The New Mexico Facetor

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Don't forget: next meeting is January 13, 2000 at 7:00 pm. Dues of $20 are due.

The Prez Sez:

Looking Back: A Review from the Beginning of a New Millennium

On behalf of the New Mexico Faceters Guild, I wish you all the very best in the year 2000! Our Guild will celebrate its 18th. anniversary this year, and one can trace our club's longevity directly to the hard work, dedication, sacrifices, and care from all our members. It is human nature to reflect on past endeavors when faced with some of life's greatest milestones. In this column, the first for the year 2000, I would like to review some of the more important changes that have shaped our faceting world for better or worse.

The advent of computers has permeated almost every aspect of our lives, and the faceting community has actually benefitted significantly in this respect. One of the first advances that comes to mind is GemCad, the computer-based faceting design program written by Robert Strickland. Some may bemoan the loss of "art" in creating new faceting diagrams, but one cannot deny what a powerful tool Gemcad is for the faceting community. GemCad and its helper DataVue give us a common tool to archive designs and standardize their format, in effect, a universal faceting "language". Who will write the first symphony?

Along with the advent of personal computers, we have seen the rise of online lapidary groups, such as Lapidary Digest and Faceters Digest. People can subscribe to email-based digests for free and interact with other lapidaries from across the globe to share knowledge and ideas. Your question about Australian opal might be answered that day by an Australian opal miner taking a break from his mining to surf the Web!

Then, there is the much touted retail side of the World Wide Web, where average lapidaries may offer their gems and jewelry for sale on their own website or for auction on such sites as Ebay. I predict this retail side of the web will continue to expand rapidly in the future. However, do not forget that web retail is similar to a bazaar or flea market in many respects, complete with shams, genuine deals, junk science, and valuable educational information. Caveat Emptor. Buyer beware.

The computer related link to faceting continues with the actual physical process of cutting gemstones. At the Tucson Gem and Mineral Show last year, we saw Mr. Jarvi of the Facetron company demonstrating his computer-controlled faceting machine to prospective buyers. The Israelis pioneered computer-controlled cutting of diamonds years ago, and the Swarovski company has also been a forerunner in this technology. I feel it is only a matter of time when faceters like ourselves will be able to purchase software and hardware to link our machines up to our personal computers, start the cutting program, and walk away while the stone is cut. In this case, do you think the technology enhances the hobby or destroys it?

Another area where great advances have been made is in the manufacture of polishing and grinding compounds. New ways of embedding grit into carrier materials has resulted in longer wearing and better cutting tools, often times cheaper. New products mean new faceting designs and carving capabilities. Will cubic boron nitride become an inexpensive substitute for diamond powder? Who among us has heard of it?

Spin-off technology from thin film and laser crystal research for the optical and semiconductor industries has brought us silicon carbide, also known as moissanite, as well as synthetic (lab-grown) sapphire, ruby, garnet, beryl, and cubic zirconia. General Electric pioneered the technology for synthetic diamond production and has recently been chastised by the gem industry for not controlling the synthetic diamond distribution in such a manner as to deter synthetic diamonds being sold as natural. The production of synthetic gemstones has brought many changes to the gem industry as a whole. For example, the average citizen can now own a large ruby (lab-grown), which would have been unthinkable twenty years ago. Synthetics offer faceters a cheaper alternative for practising new cuts or making inexpensive gifts for family and friends.

Unfortunately, there is a dark side to synthetic gemstone production. The phrase "Buyer beware!" has never before been so applicable. Unscrupulous gem merchants can offer a synthetic or simulant version of almost any gemstone. Large parcels of cutting rough may be "salted" with synthetics. We have to contend with diffusion-treated sapphires, irradiated topaz, fracture filled emeralds, synthetic amethyst, just to name a few. The imitations now even mimic certain natural crystal defects, twinning, and chemistry. How does one guard against these situations? It helps to mainly do business with ethical dealers, even if they do not offer their rough at the cheapest price per carat. Most important: Learn all you can about the material you wish to purchase. Learn from your fellow faceters and the scientists in our Guild about simple gemstone identification tests you can perform in the marketplace. Put time on your side and be a truly informed buyer.

Years ago, faceters were limited to cutting material either they themselves found or that which could be traded from another cutter. Today, we have the behemoth gem show in Tucson, Arizona every February, where a cutter buys direct from miners located across the world! We were so lucky to hold in our hands Nigerian tourmaline (liddicoatite) that was in the miners hands just days before! What selection we now have! What knowledge we must now possess to make the correct informed choice! What surprises await us in the years to come, as geographic distances shrivel in the face of modern commerce to give us ever improved access to fine cutting material!

Finally, let us think about how the lapidary hobby has changed over the last fifty years. Over the Holidays, Scott and I have been reading back issues of *Rock and Gem* magazine (some from the 1950's). Lapidary was a BIG hobby forty years ago. What happened? In the last decade, clubs have dwindled in size, and the ages of the members have increased year by year! Some of the older members have died, and some members moved away. New members are harder to find, and kids nowadays do not seem interested. Are television and computer games to blame? Do people not have time for hobbies any more? Are people too busy working to survive that they have no time to learn something fun for relaxation?

As I mentioned at the onset of this column, our Guild will be celebrating our 18th. year anniversary in 2000. Congratulate yourselves on making this Club a viable organization. I want this Guild to help keep the art and science of gemstone faceting alive, but I also want each member to feel welcome at the meetings, learn something from our speakers, and above all, enjoy it so much that it remains one of your hobbies throughout your life.

Heidi Ruffner and Guild President Susan Wilson

NMFG Christmas Party

The NMFG Christmas Party was a rousing success! Dinner was held at Salsa's Grille at the base of the tram on Saturday, the 11th of December. Approximately thirty people attended the event, which lasted from about 5:00p.m. to 8:30pm. The Guild would like to acknowledge the hard work of Ina Swantner, Eileen Smith, Nancy Attaway, and Susan Wilson for their input and planning. Guild President Susan Wilson treated the members to her traditional homemade key lime pies for dessert.

We would also like to acknowledge the incredible chocolate confection Glenda Plunkett made that consisted of Santa's sleigh and three reindeers. This lovely donation by Glenda to the gift exchange was won by Maria Traulsen.

Millennium Cut Design Contest

The Guild sponsored Millennium Award has been postponed until the January 13th meeting, due to lack of entries brought to the Christmas party. Announcement of the winning entry will be listed in the next newsletter.

Minutes of the NMFG Meeting

November 10, 1999

By Nancy L. Attaway

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

Old Business

President Susan Wilson declared the Guild Picnic a rousing success, and Guild members thoroughly agreed. She thanked all for participating in the fun-filled event and for bringing goodies to share. She specifically thanked **Paul and Marge Hlava** for hosting the event, and she thanked **Waylon Tracy** for bringing that delicious ham.

Susan Wilson added that the Ladies of the Guild held a luncheon in October at Paisano's on Eubank. All who attended enjoyed good food and good conversation. The luncheon was organized by **Betty Annis.** Another Ladies of the Guild luncheon will be organized for next March.

Susan Wilson reminded Guild members that the winner of the Millennium Cut Challenge would be voted upon during the Christmas Party, and that she will arrange for the winner to receive a nice gift. Susan mentioned that the competition allowed for special pieces of jewelry as well.

New Business

President Susan Wilson announced that the Guild Christmas Party was scheduled for December 11 at Salsa's Latin Grille and Cantina, located at the base of the Tram. Cocktail hour begins at 5:00 p.m., and we will order our dinner entrees at 6:00 p.m. Door prize drawings will commence after dessert, so bring one or two gifts for our usual rowdy gift exchange. We are invited to stay as late as we desire, so dress up and be prepared to party.

Susan Wilson reminded Guild members that the 20th Annual New Mexico Mineral Symposium was slated for November 13 and 14 at the Macey Center on campus in Socorro. Although 150 persons had pre-registered, some room still remained available for those who wanted to attend the talks and the dinner. **Guild Mineralogist Paul Hlava** will be one of the scheduled speakers.

Show and Tell

The show and tell case tonight held some remarkable new gems and jewelry.

Elaine Weisman displayed a long necklace composed of handmade oval links of sterling silver, a large bezel-set red-orange banded Brazilian agate cut en cabochon, a small bezel-set bullet-shaped moonstone, and an arch-shaped plate of sterling silver. Elaine rolled the plate of sterling silver in her rolling mill and roll-printed a copper screen to impart a pattern. She then soldered silver and gold wire in various patterns on the sterling silver plate. She suspended the agate beneath the arched-shape sterling plate and hung the moonstone on a hinge beneath the agate.

Will Moats displayed four stones that he cut. Will cut two large Nigerian rubellite tourmalines in the nine mains round cut, his favorite round diagram. He used a culet angle of 39 degrees that allowed a lot of sparkle. One tourmaline exhibited a rich dark pink hue, and the other showed a dusty, dark pink color. Will polished the two tourmalines with alumina oxide. Will also cut a pale yellow apatite and a New Mexico labradorite in the nine mains round. He polished those two stones on the Last Lap with 50K diamond. He wanted to practice on a small piece of labradorite he found before he cut his 32 carat chunk that he found.

Nancy Attaway displayed one very interesting stone. Steve and Nancy traveled quite a lot during the last three months, and they have not had any quiet time to cut and carve gems. However, Nancy has had an idea in her head for this special-shaped stone, and she wanted to convert the thought into a reality. Nancy cut a clear piece of Arkansas quartz into a stone that showed characteristics of both a square and a marquis with a barion-like pavilion. Without the aid of GemCad, Nancy derived the angles and facets all on her own. She called the new design "Millennium Magic", as she pulled it out of her hat much in the same way a magician pulls a rabbit out of his magic top hat. The design appears in this issue of *The New Mexico Facetor*.

Refreshments

Herb and Maria Traulsen and **Rainey Peters** brought home-baked refreshments to the meeting in November, as did **Susan Wilson** and **Nancy Attaway**. Thank you very much. **Betty Annis** and **Nancy Attaway** volunteered to bring refreshments to the January meeting.

Welcome Back

President Susan Wilson welcomed back former Guild Treasurer **Bill Andrzejewski,** who has been convalescing quite well from his two heart surgeries.

Future Programs

John W. Husler is scheduled for the January meeting. John Husler, staff chemist with the Earth and Planetary Sciences Department at the University of New Mexico, will discuss the use of x-ray fluorescence as a tool for gemstone identification. John Husler appeared in NBC's Dateline television show, broadcast in August of 1998, as an expert who could differentiate genuine turquoise from altered turquoise using mineral content analysis obtained from x-ray fluorescence. At the January meeting, John Husler will explain x-ray fluorescence and elaborate how its use can lead to a mineral-content analysis of many types of gemstones.

Program Speaker

by Nancy L. Attaway

Robert Eveleth from the New Mexico Bureau of Mines and Mineral Resources presented a fascinating overview of the early mining history in our state. Bob began by stating that primitive man was the first mineral collector, as he collected chert, chalcedony, and obsidian to be shaped into arrowheads and spear points for hunting. Later, pre-historic man used turquoise, gold, silver, and copper in religious ceremonies, for spiritual enhancement, and protection from evil. Slides of woodcuts, sketches, and printed scenes from stock certificates accompanied Bob's wonderful talk as he described the historical events that led to the formation of the first commercial mining districts in New Mexico.

Before he continued, Bob remarked that, during his research of the history of mining, he found very few references to anything poetic regarding the mining of any ore, coal being the exception. Coal miners had waxed poetic about working deep in the earth while digging for coal and had preserved their stories in the printed forms of poetry and lyrics for songs. He managed to uncover one poem relating to the mining of sylvanite, however, and read it to his audience. Bob then said that all miners are optimists.

Bob related that the quest for commercial grade ore drove the Spanish from Europe to Mexico and then north from Mexico into the southwest, the area that later became the territory of New Mexico. During the 1700's and 1800's, Santa Fe served as the center of commerce between old Mexico and New Mexico Territory. Bob explained that the profound isolation of New Mexico Territory from the rest of the United States at that time, its vast and rugged terrain, and its hostile Indian population kept exploratory and survey parties from successfully exploiting its mineral wealth until after the mid-1800's. The area was generally avoided by most geologists and miners. Only a hardy few attempted any mining, and most of those lost their lives to starvation or to Indian attacks.

Bob described the early New Mexico Territory as a trackless wilderness. Anyone who wandered there traveled on foot. Those traveling on foot had time to notice the rock outcroppings, the geologic features, and the lay of the land. Bob wanted to focus on the following famous mining districts: the Lake Valley region of the Organ Mountains near Las Cruces, the Santa Rita del Cobre at Chino, the Oro Grande area also known as the Jarilla District, the Burro Mountains, Cerrillos, Tyron, and Magdelena.

At the inside corner of the bootheel of New Mexico lies an area known for the mining of sylvanite, a gold telluride mineral. Miners erected a tent town and called it Sylvanite. Old photographs depicted the town with horses and "benzene buggies", a name given to the first automobiles. The town was all gone in a matter of a few years.

Bob explained that the native American Indians treasured turquoise above all of their earthly possessions. From their religious beliefs, native Americans regarded turquoise as being a highly spiritual stone that the gods endowed with magical powers. Turquoise was traded among tribes in the regions spanning North, Central, and South America. A legend tells us that native Americans first discovered the major copper deposits of New Mexico Territory, including those at Oro Grande, Cerrillos, the Burro Mountains, and at Santa Rita del Cobre at Chino.

This legend involves a story of an Apache chief disclosing a turquoise location in 1801 or 1802 to Colonel Carrasco, an officer in the Spanish militia. This was done in return for a favor done by the colonel to the tribe. The location became the famous Chino Copper Mine. This particular colonel was reputed to have mining experience from working deposits in Europe, as well as in Mexico. He may have known of this disclosed deposit in New Mexico as early as 1775, as Samuel F. Emmons and Waldemar Lindgren had written reports of copper in the Colorado Plateau. The native American Indians came to hate the Spanish because of their harsh treatment from the Spanish, who enslaved the Indians as workers in the silver mines in Mexico. Bob held doubts about this legend.

Bob showed slides depicting the varieties of turquoise found in New Mexico. The turquoise from the Santa Rita del Cobre region at Chino exhibits an intense blue hue with distinctive pyrite mineral inclusions. The turquoise from Oro Grande is a light shade of bluish green with a characteristic spiderweb pattern from the jarosite. The turquoise from Tyrone occurs in thick veins in the host rock.

Bob said that the Spanish wore out their welcome at Chino and soon had to erect an adobe fort with walls twenty feet thick to ward off hostile Indians. The miners at Chino were dependent upon supplies arriving from Mexico for their continued survival. However, Indians easily overtook these supplies carried by two-wheeled carts through the treacherous Chihuahua Mountains of Mexico.

Bob explained that the axles on the two-wheeled carts that ferried supplies required constant lubrication in the desert environment of New Mexico Territory. When the axles needed greasing, cows were milked on the spot, and butter was churned from the milk and used for axle grease. The constant raiding of supplies by the Indians eventually forced the miners to abandon the mining camp at Chino. The hostile Indians killed many of the surviving miners.

Meanwhile, Santa Fe and Las Cruces were both experiencing a gold rush. A large placer deposit was discovered in the Ortiz Mountains south of Santa Fe. In 1820, Santa Fe was an established trading post, and the Pueblo Indian tribes were placid instead of hostile and willing to co-exist with the miners. Mining the Ortiz lode proved less problematic than what had been the situation at Chino. North of Las Cruces, a significant ore body was unearthed at Mesilla. Prospectors found "floats", pieces of an ore body that had been carried from the source. They located a massive shear zone rich in silver and lead that required machinery to extract and financing to operate.

Hugh Stevenson, owner of a mercantile store in El Paso, offered the required financing and became partners with the miners to grubstake Mesilla. Indians raided the camp and drove the other miners away, but Hugh Stevenson remained and claimed control. The first description of the mineral specimens from Mesilla was written by General Pope and the French mineralogist, Galena in the 1850's.

In 1847, Lieutenant Emory led a scouting and surveying party to the southwestern territory that was slated to become a part of the United States. In his report, he mentioned that he visited the copper mines at Santa Rita. The ore there contained 75% copper. Huge sheets of native copper crusted with cuprite crystals were shipped from the Santa Rita mine. Colonel Zebulin Pike had organized and documented shipments of 20,000 mule loads per year from the Santa Rita mine to the mint in Chihuahua, Mexico.

Sophio Hinkle, a metallurgist from the Freiburg Academy in Germany, surmised that there should be more than one copper mine at Santa Rita. He soon located the Hanover Mine at the base of a cone-shaped mountain and erected a smelter on the spot. The Hanover Mine became immediately famous for its massive blocks of native copper and its outcrops of cuprite, and it outpaced the production from the mine at Santa Rita for few years. The Hanover Mine was even mentioned in U.S. government publications, an unusual occurrence for that time. The Hanover Mine was also famous for its tree-like forms (arborescent) and botryoidal forms of malachite and azurite. Miners leached copper with sulfuric acid to dissolve the copper from the ore and precipitate the copper back out of the solution. All of the known mineral specimens from the Hanover Mine pre-date the turn of the century (1900), before the leaching method was used, as the rest had been dissolved.

In 1856, a rich placer deposit was discovered at Pinos Altos near Bear Creek, northwest of Silver City. It was so rich in gold that miners made $40 to $50 per day just panning gold. Within three months of its discovery, one thousand prospectors had come to live and work there. The mine at Bear Creek became the first corporate mining company to form in New Mexico. Miners at Bear Creek used rockers, sluice boxes, and “long toms” along with their gold pans to separate gold from the rock. Gold-bearing ore was crushed in mills (arraste) and also extracted from retorts. In retorts, mercury captures the gold, and the gold is left after the mercury is boiled to a vapor. This process was done with a minimum of expenditure, but it killed the brain cells of any miner who breathed the mercury fumes. The mill at Bear Creek closed three years after it opened.

Miners ventured downstream to the San Vincente Creek Arroyo, where Silver City lies today, and found a rich silver deposit. There, at Chloride Flat, miners found horn silver, silver chloride. They named the mine, the Legal Tender, and this silver mine burrowed anywhere from 50 to 200 feet below the surface. Martin Beaman, a miner who had a sawmill and experience using a steam engine, established the ore mill. The first miner of Silver City, he had purchased the equipment used at Bear Creek for scrap. The Legal Tender mine produced $2 million in two years with its high grade silver ore. In 1894, the market for silver suffered a devastating crash, and silver fell from one dollar per ounce to thirty-nine cents per ounce.

The Lake Valley area contained the largest silver deposit in New Mexico. The interface between the dolomite and the shale had seen a chemical reaction that enabled the formation of a rich silver deposit. The surface ore there was so rich that one ton could contain 30, 40, or even up to 50 ounces of silver. Prior to 1894, the mine at Lake Valley produced $3 million in silver.

Two cowboys named Lufkin and Watson, along with a man named Miller, brokered the Lake Valley mine to investors in New York and Philadelphia in 1882. They sold $300,000 in investments and used the money to further develop the area. They wanted to tunnel in a western direction and dug down thirty feet. They extracted ore that produced 70 ounces of silver per ton. Another shaft was sunk between the Lake Valley claim and an adjacent claim, and it opened into a cave that contained spectacular mineral formations, including a four-foot seam of silver chloride. The room was later named the Bridal Chamber. This rich ore deposit produced 16,000 ounces per ton. What was originally organized as a scam in the beginning thus became an awesome business proposition that sold two and one half million ounces of silver and made its investors rich.

At Las Cruces, William Skidmore staked the Stevenson-Bennett property. The claimed outcrop became the Bennett lode, mined by the Stevenson-Bennett Mining Company. A shaft revealed a spectacular chamber filled with veins of calcite, calcite stalactites, and aragonite trees. The cave was sketched and photographed. The Bennett vein varied from twenty to thirty-five feet wide. Besides silver, miners unearthed world-class wulfenite and cerussite crystals. Mineral dealers competed keenly for these specimens, and Bob related several stories of mineral dealers trying to outbid one another. Silver was mined while more of these marvelous mineral specimens were carefully extracted.

After briefly mentioning the Magdelena mine and its wonderful zinc carbonates, Bob stated that archiving mineral specimens preserves our rich mining history. Saving minerals brings it all to life. A story lies within every stone, and Bob Eveleth masterfully told many wonderful tales that helped us re-live those remarkable times.

In the News

New Tanzanite Imitator

Source: National Jeweler 11/16/99

Tanzanion, a lab-created gem that looks like tanzanite, is now for sale at a tenth of the price that is listed for genuine tanzanite. The Morion Company of Brighton, Massachusetts markets tanzanion, which is grown in a lab in the Ukraine. Tanzanion is harder and less fragile than tanzanite.

More Russian Synthetics

Source: National Jeweler 11/16/99

More synthetic gemstones are coming out of Russia. The scientists in Russia who used to work for the military are now using their high tech crystal knowledge to make synthetic gemstones. These gem making processes are kept secret, but an alliance is being forged with American crystal growers to work with their Russian counterparts and share knowledge, detection methods, and marketing.

Madagascar Sapphires

Source: Colored Stone November/ December 1999

The fine quality sapphires from a new deposit in south central Madagascar is said to compare well with the best Sri Lankan sapphires. Miners currently unearth pink and blue sapphires from shallow pits dug in an alluvial plain that once was an ancient seabed. The potential of this deposit, concentrated in a forty-square mile area, is massive. The market has recently been flooded with Madagascar sapphires, which has depressed sapphire prices worldwide. Look for great prices on sapphires at Tucson.

A Standard Light Source

Source: Colored Stone November/ December 1999

Light makes the ultimate difference in the color and monetary value of a gemstone. Color is the most important component of a colored gemstone, and the differences in lighting can change the way a stone's color is perceived by the stone grader, the dealer, and the customer. Problems also occur when dealers use light to enhance the color of a stone in a way that approaches fraudulence, such as using red light to sell ruby.

The ideal lighting is one that most closely replicates daylight, the white light caused by yellow sunlight scattered from a bluish overcast sky. Indirect north, noon daylight is the best light and is considered to be the standard. Daylight is composed of an equal mixture of all the wavelengths in the visible color spectrum.

The development of a standard will need a directional point source, a neutral surrounding, and light levels higher than those used in most jewelry stores. Personnel should be color vision tested. The only accurate and measurable means of comparing light sources is the spectral power curve, the spectral output of color.

New Emerald Disclosure

Source: Colored Stone November/ December 1999

GIA's report on emerald fillers has inspired an international group of gemologists to forge an agreement on emerald disclosure. They hope to establish a standard for emerald treatments that explain the processes involved to consumers. They believe that gem labs have a responsibility to emerald customers, that labs and dealers need to maintain communication.

New Century Diamond Cut

Source: National Jeweler 11/16/99

Michael Parker of Aiea, Hawaii recently received a U.S. design patent for a 100-facet diamond cut named "the New Century". The cut has been described as an "ultra ideal" cut.

New Zimbabwe Diamonds

Source: National Jeweler 12/1/99

A new major diamond deposit was discovered in Zimbabwe by Rio Tinto. The company plans to mine when the geological survey is completed. The River Ranch Diamond mine closed but will reopen soon.

Gem Origins Determined

Source: National Jeweler 12/1/99

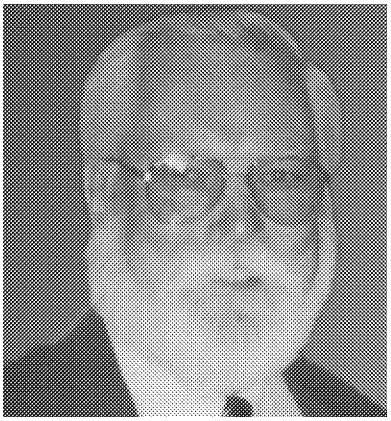
The AGTA Gem Lab in New York is working on a data base to determine country of origin for rubies and sapphires. Lab Director Kenneth Scarratt stated that the lab relies on gem samples from different parts of the world and uses a three-part examination of the stone. The process studies the stone's inclusions, checks its chemistry (energy-dispersive X-ray fluorescence), and tests its absorption of light (spectrometer). Gem origin can be determined 90% of the time.

Two New Synthetics

The December 1, 1999 issue of National Jeweler shows an advertisement on page 23 for Biron created emeralds from Australia, sold by KingStone. The Fall 1999 issue of Gems and Gemology states on page 87 that Brazil sells small calibre-cut hydrothermally-grown aquamarine, identified by the chevron-like graining seen in many hydrothermal-grown crystals. Supply is currently limited.

Facet Designer's Workshop

By Ernie Hawes



Designs for the Millennium

Part II

In the last issue, I provided two patterns for the Millennium design competition. This issue has two more, one by Nancy Attaway and a third by me. Nancy's design is quite unusual, and the cut stone, shown at our November meeting, is very attractive. She has named her new design Millennium Magic. In the paragraphs below are her comments on how she came up with this interesting pattern.

"A shape for a faceting design appeared into my mind in October that incorporated the shapes of a square and a marquis. I wanted it to show the elongation and the pointed ends of a marquis, but I wanted the mid-section to be more like a square instead of an oval. I admire the jewelry from the art deco period and utilize their geometric patterns in my own designs. My desire was to create a faceting design for the millennium that combined an antique jewelry shape with a modern flair, to pay homage to the old while showcasing the new. The design that emerged from this thinking became "Millennium Magic".

I used the word "magic" in the title, because I derived the facets and the angles completely out of thin air, much the way a magician pulls a rabbit out of his magic top hat. I did not use GemCad in any way to derive the angles needed for this particular diagram, although I have used GemCad in the past. I knew how I wanted the gem to look and how I wanted the facets to appear in the diagram. From experience, I discovered that certain angles make a facet appear broad, some angles make a facet appear long, and other angles allow a facet to be cut in shallow and wide. I called upon that experience to create this design.

I wanted the pavilion and the crown to use the same sets of facets, like 12, 36, 60, and 84 and 18, 30, 66, and 78 in order to show a mirror image. I wanted the pavilion to fan out at the culet, but not be too deep. The girdle is thick, and some of the facets float. One aspect of this design is that the girdle is not level. However, I do not anticipate any problems with setting a stone cut in this design. I cut this design in Arkansas clear quartz. Since the design exhibits a lot of sparkle and pizzazz, I want to cut it in aquamarine next."

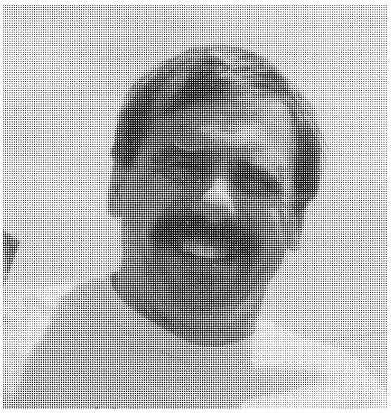
The second design I have called The Third Millennium. A cushion triangle seemed to me to be most appropriate to represent the next millennium. I wanted to design a pattern that would be relatively easy for an experienced faceter to cut, and I think I have accomplished that goal fairly well. As you can see, the design has a barion type pavilion, while the crown is a slightly modified brilliant pattern. Quartz angles were deliberately used, as I have quite a bit of citrine and amethyst to cut, as well as some other gem materials that are about the same refractive index. I think it will look nice in both amethyst and citrine, but it should be even more attractive cut in stones with a higher refractive index, (with angles modified, of course.)

Please give both of these designs a try, as well as the ones published in the September/October 1999 issue. I am confident that you will be happy with the results.

Reports on the development of the new version of GemCad continue to filter in. From everything I have heard, it will be a truly exciting and useful tool for both designers and faceters. I am now more anxious than ever to get the new program. I recently acquired a SONY PCGC1X Picture Book sub-notebook computer. The drivers for the built in camera apparently conflict in some way with the current version of GemCad and, consequently, prevent it from functioning. That was a big disappointment. Until the new version is released, I will have to be content to do my design work on my other computers. Even they are somewhat quirky at times. Some of you are probably thinking that I should spend more time cutting and not worry about the new version. For now, I guess I should do just that. After all, faceting stones is what our hobby is truly about.

Happy faceting!

Gem Myth of the Month



By John Rhoads, D & J Rare Gems, Ltd.
raregems@amigo.net

Gem Myth: "Colorless beryl is known as white aquamarine." We heard this spoken on one of the home shopping television networks. This statement appears to be another attempt to capitalize upon the popularity and value of a known member of a gem family by transferring its name to a lessor valued variety of the same gem family.

We saw two similar attempts at this marketing angle within the gem family of beryl a few years ago. A certain gem promoter tried to capitalize upon the popularity and value of emeralds by calling morganite, the pink variety of beryl, "pink emeralds". Another gem promoter listed red beryls as "red emeralds". These stones were listed at $500 to $10,000 per carat just because they had the word "emerald" in the gem name. However, red beryls are expensive because they are rare, naturally-colored gemstones.

When these marketing ploys first appeared, we alerted our customers to this practice of mis-labeling gemstones as a way to charge higher prices for the less valued gem varieties. So many of our customers called the promoter selling "pink emeralds" that we received a call from him. He protested our claim that the name "pink emerald" was misleading and only used to sell a lower price variety of beryl at high prices. However, he was doing exactly that.

Colorless beryl is known as goshenite and is recognized by that name in most gem and mineral reference books. Goshenite is fairly common, but not in gem grade. Much of it was shipped to Russia to be used as seed material to grow synthetic "created" emeralds. Our success has varied over the years in obtaining gem grade goshenite.

Customers must be aware of misleading gemstone promotions where gems are referred to by the gems that have a familiar name and are associated with a known color. Anyone interested in some white ruby?

{Editor's note: The November/December 1999 Issue of Colored Stone on page 7 shows an advertisement by Red Emerald (Gib) Ltd. for red beryl/Red Emeralds from Utah. The advertisement states that red emeralds are 1000's of times more rare than a diamond and 100's of times more rare than green emeralds. Green emeralds? What other color would an emerald be? Emeralds are green by definition, however, red beryls are indeed rare.}

Gem Myth: "All spinels are man-made gems." We hear this comment voiced often at shows when customers, especially older customers, view our selection of natural spinels. They are not aware that spinels are natural gems.

Spinels have most unfortunately received a bad reputation, as they were the first gem produced synthetically in commercial quantities. Many an antique ring was set with a scissors-cut spinel of almost any color imaginable. Natural spinels were ignored for a time in commercial markets in favor of the supply of inexpensive synthetic gems.

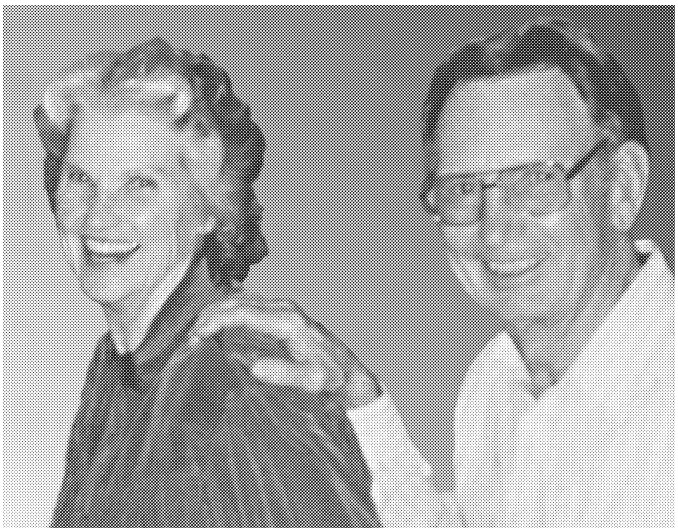
Natural spinel has been an important gem historically. Large spinels, such as the Black Prince's Ruby and the Timur Ruby found in the Crown Jewels of England, are actually fine, unusually large, red spinels. In ancient times, natural red spinels were known as Balas rubies.

Natural spinels make an excellent choice for gem wear in any situation. The color range is quite extensive, and prices for natural spinels are usually less than the comparable sapphires and rubies.

{Editor's comment: Years ago, a certain gemologist/facetor displayed a natural lavender spinel that he had acquired. The stone was "native cut", and he had decided to re-cut the gem to improve its sparkle. A customer, who was looking for a purple gem for a ring, spied the spinel and wanted to buy it. She insisted that the stone was fine the way it was without any re-cutting, and the gemologist sold it to her. When she carried the stone to her local jeweler, he remarked, "Why did you buy this stone? Everyone knows that all spinels are man-made." She quickly returned the stone and threatened the gemologist with a lawsuit. The gemologist then sent the spinel to GIA. The certification stated that the stone was a very fine natural lavender spinel and quoted a lot of money per carat on the value of the stone. Jewelers are not always gem aware.}

Let's Talk Gemstones

By Edna B. Anthony, Gemologist



Edna and Tony

Zircon Group

A Nesosilicate

Zircon

Zircon is the single member of the zircon group of the nesosilicates that is suitable for use as a gemstone. In the nesosilicates, independent SiO_4 tetrahedra are connected only by ionic bonds. Because the tetrahedra are not linked to form chains, sheets, groups, rings or a framework, an equidimensional crystal habit and the lack of distinct cleavage planes are prevalent. Nesosilicate structures are generally determined by the size of the interstitial cations, the positively charged atoms occupying the spaces between the connected tetrahedra. Aluminum often replaces silicon in the silicates, but such substitution occurs less frequently in the nesosilicates. Dense atomic packing causes their relatively high specific gravity and hardness. Zircon exhibits these typical characteristics.

Hafnium, a metallic element, is always present in zircons, although the amount is usually less than four percent. Uranium and thorium are often present. The "self-irradiation", caused by the decay of these radio-active guests, results in damage to the atomic lattice and is responsible for the eventual alteration of the crystal to an isotropic glass. This process occurs over a long period of geologic time. Zircons thus affected are termed "metamict" and classified according to the extent of the damage sustained. "High" zircons have undergone little or no change to the lattice and are very acceptable for use as gems. "Low" and "intermediate" zircons have undergone more extensive destruction, but none present a hazard to humans.

Zircon is found worldwide in igneous rock formations and gem gravels. Thailand, Cambodia, and Sri Lanka, the source of the largest gem crystals and the greatest variety of colors, produce the major portion of the world's zircon gem material. The double-refractive uniaxial tetragonal crystals are often twinned and occur in tones of green, red, yellow, grey, orange, reddish-brown, and blue.

The refractive indices vary. Low zircon can be almost isotropic and exhibit indices of 1.78 – 1.85, with a birefringence of 0.0 to 0.008 and a density of 3.9 to 4.1. Intermediate material has indices of 1.85 – 1.93 for the ordinary ray and 1.84 – 1.97 for the extraordinary ray, birefringence of 0.008 to 0.043, and the density range of 4.1 to 4.65. High zircon refractive indices range from 1.92 – 1.94 (often 1.925) for the ordinary ray and an especially high 1.97 – 2.01 for the extraordinary ray. The birefringence is usually 0.059 but can be as low as 0.036. High zircon also has a greater specific gravity range of 4.65 – 4.8 but its usual density is 4.70.

The earliest use of zircon as a gemstone is unknown, but carved zircons have been found in some of the most ancient archaeological sites. Its name may have been derived from the Arabic word *zarkun* meaning "red" or a combination of the ancient Persian words *zar* (gold) and *gun* (color). Zircon has appeared in literature throughout history under a variety of names. Most of these designations are no longer in use, but some are still associated with specific colors. The beauty of zircon's sometimes adamantine luster and a dispersion approaching that of diamond is often not appreciated. The zircon cut, a variation of the brilliant cut that adds eight extra facets to the pavilion, was designed to take advantage of these properties. Heat treatment of colored material to enhance or change the color is an accepted practice. For decades, the process of repeatedly heating material in primitive ovens to obtain satisfactory results has also produced a more fragile and brittle product on which it is difficult to maintain a high polish. This and the use of the transparent grey tinged, colorless variety as a very inexpensive simulant for diamond has caused many persons to regard zircon with disdain. Its name has become synonymous with "cheap imitation." A small city in southern Sri Lanka supplied

large quantities and gave its name to this variety often called the *matara diamond*.

TABLE 1. Gemstone Properties

SPECIE	*zircon*
Composition:	ZrSio4+Hf, Fe, Th, UZirconium silicate
Class:	silicates
Group	zircon
Species:	zircon
Crystal System:	tetragonal
Variety:	(see above narrative)
Colors:	colorless, blue, violet, yellow, yellow-brown, orange, red, brown, and green
Phenomena:	chatoyant material has been found in Sri Lanka
Streak:	white
Diaphaneity:	transparent, translucent, opaque
Habit:	prismatic crystals with pyramidal terminations
Cleavage:	indistinct and poor
Fracture:	conchoidal and very brittle
Fracture Lustre:	vitreous and greasy
Lustre:	vitreous and often adamantine
Specific Gravity	3.90 to 4.7
Hardness	6.5 to 7.0
Toughness:	poor and brittle; easily chipped and abraded

TABLE 1. Gemstone Properties

SPECIE	*zircon*
Refractive Index	(see above narrative)
Birefringence:	(see above narrative)
Optic Character	uniaxial
Dispersion:	0.039 for all varieties
Pleochroism	(see above narrative)
Luminescence	often inert; varies SW for mustard yellow and orange-yellow; LW for dull yellow and may phosphoresce
Absorption Spectrum	numerous bands and lines are typical
Aqua Filter	no information found
Chelsea Filter	no information found
Solubility	insoluble
Thermal Traits	infusible
Treatments	heat treatment is common
Inclusions	(see above narrative)

The especially descriptive name *starlite* for blue zircon is seldom used now, and the natural blue zircons that possess a unique blue color are rare. The zircon cut displays the properties of the blue gems to the greatest advantage. Blue crystals are found in Cambodia, Thailand, and Vietnam, but heat treatment of the red-brown material from this region produces most of the blue gems. The very characteristic absorption spectrum is nearly always present. The strength of the pale greenish-blue or yellowish-grey and the vivid blue pleochroism colors varies with the intensity of the color of the stone. Surprisingly, this gem has not been produced synthetically, but it is sometimes imitated by synthetic spinel.

Jacinth and *hyacinth* are terms that have been used extensively to denote red zircon. Most red, red-orange, or brick colored and violet-red gems have not undergone heat treatment. Crystals are found at Espaly, St. Marcel in France and in Sri Lanka, Thailand, and Cambodia. The oval and round mixed cuts with a brilliant-cut crown and a step-cut pavilion are the most common facet designs used for these gems, even though the zircon cut can be used to display its attributes to better advantage. With the exception of the spectrum, this red material possesses the typical zircon properties. The dichroscope reveals red and medium brown pleochroism colors. The orange gems from New South Wales, Australia display only a few lines of the distinctive zircon spectrum, and some red zircons may exhibit none.

In the past, yellow zircon was known by the name *jargoon* or *jargon*, a word we use today with a seemingly unrelated meaning. Yellow zircon includes the color range from pale to canary yellow, greenish yellow, and gold. It exhibits properties normal for zircon, but it can be confused with yellow sapphire. Sri Lanka is the main source of crystals, the heat-treated, red-brown material. A round or oval mixed cut is commonly used. A synthetic counterpart is not known to be produced, but it is imitated by man-made materials, such as YAG and cubic zirconia.

The readily available, richly-colored brown zircon makes a striking gem. Excellent cutting enhances its uncommon yellow-brown, reddish-brown, tobacco, and "black-tea" tones that are not found in other gemstones. Sri Lanka, Vietnam, Cambodia, and Burma furnish the majority of this material that also exhibits the normal properties consistent with the other varieties of zircon. Pleochroism colors of reddish-brown and yellowish-brown are seen with the dichroscope. No commercial imitation or production of brown synthetic zircon is known.

The distinctive colors of green zircon are frequently associated with the *metamict* state of the gemstones. Exceptionally transparent material in shades of brilliant green, yellow-green, and brownish-green is fairly common. Often, the material is cloudy. The usually obvious and strong birefringence common to most other zircons is rather difficult to detect in these gems at times. Despite the metamict state, the normal zircon spectrum is readily seen. Inclusions known as "spangles" are typical of these crystals as are "streaks" and angular zoning. Iron-stained interior tension fractures are common, and "silk" can be found less frequently. Burma and Sri Lanka are the main sources of green zircon.

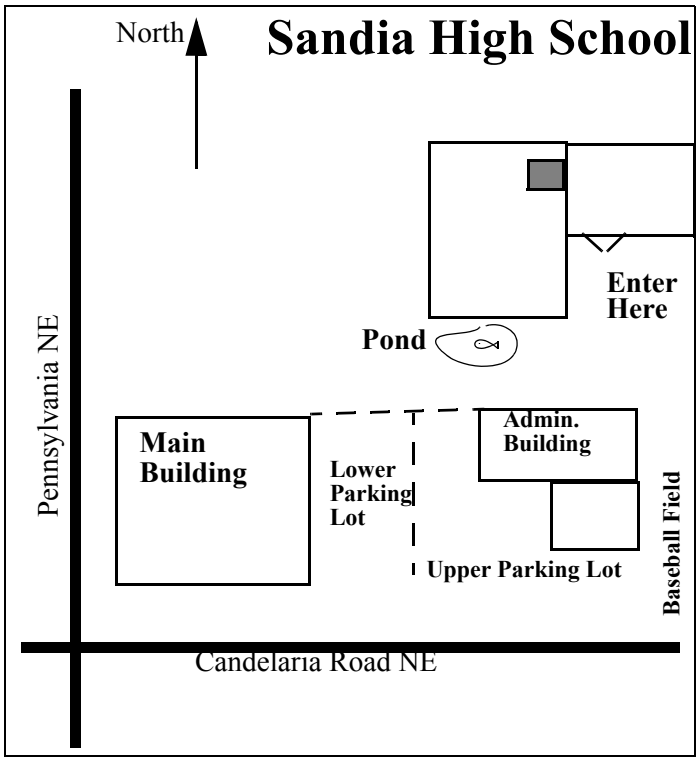
A Change in the New Mexico Faceters Guild Meeting Location

for NMFG meeting date January 13, 2000

Location: Sandia High School

Due to the construction problems at the New Mexico Natural History Museum, Guild member Ernie Hawes has graciously arranged for the New Mexico Faceters Guild to meet September 9, 1999 at 7:00p.m. at Sandia High School, located at Pennsylvania and Candelaria Roads NE. We will be meeting in Room K6, the same geology/astronomy room where we held our faceting symposium a few years ago. Please park at the north end of the lower parking lot.

The science teacher whose room we will be using would greatly appreciate any donations of New Mexico rocks and minerals you may wish to give. Thank you. to those who left donations during the last meeting.



Special Dates for Guild Members

Gary and Rainy Peters celebrated their 20th. wedding anniversary December 23. Al and Elaine Weisman will celebrate their 42nd. wedding anniversary January 22. Congratulations to all.

Meet two of our newest Guild Members: Gary and Rainy Peters.

New Address for the Cannons

The new address for old time New Mexico Faceters Guild members, Tom and Eleanor Cannon is: 1130 Allumbaugh Street, apt. #273 in Boise, Idaho 83704-8799. The telephone number is unknown, and it is not certain whether they still have an e-mail address. For those who knew Tom and Eleanor from the "old days", please send them your regards. Thanks.

We exchange newsletters with the following guilds

Anglic Gemcutter, Beaver Creek, Oregon
Facets, Portland, Oregon
Tacoma Faceters Guild, Tacoma, Washington
Stoney Statements, Houston, Texas
The Permain Faceter, Midland, Texas
Angles, Woodland Hills, California
Texas Faceters Guild, Cedar Park, Texas
Albuquerque Gem and Mineral Club, Albuquerque, N.M.
The Roadrunner, Big Springs, Texas
Intermountain Facetors Guild, Port Townsend, Washington
The Midwest Facetor, Birch Run, Michigan
The Transfer Block, Sacramento, California
USFG, Kalispell, Montana
Facet Talk, Ashgrove West, Queensland, Australia
Calgary Faceters Guild, Saskatoon, Saskatchewan, Canada
North York Faceting Guild, Markham, Ontario, Canada
Ottawa Gem Facetor's Guild, Ottawa, Ontario, Canada
Vancouver Island Faceters' Guild, Port Alberni, B.C.
{Please let me know if I have accidently omitted any group.}

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Stephen A Vayna:	Vayna@transatlantic.com

Obituary

It is with sadness that we report the passing of Guild member Rhonda Mills, who died in Santa Fe at age 54 shortly before Thanksgiving. Rhonda learned faceting from Al Huebler and had purchased an Ultratec faceting machine from him. Besides being a member of the New Mexico Faceters Guild, Rhonda was a microbiologist and also a member in the New Mexico Pastel Society.

NMFG Back Issues

Back issues of the *New Mexico Facetor* are available for all of 1999, all of 1998, and much of 1997. Please contact the Editor for requests of back issues. Thanks.

TABLE 2. Shows of Special Interest

Name	*Location*	*Date*
Rapa River Enterprises	Tucson, AZ	Jan. 27 - Feb. 13
Gem Shows, Inc.	Tucson, AZ	Jan. 29 - Feb. 9
Globe-X: Jump Start	Tucson, AZ; Days Inn	Jan. 29 - Feb. 12
International Gem and Jewelry Show; Intergem	Tucson, AZ; Congress Street	Jan. 29 - Feb. 13
Congress Street Expo	Tucson, AZ; Congress Street	Jan. 29 - Feb. 13
Gem and Lapidary Wholesalers, Inc. (GLW)	Tucson, AZ; Rodeway Inn	Jan. 30 - Feb. 12
Pacifica Trade Shows	Tucson, AZ; Holiday Inn I-10&22nd. Street.	Jan. 30 - Feb. 12
Arizona Mineral and Fossil Show	Tucson, AZ; Best Western/Executive Inn	Jan. 30 - Feb. 12
Gem, Lapidary, and Mineral Show	Tucson, AZ; Downtown Event Center	Jan. 30 - Feb. 12
The Mineral and Fossil Co-Op	Tucson, AZ	Jan. 30 - Feb. 12
Atrium Productions	Tucson, AZ; Four Points Hotel	Jan. 31 - Feb. 12
Tucson International Trade Show; 11th Annual Show	Tucson, AZ	Jan. 31 - Feb. 13
Gem Cast Productions; Tucson Diamond Show 2000	Tucson, AZ; Manning House	Feb. 2 - 5
AGTA Show	Tucson, AZ; Tucson Convention Center	Feb. 2 - 7
GLDA Show	Tucson, AZ; Holiday Inn/City Center	Feb. 2 - 7
Professional Jeweler Tucson Jewelry Show	Tucson, AZ; DoubleTree Hotel	Feb. 3 - 6
Gem and Jewelry Exchange; GJX	Tucson, AZ	Feb. 3 - 8
HBE Gem and Jewelry Show	Tucson, AZ; Tucson Exposition Center	Feb. 3 - 9
Gem and Lapidary Wholesalers, Inc.; GLW	Tucson, AZ; Holiday Inn/Holidome	Feb. 3 - 11
Rio Grande/Catalog in Motion	Tucson East Hilton	Feb. 4 - 7
Tucson Gem and Mineral Society's 46th Annual Gem and Mineral Show	Tucson, AZ; Tucson Convention Center	Feb. 10 - 13