



***The  
New Mexico***

***Faceters Guild***

***September/October 2002***



**The Official Newsletter of the New Mexico Faceters Guild**

# NMFG

## Show and Tell



**Dylan Houtman** faceted six rhodolite garnets, a truncated marquise, a half moon, an eight sided square, and three shields. He cut two andalusites, a triangle and a truncated marquise. He cut an Australian opal, a Mexican opal, and a color change sapphire in standard round brilliants. The Mexican opal exhibited a very nice aurora borealis. He cut four Nigerian tourmalines, a cushion cut triangle, a geometric pearshape, a new shape that combined an oval with an emerald cut, and a hexagon.



**Nancy Attaway** faceted three peridots from Pakistan, an *Apollo* cut triangle, a shield, and a pearshape. She cut an octagonal citrine, the octagon variation design in this issue of the *New Mexico Faceter*. She also cut the 85-carat Bolivian ametrine in her *Eye of Horus* design, shown on the cover of this issue of the *New Mexico Faceter*.

## The New Mexico Faceters Guild

### Guild Officers 2002-2003

**President:** Scott Wilson  
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**Secretary/Treasurer:** Ina Swantner  
**Guild Librarian:** Russell Spiering  
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### Special Events Coordinators:

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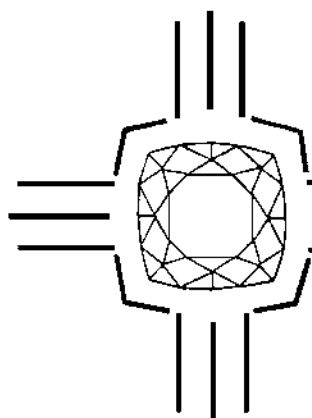
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**Purpose of the Guild:** *The purpose of the New Mexico Faceters Guild is to bring together persons who are interested in faceting or faceted stones. We promote the art and science of faceting and provide a means of education and improvement in faceting 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). Please see the membership application / renewal form on the last page of the newsletter.*

**Meetings are held the second Thursday 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 22, No. 5, September/October, 2002



NMFG President Scott Wilson

## The Prez Sez:

by Scott R. Wilson, Ph.D

I hit upon a peculiar tidbit while researching ion beam machining. I found a company now selling “ion beam branding” equipment aimed at the colored gem (and diamond) market (1). They claim to be able to write patterns with a resolution of 50nm (about 1/500 of the diameter of a hair). Patterns that are written on gemstones now include photographs, gemological data, etc. These patterns are so small as to be visible under very high magnification, or not at all except in an electron microscope. They can also be made large enough for clever visual effects.

The scary thing not said is that this equipment, due to its resolution, can write a diffraction grating into the surface of a gemstone. A diffraction grating has many identical, very fine lines, ruled next to each other in uniform progression. A diffraction grating breaks up white light into colors of the spectrum, similar to a prism. The color seen is dependent on the grating orientation, the line spacing, and the light source location.

Here’s the kicker. One could easily design a grating to be printed into the pavilion facets of a poorly colored gemstone, causing it to have absolutely gorgeous color! The lines making up the grating are so small that they may not be visible even under the highest magnification optical microscopes, far beyond typical gemmological microscopes. If done properly, the presence of the grating might be very difficult to detect. A new “gem treatment” is born!

Not only that, but one could also use this technology to write a hologram into the surface of a gemstone. You might someday view the table of a sapphire in the sun and see a 3D image of the prior owner. The possibilities go on and on. Gems with such “treatments” will appear in the market one day. It will be interesting to note their public reception.

In the meanwhile, if it looks like the color is too good to be true, consider that this might just be the case! (1) 3-Beams Technologies; [http://www.norsam.com/3beams/products/branding\\_1.html](http://www.norsam.com/3beams/products/branding_1.html) (It is interesting to note that this company is located not far from one of Intel Corporation’s big research and development labs in Hillsboro, Oregon. They are using technology licensed from Los Alamos National Labs and are 12% owned by a large semiconductor equipment company.)

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## Minutes of the NMFG Meeting

September 12, 2002

by Nancy L. Attaway

**President Scott Wilson** called the meeting to order at 7:10 p.m. and welcomed all members and guests.

### Old Business

**Nancy Attaway** reported on the workshop held July 13 at the Attaway's home. Ernie Hawes led the morning session in an informative discussion on polishing laps. Ernie listed the many different polishing laps available and spoke about their recommended usages. Nancy provided additional commentary regarding certain laps that polished particular gem material. Members faceted their stones after lunch.

### New Business

**Nancy Attaway** announced that the next Guild workshop was scheduled for **October 12** from 9:00 a.m. until 4:00 p.m. at the home of Scott Wilson in Corrales. Ernie may plan a morning classroom session, and members will facet stones after lunch. Members attending workshops are asked to give \$5 towards food and the copies of information and faceting designs, but extra cash donations are always appreciated. Please contact Ernie regarding all workshops. Ernie has a faceting machine available for those who do not own machines, so call him to reserve a machine for you at the next workshop.

**Steve Attaway** remarked that, due to rising costs with publishing and postage for the newsletter, he would like members to consider receiving the newsletter by e-mail. Steve will arrange to have the newsletter sent electronically as a pdf file. He plans to send a test version out to members. He will also update the website and include "Show and Tell" in the Gallery section.

**Steve Attaway** also mentioned that Robert Strickland, the author of GemCad, now had a new version of Gem Cad for Windows available. The new version includes both a user's manual and a tutorial of Gem Cad. The version for Windows is free for 30 days, then expires. The cost of this software is \$90.

**Nancy Attaway** mentioned that it would be nice if folks called **Betty Annis** or sent her a sympathy card, regarding the loss of her husband, Russell. Sending a card to **Rainy Peters**, regarding her very serious ill-

ness, would be nice, too. Also, do not forget to call or send a card to Merrill O. Murphy, telling him that you are thinking of him, as well. The New Mexico Faceters Guild thanks **Betty Annis**, **Rainy Peters**, and **Merrill O. Murphy** for their service to the Guild.

**Nancy Attaway** also thought that it would be best if the Guild held the Christmas Party at someone's home rather than at a restaurant. Then, members could have an "organized pot luck" dinner in a more relaxed atmosphere and not have a time restriction. Scott Wilson volunteered to host the Christmas Party. The **Guild Christmas Party** was then scheduled for **December 14** starting at 4:00 pm. Please contact Nancy Attaway on what you might bring, including wine. Our traditional and fun gift exchange will take place after dessert. Dress up and share the Christmas spirit at Scott's.

**President Scott Wilson** and the **Attaways** commented upon some possible changes to the operation of the New Mexico Faceters Guild. The Guild has lost quite a few members, while publishing costs and postage have increased. Also, the folks who do a lot of the work for the Guild are getting a bit tired and would like some help or a break. Several proposals were voiced regarding the future of the Guild. Since members enjoy the workshops so well, it was proposed that the Guild cut back on meetings and hold more workshops. The Guild might consider going to quarterly meetings, as other Guilds have already done. The newsletter might follow that thought and be published on a quarterly basis, too. The Guild might even consider merging with the Albuquerque Gem and Mineral Club. Comments and suggestions from the membership are welcome regarding these proposed changes. These proposals will be further discussed at the November meeting and hopefully decided upon at that time.

### Show and Tell

The Show and Tell Case tonight held many faceted stones and jewelry rendered by Guild members.

**Elaine Weisman** displayed an ornate pendant that she handwrought in sterling silver. The pendant incorporated some printed silver sheet in the design and held an emerald cut blue topaz. Elaine remarked that this printed silver sheet was available in 16 different patterns. She also displayed a sterling silver and gold ring that held a bezel-set garnet. The ring was a casting that showed a melted wax free-form design.

**Dylan Houtman** displayed 15 stones that he had faceted. He cut two andalucites, a triangle and a truncated marquise. He cut six rhodolite garnets, a truncated marquise, a half moon, an eight-sided square, and

three shields. Dylan cut four Nigerian tourmalines, a cushion cut triangle, a geometric pearshape, a shape that combined an oval with an emerald cut, and a hexagon. He cut a standard round brilliant color change sapphire. He also cut a Mexican opal and an Australian opal in standard round brilliants. The Mexican Opal exhibited a very nice aurora borealis.

**Nancy Attaway** displayed six stones that she had cut. She showed the 31.53-carat *Aspen Leaf* design that she rendered in oro verde quartz. This faceting design was published in the July/August, 2002 issue of the *New Mexico Facetor* and was shown on the cover with actual aspen leaves. Nancy showed the 85-carat *Eye of Horus* design that she recently rendered in Bolivian ametrine. This design was a variation of her *Millennium Magic* cut, modified so the stone is easier to set and sets it lower in a mounting. She arranged the girdle facets to resemble an elongated eye shape. The table facet resembled an elongated eye. She left a large culet facet for Steve to carve the details of the eye. Steve carved a sphere for the eyeball and carved lines around the sphere to mimic the iris. Nancy also showed three bright green peridots from Pakistan, a shield cut, a pearshape, and an *Apollo Cut* triangle. She showed an octagon cut Brazilian citrine, where she placed three rows of facets in both pavilion and crown. This design, the *Octagon Brilliant*, is a variation on the octagon.

### Refreshments

**Phil Callow, Steve and Linda Vanya, and Scott Wilson** brought home-baked refreshments to the September meeting, plus gourmet coffee. Thank you very much. **Elaine Weisman** and **Nancy Attaway** volunteered to bring refreshments to the November meeting.

### Future Programs

**Vice-President/Programs Paul Hlava** scheduled award-winning gemcutter, **John Rhoads** (D&J Rare Gems, Ltd. in Salida, Colorado) for a talk in November. John Rhoads is a very accomplished facetor. He has won several Cutting Edge Awards from AGTA, including two from last year's competition. He will speak on cutting special and rare gem material. Don't miss it.

We changed the date for the November meeting to **November 21**. Please note this change. John Rhoads will be in Albuquerque as one of the dealers in the AGATE 2002 Gem and Jewelry Show (November 23 and 24). The meeting date was changed to have John as our guest speaker. The usual meeting room was already scheduled for another function, so the Guild will meet in the Museum Annex across the street. See you there!



## Program Speaker

by *Nancy Attaway*

Mike Potts and Tom Katonek of the Albuquerque Gem and Mineral Club spoke on their recent rock-hunting adventure to Barranca del Cobre (Copper Canyon) in Mexico's state of Chihuahua. Mike and Tom presented their rock hunt as a travel documentary that included accompanying slides and many humorous tales. Their primary goal was to drive to areas known for silver and copper deposits and collect interesting mineral samples. They also stopped at Nuevo Casas Grandes before leaving Mexico to purchase some of the beautiful and famous pottery made by the artisans there. This marked their second trip to these sites.

From Albuquerque, Mike and Tom drove to El Paso, Texas to obtain the required credentials (visas) and Mexican insurance. They entered Mexico through Ciudad Juarez and went through customs. Dealing with the lines at the Mexican custom station and the Federales there was a story in itself. From there, Mike and Tom drove to the city of Chihuahua and purchased food and other necessary provisions. That night, they dreamed visions of silver specimens by the truckload.

In their quest for silver, Mike and Tom first stopped at Santa Eulalia, near an old underground mine. From the cobblestone streets of Santa Eulalia, Mike and Tom drove up the mountain and parked near the mine of San Antonio. Their guide to the mine, Alfredo, was very knowledgeable on mines in the area. Also, the guide's brother owned and operated a rock shop in the town of Santa Eulalia, where Mike and Tom stopped to shop.

A vertical shaft marked the entrance to the mine. Mike and Tom entered the mine by climbing down a cable ladder. Both Mike and Tom wore helmets with electric lights. The guide, Alfredo wore an old carbide lamp on his helmet. They climbed down a series of nine ladders, seven cable ladders, and also used ropes to reach level 12 of the mine. At that level, they encountered a natural cave with large chambers. A fault plane had cut into the cave. The walls of the cave glistened with calcite and aragonite crystals that sparkled in the lamp light. Alfredo guided Mike and Tom through the passages. He pointed out to them which boards were safe to walk on and which were not, as well as which areas to avoid. He made certain that Mike and Tom remained clear of any potential hazards left from previous mining operations. Mike and Tom remarked that

climbing out of the mine with packs full of gear and mineral specimens proved somewhat of a challenge.

Mike and Tom were told that most of the mines are owned by the Mexican Government. Old mining relics of times gone by are seen, set here and there, along the streets of Santa Eulalia. Mike and Tom searched the town for rock shops that had specimens of silver, smithsonite, and mimetite for sale. Dealer, Jose Nunez did his best to help fill their specimen wish list.

The north side of the valley was honeycombed with caverns, now used as cool areas to store food. Some natural caves in and around the town of Santa Eulalia were prehistoric and still contained some artifacts. Mike and Tom noticed that town residents had built adobe and wooden houses above those caves.

Stone walls, laid by hand, divide the land grants and parcels of land. The rock walls run a long way over the landscape and extend over many steep hills and through valleys. One can only imagine the time and effort required to build these remarkable walls.

Mike and Tom next visited the town of Creel, where they met speed bumps about five inches high that would jar the vehicle (and the riders) if driven over too fast. Creel is a popular tourist destination. The Tarahumara Indians comprise about half of the population of Creel. The Tarahumara Indians also carve and erect totem poles there. The totem poles resemble the carved totem poles found in some Alaskan villages.

From Creel, Mike and Tom drove to a picturesque village of Batopilas. Batopilas is a world renown spot for silver and copper. Mining there began back in the 1500's. Traveling the 175 kilometers to Batopilas required about four and a half hours of slow driving over some rough and narrow roads. Scattered habitations of the Tarahumara Indians dotted the way. The road to Batopilas leads into Copper Canyon.

Copper Canyon, located in the Sierra Madre Occidental Mountains, is noted for its copper colored, steep canyon walls, hence, the name. With a depth of about 7,500 feet, Copper Canyon is actually deeper than Arizona's Grand Canyon. Also, the land extent of Copper Canyon comprises about four times that of the Grand Canyon in Arizona. Five major rivers flow into Copper Canyon. Copper Canyon is actually 20 separate canyons and not just one. Several bridges that Mike and Tom crossed showed rotted planks and holes. A religious shrine was set at the end of one of the bridges.

Mike and Tom recommended the book, "The Silver Magnet", by Grant Shepherd, that relates the times when the tenth largest silver mine was once in opera-

tion at Batopilas. The Spanish had searched there for gold and silver. That area represents one of the three major silver producing areas in Mexico. Some time ago, one could count about 350 different silver mines in the area. The once grand and elaborate estate of the mine owner now stands in ruins, but the site can be visited. Tours to the Satevo ruins require driving all the way down to the canyon floor, quite the scenic drive. An old brick and stone church in Satevo, established in 1630, still had triple tiers and a bell tower remaining.

Mike and Tom finally convinced several old miners to part with a few of their silver and calcite specimens, after much pleading and bargaining. Loaded up and ready to go, Mike and Tom began their journey home.

They stopped at the town of Divisadero, another tourist attraction. The Tarahumara Indians hold an outdoor market there, where one can purchase a wide variety of very nice handmade items.

On their way north, Mike and Tom visited Nuevo Casas Grandes to peruse the famous Mata Ortiz pottery. The town of Mata Ortiz had been a railroad stop, but it was a logging town just 30 or 40 years ago. About 15 or 20 years ago, a potter decided to make pots in the old Indian tradition and opened his home for business. The old ways of pottery making also included hand painting and etching. This potter was so successful that other potters decided to do the same. Now, nearly everyone there is connected with the pottery industry. Mata Ortiz pottery is highly regarded and sought after, and the pottery prices compare well to the pottery seen for sale at the various Indian markets in New Mexico.

There are currently about 350 potters in the town, and their pottery is absolutely wonderful. Some pieces are true works of art. Mike and Tom enjoyed meeting the many pottery artisans of Mata Ortiz and managed to choose several pieces of pottery to purchase from their remarkable inventory. Nearer to the border, Mike and Tom stopped to inspect the ruins at Hacienda San Diego, then headed home to Albuquerque.

At home and unpacked, Mike and Tom cleaned their prized mineral specimens with a hydrochloric acid bath in the backyard. Among the lovely specimens collected were arborescent crystal displays of silver, leaf silver with calcite, and golden yellow smithsonite.

Mike and Tom showed some great slides that depicted their many stops along the way, as well as the people they met. Thank you, Mike and Tom! {Please contact Mike and Tom for where to stay, where to eat, where to shop, and what roads to travel, regarding their Mexican rockhunting and sightseeing adventure.}





## Faceters Guild Workshop

by Nancy L. Attaway

The New Mexico Faceters Guild held a faceters workshop October 12 at the home of Scott Wilson in Corrales. **Scott Wilson** and **Nancy Attaway** served as instructors, as Ernie Hawes and Steve Attaway were not available that day. The drive over to Scott's home was made all the more wonderful with the view of hundreds of colorful hot air balloons, some special shapes, floating above the autumn landscape that morning. October 12 was the second last day of the world famous Albuquerque Balloon Fiesta, which runs nine days from the first full weekend in October. It also was a mass ascension day. With little wind that morning, the hot air balloons hovered above me as I drove to Scott's.

**Linda Vanya** had transferred the large octagon synthetic sapphire after the last workshop, and she worked on the crown most of the day. While Linda experienced some alignment problems with the crown facets, she finished polishing the first row of facets on the crown with a ceramic lap. She plans to complete the stone later. She was somewhat limited in room for a crown, so she was advised to make the crown angles a bit shallower (acceptable for sapphire) than what was on the diagram sheet. Linda became aware of how parts of a facet can be polished relative to where the facet is placed on the polishing lap. She saw how the direction of the lap spin can affect where the polish occurs on a facet. Her husband, **Steve Vanya** cheered her progress.

**Elaine Weisman** faceted a small Zambian amethyst that Nancy preformed into a shield. Nancy made up the cut as she went. Elaine polished the stone on a cerium oxide dyna lap. Elaine was able to complete the entire stone that day, one advantage of faceting small stones. Elaine learned about how a stone is faceted and how the cutting pattern is revealed on the stone.

**Carsten Brandt** faceted the pavilion of a bright orange Mexican fire opal in the *Apollo Cut* triangle. He had to work around a limited depth, while maintaining as large a stone as possible. He now has the choice of bringing in the stone from the girdle and the pavilion mains to make a culet, or he can leave a culet facet. The triangular opal will be a beauty when he is finished.

Members faceted stones during the morning and afternoon, with an hour's break for pizza and Nancy's cherry/chocolate cake. There was no morning session. Thanks to all who participated in the workshop.



## The Next NMFG Faceters Workshop and Christmas Party

**Bill** and **Ina Swantner** have volunteered to host the **Faceters Workshop** and **Guild Christmas Party** on **December 14** starting at **1:00pm** in their home in the northeast heights. The **Guild Christmas Party** will begin around **5:00pm**. A reminder notice will be sent by e-mail, and invitations will be sent in the US mail.



## GemCad Version for Windows

Robert Strickland, the author of GemCad, has fine-tuned, made many improvements, and added new features to his original version of GemCad over the years. His latest modification is a GemCad version for Windows, where he includes a user's manual and a tutorial. Plus, he has provided a way to better show the cutting sequence of the facets as the stone is cut. This is a good learning tool for faceters. It is a great help in showing the cutting stages that the stone goes through when cut in a particular faceting diagram. It allows the faceter to know what to expect with a certain design. The new version for Windows is free for 30 days and costs \$90.



## MakeGemW

Source: *Courtesy of The North York Faceters Guild*

Piet Van Zanten and Johan Kaldenbach invented a new cad program, MakeGemW, for Windows similar to GemCad. Robert Long and Robert Strickland provided suggestions to MakeGemW. MakeGemW has its roots in a simple program that Piet wrote in Basic before 1986. The program language was later changed to different Pascal dialects and then to Pure-Pascal. With the help of Johan, Piet changed the program to Turbo-Pascal to be pc oriented. Johan transferred the program to a version for Windows using the Delphi language.

To acquire MakeGemW, please e-mail Johan Kaldenbach at: [kaldenba@iaehv.nl](mailto:kaldenba@iaehv.nl). The program is free. The developers appreciate any suggestions and want to correct any errors. The program is reputed to be easy to learn and use. It utilizes a new feature, where new facets are able to be placed on a design.



## In the News

### **The High Cost of Large Tsavorites**

*Source: GIA Insider September 14, 2002*

Tsavorite garnet occurs in the rough as irregular lumps or pods, called potatoes by miners. Rough tsavorite shows few transparent gem quality material, and opaque areas are removed to yield this material. This results in a yield of only 10 - 15%. The rough is often fractured. Most fragments are smaller than 2cm, suitable for faceting only small stones. Some tsavorite rough can yield cut stones above one carat. Pieces suitable for cutting large, gem quality stones are the exception. Thus, cut stones of tsavorite garnet over three carats command premium prices per carat. Tsavorite garnet typically occurs as fractured masses about 5cm in diameter and in pods as large as 8kg. Tsavorite garnet can contain graphite and biotite inclusions.

### **Plastic and Steel Pearl Imitations**

*Source: GIA Insider September 14, 2002*

GIA tested some small brownish-gray to dark gray and pink pearls, undrilled, 2mm to 12mm in diameter, rounds, button-shapes, and baroques. Some floated when immersed in carbon tetrachloride for X-radiography, indicating imitation. Microscope examination showed a slightly uneven granular surface. A hot point applied to the surface produced a burned plastic smell. X-radiographs revealed others as imitations when they completely absorbed x-rays. Microscopic examination of the grays revealed brown spots on their surface, but no suture lines that are commonly noted on natural and cultured pearls were seen. Qualitative chemical analysis with EDXFR spectrometry showed iron with a trace of titanium, identifying the “pearls” as steel.

### **New Morganite Mine in Madagascar**

*Source: GIA Insider October 12, 2002*

A new deposit of morganite was found in a pegmatite in the Fianarantsoa district of south-central Madagascar, in the Ambositra area. The color resembles saturated rose quartz. Most of the material is peach colored when mined, then turns pink with exposure to sunlight. Stones contain needles, fractures, fingerprints, and pinpoint inclusions. Stones of six carats were cut.

### **Bragging on the Batt Lap**

*Source: Rock and Gem November 2002*

Facetor Paul Ahlstedt describes the many virtues of the Batt Lap, how it was created, and what it can do. The Batt alloy polishing lap, cast from a proprietary tin alloy, was developed by materials scientist Jonathan “Gearloose” Rolfe of North Easton, Massachusetts. As an inventor, Jonathan Rolfe currently has 14 patents and 120 invention disclosures, and he has been a facetor over 44 years. The lap is cast and hardened in domains of hard and soft microscopic areas. The soft domains hold the polishing media, while the hard domains provide dimensional stability to the alloy. The lap can be charged with nearly any type of polishing compound. It creates very flat facets and sharp meets.

### **Using Gravity to Prospect for Diamonds**

*Source: New Scientist September 21, 2002*

Diamonds are considered the world’s most valuable commodity, and the hunt for diamond-bearing deposits employs advanced technology. For ten years, Edwin van Leeuwen has been searching technologies that his Melbourne-based multinational company BHP Billiton can use to hunt for oil and minerals, including diamonds. His most successful project is the Falcon project. The Falcon detector locates minute changes in the Earth’s gravitational field generated by hidden reserves of valuable ores or the rock formations associated with diamonds, all performed from a aircraft flying 185 kilometers per hour, 90 meters above ground.

The Falcon utilizes airborne gravity gradiometer, AGG, and is based upon pairs of accelerometers. AGG is a device so sensitive that it can spot minute gravitational pulls and anomalies from the air as small as those equal to one millionth of the gravitational pull of the Earth. The technology for the Falcon project evolved from (top-secret, now declassified) cold war technology. Gradiometers were used by nuclear submarines to negotiate underwater mountain ranges without using sonar pings that would alert the enemy. Gradiometers also detected concealed nuclear warheads by detecting the gravitational pull of a lump of plutonium. Kimberlite, the ore associated with diamonds, often has different magnetic and conducting characteristics to the surrounding rocks, usually about 10% less dense than surrounding rock. Gravity surveys can detect ore bodies of minerals, copper, silver, zinc, and lead, that tend to be nearly twice as dense as the surrounding rock.



## Rubies Found in Canada

Source: *Colored Stone November/December, 2002*

Diamond Discoveries International Corporation of New York reported that samples taken during a recent exploration yielded more than 60 rubies and over 900 pieces of pink sapphires. Twenty of the rubies have dimensions of 2mm, with the remaining red and pink crystals measuring 0.5mm to 1.0mm in diameter. The company has acquired six exploration permits that covers about 80,000 acres in Torngat, Quebec. Exploration included surface prospecting, geologic mapping, and microscopic studies of stream sediment sampling. The sampling also found heavy metals, pyrope garnets, and chrome diopside, indicators of kimberlite dykes.

## Emeralds Found in Canada

Source: *Colored Stone November/December, 2002*

True North, Inc. a small Canadian company, is finding emerald crystals near Regal Ridge in the southern part of the Yukon Territory. From bulk sampling, the company discovered that emeralds generally occur in a quartz/tourmaline vein, found in rock rich in jarosite. Other pathfinder minerals commonly found near emerald include tungsten and copper, although their role in emerald formation is not well understood. Many of the emeralds contained fractures from freezing and thawing. The company has purchased the rights to the Southwest Zone of Regal Ridge and plans to go deep beneath the frost zone in search of emeralds.

## Utah Red Beryl Update

Source: *Colored Stone November/December, 2002*

Since the mine was completely filled in and covered with topsoil, seed, and now covered in manure last year, control of the upper pit has reverted to the original owners, Red Emerald, Inc. The name Red Emerald, Inc. is not to be confused with the company name of Red Emerald, Ltd. or the company name of Red Emerald Corp. Red Emerald, Inc. regained control of the deposit in July, but company officials have yet to decide whether or not to continue mining. However, control of the lower pit, known as the "Harris Pit" because it is owned by a family of the same name, remains uncertain. The Harris stockpile of several hundred carats of red beryl is currently managed and being marketed by Roncor, Inc. Roncor, Inc. is the company that sells Yogo sapphires from Yogo Gulch, Montana.



## Faceters Symposium 2003

Presented by the Faceters Guild of Southern California and held at the Seaside GEMBoree AFMS/CFMS Convention and Show in Ventura, California on June 6, 7, and 8, 2003 (Friday, Saturday, and Sunday).

You are invited to participate in the Faceters Symposium 2003, scheduled for June 6, 7, and 8 at the Seaside Park (Ventura Fairgrounds) at Ventura, California, held during the AFMS/CFMS Convention and Show.

The CFMS GEMBoree falls on those dates, as well as on Thursday, June 5. All events are happening at the same location, just a hundred yards from the beach.

The Faceters Symposium 2003 will feature ten speakers, who will have presentations covering various parts of gemstone faceting interests. The Faceters Symposium 2003 also includes a Hospitality Hour on Friday evening and a Saturday Awards Luncheon.

There will be competitions at the Novice, Advanced, and Master Levels. Get started on your competition entry soon.

The CFMS GEMBoree itself will have buildings that have exhibits on display, dealers with their wares to offer, demonstrators to show how it is done, and speakers with presentations covering other lapidary fields of interest.

For information and costs regarding the Faceters Symposium 2003, including competition information, please contact Glenn Klein, Symposium Chairman at 24001 Muirlands Blvd., Space #79, Lake Forest, California 92630 or e-mail him at: [glennklein@yahoo.com](mailto:glennklein@yahoo.com)



## Emerald Glitter Design Chosen for USFG 2003 Competition

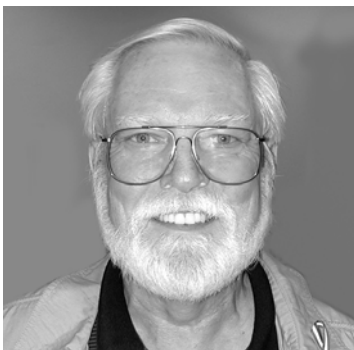
The *Emerald Glitter* faceting diagram created by Nancy Attaway was selected as the faceting diagram for the Pre-Master Level Competition in the USFG 2003 Faceting Competition. Master faceter Art Kavan, who serves as the Co-Chairman for the USFG Competition Committee, test-cut the stone design in light blue synthetic quartz and remarked that "the published cutting sequence works out fine". Alright!

Art Kavan's text in its entirety can be found at: [www.usfacetersguild.org/promo/emeraldglitter.shtml](http://www.usfacetersguild.org/promo/emeraldglitter.shtml)



## Facet Designer's Workshop

By Ernie Hawes



Robert Strickland has finally released the long awaited Windows version of GemCad. I have only been playing with it now for about two weeks, so I do not yet feel competent to give it a full review. My first impressions are that the Windows version has been worth the wait. I have had some adjusting to do, as many features do not work the same way as in the DOS version. However, new users who have not had experience with the DOS version should be able to learn the new program with relative ease. A printable manual is included. A fully functional trial version that can be used for 30 days is downloadable from [www.gemcad.com](http://www.gemcad.com). The program can be purchased online for \$95.00. A lower upgrade price is available to registered users of the DOS version.

As with any new software, bugs appear. To Robert's credit, he has fixed these quickly and has posted revised versions of the program on the GemCad website. Some important help with the program development was provided by NMFG member Steve Attaway. I still find uses for the DOS version, as some of the supplemental programs such as GemRay and Gemframe are not yet available in a Windows version.

Two really nice features that I will mention are the programs ability to search, view, and open a DataVue2 file, and the ability to open .asc files and save revisions in the .asc format. I have quickly downloaded an .asc file from the Internet, opened it, and saved it in the .gem format. Another handy feature is the ability to rearrange the cutting sequence, if desired. As I get better acquainted with program, I will try to include more information about it in future newsletters. Meanwhile, I encourage everyone to download the program and give it a try. You do not have to use it to create new designs.

A really great use is to enter the cutting sequence of a design that you have in an old issue of Lapidary Journal or one of the various faceting books to verify that the information is accurate.

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With over four thousand designs out there, the thought has arisen in my mind that maybe we have exhausted the possibilities. I doubt very much that the idea is true. However, more and more, I think that there is a strong probability for "new" designs that have been thoughtfully created by someone, actually being variations of existing designs, or perhaps combinations of two or more designs. We sometimes deliberately modify older designs in order to get better optical performance or to achieve a different length-to-width ratio. An example of this "variation" idea is the design presented here by Nancy Attaway. Nancy started with an existing design recently and has come up with an interesting variation that combines elements from at least two different designs. Nancy tells us about it below.

"Back in the spring, a man from Santa Fe joined the New Mexico Faceters Guild. He attended one workshop, where he told me that he was glad to learn how a stone was faceted. The stone that he worked on was a citrine that I gave him, and he used my machine to cut it. The diagram was a simple design for an octagon that Ernie had chosen for beginners to facet. The man was working on the pre-polish of the pavilion during that workshop, and we did not see him after that. The stone sat on its dop in my dop tray for months. I finally decided to finish it and chose three rows of facets in both pavilion and crown.

The angles for the three rows of facets were inspired by the twelve-sided round design that I like so much. However, this made the pavilion of the octagon citrine deep and the crown high. The table facet also came in smaller than I would have liked, but a larger table facet would have over cut the star facets on the crown. The stone is actually bright, and folks commented at the last meeting that they liked it. I am certain that some improvements can be made to this version of an octagon by changing the angles. The design is not an original design but is a variation."

Our second design is one that I came up with recently while I was experimenting with the new Windows version of GemCad. This is a simple design that is based on the standard round brilliant. I was curious to see what would happen if I created the pattern using six fold, mirror image symmetry. The **Six-Sided Cushion** is the result. This could not be an original design, I thought. Maybe, it isn't. A search through the

DataVue2 database did not come up with anything like it. For now, anyway, I am considering it as a new design, one based on the elements of one of the most common designs in existence. The angles, especially on the crown, are different than what one might expect. The data I obtained with GemRay and GemFrame strongly suggest that these angles are very workable. Cutting a stone proves it. This design is so straight forward and simple that I especially recommend it for beginning faceters. I feel that anyone will find it a nice design to cut.



## **John Rhoads, Award-Winning Faceter, to Speak at the Guild Meeting on November 21**

Award-winning faceter, **John Rhoads** of D & J Rare Gems Ltd. of Salida, Colorado will be the speaker for the New Mexico Faceters Guild meeting in November. John will address the Guild on **November 21** at the **Annex** of the New Mexico Museum of Natural History. (The Annex is across the street from the main entrance to the museum. We were, unfortunately, not able to obtain our regular meeting room for that night.)

The title of his presentation is "*Cutting Rare Gems, the Good, the Bad, and the Ugly*". John will be talking about cutting three classes of rare gems, the "Good", the "Bad", and the "Ugly". The "Good" in rare gems are those rare gems that are difficult to find but present little or no problems in cutting, such as taaffeite, phenacite, danburite, and benitoite. The "Bad" in rare gems are those rare gems that are fairly common but present problems in cutting, such as chrome diopside, fluorite, sphene, and apatite. John will discuss those problems and how to deal with them. The "Ugly" in rare gems are those rare gems that are extremely difficult to facet, such as wulfenite, crocolite, thaumasite, and cinnabar. In each category, John will address the problems encountered with faceting these rare gems and will explain his solutions. John will entertain any questions from the audience regarding the problems of faceting and polishing these gems and any other gems. Don't miss this talk! John has won several Cutting Edge Awards from the AGTA Cutting Edge Gemstone Competition, including a first place award and a third place award from last years' competition.

### **Please note that we will be having our meeting on November 21.**

This allows us to have John Rhoads as a speaker when he is in town for the AGATE Show as one of the dealers. His wife and business partner, Donna will also be there.

We plan to meet at 5:30pm for dinner at the Church Street Cafe in Old Town, Albuquerque. Please call Nancy Attaway if you want to join us for dinner.

# **AGATE**



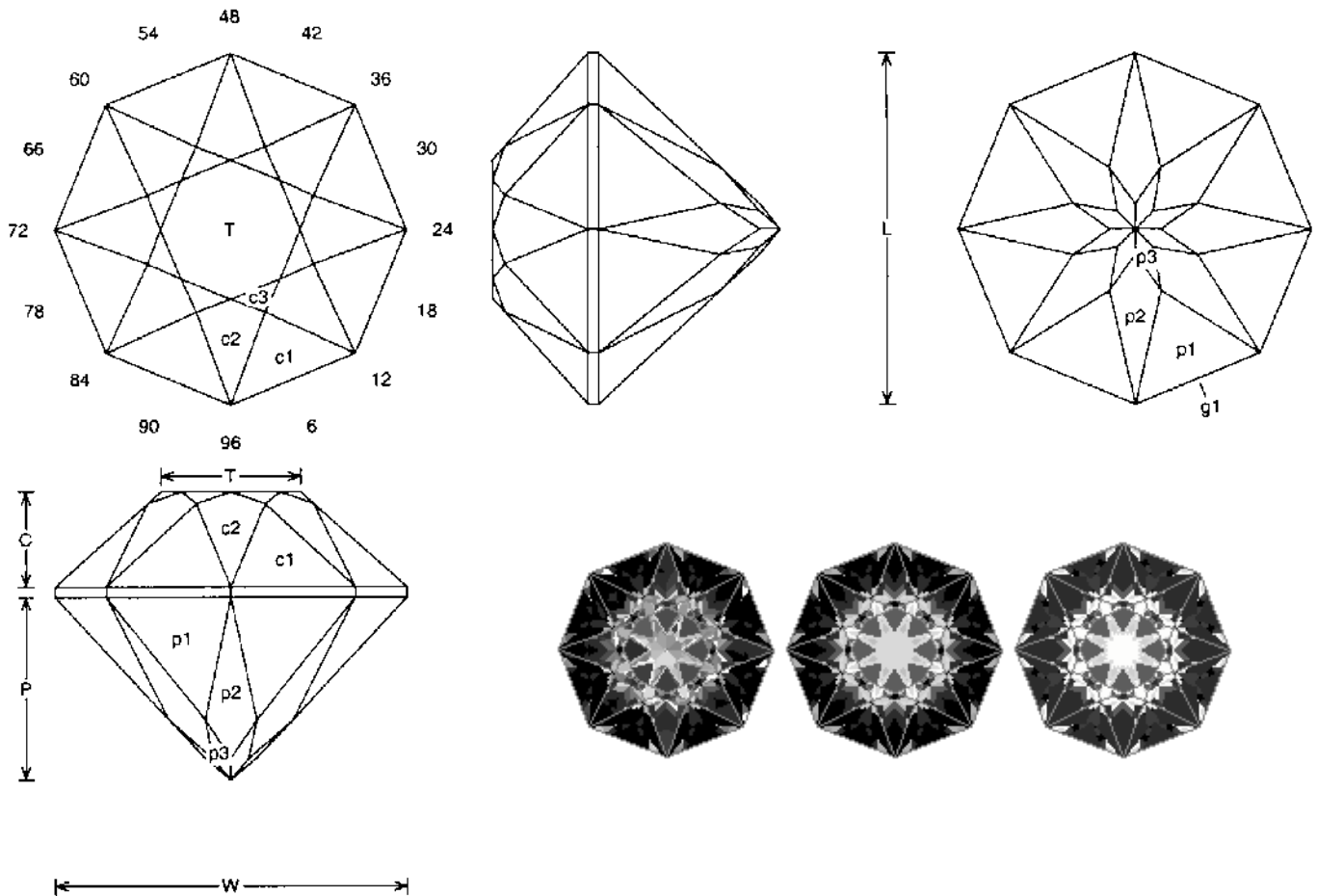
## **Ninth Annual Jewelry and Gemstone Show**

Sat., Nov. 23, 2002, 10:00 am - 5:00 pm  
Sun., Nov. 24, 2002, 11:00 am - 5:00 pm

**UNM Conference Center**  
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For more information, contact Nancy Attaway 505-281-4163  
[www.attawaygems.com/agate](http://www.attawaygems.com/agate)



## Octagon Variation By Nancy Attaway

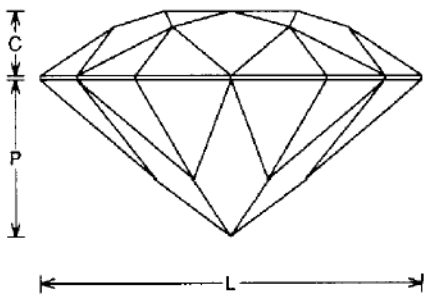
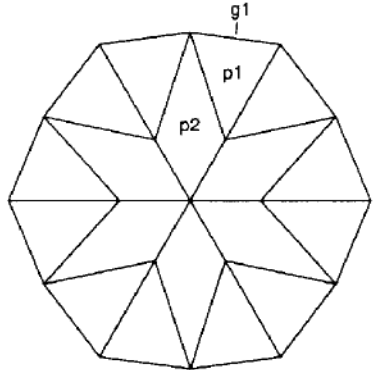
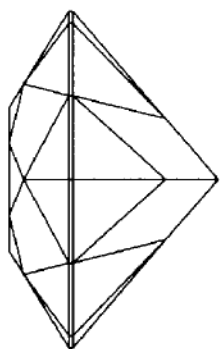
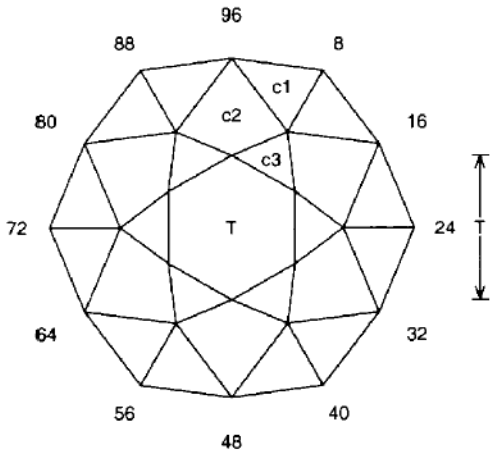
Angles for R.I. = 1.54  
 49 facets + 8 facets on girdle = 57  
 8\_fold, mirror\_image symmetry  
 96 index  
 $L/W = 1.000$   $T/W = 0.397$   $T/L = 0.397$   
 $P/W = 0.519$   $C/W = 0.272$   
 $H/W = (P+C)/W + 0.02 = 0.810$   
 $P/H = 0.640$   $C/H = 0.335$   
 $Vol./W^3 = 0.262$   
 Brightness:  $COS = 29.7\%$   $ISO = 35.9\%$

### PAVILION

g1	90.00	06_18_30_42_54_66_78_90
p1	52.00	06_18_30_42_54_66_78_90
p2	47.00	96_12_24_36_48_60_72_84
p3	42.00	06_18_30_42_54_66_78_90 meet at p1 and p2

### CROWN

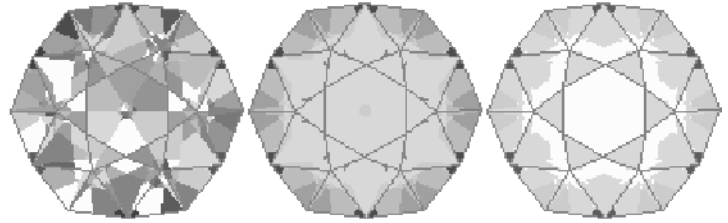
c1	49.00	06_18_30_42_54_66_78_90
c2	42.00	96_12_24_36_48_60_72_84
c3	25.00	06_18_30_42_54_66_78_90 Meet at c1 and c2
T	00.00	Table



## Six-Sided Cushion

By Ernie Hawes

Angles for R.I. = 1.54  
 43 facets + 12 facets on girdle = 55  
 6-fold, mirror-image symmetry  
 96 index  
 $L/W = 1.073$   $T/W = 0.429$   $T/L = 0.399$   
 $P/W = 0.435$   $C/W = 0.178$   
 $H/W = (P+C)/W + 0.02 = 0.633$   
 $P/H = 0.686$   $C/H = 0.282$   
 $Vol./W^3 = 0.209$   
 Brightness : COS = 82.9 % ISO = 91.0 %



### PAVILION

g1	90.00	02-14-18-30-34-46- 50-62-66-78-82-94
p1	42.50	02-14-18-30-34-46- 50-62-66-78-82-94
p2	41.00	96-16-32-48-64-80

### CROWN

c1	35.00	02-14-18-30-34-46- 50-62-66-78-82-94
c2	32.00	96-16-32-48-64-80
c3	17.00	08-24-40-56-72-88
T	00.00	Table





## LET'S TALK GEMSTONES



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CONTACT THE AUTHOR FOR PERMISSION TO REPRODUCE THE FOLLOWING ARTICLE IN ANY FORM

### Phenakite Group

[A NESOSILICATE]

#### Willemite

As a gemstone, faceted **willemite** is rare. It is so rare that Dr. Joel Arem tells us in the *Color Encyclopedia of Gemstones* that “stones larger than one to two carats are worthy of museums”, though the Franklin, New Jersey deposit has produced faceted gems up to ten carats. Little space is devoted to the material in readily available reference materials, and the information is often contradictory. One of the goals the author has set is to provide information, especially about little-known gems, to those interested in and involved with gemstones. The format used to do this has been greatly influenced by Cornelis Klein and Cornelius S. Hurlbut, Jr.’s *Manual of Mineralogy after J. D. Dana*. This volume lists willemite, as well as phenakite, as a member of the Phenakite Group. It is the only reference work that does so. The 1995 edition of the Michael Fleisher. Joseph A. Mandarino *Glossary of Mineral Species* does not list a Phenakite Group; nor do other references.

The following quote from the *Manual of Mineralogy* is of particular interest. “Willemite is isostructural with phenakite, with  $\text{SiO}_4$  and  $\text{ZnO}_4$  tetrahedra. Because  $\text{Zn}^{2+}$  (radius = 0.74 Å) is much larger than  $\text{Be}^{2+}$  (radius = 0.35 Å) the structure of willemite is much expanded over that of phenakite.] Manganese frequently replaces a substantial portion of the zinc, and small amounts of iron may be incorporated in the chemical composition of willemite. *Troostite* is the name given to this manganese-iron bearing variety of willemite. Willemite was named to honor King William I of the Netherlands, and the troostite variety derives its name from the American mineralogist, Gerard Troost.

The *Color Encyclopedia of Gemstones* [photo #239] and Walter Schumann’s *Gemstones of the World* [page 204] present photos of willemite gems. A picture of an excellent crystal specimen from a New Jersey source can be found on page 69 of *An Illustrated Guide to Rocks and Minerals* by Michael O’Donoghue.

Willemite is usually found in massive or granular forms. Crystals are rare. Its structure is listed as hexagonal [*Manual of Mineralogy*- pg.373 and *Color Encyclopedia*- pg.202]; – trigonal [*Gemstones of the World*-pg18]; and tetragonal [*Gemstones of the World*- page 204]. Zinc bearing metamorphic deposits are the most common source. The *Manual of Mineralogy* indicates that crystals may have developed by the metamorphism of smithsonite or hemimorphite in crystalline limestone. The absence of water in willemite distinguishes it from hemimorphite. There are rare occurrences of willemite crystals as a secondary mineral in oxidized zones of zinc deposits. Deposits at Franklin and Sterling Hill, New Jersey yield crystals, masses, and the manganese-bearing troostite associated with franklinite, zincite, and calcite. Willemite has been found in Utah, in Inyo County in California, in the Merritt mine in New Mexico, and at Tiger, Arizona. Other locales for willemite include Algeria, Belgium, Greenland, Zambia, Zaire, and at Tsumeb, Namibia. Gem quality blue crystals can be found at Mt. Saint Hilaire in Quebec, Canada.

Rhombohedral terminations of the hexagonal prisms [short and stubby or acicular] are the norm. Pure willemite is white and infusible, but heating with cobalt nitrate on charcoal results in a blue assay. A violet-red color appears on a borax bead when troostite is subjected to an oxidizing flame. Material from Franklin, New Jersey exhibits a strong green to yellow-green fluorescence, frequently followed by an intense green phosphorescence in both long wave and short wave ultraviolet light.



Willemite exhibits a conchoidal fracture, a vitreous to resinous luster, and a hardness of 5.5. Most faceted willemite gemstones are colorless or varying shades of green, orange, reddish brown, yellow, gray or white. Blue gems are exceptional. Attractive cabochons are cut from massive troostite and from white calcite bearing willemite with red zincite and black franklinite. It is neither practical nor commercially feasible to use willemite in jewelry, except for the collector of unusual gemstones.

TABLE 1. Silicate Properties

<i>Composition</i>	<i>Zn<sub>2</sub>SiO<sub>2</sub> zinc silicates</i>
<i>Class</i>	<i>Silicates</i>
Group	phenakite, per the <i>Manual of Mineralogy</i>
Species	willemite
Variety	by color and Troostite
Crystal System	(see above article)
Habit	prismatic, acicular, granular, and massive
Cleavage	good, per the <i>Manual of Mineralogy</i> ; poor, per Arem
Streak	white or gray
Fracture	conchoidal
Fracture Lustre	no information
Lustre	vitreous to resinous
Diaphaneity	transparent, translucent, and opaque
Colors	green, orange, yellow, reddish-brown, gray, white, & blue
Phenomena	none known
Specific Gravity	3.89 to 4.20; usually 4.10
Hardness	5.5
Toughness	fragile and brittle
Refractive Indices	o=1.691; e=1.719

TABLE 1. Silicate Properties

<i>Composition</i>	<i>Zn<sub>2</sub>SiO<sub>2</sub> zinc silicates</i>
<i>Class</i>	<i>Silicates</i>
Birefringence	0.028
Optic Character	uniaxial (+)
Dispersion	no information
Pleochroism	varies by color
Luminescence	(see above article)
Spectrum	strong band at 4210; weak bands at 4320, 4420, 4900, 5400, and 5830
Chelsea Filter	no information
Aqua Filter	no information
Solubility	no information
Thermal Traits	avoid thermal shock; infusible (see above article)
Treatments	no information
Inclusions	no information



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 Elaine and Al Weisman..... almgicons@aol.com  
 Scott Wilson ..... swilson@conner.net



## Alpha Taurus For Sale

As many local faceters know, I have more machines that anyone with good sense needs. I just bought a new Alpha Taurus to use as my primary machine. Although I want to keep some of the other machines to use in the Guild's workshops, I have decided to offer the two older Alpha Taurus machines for sale. Both have been carefully calibrated by me and are in good working condition. Each has a 96 index gear and comes with a basic set of laps and a standard set of dops. New Alpha Taurus machines, without laps, list in Alpha Supply's catalog for \$2,250. I will take \$1,100 for the older one and \$1,200 for the newer one. I will even throw in some gem rough to sweeten the deal. If interested, call me, Ernie Hawes, at (505) 821-3201. My e-mail is: ehawes7@comcast.net



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## FOR SALE

### Graves Mark IV

John Roberts, a former member of the New Mexico Faceters Guild has for sale a Graves Mark IV faceting machine. Ernie Hawes has examined the unit and believe it to be in very good condition. The machine comes with 96, 64, 32, 80, and 120 index gears, 65 dops with a wood holder, two 45 degree dops, a transfer block, and two notebooks full of faceting designs. No laps are included, as John will use them on another machine. John is asking \$500 or best offer. For those interested, please call John at (505) 299-8209.