then determines the best fit in three-dimensional for the points marked on the photos. In all, over 300 points were compiled to mark the intersections of the facets. The model was detailed enough to see each

meetpoint and capture the very complex geometry of the Hope Diamond's girdle configuration. Nancy remarked that, since the team worked under a time constraint, the two trips to the Smithsonian had been necessary to obtain all of the photos needed. The Hope Diamond was only available for study after 6:00pm and until 9:00pm, and the diamond had been removed from its diamond-studded Cartier setting only six times since the Smithsonian had acquired it. Nancy said that their turns marked #7 and #8.

Scott Sucher, Steve and Nancy Attaway enjoyed a very wonderful and unique experience photographing the Hope Diamond in the Smithsonian's Blue Room, so named by the royal-blue carpeting on the floor, some walls, and tabletops. Besides curators Jeff Post and Russell Feather, Nancy said that Scott, Steve, and she were the only ones allowed to touch the Hope Diamond in order to arrange the diamond for photographs. The various gem and diamond dignitaries, along with the guards and the official Smithsonian photographers, watched while we photographed the Hope Diamond from all angles. Scott Sucher's experience in the Blue Room differed somewhat from Steve and Nancy's experience, and all three related some very funny stories corresponding to their particular turns in the Blue Room. At the end, Jeff Post awed us all with a display of the Hope Diamond's bright red phosphorescence.

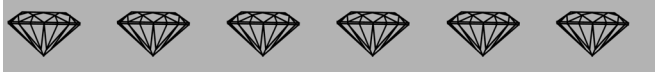
Nancy said that the new and very accurate computer rendition of the Hope Diamond obtained from digital photography and PhotoModeler software allowed an excellent comparison between the French Blue and the Hope Diamond. Nancy stated that the Hope Diamond fit tightly and only one way inside the French Blue. Steve's digital photos also captured what appeared to be the diamond graining of the Hope Diamond, as well as the evidence of several suspected "artifact" facets, facets left from cutting the Hope Diamond from the French Blue. From the computer models and the faceted replicas, it was easy to visualize how one diamond came from the other, Tavernier first, French Blue next, then the Hope Diamond. SolidWorks

software with GemCad enabled viewers to see all three stones nested within each other on the computer screen.

Nancy mentioned that there were some suspected sister stones reputed to have come from the cutting of both the French Blue and the Hope Diamonds. Nancy stated that there was not near enough diamond residue of any thickness to cut any sister stones when the Hope Diamond was cut from the French Blue. She said that Steve provided a simple solution to see what would have been left from cutting the French Blue and the Hope Diamond by making rubber molds of all three replicas. Steve placed the replica of the French Blue into the mold of the Tavernier, and he also placed the replica of the Hope Diamond into the mold of the French Blue. He then poured hot wax into the mold with the replicas inside, waited until the wax cooled, and opened the two molds. He showed the very thin wax residue left over as representing the diamond residue left over from cutting. No sister stones could have been cut, and the leftover residue of blue diamond had been ground into powder. Nancy stated that the Hope Diamond was cut to hide the crime of the French Blue having been stolen, as no one would have purchased a stolen gem from the French Crown Jewels. Nancy said that it was a crime to have erased the elegance of the French Blue Diamond with such an irregular oval cut having a very shallow crown.

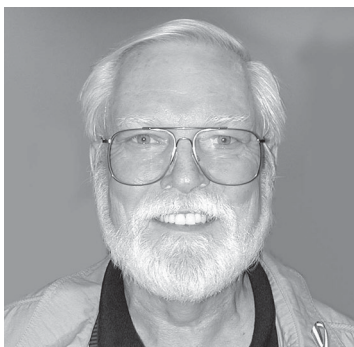
Nancy closed by noting that Scott Sucher cut for the Smithsonian the most accurate replica of the Hope Diamond known in the world. She stated that the faceting design of the Hope Diamond obtained from digital photography and PhotoModeler software is proprietary to the Smithsonian and owned solely by them. The faceting design of the French Blue was published in the June 2005 issue of Lapidary Journal and authored by Nancy. The faceting design for the original Tavernier Diamond was authored by Scott Sucher. Nancy remarked that Jeff Post and the Smithsonian were wonderful to work with, and that Jeff especially was very gracious with his expertise and knowledge. Scott, Steve, and Nancy all felt honored to have been on the research

team for the Hope Diamond Project with the Smithsonian.



Facet Designer's Workshop

The not so
common indices



By Ernie Hawes

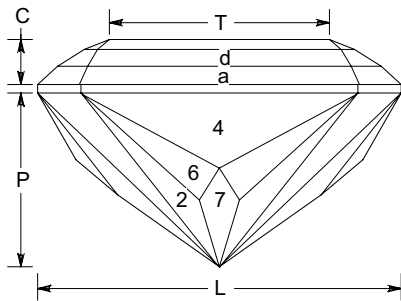
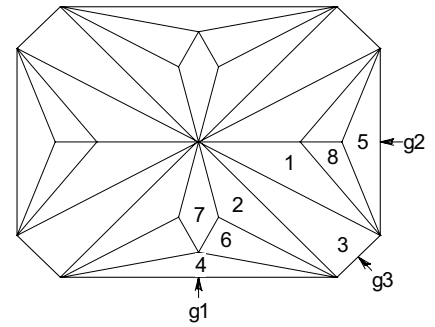
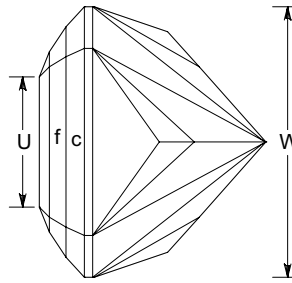
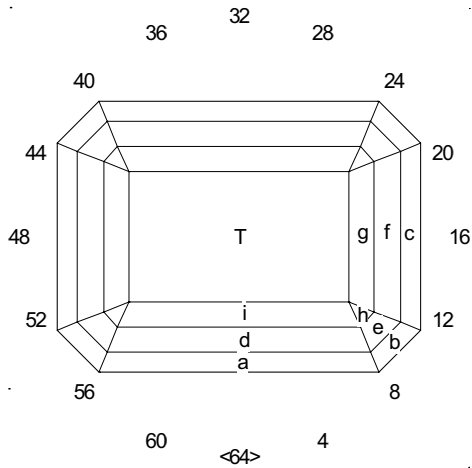
Most people, when you mention the emerald shape, think of a cut corner rectangle with step cut facets on both the pavilion and crown. However, as any experienced faceter knows, there are many designs with the emerald shape outline that only have step cut facets on the crown or pavilion, or they may have no step cut facets at all. Step cut designs usually lack much sparkle and are often cut simply to bring out the color of the stone. It may be that step cuts deepen the color of lighter hued materials. I've mentioned before that mixing step facets on either the crown or pavilion with brilliant facets on the other side often results in some interesting optical effects. Such, I believe is the case with the first design in this issue. Esmeralda is Spanish for emerald. If you've read Victor Hugo's *Hunchback of Notre Dame*, you will recall that Esmeralda was the name of the gypsy girl who entranced both the crowd and the hunchback, Quasimodo. I feel that the sparkle in this emerald pattern is far more entrancing than that in the traditional emerald step cut, so for once, I have some inspiration for naming this design *My Esmeralda*.

Getting good meets on the crown will be the most difficult part of cutting this design, due, I think, to minute alignment problems on many machines, and the necessity to be very careful in cutting to exactly the same place on each facet in a tier. If you cut the width and length exactly to the given ratio, the pavilion will come together easily. If you're a little

off, one or two angles may require adjusting. In any case, you'll have an entrancing gem when you're done.

The second design for this issue came about as the result of a friend's request. He wanted to know if I could create a square cushion pattern that would have an outward appearance similar to the Portuguese round pattern. If you've ever cut a Portuguese, you know that it has a fair amount of sparkle, but is not as bright as designs with better pavilion angles. As I worked on developing the design, I decided to try a semi-barion pavilion with the multiple rows of facets on the crown that would be reminiscent of the Portuguese. Because the pavilion is not in the style of the Portuguese, I didn't feel it was appropriate to name the design Portuguese Square Cushion; that design will have to come later. But since it has some Portuguese qualities, the son of the Portuguese, so to speak, and a fairly regal one at that, I chose *Prince of Portugal*. Cut it, and I think you'll agree the name is well deserved.

The *Prince of Portugal* is a semi-meetpoint design which requires some care in cutting the pavilion. Careful judgment must be applied to pavilion facet number 2 in order to keep later angles as listed. Otherwise, it's a fairly straightforward project to cut. The finished result will definitely be worth the effort. Although RI 1.76 is specified, the design will work in most mid range RI materials.



My Esmeralda By Ernie Hawes

Angles for R.I. = 1.540

51 + 8 girdles = 59 facets

2-fold, mirror-image symmetry

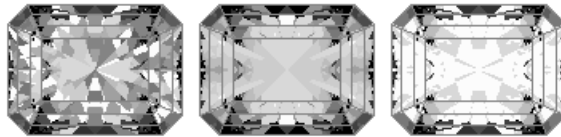
64 index

L/W = 1.332 T/W = 0.811 U/W = 0.476

P/W = 0.639 C/W = 0.167

Vol./W³ = 0.508

Average Brightness: COS = 65.8 % ISO = 79.1 %

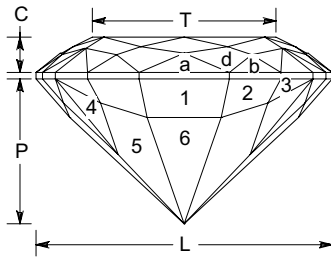
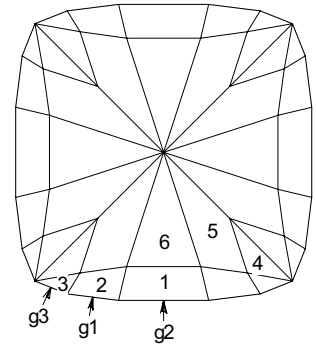
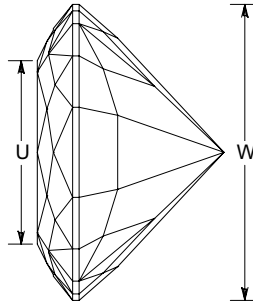
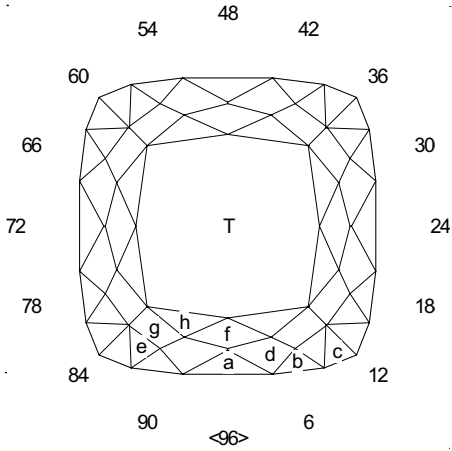


PAVILION

g1	90.00°	64-32	set width
g2	90.00°	16-48	cut to 9x12 or ratio 1.332
1	40.60°	10-22-42-54	Cut to centerpoint
2	42.40°	06-26-38-58	Cut to centerpoint
3	41.80°	08-24-40-56	ease in to centerpoint from 41.8 degrees
g3	90.00°	08-24-40-56	meet 2 at girdle
4	70.95°	64-32	meet 2 & 3 at girdle
5	59.90°	16-48	meet 1 & 3 at girdle
6	48.90°	03-29-35-61	meet 2, 3 & 4 at girdle
7	41.95°	64-32	cut to centerpoint; meet at juncture of 4 & 6
8	42.80°	12-20-44-52	meet 1,3 & 5 at girdle

CROWN

a	41.90°	64-32
b	41.90°	08-24-40-56
c	41.90°	16-48
d	34.50°	64-32
e	34.50°	08-24-40-56
f	34.50°	16-48
g	20.90°	16-48
h	20.90°	08-24-40-56
i	20.90°	64-32
T	0.00°	Table



Prince of Portugal By Ernie Hawes

Angles for R.I. = 1.760

97 + 20 girdles = 117 facets

4-fold, mirror-image symmetry

96 index

$L/W = 1.000$ $T/W = 0.612$ $U/W = 0.612$

$P/W = 0.487$ $C/W = 0.121$

$Vol./W^3 = 0.255$

Average Brightness: COS = 70.8 % ISO = 83.7 %



PAVILION

g1	90.00°	02-22-26-46- 50-70-74-94
1	47.90°	96-24-48-72
2	47.40°	02-22-26-46- 50-70-74-94
g2	90.00°	96-24-48-72
3	44.70°	06-18-30-42- 54-66-78-90
g3	90.00°	06-18-30-42- 54-66-78-90
4	41.90°	07-17-31-41- 55-65-79-89
5	41.75°	03-21-27-45- 51-69-75-93
6	43.00°	96-24-48-72

CROWN

a	37.50°	96-24-48-72
b	36.50°	02-22-26-46- -70-74-94
c	32.25°	06-18-30-42- 54-66-78-90
d	34.60°	01-23-25-47- 49-71-73-95
e	31.55°	05-19-29-43- 53-67-77-91
f	27.25°	96-24-48-72
g	27.05°	04-20-28-44- 52-68-76-92
h	22.00°	02-22-26-46- 50-70-74-94
T	0.00°	Table



Workshop Report

President Dylan Houtman hosted the New Mexico Faceters Guild Workshop on October 21 at his home. Those attending the workshop on a sunny but cool autumn day included Betty Annis, Jennifer Baker, Jeff Jaramillo, Steve and Linda Vayna. Ernie Hawes and Nancy Attaway, plus Dylan Houtman served as instructors and assisted folks with their faceting problems.

Ernie Hawes presented information on topaz for the morning's discussion. He described the various methods of treatment now seen on topaz in the current gem market. Ernie was very concerned with the coatings that now color topaz in different colors, and he said that these color coatings were named after the gems known for certain colors, like "emerald green" topaz and "sapphire blue" topaz. Ernie then showed examples of these color coatings by accessing several websites that advertised these types of topaz treatments. Ernie related that these color coatings would eventually be worn off the stone with wear. He also said if the stone were chipped badly enough to require re-cutting to repair, that the coating would certainly be erased during the re-cutting process. Ernie wondered how the color coating treatments would be disclosed and was concerned that the treatments might not be explained very well to the buying public.

Dylan had finished many wonderful gems and showed them all to us. These gems will be displayed in the Show and Tell Case at the November meeting of the New Mexico Faceters Guild.

Dylan Houtman provided a fruit assortment and strips of chipotle pepper cheese. Nancy Attaway baked a pumpkin spice cake and brought pumpkin flavored coffee. Pizza was ordered for lunch.

Many stones glittered on the dopsticks as faceters polished the pavilions and crowns of their gemstones.

Betty Annis polished the pavilion of a champagne yellow labradorite that she had cut in the "Flower of the Mines Cut", an eight-sided square brilliant or cushion cut square. This is Betty's second stone to facet. Jennifer Baker pre-polished a pale amethyst in the "Flasher Cut", a twelve-sided round to better understand the diagram. Jeff Jaramillo polished a large oval cushion cut rhodolite garnet and placed a very interesting checkerboard cut on the crown. The large finished gem was absolutely stunning. Jeff then polished the crown of another oval rhodolite garnet with a checkerboard crown. Linda Vayna finished the pavilion of a large pale amethyst "Flasher Cut" twelve-sided round. Her stone is now ready for transfer.

Lively discussions always pepper the workshops amid all of the ongoing faceting of gemstones. These discourses are fun and often informative. We all thank Dylan for being such a good workshop host.



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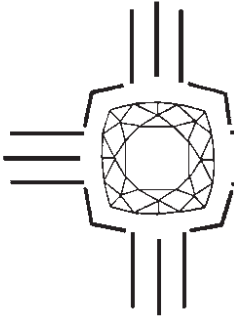
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Please contact Carsten, if you want to include your email address.



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