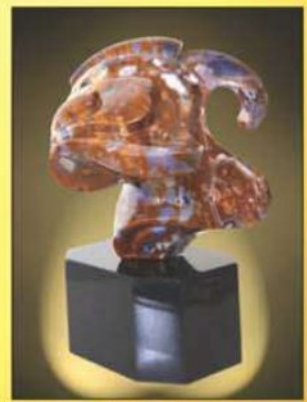


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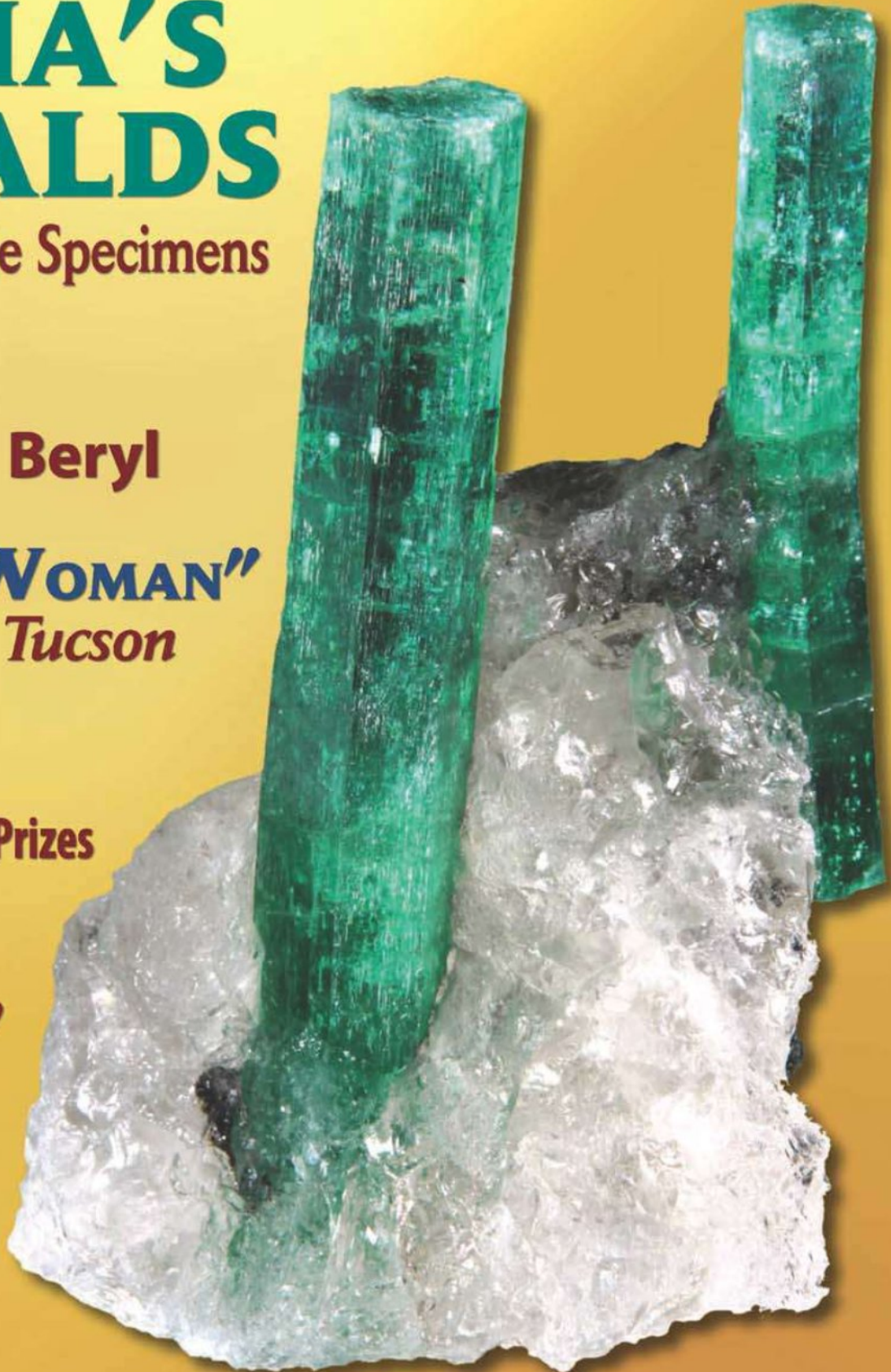
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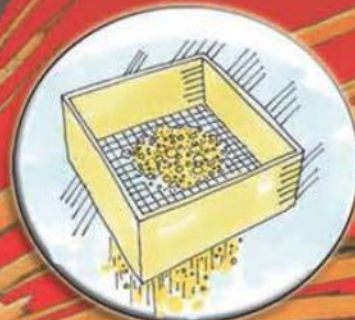
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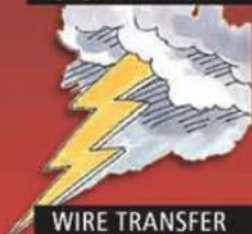
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### Printed in U.S.A.

Notice: On rare occasions, typographical errors occur in prices listed in magazine advertisements. For this reason, advertisements appearing in *Rock & Gem* should be considered as requests to inquire, rather than as unconditional offers to sell. All prices are subject to change without notice.

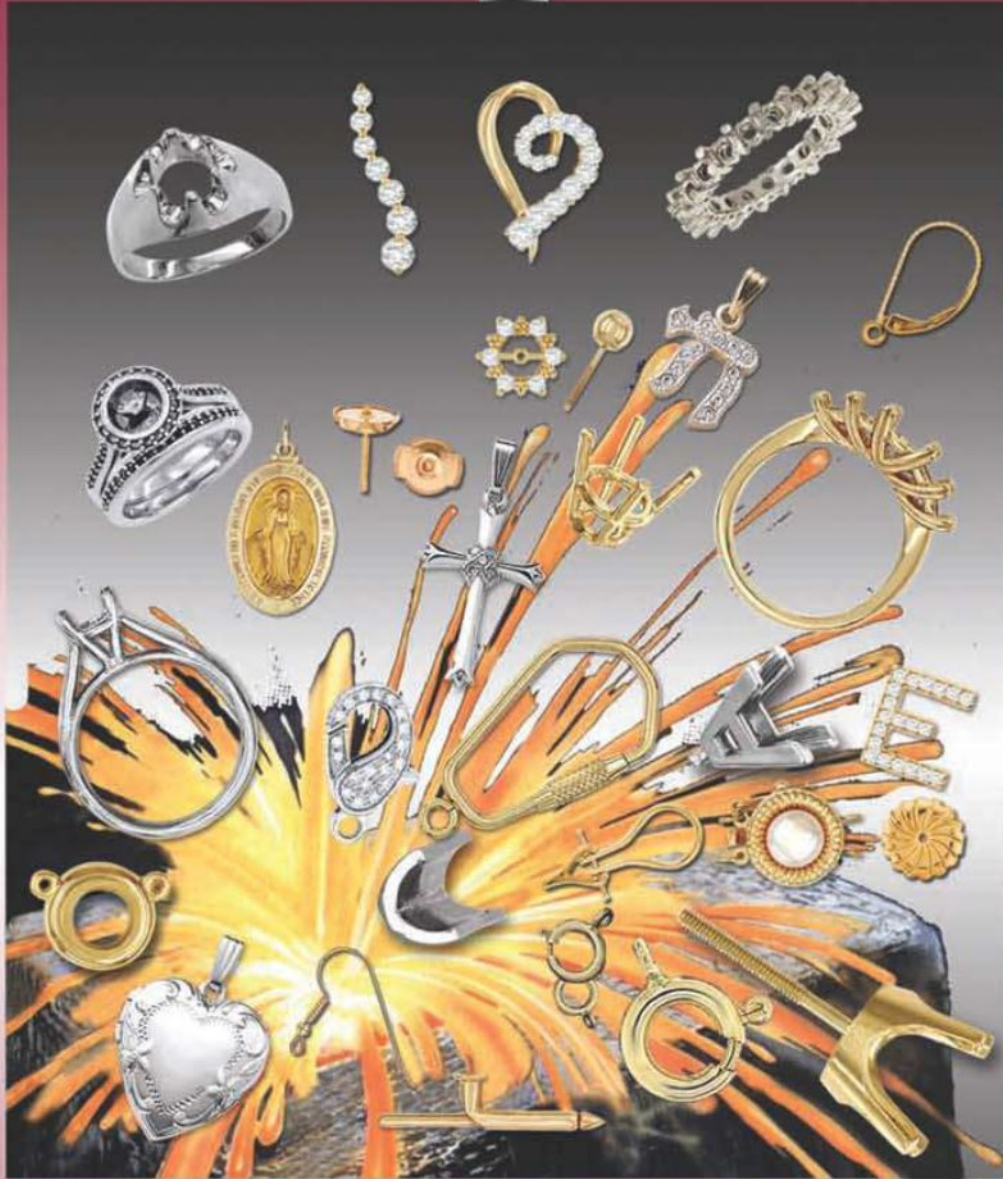
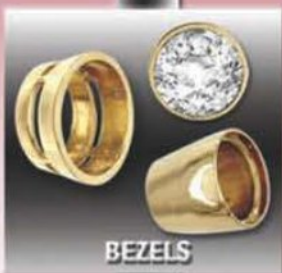
*Rock & Gem* (ISSN 0048-8453, USPS 486-290) is published monthly by JMiller Media (Miller Magazines, Inc.), 290 Maple Ct., Ste. 232, Ventura, California 93003-3517, telephone (805) 644-3824. Periodicals postage paid at Ventura, CA 93006, and additional mailing offices. Single-copy price \$4.99. Subscription in U.S.A. and possessions: 1 year (12 issues) for \$27.95; 2 years for \$49.95; 3 years for \$66.95. Add \$15.00 per year postage for Canada and all other foreign countries. Submission of articles and photos by our readers is welcome, but we can accept no responsibility for loss or damage to unsolicited editorial contributions. Copyright 2010 by JMiller Media (Miller Magazines, Inc.)

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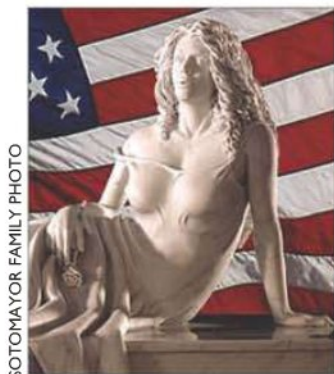


## Tucson Highlights

The month of February continues the mineral and gem show season in the American Southwest, with activity centering around the city of Tucson, Arizona. *Rock & Gem* will be present, as always, with a booth at the Main Show in the Tucson Convention Center. Last month, we gave you a guide to the locations of our advertisers who are doing business in Tucson over January and February. In this issue, we highlight some of the exhibits and specimens that will be on display and for sale at the Tucson shows in February.

Bob Jones leads off with the fascinating story of the gem emerald specimens that have recently been brought to the collector market out of the Central African nation of Zambia (page 12). Their availability is due, in great part, to the specimen mining expertise of The Collector's Edge, of Golden, Colorado. Introduced to the mineral-collecting public at the 2009 Denver Gem & Mineral Show, these green gems on quartz matrix will be available at several wholesale and retail shows around Tucson in 2010, including the Westward Look Show and the Tucson Gem & Mineral Show™. Contact The Collector's Edge ([www.collectorsedge.com](http://www.collectorsedge.com)) for its show schedule.

COLLECTOR'S EDGE/GEMFIELDS SPECIMEN/  
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SOTOMAYOR FAMILY PHOTO

On page 22, writer Barbara L. Miller tells the backstory of the "American Woman" sculpture by Colorado artist Francisco Sotomayor. This 10,000-pound, life-size marble lady has been touring the country with her creator and will be a guest exhibit at the Main Show in the Tucson Convention Center, Feb. 10-14, 2010.

It was in Tucson that Bob Jones first became acquainted with the gem sculptures of Perry Brent Davis in 2009. Learn more about Davis' background and carving style in Bob's article on page 30. See more examples of Davis' large-size gemstone carvings on his Web site, [www.perrybdavis.com](http://www.perrybdavis.com).

The Westward Look Show is a major Tucson event scheduled for Feb. 5-8, 2010. Each annual show features a Sunday Evening Program that is filmed by BlueCap Productions for release on DVD. Read a review of the 2009 presentation, "Capturing the Minerals: Three Photographers' Perspective", in *Picks & Pans* (page 38). The Feb. 7, 2010 program will be a panel presentation featuring mineral artists Eberhard Equit, Hildegard Könighofer, Wendell Wilson and Susan Robinson.

If you don't get to see as much as you'd like to during your stay, BlueCap Productions will wrap it all up in a neat DVD package called "What's Hot at Tucson 2010" that takes viewers behind the scenes for an up-close look at some amazing mineral specimens and intimate chats with the dealers who make them available to the collecting community.




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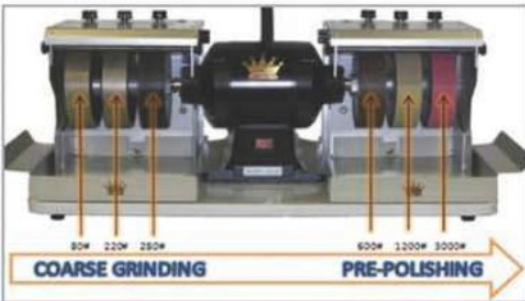
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# CRAFTSMAN OF THE MONTH

I started doing lapidary about 9 years ago," writes February Craftsman of the Month Dale Freestone, of West Jordan, Utah. "I started looking for rocks and then tumbling them, then I got a 12-inch lapidary saw and started cutting the bigger rocks that I found and making cabochons. I was fortunate to find a very good 20-inch lapidary saw so I could cut bigger rocks. I had been rockhunting and found this honey onyx from Nephi, Utah, so I started cutting this rock. It was about 12 inches by 9 inches and I cut two 1-inch-thick slabs and three 1/2-inch-thick slabs.

"I had seen a picture of a bear and I decided to make a clock with a base that would light up. I drew a bigger picture of the bear and traced it onto one of the 1-inch slabs. I cut it out with a tile saw and shaped it. Using a diamond cut-off wheel in my Dremel tool, I cut out the notch for the nose, then I cut a piece of black jade to fit in the notch. Next, using a piece of 80-grit sandpaper glued onto a piece of wood, I sanded the jade and the onyx to get a tight fit. I set the nose with 5-minute epoxy, and when it dried I finished shaping the bear.

"Next, I drilled the hole for the clock using a 10-millimeter core drill. The slab had to be recessed in the back so that the clock works would fit, so I used my Dremel and a diamond cylinder bit to do this.

"Now I cut the base using the other 1-inch slab. I cut the bottom piece to the base to 7 inches by 5 inches and cut the corners at a 45-degree angle. Then I cut the top to the same using one of the 1/2-inch slabs. Using the other 1/2-inch slabs, I cut out two 3-inch by 6-inch pieces and two 3-inch by 3-inch pieces. In one of the 3X6 pieces, I drilled a 1 3/4-inch hole using a carbide hole saw and a cooling aide, as heat will crack the stone. I would install a light in this hole to light up the base.

"Next, I epoxied the base together and epoxied the bear onto it. When the epoxy set up, I used an X-acto knife to clean off the excess epoxy. Then I finished shaping the bear and base with 80-grit silicone carbide sandpaper, resanding with 220-grit, 600-grit and 1,000-grit. For the final finish, I used my bench-top polisher with a 6-inch muslin buffing wheel and green Zam polish on it, which gave it a very good polish. I had to watch that it did not get hot, as heat will crack this onyx. I had a 7-watt light with switch and a spring plate attached to it. I snapped the light into the base and installed the clock works and the clock face plate. For the eye, I shaped and sanded a piece of leftover jade with my 6-inch drum sander, then polished it and epoxied it on."



### Would you like to be named Craftsman of the Month?

To enter the contest:

- Write a 500-word step-by-step description of how you crafted your lapidary project from start to finish. A copy of the story on diskette, along with your printed manuscript, would be appreciated.
- Take least one sharp, close-up, color photo of the finished project. Submit high-resolution (300 dpi at 4 inches by 5 inches) digital photos .tif or .jpg files on a CD. (Contact the editor with questions.)
- Send your materials, along with your name and street address

(required for delivery), to Craftsman of the Month, *Rock & Gem* magazine, 290 Maple Ct., Ste. 232, Ventura, CA 93003. Submissions will not be returned, so do not send originals. Only winners will be notified.

Craftsman of the Month winners receive a two-speed Dremel Model 200 N/40 MultiPro kit and a wall plaque in recognition of their creativity and craftsmanship. Winning projects are also posted on our Web site, [www.rockngem.com](http://www.rockngem.com).



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## JANUARY-FEBRUARY 2010

**1-28—QUARTZSITE, ARIZONA:** Desert Gardens International Rock, Gem & Mineral Show; Desert Gardens RV Park; 1055 Kuhen St., south side of I-10, along frontage road; 8-5 daily; free admission; wholesale/retail, crystals, minerals, rough, polished, jewelry; contact Sharon or Sandy, Desert Gardens RV Park, P.O. Box 2818, Quartzsite, AZ 85346, (928) 927-6361; e-mail: info@desertgardensrvpark.net; Web site: [www.desertgardensrvpark.net](http://www.desertgardensrvpark.net)

**30-12—TUCSON, ARIZONA:** Business to Business Gem Trade Show; Gem and Lapidary Wholesalers Inc.; The Gem Mall, 4475 S. Country Club Rd.; daily 10-6, last day 10-3; contact Gem and Lapidary Wholesalers Inc., P.O. Box 98, Flora, MS 39071-0098, (601) 879-8832; e-mail: info@glwshows.com; Web site: [glwshows.com](http://glwshows.com)

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**30-13—TUCSON, ARIZONA:** Show, "Arizona Mineral & Fossil Show"; Martin Zinn Expositions; InnSuites Hotel, 475 N. Granada Ave.; Sat. 10-6; free admission; AMFS Treasure Hunt: win prizes for visiting show locations, pre-register online or at the InnSuites Hotel; daily drawings Feb. 1-10, more than 400 vendors in four locations; contact Regina Aumente, P.O. Box 665, Bernalillo, NM 87004, (505) 867-0425; e-mail: [mzexpos@aol.com](mailto:mzexpos@aol.com); Web site: [www.mzexpos.com](http://www.mzexpos.com)

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**5-7—ROSEVILLE, CALIFORNIA:** Show, "Gem Faire"; Gem Faire Inc.; Placer County Fairgrounds, 800 All America City Blvd.; Fri. 12-7, Sat. 10-6, Sun. 10-5; \$5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: [www.gemfaire.com](http://www.gemfaire.com)

**5-8—TUCSON, ARIZONA:** 9th annual show, "Westward Look Show 2010"; FineMineralShow; Westward Look Resort, 245 E. Ina Rd.; Fri. 10-6, Sat. 10-6, Sun. 10-6, Mon. 10-5; more than 25 of the world's top dealers, "Collector Day" Sat., featuring Will Larson's private collection, Sun. evening cocktail hour, mineral art gallery, and artist panel, including Eberhard Equit, Hildegard Könighofer, Susan Robinson and Wendell Wilson; contact Dave Waisman, P.O. Box 8543, Spokane, WA 99203; Web site: [www.finemineralshow.com](http://www.finemineralshow.com) or [www.westwardminerals.com](http://www.westwardminerals.com)

**12-14—KIRKWOOD, MISSOURI:** Show; Cabin Fever Productions; Kirkwood Community Center, 111 S. Geyer; Fri. 4-9, Sat. 10-6, Sun. 10-4; adults \$3, seniors and students \$2, children 12 and under free; jewelry, gems, rocks, minerals, fossils, attendance prizes; contact Melanie Vick, 1801 Barbary Way, Swansea, IL 62226, (618) 830-8471; e-mail: [cabinfeverprod@aol.com](mailto:cabinfeverprod@aol.com); Web site: [www.cabinfeverproductions.com](http://www.cabinfeverproductions.com)

**12-14—SANTA MONICA, CALIFORNIA:** Show, "Gem Faire"; Gem Faire Inc.; Santa Monica Civic Auditorium, 1855 Main St.; Fri. 12-7, Sat. 10-6, Sun. 10-5; \$5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: [www.gemfaire.com](http://www.gemfaire.com)

**12-21—INDIO, CALIFORNIA:** Show, "Riverside County Fair & National Date Festival"; San Geronio Mineral & Gem Society; Gem & Mineral Bldg., Bldg. #1, 46-350 Arabia St.; 10-10 daily; adults \$8, seniors \$7, children \$6; contact Bert Grisham, (951) 849-1674; e-mail: [bert67@verizon.net](mailto:bert67@verizon.net)

**13-14—OAK HARBOR, WASHINGTON:** 45th annual show, "Sweetheart of Gems"; Whidbey Island Gem Club; Oak Harbor Senior Center, 51 S.E. Jerome St.; Sat. 9-5, Sun. 9-4; contact Keith Ludemann, (360) 675-1837; e-mail: [rock9@whidbey.net](mailto:rock9@whidbey.net)

**19-21—SANTA BARBARA, CALIFORNIA:** Show, "Gem Faire"; Gem Faire Inc.; Earl Warren Showgrounds/Exhibit Hall, 3400 Calle Real; Fri. 12-7, Sat. 10-6, Sun. 10-5; \$5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: [www.gemfaire.com](http://www.gemfaire.com)

**20—PHOENIX, ARIZONA:** Annual show, "Family Fun Day at the Museum"; Maricopa Lapidary Society; 1502 W Washington St.; Sat. 10-4; free admission; dealers, demonstrations, kids' activities, gold panning, metal detecting; contact Laurette Kennedy, (602) 771-1611 or (602) 738-2552; e-mail: [lkennedy11@aol.com](mailto:lkennedy11@aol.com)

**20—UPPER MARLBORO, MARYLAND:** Show; Southern Maryland Rock & Mineral Club; The Show Place Arena, 14900 Pennsylvania Ave.; Sat. 10-4; ages 7 and up \$3, 6 and under free; vendors, exhibitors, minerals, fossils, gems, original jewelry designs, demonstrations, faceting, bead stringing, wire wrapping, gold panning, children's crafts, door prizes; contact Michael Patterson, 11000 Thrift Rd., Clinton, MD 20735, (301) 297-4575; e-mail: [michael.patterson@pgparks.com](mailto:michael.patterson@pgparks.com); Web site: [www.freewebs.com/smrnc/](http://www.freewebs.com/smrnc/)

**20-21—ALBANY, NEW YORK:** 17th annual James Campbell Memorial Gem, Mineral, and Fossil Show and Sale; New York State Academy of Mineralogy, Capital District Mineral Club; Museum, Empire State Plaza, Madison Ave., 4th floor; admission \$6 (includes flower show); Sat. 10-5, Sun. 10-5; more than 20 mineral and fossil dealers, guided museum tours, mineral and fossil identification; contact Michael Hawkins, (518) 486 2011; e-mail: [mhawkins@mail.nysed.gov](mailto:mhawkins@mail.nysed.gov)

**20-21—PLAINVIEW, TEXAS:** 48th annual show; Hi Plains Gem & Mineral Society; Ollie Limer Center, south I-27; Sat. 10-6, Sun. 10-5; adults \$2, students \$1; dealers, demonstrators, grand prizes, silent auction, kids' wheel; contact Mildred Matlock, 701 Zephyr, Plainview, TX 79072, (806) 293-3476; e-mail: [jmmatlock@suddenlink.net](mailto:jmmatlock@suddenlink.net)

**26-27—NORTHBRIDGE, CALIFORNIA:** Show, "GEMboree"; Del Air Rockhounds Club; United Methodist Church, 9650 Reseda Blvd.; Fri. 3-9:30, Sat. 10-5; free admission, children under 16 must be accompanied by an adult; gems, jewelry, beads, Girl and Boy Scout merit badges; contact Julia Marin, 18220 Marilla St., Northridge, CA 91325, (818) 886-7190; e-mail: [jmarin@dslextrreme.com](mailto:jmarin@dslextrreme.com); Web site: <http://delairrockhounds.blogspot.com>

**26-28—COSTA MESA, CALIFORNIA:** Show, "Gem Faire"; Gem Faire Inc.; OC Fair & Event Center/Bldg. 10, 88 Fair Dr.; Fri. 12-7, Sat. 10-6, Sun. 10-5; \$5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: [www.gemfaire.com](http://www.gemfaire.com)

**26-28—MELBOURNE, FLORIDA:** Show; Frank Cox Productions; Melbourne Auditorium, 625 E. Hibiscus Blvd.; Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (841) 954-0202; e-mail: [frankcox@comcast.net](mailto:frankcox@comcast.net); Web site: [www.frankcoxproductions.com](http://www.frankcoxproductions.com)

**27—BARTOW, FLORIDA:** 6th annual show; Imperial Bone Valley Gem, Mineral & Fossil Society; Stuart Center, Polk

continued on page 18

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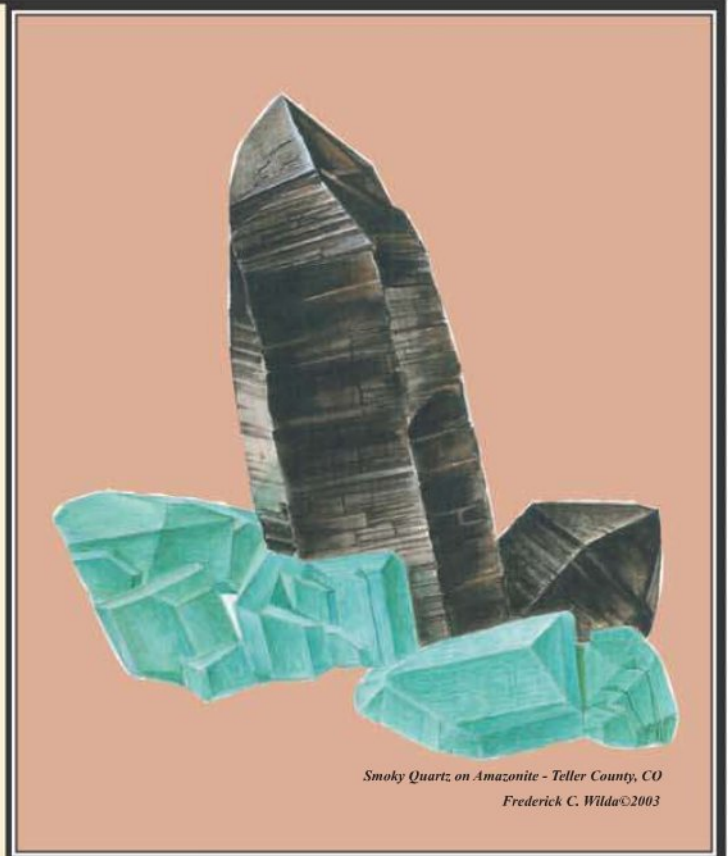
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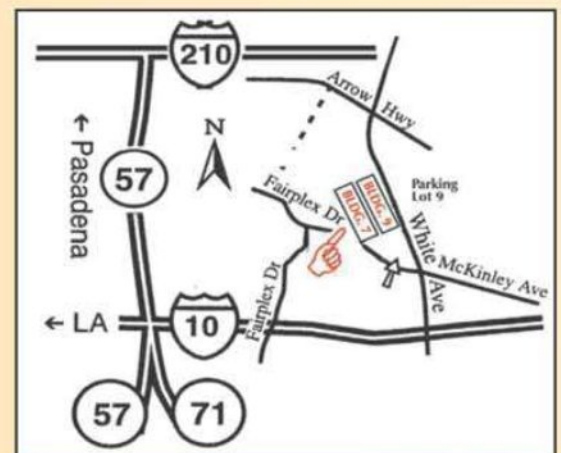
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# ZAMBIA'S Gem Emeralds

## These Central African Collector Specimens Are a First

Story by Bob Jones

COLLECTOR'S EDGE/GEMFIELDS  
SPECIMEN/RICHARD JACKSON PHOTO



The world is very familiar with the superb green gem emeralds mined in Colombia. Once found and mined in profusion, Colombian emeralds set the standard for quality against which all other emerald sources are compared. The Colombian deposits are still viable, with reserves estimated to last 500 years.

Russia is also well known for fine gem emeralds. These lovely green bolts were accidentally discovered in the Ural Mountains. This discovery set off a massive rush to mine the gem crystals, even though only about 10 percent of the find was useful gem rough because of the enclosing, and often included, mica schist. The Russian deposits seem to have largely played out. Emeralds are also being recovered in Brazil. An early find in Bahia (circa 1912) brought a few crystals to light, as did later mining in the state of Brumado. One deposit near Victoria da Conquista in Minas Gerais has yielded crystals from a pegmatite/mica schist deposit.

**Zambia is an important producer of gem-quality emeralds for jewelry applications, but until 2009, no collector-quality emerald specimens had been produced.**

In the United States, remarkable gem emeralds have been mined around Hiddenite, North Carolina. Occasional finds occurred there for decades, but no serious mining effort ever paid off until the 1990s, when prospector Jamie Hill struck large pockets of superb gem emeralds. North Carolina emeralds, however, have not had a huge impact on the gem market, since production is spotty at best.

In 1928, formal prospecting efforts by the Rhodesia Congo Border Concession Co., which was working in the gem-rich copper belt that cuts across Zambia, found minor amounts of emerald. Nothing was done to mine the crystals for 50 years. In the 1970s, things changed with the discovery of superb green crystals in the Kafubu mining district of North Central Zambia. Large, open-pit operations at the Kagem Mine began extracting gem emeralds from a large schist/pegmatite contact zone. Predictably, many of the emerald crystals found in the schist contained mica, but enough gem crystals were mined to impact the market significantly!

COLLECTOR'S EDGE PHOTO



Heavy equipment such as this excavator and haul truck are used to move the enormous tonnages of waste rock generated in the search for the gem-quality emeralds.

COLLECTOR'S EDGE PHOTO



Secondary gem rough sorting takes place in the "Emerald House" at the Kagem Emerald Mine. Gemfield's employees evaluate each piece of rough to determine which pieces have gem potential.

COLLECTOR'S EDGE PHOTO



A large haul truck passes by one of the water-filled pits that are created as the emerald-bearing reaction zones are mined out.

COLLECTOR'S EDGE/GEMFIELDS SPECIMEN/RICHARD JACKSON PHOTO

These deposits are now producing emeralds every bit as gemmy and richly green as those from the South American source. In fact, you may be surprised to know that Zambia is now estimated to produce between 15 and 20 percent of all the world's gem emeralds, second only to Colombia's production. The estimated value of Zambian production is between \$100 million and \$200 million dollars per month! What is amazing is that this is based solely on cut gem emeralds and not on specimen values. Superb collector specimens of emerald in any quantity were not forthcoming from the Zambian deposit until the last two years.

Such production is largely due to a carefully organized mining effort in what is now the world's largest producing open-pit emerald mine, covering one square kilometer! During mining opera-



This 3.3-centimeter-tall emerald is one of the finest phlogopite-hosted crystals to have been preserved in natural form from the Kagem Emerald Mine.

tions a short time ago, an unusual occurrence of gem emerald crystals prompted mine owners Gemfields, PLC to seek expertise in the recovery and preparation for sale of some unusual gem emeralds.

The fine green crystals were typical, but their mode of occurrence was not. The company that was contacted, and with which Gemfields now has a specimen extraction, preparation and marketing agreement, is The Collector's Edge of Golden, Colorado.

Collector's Edge is a most remarkable mineral and gem company that has had a major impact on the specimen market for over 20 years. Through hard work and careful study of mineralogical and geological deposits, this organization has unearthed a variety of choice collector minerals, mainly in the United States. Each find has had a profound impact on the specimen market



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**Zambia's Gem Emeralds** from page 13



COLLECTOR'S EDGE PHOTO

The primary washing and sorting station for emerald rough utilizes a rotating trommel drum to separate the gem material from the days and mica.

and has thrilled the collector community. (See "On the Rocks", page 78, for more details.) Collector's Edge is now internationally famous for its technical skills in mining and specimen preparation. Thanks to this new venture, we have superb emerald display specimens, along with faceted emeralds to 9 carats, cut from gem crystals that are up to 4 or 5 inches long and as thick as your middle finger. These specimens are truly breathtaking, as the vibrant green bolts stand regally up from a matrix of snow-white quartz, a most unusual association!

How these gem beauties came into being is interesting. The deposit has been worked for three decades by the Kagem Mining Co. and has, in years past, produced very fine crystals, mainly from the schist ore body. Like any gem crystal deposit in schist, many crystals had included mica, but many also had gem-quality sections within the crystals, so large quantities of marketable gems resulted. In spite of such a large operation and a considerable input of faceted gems into the marketplace, Zambia has never been considered important as an emerald collector-specimen producer, partly because the crystals being mined were relatively small, with most embedded in a micaceous schist that isn't particularly attractive. Large display specimens from Zambia have had little impact on the mineral collector market—until now! The change was brought about by the decision to involve Collector's Edge in the process. Once extracted, the specimens were given to Collector's Edge specimen preparation technicians for treatment. The result are superb display specimens of gemmy emerald crystals found in an unusual Zambian environment, green crystals embedded in snow-white quartz!

To understand the success of the Collector's Edge, you have to realize that

with decades of experimentation and experience, its staff has developed some of the most advanced specimen preparation techniques around. They are able to employ their expert skill in trimming specimens, highlighting the very best features of each specimen they treat, regardless of species. It was this skill in specimen mining and preparation, coupled with proven specimen marketing practices, that caused Gemfields PLC to invite Collector's Edge, in February 2009, to come to the Kagem emerald mine to advise on specimen extraction while providing skills needed to best extract gem emeralds from their solid white quartz matrix. The Kagem Mining Co. started working this deposit in 2007, and by 2008 the company had control of 75 percent of the deposit and commenced serious specimen mining.

This deposit is unusual and differs in some ways from the Colombian and Russian deposits. Russians emeralds occur in a micaceous schist, much like that of the Kagem Mine deposit. The finest specimen emeralds, however, are largely from a quartz occurrence completely different from the Russian or Colombian sources. What makes the Zambian deposit unique is the sudden appearance of choice green crystals locked completely in quartz—not in calcite, not in schist, and not free standing in pockets, as we might envision them. To understand this odd occurrence, the geology of the ore body was studied. It consists of six belts of a talc magnetite schist, which has served as a host rock. These belts are huge. Core drilling has shown they can extend up to 13 kilometers across the landscape! How rich these talc-magnetite belts are in emeralds will only be revealed as mining continues.

The vast majority of the emeralds mined thus far have been found in the black mica

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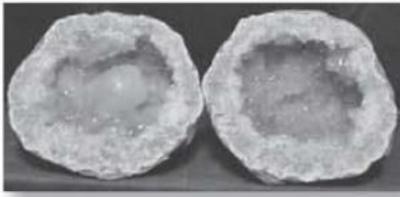
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## Zambia's Gem Emeralds from page 14

COLLECTOR'S EDGE/GEMFIELDS SPECIMEN/RICHARD JACKSON PHOTO



The highest quality emerald specimens are recovered from within thick, milky quartz lenses that are occasionally encountered within the mica-rich reaction zones.

schist. Sections of this mica may be as much as 8 inches wide. These are termed "mica-rich reaction zones", areas that are in contact with pods of pegmatite and quartz-tourmaline veins. Deep beneath the deposit is a granite pluton, which is undoubtedly the original source of the mineralization. From that original pluton, hydrothermal solutions worked their way into the vast mica-magnetite schist belts, bringing with them the necessary ingredients for emeralds to develop. In those solutions was enough trace chromium to act as a chromophore, causing the beryl crystals that developed to take on the lovely green color of emerald.

Where small open areas had developed in the mica-rich reaction zones, quartz-rich mineralized solutions invaded and provided the mineral elements necessary for emeralds to develop. Simultaneously, the solution released quartz, which filled these voids with crystals. The end result of all this mineralization is superb gem-quality emeralds locked in pure white quartz. When mining encountered these large pods of quartz, which can weigh anywhere from 3 kilograms to 25 kilograms, Gemfields realized superb gem emeralds were to be had with proper specimen extraction and preparation. At this stage, Collector's Edge became involved.

Emeralds depend on a chromophore to supply color to what is otherwise colorless beryl. The common chromophore for the green gem is chromium in trace amounts. Vanadium can also trigger this color response, as in some Colombian emeralds, but the Zambian emeralds gain their lovely green color from chromium atoms leached

from the surrounding rock by the hydrothermal solutions. It has been shown that the schist in this deposit has a chromium content of from 3,000 to 4,000 parts per million.

This schist is nothing recent. Potassium argon dating, a common and very reliable technique used to age date older rock formations, has dated the emerald-bearing schist at 450 million years! This mica schist is a ready source of emeralds that range in quality from fine gems to crystals almost totally replaced by mica. I'm sure that collectors who enjoy owning pseudomorphs would be most pleased to have one of these

unusual mica pseudomorphs after emeralds in their collection! These replacement crystals are found in the reaction zones mentioned above.

Normally, mining has shown that the reaction zones are almost bereft of quartz, so the schist emeralds are found on mica, not quartz, in colors ranging from medium to dark green, and range from gem quality to only specimen quality, including the pseudomorphs mentioned above. While the schist produces the majority of the emeralds that are cut into gems, the unusual quartz pods are the targets for finding amazingly large, water-clear, collector-quality gem crystals.

Current mining has been working what is called the Fawa-Fawa-Pirala belt, which extends an amazing distance of 1,720 meters. That's over a mile! It from in this belt that emerald-rich quartz pods have been mined so far. The finest crystals found are over 4 inches long. By careful removal of the quartz, such embedded crystals are partially exposed, so the majority of the crystal prism is free standing for all to see. Enough of the green crystal is left embedded in the quartz to form a stable display specimen.

By enlisting the consummate skill of Collector's Edge in mining, extracting and preparing collector specimens, Gemfields PLC has made possible the marketing of superb emerald display specimens through Collector's Edge marketing skills. Given the size and length of the huge mica-rich reaction zones Kagem has yet to mine, I am confident the supply of choice gem emerald specimens from Zambia will continue and may even increase! ♦

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## Show Dates from page 10

County Extension Service Bldg., 1702 US Hwy. 17 S.; Sat. 9-5; free admission; silent auction, door prizes, children's sand pit, demonstrations, rocks, minerals, fossils, jewelry; contact Jim Reed, 5740 Hebron Ln., Lakeland, FL 33812, (863) 644-6665; e-mail: rocks57@tampabay.rr.com; Web site: www.bonevalley.net

**27-28—BOISE, IDAHO:** Annual show; Idaho Gem Club; Expo Idaho, 5610 Glenwood; Sat. 10-7, Sun. 10-5; contact Charlie Smith, (208) 628-4002

**27-28—EVERETT, WASHINGTON:** 57th annual show; Everett Rock & Gem Club; Washington National Guard Armory, 2730 Oakes Ave.; Sat. 10-6, Sun. 10-5; contact Fritz Mack, P.O. Box 1615, Everett, WA 98206, (425) 232-0809

**27-28—JACKSON, MISSISSIPPI:** 51st annual show; Mississippi Gem & Mineral Society; Mississippi State Fair Grounds/Trade Mart Bldg., 1207 Mississippi St.; Sat. 9-6, Sun. 10-5; adults \$5, students \$3; free demonstrations, door prizes, educational and hands-on booths, 24 dealers; contact Keith Peacock, 114 Quail Ridge Rd., Braxton, MS 39044, (601) 863-6535; e-mail: kpcoc@aol.com; Web site: missgems.org

**27-28—ROSEVILLE, MINNESOTA:** Show; Anoka County Gem & Mineral Club; Har Mar Mall, 2100 Snelling Ave.; Sat. 10-6, Sun. 12-5; free admission; gems, minerals, jewelry, fossils, agates, collectibles; contact Martha Miss, 8445 Grange Blvd., Cottage Grove, MN 55016; e-mail: rockbiz@cs.com

**28—SPOKANE, WASHINGTON:** Show, "Rings & Things BeadTour"; Rings & Things; Mirabeau Hotel Spokane Valley (Ballroom), 1100 N. Sullivan Rd.; Sun. 11-4; free admission; gemstones, bead strands, wholesale prices, findings, stringing supplies; contact Dave Robertson, P.O. Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/city.php?city=Spokane

## MARCH 2010

**5-7—DEL MAR, CALIFORNIA:** Show, "Gem Faire"; Gem Faire Inc.; Del Mar Fairgrounds/Exhibit Hall, 2260 Jimmy Durante Blvd.; Fri. 12-7, Sat. 10-6, Sun. 10-5; \$5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

**5-7—NEWARK, CALIFORNIA:** Show and sale; Mineral & Gem Society of Castro Valley; Newark Pavilion, 6430 Thornton Ave.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$6 (\$1 off flier on Web site), children under 12 free with adult; large, rare ice age fossils, fluorescent rock display, 60 display cases, 35 dealers, eight lapidary demonstrations, benefit auction; contact Larry Ham, P.O. Box 2145, Castro Valley, CA 94546, (510)887-9007; e-mail: showchair@mgscv.org; Web site: www.mgscv.org

**5-7—RICHMOND, INDIANA:** Show; Eastern Indiana Gem & Geological Society; Wayne Co. Fairgrounds, 861 N. Salisbury Rd.; Fri. 9-6, Sat. 10-6, Sun. 11-4; adults \$4, seniors \$3, students \$1, children 6 and under free; contact John LaMont, 14158 St. Rd. 1, Brookville, IN 47012, (765) 647-4503; e-mail: Midwestchar@peoplepc.com

**5-7—SARASOTA, FLORIDA:** Show; Frank Cox Productions; Municipal Auditorium, 801 N. Tamiami Trail (Hwy. 41); Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (841) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

**5-7—SHARONVILLE, OHIO:** Show and sale; GemStreet USA; The Sharonville Convention Center, 11355 Chester Rd.; Fri. 10-6, Sat. 10-6, Sun. 11-5; fine gems, jewelry, beads, fossils, minerals; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

**6-7—ARCADIA, CALIFORNIA:** Show; Monrovia Rockhounds; LA County Arboretum, 301 S. Baldwin Ave.; Sat. 9-5, Sun. 9-5; adults \$7, students and seniors \$5, children \$2.50; more than 15 vendors, rocks, gems, jewelry, minerals, fossils, wire wrapping, findings, beads, grab bags, Treasure Wheel, Fossil Find; contact Jo Anna Ritchey, 224 Oaks Ave., Monrovia, CA 91016, (626) 359-1624; e-mail: joannaritchey@gmail.com; Web site: www.moroks.com

**6-7—BIG SPRING, TEXAS:** 41st annual show; Big Spring Prospectors Club; Howard County Fair Barn; Sat. 9-5, Sun. 10-5; dealers, demonstrators; contact Jerald Wilson, 707 Tulane, Big Spring, TX 79720, (432) 263-4662 or (432) 263-3340

continued on page 36

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# SHOP TALK

by William A. Kappeler

## Resin and Rocks

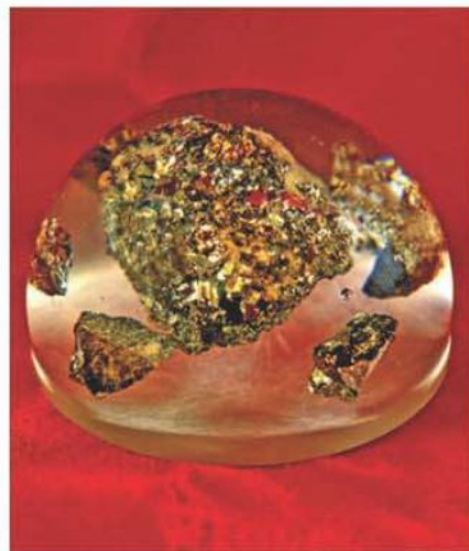
Some of you will probably remember that, back in the 1960s, tabletops made by embedding gemstone slabs in resin were all the rage. A lot of the tables had strange kidney, triangular and freeform shapes, and they always reminded me of the paintings on black velvet of dogs playing poker. They were very popular, but then again, so were the dogs playing poker. To be honest, it was not the rocks in resin that bothered me, but the idea that they were just put on a piece of plywood with legs. I really think that today we can make some very nice-looking pieces by combining the resin and gemstone slabs with either home-built or commercial furniture.

There are lots of glass-top coffee tables available. Some have a one-piece top, while others have two, three or more glass panels framed with wood. These glass panels make a perfect base for attaching the resin. For a table with a single pane of glass, place the pane upsidedown and place a large agate slab facedown in the center of it. Anchor the slab with resin. Some pulverized agate "dust" in a matching or contrasting color could be sprinkled into the wet resin as an accent. Turn the pane right side up and reinstall it in the table top. This should make a striking piece of furniture. The same plan could be used for end tables or bedside tables.

Furniture is only one of dozens of ways I can think of that slabs in resin could be used for home décor. If you happen to be remodeling the kitchen, rock-in-resin panels could easily be added to an existing tile backsplash as small overlays by attaching them with resin or epoxy to the center of each tile.

The same technique could also be used with a backsplash of granite or a composite material such as Corian®. I recently remodeled a couple of bedrooms in my house and built faux transoms with stained glass panels. Rock-in-resin panels would also have worked just fine. In fact, anyplace you would use a stained glass panel is a place these panels would work. Just let your creativity run wild.

There are all kinds of small gadgets and knickknacks that can be made with small pieces of rock and resin: coasters, trivets, framed wall art, letter opener handles, paperweights, brooches, pendants, brace



lets, jewelry box tops, and a whole host of others. Craft stores carry all kinds of molds. Some are for resin and some are for polymer clay. Fortunately, polymer clay molds will work just fine with resin, too. The paperweight pictured here was made using a mold from a craft store. I embedded some nice pyrite samples that I had collected in Colorado some years ago in the resin. This was my first attempt, and it came out pretty well. These plastic molds are very inexpensive and reusable, and come in a wide variety of shapes and sizes. There are even molds in standard cabochon shapes. A resin cabochon is an ideal casing for a small fossil, a leaf imprint, or bits of colorful stone or pyrite.

There are several types of resin available at home centers, craft stores, paint stores, marine hardware stores, and online. I would find a local supply source, tell them what you want to do, and let them suggest the best type for your project. The Internet has pages and pages of information on the subject, so if you have access, you can do a lot of researching before you have to open your wallet or purse. ♦

Please feel free to send your questions and comments about any of my columns to Shop Talk, 25231 Pericla Dr., Mission Viejo, CA 92691 or quappelle@cox.net.





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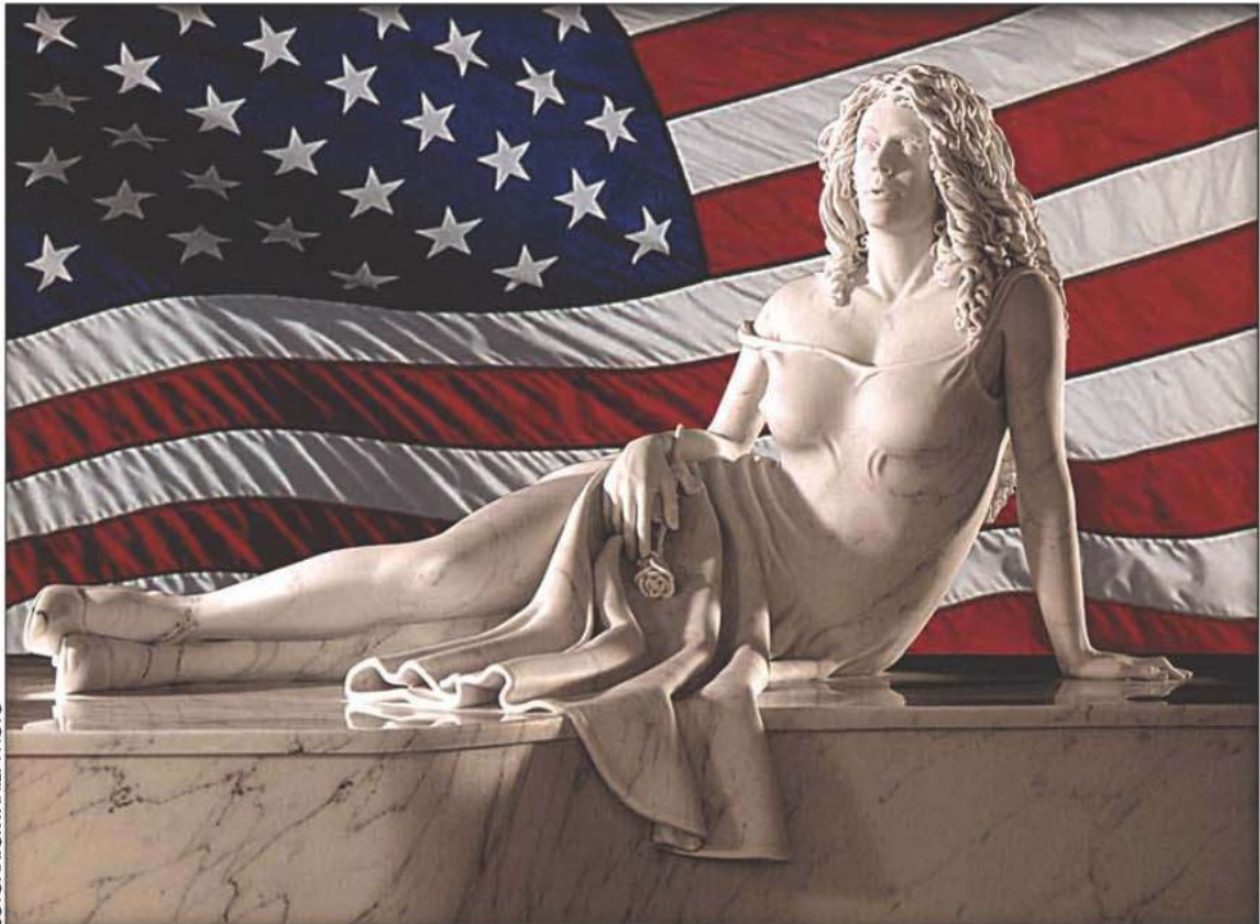
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# “American Woman” Comes to Tucson



SOTOMAYOR FAMILY PHOTO

The life-size, one-piece marble “American Woman” sculpture by Francisco Sotomayor will be on display at the 2010 Main Show in Tucson.

## Francisco Sotomayor’s Work Is a Featured Exhibit

Story by Barbara L. Miller

**A** new lady is taking the world of gem and mineral shows by storm. She is “American Woman,” a sculpture by Colorado artist Francisco Sotomayor. The artist and his work have been touring Colorado, Arizona, California, Nevada, Utah, Oklahoma, New Mexico, Missouri and Texas since 2007. The tours have been made possible by the sponsorship of companies such as Polycor Inc., Dremel International, Sanford Corp. (makers of Sharpie Pens), and Manitou Motion Pictures Ltd. “American Woman” has been on ABC, NBC, FOX and CBS News more than 60 times, and has been the subject of 12 radio interviews and 100 articles.

The sculpture, carved from Yule marble, consists of a woman seated on a grand piano, leaning back on her right hand. Her left hand, resting on her hip, curls around the stem of a rose, its forefinger slightly raised. Intricate ringlet curls cascade down the woman’s back. The draping and satin highlight polish of her gown are natural in appearance. Her lips, fingernails and shoes have been polished to a high sheen; the eyes a bit less polished and the piano has a luster finish.



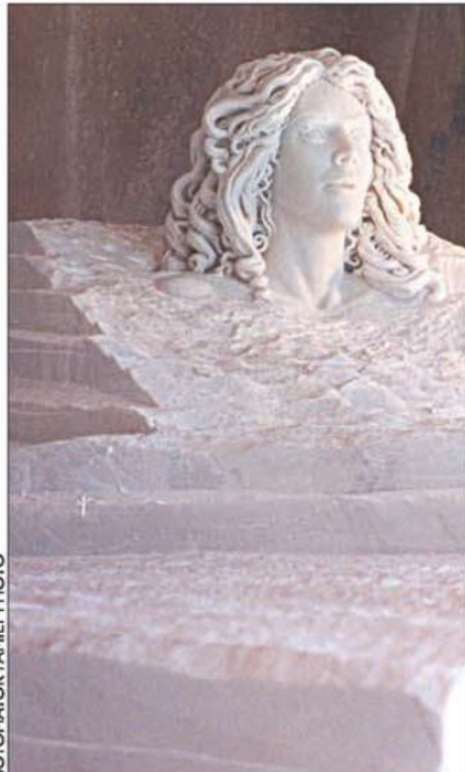
Francisco believes that his sculpture will add to the language of sculpting because of his extreme attention to detail, including the addition of carved eyelashes. Due to the difficulty involved, eyelashes have never appeared on a marble sculpture. Francisco said that addition would make the lady seem more lifelike.

"I have studied the whole timeline of sculpture," Francisco says, "from the oldest—the Venus of Walendorf 28,000 years ago—to the present-day sculptures. This is a volume of over thousands of marble sculptures. In marble sculpture, this is the first for protruding, carved eyelashes. There have been bronze sculptures that have silver eyelashes and wax sculptures with real hair."

Francisco is a Colorado Springs, Colorado, native who graduated from Palmer High School. Sculpting is his hobby; he operates a high-end custom wood shop in the Woodland Park, Colorado, area full time. He taught himself to sculpt from books, since sculpting classes were not available while he was attending college, and developed his own techniques. He says, "Artists stand on the shoulders of all those that came before them." He does not use religious or political themes, but prefers to create artwork that captures the feeling of an American renaissance era that compares to the 1500s, which were dominated by Michelangelo, the 1600s, which were shaped largely by Bernini, and the period from 1750 to 1820, which was influenced by Neo-Classical culture.

Having started with wood and clay, Francisco transitioned to white Yule marble from Marble, Colorado. He believes it is some of the best marble available since it has a smaller crystalline structure, for a weight of 170 pounds per cubic foot, that allows for his intricate sculpting. An added attraction is that it comes from his home state.

Francisco's first Yule marble sculpture was "David", a half-torso figure of a man holding a marble ball in his hands. The ball revolves, being totally free, but will not roll out. His second marble sculpture was "Pas de Deux", or "The Dancers", which is a man and woman entwined in a ballet position. He began with a 12-ton block of marble, and 3,000 work hours later, the 3,800-pound, life-size figures were completed.



SOTOMAYOR FAMILY PHOTO

Francisco removed part of the 21-ton block and began by sculpting the face and hair of the lady so that the body would follow in the correct proportions.



BARBARA L. MILLER PHOTO

A diamond burr and a lot of patience were used to sculpt the intricate marble ringlet curls cascading down the back of the "American Woman".



SOTOMAYOR FAMILY PHOTO

Francisco says he relies on a "built in" sense of proportion to guide him as he sculpts.

Francisco chose premium-grade Yule marble from Treasure Mountain for his sculpture of a woman on a grand piano. The Colorado Stone Quarry, near Marble, is owned by Polycor Inc., of Quebec, Canada, which is the second largest stone



SOTOMAYOR FAMILY PHOTO

Francisco used a real flower as a model in order to get this beautiful marble rose to look so lifelike.

company in North American and one of Francisco's sponsors. The mine operators searched for three months to locate the perfect marble block that was white in color, with the grain lying in the proper direction and few inclusions.



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BARBARA L. MILLER PHOTO

The marble ringlet curls, the raised left forefinger, the draping of the gown and the luster polish of the piano are details that set Francisco's sculpture apart.

In fall 2000, the 21-ton block was loaded onto Francisco's flatbed gooseneck trailer at the storage yard in Marble for its trek through the mountains. The sculpting studio was too small to house the huge block, so Francisco constructed a shop around the marble that could be dismantled upon completion of the sculpture.

Safety is uppermost in Francisco's mind while working. He wears safety glasses, ear protection, a facemask for breathing protection, and a cover over his scalp to eliminate the drying problem that can be caused by a buildup of dust.

On Jan. 31, 2001, the project began. Using diamond saws, Francisco removed marble to expose the area where he would begin the woman's head. I was amazed to learn Francisco uses his open hand stretched, thumb tip to little finger tip that measures 9 inches, instead of calipers for correct mathematical proportions. He began with the woman's head, because if it had the correct proportions when finished, the rest of the body would follow. He said he is fortunate to have a built-in sense of proportion that guides him as he sculpts. Francisco carved the ringlets using a Dremel diamond burr. A real flower was used as a model for the stone rose.

The weight distribution for the three legs of the piano was a very important factor to be considered. The reclining woman added much weight to the grand piano base. She had to be aligned perfectly on the piano for the 5-ton weight to be supported by the three marble legs.

Francisco's wife, Mindy, their daughters, Danielle, Courtney and Julia, and two professionals served as models for the marble lady. After completing the rough cutting with saws and chisels, Francisco used tungsten carbide burs on the Dremel to begin shaping the woman's features. Diamond

burs were then used to complete the shaping and polishing. He accentuated features on the face and in the hair by using a small diamond burr to establish depressions, creating shadows.

Francisco completed the sculpture in over 1,600 hours, over a two-year period, by working for three hours after closing the wood shop each evening. As his masterpiece neared completion, the choice of a name was weighing heavily on Francisco's mind. He wanted a special name and decided upon "American Woman" as a tribute to women in all of North America.

Francisco designed a cart with a Plexiglas® enclosure in which to transport "American Woman" to shows and built it with help from his son, Adam. He also designed a remote-control guidance system that wheels the cart into the exhibit area. The Plexiglas is removed, the legs were inserted into the base of the piano, and the cart is removed. The free-standing piano and reclining lady are then ready for public viewing.

Francisco unveiled the sculpture at the Plaza of the Rockies in Colorado Springs on May 8, 2003. Each of the 500 people in attendance were asked to bring the autographed marble chip they received when visiting Francisco in his studio during the sculpting process.

During shows at which "American Woman" is on exhibit, Francisco is a busy man. He autographs a color photo of the sculpture, plus a marble chip, for each person in line. Other members of the family visit with members of the public while Francisco is autographing.

As of this writing, Francisco has towed the lady over 22,000 miles to present her at 41 events and cities for exhibition. Their travels have not always been without mishap. As they neared Tucson for the 2007



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"American Woman" from page 24



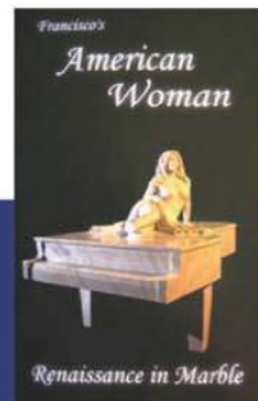
BARBARA L. MILLER PHOTO

Francisco designed a hand-controlled guidance system to move the glass-enclosed cart into position.

show, Francisco recalls, the transmission on their truck failed and they were at a standstill along the highway. However, 20 minutes later they were towed, thanks to very helpful people.

The sculpture travels in its Plexiglas enclosure and creates quite a stir wherever it goes. Francisco refers to it as "Art for the Rush Hour Traffic". While traveling in one of our western states, Francisco saw a state patrol car's blinking lights in the rearview mirror and pulled over, wondering what could be wrong. The patrolman was in awe of the lady enthroned inside the Plexiglas window enclosure. He requested several autographs, then wished Francisco and Mindy safe traveling.

The Sotomayors will be exhibiting in the Convention Center at the Tucson Gem & Mineral Show™, Feb. 11-14, 2010. Francisco's informational Web site is at [www.franciscosfineart.com](http://www.franciscosfineart.com).



Manitou Motion Pictures and Francisco have produced a DVD that depicts the progression of work on the "American Woman" sculpture. Titled "Francisco's American Woman: Renaissance in Marble", the DVD may be purchased at shows at which the sculpture is exhibited or by e-mailing [FranciscoArts@aol.com](mailto:FranciscoArts@aol.com).

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Artist Profile:

# Perry Brent Davis, MASTER CARVER

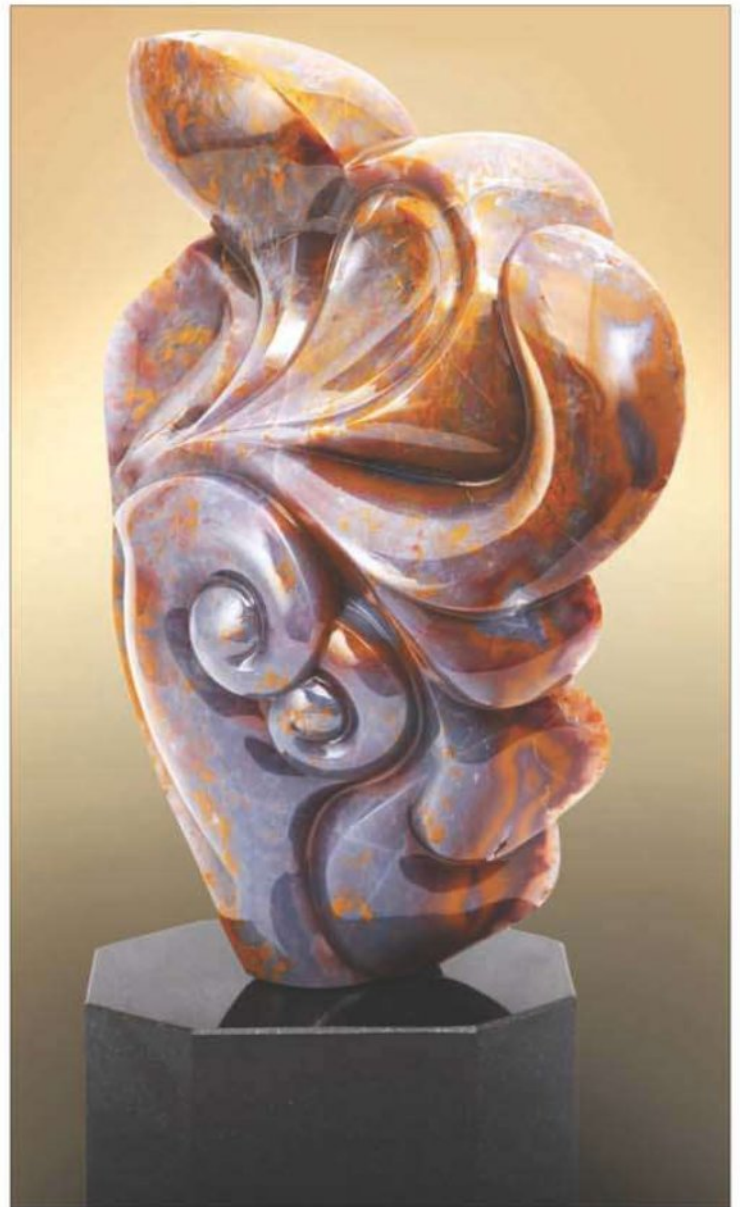
His Sculptures Meld Chinese Tradition with Modern Tools

Story by Bob Jones/Photos by Xu Bo

**A** display of a pair of gracefully carved, highly lustrous Condor agates caught my eye at the 2009 Tucson Gem & Mineral Show™. I have always enjoyed colorful Condor agate from Argentina, first brought to the United States by prospector Luis de los Santo. Little did I realize when I admired the two carvings that the artist who did them was as persistent and dedicated in the pursuit of his carving goal as Luis was in finding the Argentine agate.

“The main focus of my work is to create dynamic shapes supported by sensual lines that gradually evolve from a concept to a sculpture in stone. Combined with light the carvings will have a powerful impact on the viewer.”

—Perry Davis



The 12-inch-tall carving “Autumn Plumage” brings out the vibrant colors hidden in an Argentina agate from the Condor Mine.

The two agates were expertly carved into graceful, swirling forms, giving maximum exposure of the multicolored agate. The brilliant luster of the pieces rivaled any lapidary creation I had ever seen. Fortunately, I was able to meet the fellow who had created them: Perry Brent Davis, a man on a mission!

Many lapidaries in America carve small, lovely, jewellike gems, but few ever tackle the major problems inherent in carving very large gem objects. Such work has been done in China for centuries, but lapidaries in this country shy away from multiple-pound carvings for several reasons. Perry's mission has been to raise the level of awareness of lapidaries in the United States to appreciate—and even create—large carvings! To that end, he and his associates carve and polish stunning, multiple-pound pieces of colorful varieties of quartz, creating breathtaking gem objets d'art.

Perry's carvings are created using both modern and classic Chinese tools. The carvings are a composite of modern and classic Chinese design and carving arts, blending ancient Chinese and modern designs. Perry's carvings are the most lustrous and gracefully shaped agate sculptures I've ever seen.

The art of gem carving dates back thousands of years. Though it became highly developed in many countries, China is recognized as the leading source of the finest examples of the carving arts. Perhaps this was due, in part, to that people's love of jade and the availability of boulders of this material. The philosophy and skills that developed in China have resulted in some of the world's finest work. Perry sought to incorporate this universally recognized philosophy and skill into his work.

I chatted with Perry at the 2009 Tucson Show and was immediately impressed by his dedication to this ancient art form. Though he started in the United States by doing small gem carvings in soft stone, Perry realized that the only way to absorb Chinese carving philosophy and skills was to live in China, surrounded by expert traditional carvers, so he moved there. He currently lives in Jinzhou, Liaoning, in the northeastern part of that vast country. Perry chose this site because a very productive carving factory was located there. His goal was to absorb the philosophy of carving while incorporating modern techniques into the traditions of Chinese work.

Decades ago, Perry got into the gem and jewelry field almost by accident. He was working with leather-and-fur clothing when a friend introduced him to gem-



Clean lines and black dots in clear white agate from the Polka Dot agate mine in Oregon gave this carving the name "Flowing Purity".



In "Green Fireball", Australian chrysoprase is balanced with the lightness of a flaming fireball.



In "Movement Drama", typical Brazilian agate is brought to life in the smooth, fluid lines of a deep V-groove in an S shape.

stones. Perry immediately started making jewelry, working with a variety of soft stones until he realized he needed formal training in the jewelry crafts. He enrolled in a Graduate Gemology degree program at the Gemological Institute of America and started making the small gem carvings that were so popular in the United States.

As he pursued the carving arts, Perry saw that most artists were carving small stones, so he chose to do something different. This is when he realized to really express his carving art he had to go to China and learn from the masters of ancient carving skills.

In the city of Jinghua, China Perry partnered with the design director of what had been a thriving gem-carving factory that employed 1,000 expert carvers at one time. Perry and his partner re-opened the defunct carving factory. They identified and hired six of the most experienced and talented carvers who had worked in that facility. With their help, Perry and his partner were able to infuse the skill and historic techniques of these artists with modern techniques and equipment. Chinese carvers very often create their own carving equipment using materials readily at hand, with which they achieve breathtaking results. Using diamond tools accelerated the time it took to do hard stone carvings, even those done in traditional Chinese design.

That doesn't mean a carving could be done in a few hours or days. The carving alone normally takes from 200 to 500 hours to complete. After carving, it can take from 200 to 500 hours of polishing just to achieve the high luster seen on Perry's work. In one instance, Perry carved an 18-inch-diameter Brazilian agate. It took him 1,200 hours just to polish the piece—that's nearly two months!

Such a marriage of the ancient and modern did two things: It guaranteed that the ancient art of Chinese carving would be preserved, in the sense that it influenced Perry's carvings, and it speeded the process of creating a superb carving from many years to just hundreds of man hours. The end result of this devotion to combining ancient carving arts and modern equipment is a body of work that is now judged to be the finest gemstone carvings in the world!

Obtaining gem rough weighing many pounds and measuring a foot or more across and carving the material proved not only costly, but fraught with hidden problems. It is easier to detect internal flaws in small gem pieces. Large pieces of gem rough are more likely to contain undetected defects such as cracks, flaws, tiny vugs, or air bubbles. Even the most skilled lapi-



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dary cannot detect all such internal flaws before starting a large carving.

Perry's carving have grooves that are a half-inch deep or more and only a few millimeters wide. Polishing them can be tricky; normal rubber or felt polishing wheels can't reach down into deep grooves very easily. To avoid using modern tools, Perry adapted the method used in China. He used a Popsicle® stick with a mixture of cerium oxide and petroleum jelly on the end to get into those deep grooves. Doing this by hand takes an enormous amount of time and patience, but the result is carvings that are phenomenal!

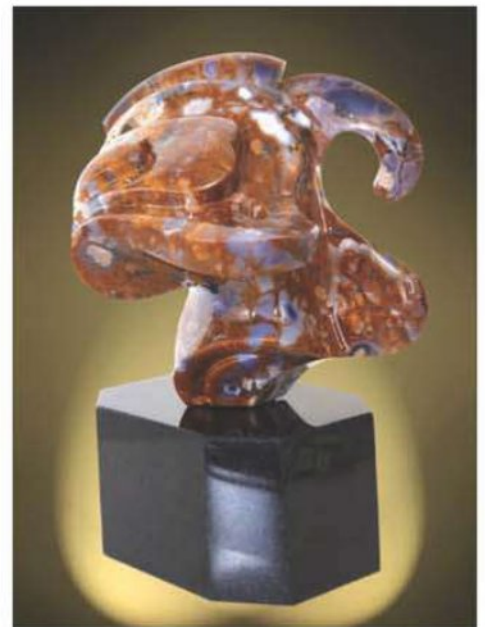
The positive side of doing large carvings is that it allows the artist to be more creative and more flexible in what he envisions as the final design and finished piece. Every carver starts out with a mental image of what the final piece should look like. The application of design to small gemstone rough is easier, but when an unforeseen problem reveals itself you have few options—and little material—to change the design.

When a flaw shows up during the carving of a large gemstone mass, the carver has greater flexibility in changing the overall design, since he has more material to work with. The larger the piece, the more likely you are to find defects, but the opportunities to work around flaws are greater. There are bound to be surprises—pleasant or unpleasant—within a large stone. In many cases, what is revealed becomes a positive addition to the overall design for a skilled artist.

Davis' group only works in quartz, agate, quartz varieties, and jasper. These are all hard stones that are difficult to carve, but are available in multipound masses. The variety of colors and nice patterns in agate, for example, add to the appeal of the final carving, and quartz stones will take a high polish.

China is world renowned for its jade carvings. Jade is both tough and hard, and has been carved in China for thousands of years. As a result, special carving machines, designed primarily for jade, have been developed in China. Such machines are ideal for carving quartz varieties, as well. When Perry took over the closed carving factory, he adapted the jade carving machines for quartz carving.

To attach the proper tools—wooden sticks or simple metal rods of varying diameters used to carry the grinding compounds, and later the polishing compounds—to the machine mandrel, Perry uses shellac, an older carving method. He also adapted



Brecciated material from the Amethyst Sage Mine in Nevada was the material used for "Wild Spinning".

modern equipment, like quick-change keyless chucks on steel mandrels, to accelerate the working time.

For large-scale polishing, Perry uses synthetic optical-grade felt of different shapes, depending on the surface to be worked, charged with petroleum jelly and diamond grit, from rough to fine. He sometimes uses Crystallite® dop pads when necessary, and don't forget those handy Popsicle sticks!

In order to combine modern and ancient carving philosophies and techniques in shaping a large mass of quartz, agate or jasper, Perry uses a team effort. Perry, with his modern design ideas, and the Chinese expert carvers, steeped in traditional Chinese carving designs, discuss the piece. Each person makes contributions to the ultimate design. To start with, the stone is examined from every angle by the experts. Each team member makes observations and suggestions on the future design of the piece. They form an initial plan of attack.

As the outer layers of mineral are removed and patterns of inclusions and color are revealed, the team continually reexamines the piece and recommends any changes in the plan that could incorporate the new developments. This continual team contribution to the design brings about changes in order to reach an ideal final design. Each internal surprise that is revealed is evaluated, and this helps direct the carver's efforts so that the final carving will be recognized as a sensational work of art. Experts who have looked at this team's work quickly recognize the Chinese influences in what is truly a piece of modern carving art in which strong ancient Chinese influences combine with Western ideas and techniques.

The overall goal of the team planning and carving effort is to create something



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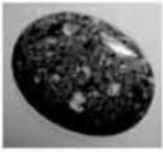
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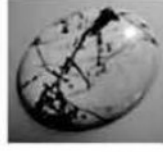
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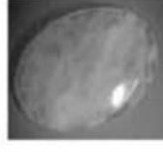
**Sizes**  
30 x 40 mm  
10 x 12 mm  
8 x 10 mm  
6 x 8 mm

### Rhodonite #792



**Sizes**  
13 x 18 mm  
10 x 12 mm  
8 x 10 mm  
6 x 8 mm

### Rose Quartz #795



**Sizes**  
30 x 40 mm  
13 x 18 mm  
10 x 14 mm  
10 x 12 mm  
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6 x 8 mm

### Rainbow Fluorite #380



**Sizes**  
13 x 18 mm  
10 x 12 mm  
8 x 10 mm

### White Quartz #762

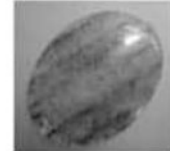


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13 x 18 mm  
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### Sale Price for Cabochons (Lapis NOT included)

30 x 40 mm	\$2.25 Each
22 x 30 mm	\$1.75 Each
18 x 25 mm	\$1.25 Each
13 x 18 mm	\$ .63 Each
12 x 16 mm	\$ .50 Each
10 x 14 mm	\$ .40 Each
10 x 12 mm	\$ .35 Each
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6 x 8 mm	\$ .25 Each
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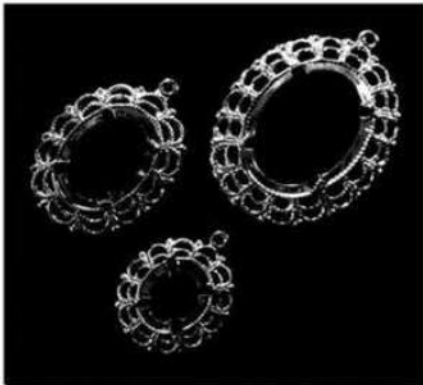


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8 x 10 mm	\$ .64 Each

**Sale Price for One Dozen**

18 x 25 mm	\$7.90 doz.
13 x 18 mm	\$6.00 doz.
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### Lapis #595



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4 x 6 mm	\$ .50 Each
4 mm Dia.	\$ .50 Each
6 mm Dia.	\$ .75 Each
8 mm Dia.	\$ 1.25 Each
10mm Dia.	\$ 2.00 Each



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Perry Brent Davis from page 32

that exemplifies the power of Nature within a stone while exposing the beauty of the stone. This is achieved by carving fluid lines, curves and images based on the vast experience and skill of the artists involved. The resulting objet d'art incorporates the quality of ancient Chinese carvings in a modern design that appeals to all.

Comparing ancient Chinese carvings to the work from the Perry Brent Davis Studio, several obvious differences are noted. Early Chinese carvings are seldom highly polished. It is common that tool marks are left visible in early Chinese carvings. One reason may be that ancient tools simply did not achieve the mirror-image of today's work. More likely, what we consider unfinished work, actually relates to ancient Chinese traditions that did not depend on a perfectly carved piece with a smooth, highly polished finish.

The Davis work, on the other hand, is completely free of tool marks and is so highly polished you can see reflections in its surface. Such an extreme luster is only possible using modern materials. Perry's finished carvings are a lustrous and sharply detailed stone done with skill and perfection with a mirror-bright finish.

Another obvious difference between ancient Chinese carvings and the Davis work is in the geometry of the pieces. Chinese carvings tend to be heavy at the base, gradually extending upwards in a more or less tapering, often delicate, design that ensured more than 50 percent of the stone remains in the lower half of the carving. This gives the old carvings stability and a base from which the final design emerges.

The Davis work is just the opposite. Each piece is designed to start out narrow at the base, flaring out wider and wider as the design flows. With overhangs, the piece develops in an ever widening design. The form flows upward in a slow and ever-expanding graceful shape so it looks ready to topple over. The pieces are so perfectly balanced, so carefully carved they stand steadfast. By doing this a preponderance of weight of the finished piece is in the upper third of the carving! Yet, the final piece is perfectly balanced and stable.

Since all Davis carvings are three dimensional they must be viewed from all directions. To see all sides of each carving a viewer would have to make a complete excursion around the piece. Either that or the viewer has to manually turn the carving again and again, not a good idea because of the weight of each piece. Viewing each carving from every angle and every direc-



"Shooting Star" is a Brazilian agate carving inspired by an area of red banding that looked like a comet with a tail traveling across the rock.

tion was something that had to be designed into the piece.

To solve this viewing problem, Perry mounts each piece on a single pin protruding from a granite base. The granite base is drilled and a pin inserted. Then the carving has to be drilled in exactly the right spot to achieve a perfect balance and allow the piece to be easily turned in its pivot. This is no easy task as drilling the piece can take as much as four hours to achieve perfect balance and fluid movement so the carving turns effortlessly.

Once mounted, any gentle touch to the carving will cause it to rotate easily, revealing every curve and design, every color and pattern. This is a delightful final touch that enables the viewer to admire every side and angle of the carving. Each turn reveals a completely different design and color pattern, delighting the viewer. It's as if you have several carvings in one.

Each original quartz mass tends to dictate how the carving will be started. Once the work has started, constant critiquing throughout the process produces an end result that is unique as it reveals the natural patterns and colors of the gem in elegantly curving designs.

Davis' goal was to develop a carving style that was not possible to achieve in the United States. He has done this in China, the historic seat of traditional carving. He learned to combine ancient Chinese carving designs and techniques with modern designs and methods of carving. This, in turn, helped him achieve his ultimate goal: to raise the awareness of both the American public and lapidaries to the beauty and art of major gem carvings. His goals have been accomplished, as elegantly expressed in his work. ♦

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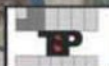
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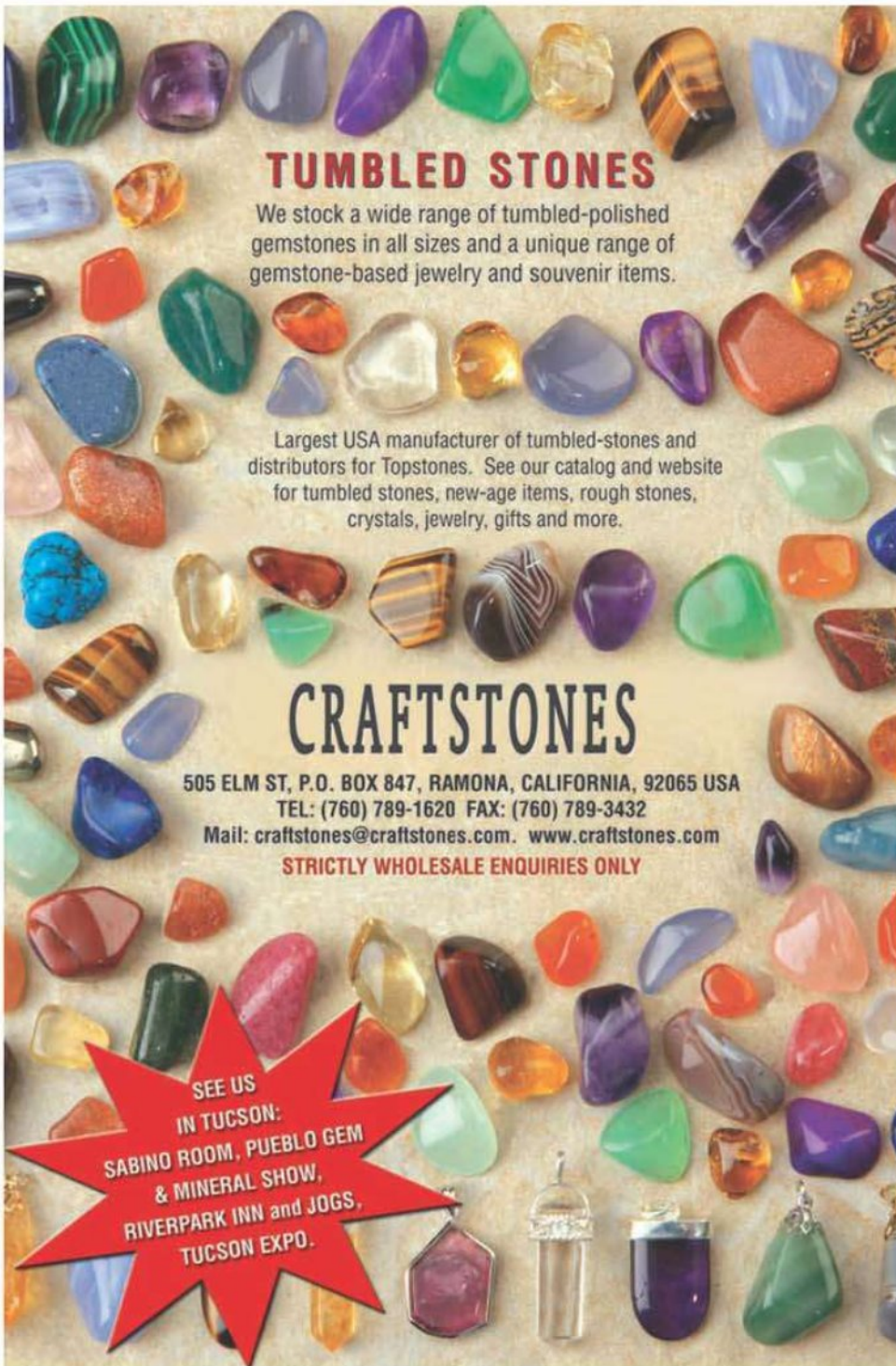
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continued on page 52



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The Revere Academy will hold a world-class series of workshops during its 2010 Masters Symposium, Apr. 3-25 in San Francisco. The Academy will host 14 master classes taught by leading goldsmiths and other experts from around the globe. Classes are open to students at all levels.

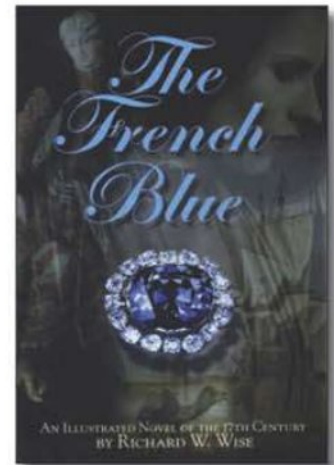
This year, Fabrizio Aquafresca, who comes from a long line of Italian master craftsmen, will share his special techniques in Chasing & Repoussé. Metal and stone artist Michael Boyd will teach both media in his classes Stone & Metal and Gem Carving at the Bench. Linda Darty, author of *The Art of Enameling*, will teach Enameling in Depth and Cloisonné. James Binnion, an expert metallurgist and master craftsman, will teach Creating Mokume Gane and Patterning Mokume Gane. Alan Revere, award-winning designer, author and educator and the Academy's founder, will share his creativity, and design expertise in a class called Jewelry Design with Alan Revere & Friends. Wayne Werner, a third-generation metalsmith from Baltimore will share his expertise in Hot & Cold Connections and Exploring the Ring. Curtis Arima will share his passions forging, forming and fabricating natural forms in metal in Nature-Smithing. Suzanne Pugh's class Gold & Steel is perfect for those looking to combine these dramatic materials in their work. For the first time in history, Hap Sakwa, a leading jewelry photographer, will share his expertise with students in Photography for Jewelers.

Most classes are open to students at all levels, from absolute beginner to advanced. Each week during its Masters Symposium, the Academy hosts a Wednesday evening lecture/reception for visiting masters that is open to the public.

Revere Academy of Jewelry Arts, 760 Market St., Suite 900, San Francisco, CA 94102, (415) 391-4179; [info@revereacademy.com](mailto:info@revereacademy.com); [www.revereacademy.com](http://www.revereacademy.com)



Mokume gane pendant by James Binnion  
in sterling silver, copper and brass.



## BOOK REVIEW: *The French Blue* by Richard W. Wise

Recent studies at the Smithsonian Institution and *The Stonecutter (Gems and Gemology, Vol. XIV, Fall 2009)* have virtually proved that the blue diamond known as the Hope diamond was derived from [a larger stone called] the French Blue. Those with a strong interest in America's blue Hope will find *The French Blue*, by Richard W. Wise (Brunswick House Press, 2010), a most fascinating, largely true story that brings to light the entire history of the acquisition and sale of the French Blue.

Sold by Jean Baptiste Tavernier to Louis the XIV, the French Blue was brought to Europe by Tavernier, a famous 17th-century world traveler and gem dealer. Tavernier made six voyages to the Far East in search of gems and documented his journeys and adventures in a series of three books. These books form the basis for Wise's very accurate retelling of his adventures. Where information on Tavernier's adventures is missing, Wise does his best to fill in, as accurately as possible, possible scenarios. This turns the text into a wonderful adventure. Twenty-eight black-and-white illustrations are interspersed throughout the well-spaced text.

If you have seen the Hope Diamond at the Smithsonian or are intrigued by this marvelous blue gem, *The French Blue* will fill in a host of gaps in the tale of America's most famous diamond. The 489-page book sells for \$29.95.

—Bob Jones

Brunswick House Press, 81 Church St., Lenox, MA 00124; [sage@secretsofthegemtrade.com](mailto:sage@secretsofthegemtrade.com); [www.thefrenchblue.com](http://www.thefrenchblue.com)

continued on page 40

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**DVD REVIEW:**  
**Capturing the Minerals: Three Photographers' Perspective**

Every year, the Westward Look Mineral Show in Tucson, Arizona, holds a Sunday Evening Event that features a panel of prominent individuals in the mineral hobby. "Capturing the Minerals" (BlueCap Productions, 2009) documents the February 2009 program in which mineral photographers Michael Bainbridge, Joe Budd, and Jeff Scovil shared more than 100 of their favorite specimen photos and a few comments on the specimens and their photographic techniques.

Bainbridge ([www.theoccurrence.ca](http://www.theoccurrence.ca)) has a background in motion picture photography and television camerawork. His interest in mineral collecting drew him into the field of still photography with minerals as his subject. He is currently attached to Canadian Museum of Nature, Ottawa, photographing the minerals in its care.

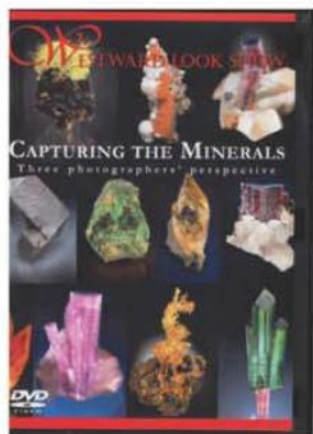
Budd ([http://homepage.mac.com/joe\\_budd/minerals.html](http://homepage.mac.com/joe_budd/minerals.html)) had only been a mineral photographer for one year when this presentation was made. His background included architectural and product photography. He made his foray into mineral photography when he was approached by a collector in connection with a project called "Private Mineral Collections of Texas" (*Mineralogical Record*, 2009).

Scovil ([www.scovilphoto.com/index.shtml](http://www.scovilphoto.com/index.shtml)) is an internationally known mineral photographer whose work has been published in books and magazines around the world. After starting his career in archaeology, he began photographing minerals in 1975, only making it his full-time occupation in 1990.

The 76-minute video features a live commentary track over a high-resolution pan-and-scan slideshow of photos, with minimal footage of the speakers, and sells for \$24.99.

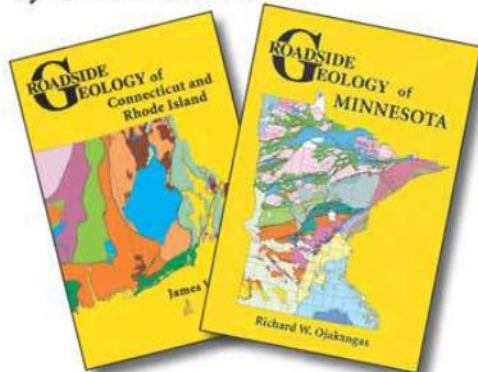
—Lynn Varon

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**BOOK REVIEW:**  
**Roadside Geology of Minnesota**  
by Richard W. Ojakangas

**Roadside Geology of Connecticut and Rhode Island**  
by James W. Skehan



These texts continue the *Roadside Geology* series by Mountain Press Publishing Co. *Roadside Geology of Minnesota* (2009) describes the geology and formation of the minerals extracted from the famous Mesabi Range. Readers will be interested to learn how the Mesabi ores were deposited and enriched.

This text answers a host of questions on how and when Minnesota's important lakes formed. Local rockhounds will find this text a very useful guide to the topography and geology of this northern state!

The geology of Connecticut is of particular interest to me, as I wrote my master's thesis on "The Luminescent Minerals of Connecticut" in 1959. *Roadside Geology of Connecticut and Rhode Island* (2009) offers insights into the formation of the Central Connecticut pegmatites that played such an important role in the early days of mineralogy in this country.

The later-formed basalts and the effect of the relatively recent glaciers that gouged the land are also of interest to collectors. The basalts hold the many suites of zeolite minerals which formed in them, minerals revealed by the glacial action.

Rhode Island's geology is closely associated with Eastern Connecticut's geology. The action of the glaciers contributed so much to the current Rhode Island shoreline. Of special interest to rockhounds is the Narragansett Pier Granite. This ancient rock is pierced by pegmatite veins, one of which is currently being worked by local collectors to yield beryl crystals, the first found in this state.

Collectors should possess the texts from this series that are relevant to the state or states in which they collect. After all, understanding the geology can be most helpful in your search for Earth's mineral treasures.

—Bob Jones

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## Mica

Sheet silicates

Mica is not a single mineral, but a group of some three dozen minerals of similar chemistry and structure. Their tablet-like crystals form "books" that separate into thin, flexible sheets due to perfect basal cleavage. Mica minerals are translucent to transparent, lightweight and soft (Mohs 2 to 3), with pearly, vitreous or metallic luster. Mica is one of the most common rock-forming minerals and is found in all three rock types, igneous, metamorphic and sedimentary. Four notable varieties of mica are:

**Muscovite**,  $KAl_2(AlSi_3O_{10})(F,OH)_2$ , the most common mica, is found in granite, gneiss and schist. Resistant to weathering, it's abundant in sand and soil. Transparent to translucent and silvery, it's lighter in color than other micas. A green chromium-enriched variety is called fuchsite.

**Biotite**,  $K(Mg,Fe^{++})_2(AlSi_3O_{10})(F,OH)_2$ , is enriched in iron and varies in color from brown to black. The more iron it contains, the darker its color is. It yellows with weathering, and flakes of it can fool gold panners. Biotite is easily altered; seawater turns it into a mica variety called glauconite.



The three dozen varieties of mica include (back row) lepidolite, muscovite, biotite, (front row) fuchsite and phlogopite.



Muscovite mica is transparent and sometimes forms huge sheets.

Reddish-brown **phlogopite**,  $K(Mg,Fe,Mn)_3Si_3AlO_{10}(F,OH)_2$ , is similar to biotite, but it contains little iron, so it's less dense and lighter in color. While biotite is commonly found in granite, phlogopite is more common in magnesium-rich pyroxenite, peridotite and marble.

Pink to lilac **lepidolite**,  $KLi_2Al(Al,Si)_3O_{10}(F,OH)_2$ , forms only in pegmatites that are rich in lithium, where it's found along with gemstones like tourmaline. Some specimens flash colors when they are squeezed, an effect that is known as triboluminescence. Lepidolite can occur as compact masses that can be polished into cabochons.

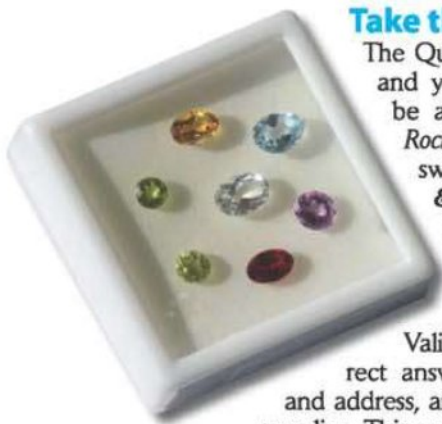
Sheets of muscovite were once used as windowpanes in Russia and were known as "Muscovy glass". Resistance to electricity and heat makes it perfect for insulation and for use in stove windows. Ground-up mica can be used as filler for plasterboard and paint and serves as lubricant in oil well drills and as artificial snow for Christmas trees! Phlogopite provides insulation between copper and steel in electric motors, and lepidolite is a source for lithium salts, which are used to treat bipolar disorder.

—Jim Brace-Thompson

## Take the Quiz, Win a Prize!

The Quiz is open to U.S. residents 17 and younger. All the questions can be answered by carefully reading *Rock & Gem Kids*. Mail your answers to **February Quiz, Rock & Gem magazine, P.O. Box 6925, Ventura, CA 93006-9899**. Five winners will be drawn from the valid entries received by **Feb. 31, 2010**.

Valid entries must include the correct answers, the entrant's name, age and address, and the signature of a parent or guardian. This month's prize is a set of seven faceted gems generously donated by Carolyn Phillips and Colin Osman.



1. Mica's crystals separate into thin, flexible sheets due to perfect \_\_\_\_\_.
2. Fuchsite is a green, chromium-enriched variety of \_\_\_\_\_.
3. Yellow flakes of \_\_\_\_\_ can fool gold panners.
4. The chalcedony in Tampa Bay coral is colored by \_\_\_\_\_.
5. Florida's state stone is actually a \_\_\_\_\_.

## WOMEN IN MINERAL COLLECTING:

### Gail Patricia Spann

Gail Patricia Spann and her husband, Jim, live in Rockwall, Texas. She is a very, very busy lady. For many years, she owned and operated a fine art and framing shop. Gail is active in bicycling and is the Texas ambassador for the League of American Bicyclists. She is also a very serious and accomplished mineral collector. Gail travels all over the United States to participate in cycling and mineral events. She often gives talks and is always ready to visit with people and talk about the things she loves in life. I asked Gail some questions about mineral collecting. Here are her thoughts.

How are women mineral collectors different from men collectors?

Women are more into the look, beauty and color of minerals. For example, women are drawn, so often, to those minerals that have colorful crystals and a slight sparkly effect. Women display their minerals better, also, incorporating them into the décor of the house and less into keeping them in flats under beds. When it comes to purchasing minerals, women will take longer to shop for a bargain and will wait till the "one that calls their name" is available. We enjoy seeing shapes in our minerals and often communicate that when showing minerals to other women.



DARRYL POWELL PHOTO

Gail and Jim Spann

What wisdom would you offer young women and girls to help them find success and satisfaction in mineral collecting?

Find other women in local rockhound clubs and learn from those that actually do dig. Buy mineral publications and read them. Go to shows with others to see pricing, availability and comparison. Go to museums, meet the people who work there, ask questions. They really don't mind! Buy minerals [at] auctions that have low starting prices, see what you can find that appeals to you and start collecting a few pieces as reference. If you really do like it, collect it. I have found that collecting is a constant[ly] evolving thing; you move on to other minerals while still loving those you first collected.

What is the most rewarding and satisfying aspect of mineral collecting for you?

The fact that I have a wonderful husband who also collects and goes to shows alongside me. It makes for a fun relationship when we both enjoy all the same aspects of our hobby. We love to be social, so that is a satisfying [part] of collecting, as well. We have crawled into mines together and love that we are there as a couple.

Would you encourage young women to pursue a career in the mineral collecting hobby?

Young women should pursue any field that interests them. If a young lady desires to be a mineral dealer or work in the field of mining, she should follow her dreams.

—Darryl Powell

## Florida's State Rockhound Symbols

So far as I'm aware, Florida is the only state whose state gem is not found within its borders! Still, moonstone is a highly appropriate choice. It was named state gem in 1970, at the height of the Apollo missions, which blasted off from Florida's Kennedy Space Center, successfully capping a decade-long race to the moon. Moonstone is a form of the mineral feldspar. Translucent, with a pleasing sheen effect, moonstone occurs in a range of colors, including white, gray, brown, yellow, green and pink.

Some folks were unhappy that a non-native mineral was named state gem, so a movement started to have agatized coral, commonly referred to as Tampa Bay coral, designated the state stone, which it was in 1979. Much of this coral grew within reefs 35 million to 40 million years ago, during the Eocene Epoch, and was initially composed of calcium carbonate. After it was buried, the coral dissolved and was replaced by silica in the form of chalcedony. The outside still looks like coral, but cut it open and you'll usually find that it's hollow, like a geode, and the interior is lined by chalcedony in botryoidal (bubbly) form. The chalcedony has various colors caused by trace minerals; most of the pieces in my collection are shades of brown, yellow, blue, gray and black. It's found around Tampa Bay and in beds of the Econfina River and the Withlacoochee and Suwannee rivers.

Since Florida's state stone is actually a fossil, and amid lingering consternation about non-native moonstone, some have proposed starting all over. For instance, in 2006, one Florida state senator moved to name Ocala limestone the state rock, cal-

cite the state mineral, and the Eocene heart urchin *Eupatagus antillarum* the state fossil. Looks like the book isn't yet closed on Florida's state rockhound symbols!

—Jim Brace-Thompson



JIM BRACE-THOMPSON PHOTO

Outwardly drab Tampa Bay coral has a colorful chalcedony interior. Moonstone, set in the pendant, was designated state gem to honor the Apollo moon missions that blasted off from Florida.

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# ROCK SCIENCE

by Steve Voynick

## Tiger's-Eye Chatoyancy

**R**ock & Gem reader James Hutchinson, a member of the Maplewood Rock & Gem Club near Seattle, Washington, recently directed my attention to new information regarding the origin of tiger's-eye, the quartz gemstone that exhibits mesmerizing gold, amber and brown bands. Tiger's-eye is a prime example of chatoyancy, an optical phenomenon in which parallel arrangements of mineral fibers included within certain transparent or translucent crystals reflect bands of light to create a bright, silky luster. Although tiger's-eye is easily affordable at rock shops, it still ranks high among the most intriguingly beautiful forms of quartz.

In 1873, mineralogists concluded that tiger's-eye was a form of chalcedony and that its chatoyancy was due to pseudomorphism in which microcrystalline quartz had replaced crocidolite, an asbestiform variety of the amphibole mineral riebeckite (basic sodium iron silicate). Mineralogists of that era believed that, after replacing the crocidolite fibers, the quartz had retained the crocidolite's original, parallel-fiber structure, causing it to reflect light in narrow, undulating bands that resemble the slit of a cat's eye. This explanation was accepted as a textbook example of pseudomorphism for 130 years, during which time tiger's-eye saw little, if any, further mineralogical investigation.

In 2003, however, a Pennsylvania State University research team used electron microscopy and X-ray diffraction to arrive at the totally different conclusion that tiger's-eye is not chalcedony after all, but macrocrystalline quartz, and tiger's-eye's chatoyancy is due to light reflecting from crocidolite fibers that were encapsulated by quartz during "crack-and-seal" hydrothermal vein deposition.

According to this theory, both crocidolite fibers and quartz were precipitated simultaneously within a restricted space. During this slow crystallization process, crustal movements generated by tectonic stresses opened many tiny new fractures that became filled with new precipitates to create repetitive, parallel layers of quartz-encapsulated crocidolite fibers. This theory, published in 2003, was widely acclaimed and has since become the accepted explanation for tiger's-eye chatoyancy.

Enter Hutchinson, who has a large collection of rough tiger's-eye. He noted that some of his specimens exhibited crocidolite fibers only partially encased in quartz—an observa-



tion that did not support the new theory. Hutchinson reported his observations to the Penn State researchers. Hutchinson received a reply from Penn State admitting that the team's theory had indeed already been challenged by South African researchers—a challenge that has not been widely reported.

Contrary to the Penn State theory, the South African researchers once again attributed tiger's-eye's chatoyancy to pseudomorphism—with a new twist. Their theory of origin points to the non-simultaneous formation of crocidolite and quartz in which pre-existing veins of crocidolite later became silicified. Furthermore, the South African theory suggests that the gold-amber-brown colors of tiger's-eye are not created by crocidolite at all, but by alteration of the ferrous (Fe<sup>++</sup>) component of crocidolite into goethite (basic iron oxide). In this example of pseudomorphism by chemical alteration, the goethite appears to have retained the detail of the parallel-fiber structure of the original crocidolite and may or may not have been later encapsulated by quartz.

Agreement among researchers about the origin of tiger's-eye's chatoyancy obviously awaits further mineralogical research, but the point already made clear by Hutchinson is that it is remarkable what amateur mineralogists can do when they study current mineralogical literature and apply what they learn to observations of their own specimens. ♥

Steve Voynick is a science writer, mineral collector, former hard rock miner, and the author of books like *Colorado Rockhounding* and *New Mexico Rockhounding*.



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NEW FIND!

# RHODE ISLAND Beryl

Rockhounds Make an Exciting Discovery



**It took us eight hours to extract the largest beryls from the hard pegmatite in the tail section of the dragon with a hammer and chisel.**

Story by Scott Maier/Photos by John Sassi

**A**lthough dozens of fascinating mineral species, including azurite, malachite, calcite and amethyst, can be found in the little state of Rhode Island, no variety of beryl has been found there—until now. There were rumored to have been trickles of Rhode Island beryl popping up in the mineral world in the 1950s, but these specimens were later discovered to have come from a New Hampshire locality. The hexagonal geometry of the standard beryl crystal had, ever since then, eluded diggers within the borders of the state.

John Sassi had better information on the subject, derived from personal exploration. In March 2008, while working construction on a large oceanfront residence in Narragansett, he had spotted tiny, poor-quality beryl in coastal rocks, at which the Atlantic Ocean lapped on a daily basis. He had not time to explore it on that particular day, so the discovery had receded into the back of John's mind. Time passed, and although the thought of the find returned every once in a while, the exploration remained a secondary priority. The motivating factor proved to be an unanticipated and sublime proverbial kick in the pants: Bad luck fishing at an uncomfortably early time of the morning.

I had just returned from studying abroad, and was reacquainting myself with everything I had left and come back to. John and I had discussed a couple of digging days in Connecticut, Maine, and New

Hampshire, but at the time I was looking for a job and running on a tight budget. John and I went fishing early one morning instead. This was a free activity, and who knows, we might even catch something for the big Memorial Day barbecue that afternoon. Unfortunately, it soon became clear that we'd have no luck catching a meal on this cold, rainy day. We were already drenched, however, and awake at 5 a.m., so John suggested we check out some crystals across the bridge. He was half serious, but realistically we had a better chance of finding an interesting patch of smoky quartz or some beach glass than catching a fish, so I was agreeable from the start.

John's red Ford Ranger, with rocks glued to the dash and rock dust in the bed, buzzed over the Pell, and then Jamestown Bridges, and went up the coast of Narragansett to an empty parking lot that was close to a public coastal access. Our plan was to start several miles away and check for beryl along the coast.

We scrambled and climbed along the coast as it wove a zigzag stitch across the bay. Certain points were non-traversable because of tide pools or rock obstacles, and we had to climb through raspberry briars, poison ivy, and grapevines to get around those blockages. John stopped at a spot that showed some interesting smoky and milky quartz banding. I wanted to split some pieces off the file cabinet-size quartz boulders for cabochons. While I did this, John went looking around. A few minutes later, he came back with a 5-centimeter green beryl, which was protruding from a weathered ball of white matrix. The stone was a vaguely translucent deep olive color. I urged John to crack off some matrix to



**TOP LEFT:** One of the first beryls we pulled out was found in a mix of quartz and salmon feldspar and contains several small green beryls throughout the matrix.

**TOP RIGHT:** The coastline near where Rhode Island's first beryl was discovered was a semitraversable mess of slippery rocks, tide pools, and large rock obstacles.

**CENTER LEFT:** The size range of Rhode Island beryl is represented here: 1 centimeter heliodors, 1.5 centimeter matrix specimens, 2 centimeter translucent green beryls, and larger formations with interesting parallel growth tendencies.

**CENTER RIGHT:** The weather-worn top layer of rock shows several crumbling heliodor crystals. Signs like this led us to uncover several "patches" of densely clustered yellow and green beryls.

**BOTTOM:** These three 1.5-centimeter pieces of heliodor are representative of the higher quality yellow beryl. They are well formed, semi-translucent and unterminated.




reveal more of the crystal. Against his better judgment, he did so. The blow cracked the piece to shards, and the pieces of olive beryl sprayed into the cracks between the boulders. What was left was a smaller beryl of slightly better color, which had been revealed by the mishap. Where there's one beryl, we reasoned, there ought to be more.

Our small expedition took on a more serious tone after this. I put my several small pieces of banded quartz away in my pack and we looked at every boulder along the coast for another half mile. We ducked through another patch of underbrush and came out at a staircase. We climbed along the rocks and came





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The end cap of our vein stops abruptly as the whole feldspar slope drops into the Atlantic Ocean. The vein pictured here produced most of our larger specimens.

to a cove with sand and pebbles, where I discovered our next promising indication that we were still on the right track to discover a vein: another olive-green beryl lodged in a white ocean-tumbled quartz lump. This one was poor in quality, and I opted to attempt to bring this piece out of matrix, as well. I cracked it right where I meant to, and indeed brought the small beryl mostly out of matrix. Unfortunately, the crack split open a much nicer piece that had been wholly hidden inside the stone. This one was much darker and slightly gemmy, and roughly 1 centimeter in diameter. I was grateful for the feelings of success the crystal prompted, but regretful for having not checked thoroughly enough for indications of more crystals. At least we were still close to the trail of the material.

We continued along the coast for another half hour. It was slow getting around the boulders and over the tide pool ledges. Eventually, we stopped again to make a plan. John wanted to continue the next two miles to the place at which he had seen the tiny beryl crystals almost a year and a half earlier. I thought that, since we hadn't seen any signs of hexagonal green windows, we should return to where we had found good signs of it. We were



The first day, we carried out several pounds of beryl crystals, both heliodor and the common green variety.

about to discuss the merits of each plan, but the discussion was over before we got to word one. John was staring at my feet with the look of a cautious delight in his face. There were soda can-size beryls in clusters occurring over a 4-meter swath of the pegmatite host rock. There must have been 15 crystals showing color or shape, and a half-dozen slender, opaque, yellow heliodor crystals. All were weather-worn, but the important thing was that these crystals would likely have near duplicates resting just inches deeper into the feldspar and quartz pegmatite.

We put our bags and tools down far enough away from the crystals so that we would not be tempted to start digging immediately and stopped to take in the layout. The vein ended one meter to our right, but continued uninterrupted for another 10 meters to our left. Large, green beryl crystals made up a majority of this section. The 4-meter section in the middle was full of heliodor. Some deep amber and honey-colored pieces came from this stretch of peg-shelf. Heliodor of any decent size or color began to dwindle in the last several meters.

About 30 meters farther down, there was a meter-wide shelf of beryl-bearing pegmatite that cut into a steeply sloping face of pink feldspar. The drop slanted into the breakers about 15 feet lower. We extracted our largest, most intact green beryl specimens from this spot. The largest specimen pulled from this end-cap section is a pale-green matrix piece that is approximately 5 centimeters in diameter. We also pulled three very well-formed green beryls that measure from 2.5 centimeters up to 3.5 centimeters each.

Meanwhile, back where we first noticed the crystals, in the long zone of heliodor, we began to see more color, better clarity, and more impressive size. One of the best specimens for color and clarity is a piece of translucent and foggy sea-green beryl that was terminated at one end. It is 2 centime-

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The largest crystal we found was pulled from a section containing mostly smaller heliodor. It's doubly terminated, with a fascinating parallel set of crystal growths.

ters tall and rests at 45 degrees. The diameter of this elliptical crystal is 2 centimeters at the widest. The last 2 millimeters near the termination has a bit better clarity than the remaining 1.8 centimeters.

It was from this same spot that John delicately extracted five specimens of beryl in matrix. One particularly nice piece was attached to a mica crystal and a glob of quartz. Another showed four beryl windows on top of a wind-worn feldspar top layer, with four well-formed heliodor crystals protruding into the back, that are free of matrix. To date, we have pulled several hundred small pieces of heliodor, a dozen large green beryls, and five mid-size translucent, sea-green crystals. The largest crystal extracted from this ledge was 5 centimeters in diameter and 7 centimeters tall, and was composed of three intergrown, parallel crystals on one side.

That first day, John and I carried out several pounds of beryl crystals, both heliodor and the common green variety. We were quite far from where we started, and both had heavy chisels and hammers on our packs. When we finally did reach the car, we only cared about reaching that cookout. The day had vastly improved on its fishless beginning, and though we didn't catch dinner, we certainly had a discovery that merited a hearty cookout toast.

Since our discovery of this beryl locality in late May 2009, we have returned to dig more than 20 times. Several areas that are in and around the large pockets of quartz surrounded by feldspar appear to be likely targets for further investigative digging. The higher quality beryl crystals seem most often to be partially grown into both of these layers. The crystal will terminate in the feldspar and taper into the quartz, making a second termination elusive.

With more effective tools, John and I hope to be more productive and reach the better material deeper in the rock. The deposit is of proportions neither of us had expected and has the potential to produce interesting pieces of beryl for quite some time. ♦

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**13—BATON ROUGE, LOUISIANA:** Show, "Rockin' at the Swamp"; The Recreation & Park Commission for the Parish of East Baton Rouge (BREC); Bluebonnet Swamp Nature Center, 10503 N. Oak Hills Pkwy.; Sat. 10-4; admission \$4; gem and mineral exhibits, vendors, crafts, rock wall, special presentations, mobile gem mining, treasure hunting trail hikes, children's "Gold Rush", Fossil Quarry; contact Claire Coco, 10503 N. Oak Hills Pkwy., Baton Rouge, LA 70810, (225) 757-8905; e-mail: ccoco@brec.org; Web site: www.brec.org

**13—SAN ANTONIO, TEXAS:** Show, "Rings & Things BeadTour"; Rings & Things; Aggie Park & Banquet Hall, 6205 West Ave.; Sat. 2-6; free admission; gemstones, bead strands, wholesale prices, findings, stringing supplies; contact Dave Robertson, P.O. Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com

**13—SKOKIE, ILLINOIS:** 61st annual silent auction; Chicago Rocks & Minerals Society; St. Peter's United Church of Christ, 8013 Laramie Ave.; Sat. 5:30-10; free admission; silent auction, rocks, minerals, fossils, hand made jewelry, lapidary items, children under 12 must be accompanied by an adult; contact Jeanine N. Mielecki, (773) 774-2054; e-mail: jaynine9@aol.com; Web site: www.chicagorocks.org

**13-14—FILER, IDAHO:** Annual show; Magic Valley Gem Club; Twin Falls County Fairgrounds, east side of Filer on Hwy. 30; Sat. 9-6, Sun. 9-5; adults \$2, children under 12 free with adult; 50 display cases, 10 dealers; contact Harold Waggoner; (208) 423-9668; e-mail: rmetts@cableone.net; Web site: www.magicvalleygemclub.org

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**13-14—SAN MARINO, CALIFORNIA:** Show, "Colors of Gems"; Pasadena Lapidary Society; San Marino Masonic Center, 3130 Huntington Dr.; Sat. 10-6, Sun. 10-5; free admission; raffle, sand scoop, demonstrators, vendors, jewelry, gems, rough material, beads, findings, mineral specimens, collectibles; contact Marcia Goetz, (626) 914-5030; e-mail: joenmar1@verizon.net

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continued on page 60



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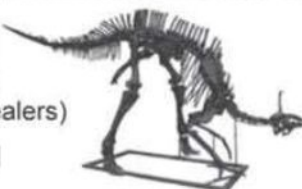
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# 2010

## Lapidary Article of the YEAR CONTEST

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### OFFICIAL CONTEST RULES

#### WHO IS ELIGIBLE

U.S. residents only, age 18 and older.

#### HOW TO ENTER

Submit a step-by-step lapidary project article to *Rock & Gem*. For submission guidelines, visit [www.rockngem.com/submissions.asp](http://www.rockngem.com/submissions.asp) or write to *Rock & Gem* Writers' Guidelines, P.O. Box 6925, Ventura, CA 93006-9899.

"Lapidary" is defined as the working of precious or semiprecious gem materials or metals into an ornament to be worn or decoratively displayed. How-to stories dealing with the building of lapidary tools, display paraphernalia, and other items are welcome, but are not eligible for the contest.

Authors must complete and return a Contributor Agreement and W-9 form before their entry will be considered for publication. Contact Managing Editor Lynn Varon at (805) 644-3824 ext. 129 or [editor@rockngem.com](mailto:editor@rockngem.com) for these forms.

All conditions and requirements of the writers' guidelines and the Contributor Agreement apply.

All step-by-step lapidary projects published in 2010 cover date issues of *Rock*

& *Gem* are eligible for the 2010 contest, regardless of the year of submission, and will be automatically judged.

The number of lapidary project submissions received may exceed the available space. *Rock & Gem* publishes approximately 6 to 12 project article per year.

The authors of all published articles will receive normal payment for the article, as determined by the editor.

If a winning entry was contributed by a separate author and photographer or by multiple authors, one prize will be awarded to the contributors, to be divided as they see fit.

#### JUDGING

Articles will be judged by a combination of reader response and editorial merit. Readers should send a brief explanation of why a project deserves the big prize to 2008 Lapidary Article of the Year Contest, *Rock & Gem* magazine, 290 Maple Ct., Ste. 232, Ventura, CA 93003 or to [editor@rockngem.com](mailto:editor@rockngem.com).

**Don't wait to send in your vote!** The deadline for 2010 votes is January 1, 2011. The winner will be notified by January 17, 2011.

Readers may vote for more than one article per year, but are limited to one vote per article.

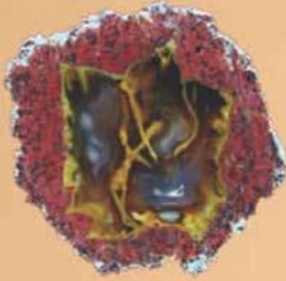
The final decision will be made by the Managing Editor of *Rock & Gem*.

#### THE PRIZE

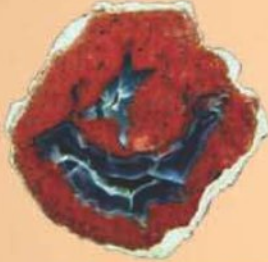
The winner will receive a complete faceting package from Lapcraft Inc. that includes four 8-inch faceting laps (a 360 Islander, a 1200 standard, a 3000 standard, and a Finalap with 50000 diamond slurry), a bottle of 50000 diamond spray, an 8-ounce bottle of Tool Cool, and a DiaLaser diamond saw blade in the winner's choice of size (4 to 8 inches). It is valued at \$550.



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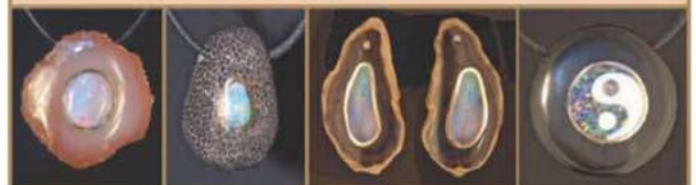
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## PROJECT:

# Cast a HOLLOW FILIGREE BEAD



Story by Lucy Groenke/Photos by Tom Entringer



Using water-soluble wax is the best, most direct way I know to cast a spherical filigree bead, even though to some it may seem to be an exotic ingredient. Wax has a place in the domestic world as a protective coating on a variety of every day things such as floors and cars, but it also plays a role in the production of parts for the machines of industry and in jewelry making also. Usually we think of wax as a water repellent, but many synthetic formulas have been developed to serve other special purposes.

### MATERIALS:

- 1 lb. water-soluble wax
- 14 gauge wax wire
- Sticky wax
- Sierra red wax
- 8- or 10-gauge sprue wax
- 4 to 6 inches of 12-gauge wax wire

### TOOLS:

- Jeweler's saw frame
- Spiral wax saw blade
- Wood rasp
- Wax file
- Brass brush
- Xacto knife
- Wax pen
- Alcohol lamp
- Dental tools
- 8 oz. or larger plastic container with lid

In jewelry making, we use wax as a temporary stand-in for metal, and in the casting process, we melt the wax in a kiln and replace the wax with metal. Water-soluble wax is also a temporary placeholder, not for metal, but usually for the air that will occupy the interior of a metal shell. After it has served its purpose, we get rid of water-soluble wax simply by dissolving it in water.

This project demonstrates the use of both kinds of wax, which we "lose" by melting in a kiln or by dissolving in water after it has fulfilled its mission. Hence the name "lost wax".

Water-soluble wax is white and comes in 1-pound chunks. This wax is not shiny like the usual carving wax; its texture is more like dense brown sugar that has hardened. It can be carved and filed and sawed. Sawing or filing will produce a fine white dust, finer than white granulated sugar, but not so fine as powder.

The first step in this project is to saw  $\frac{3}{4}$ -inch cubes from the water-soluble wax using a spiral wax saw blade in a jeweler's saw frame. The spiral blade may be more difficult to control, but it cuts better than the wax saw that looks like a meat cleaver, which tends to drag and bind.



The file-like cut of the spiral wax blade easily gets through the off-white glaze that protects the white water wax.

Next, using a rasp, remove the corners and soften the edges of the cube so that you create a sphere. The rasp does the rough work and the wax file can do the smoothing and finishing. Even water-soluble wax can clog the file, but if you dust the file with baby powder periodically, that will tend to keep the teeth clear. Also, a few passes with the brass brush clears out any wax that clogs the teeth.

The resulting sphere will be just under  $\frac{3}{4}$  inch in diameter and will look like a large mothball. This will be the foundation upon which you will create the filigree pattern using 14 gauge wax wire.

You're limited in your wire design only by your own creative instincts, but keep in mind that whatever you do, the wax wire has to provide a continuous pathway for the molten metal to follow when you cast. The pattern I am describing here is one of the simplest, but is not the only one possible.

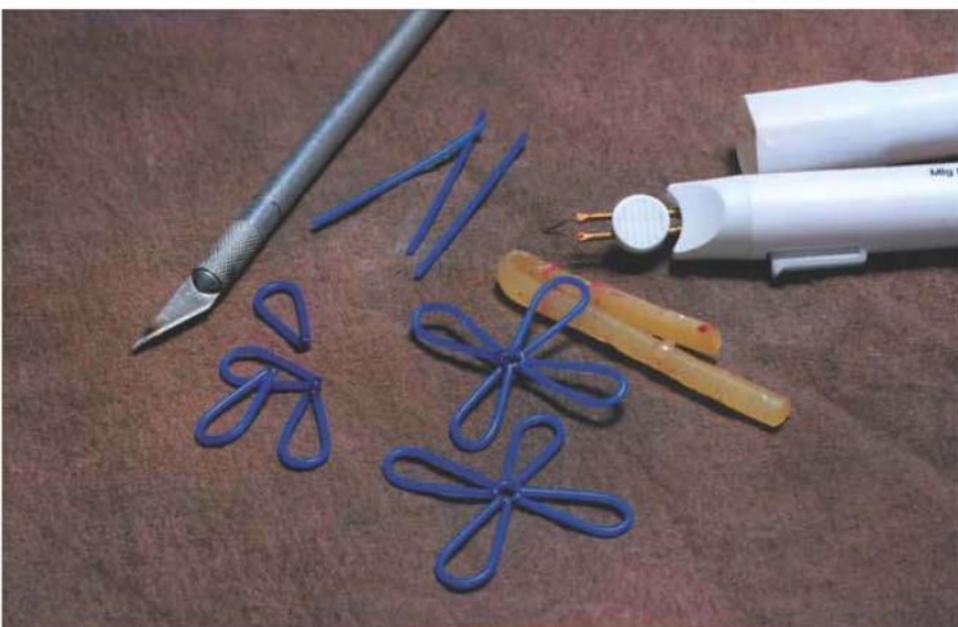
Cut the wax wire into 2-inch lengths and, using something about the size of a pencil or the handle of an Xacto knife as a mandrel, make petals or loops, securing the ends with a touch of sticky wax to keep them from unwinding. I use a Max Wax pen, but someone with a lot of practice could do it using dental tools and an alcohol lamp, too. If the wax wire seems to stick to your mandrel, put just a drop of dish detergent on your index finger and lubricate the mandrel lightly.



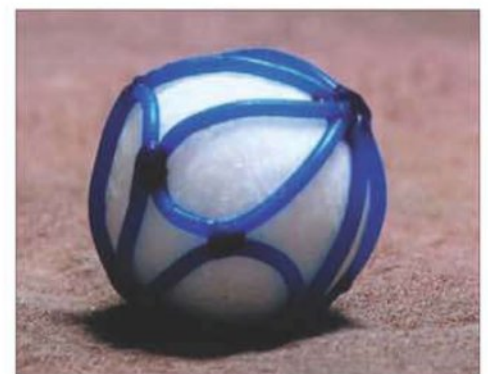
Use the rasp and wax file to shape the white wax. Baby powder and a wire brush help clean shavings from the files.



Tack the wax flowers to the white wax ball and curve the petals to the shape of the ball.



Gently bend the wax wire into loops and attach four at the narrow end, leaving a small hole.



Tack the petals of the top and bottom flowers together where they meet at the ball's equator, or midpoint.



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## Cast a HOLLOW FILIGREE BEAD from page 57



Use a puddle of red wax to attach the bottom of the sprue to the inside of your container lid.



Submerging the sprued model in water will dissolve away the white ball, leaving the blue wax wire model ready to invest, burn out, and cast.

Place four of the petals with the narrow ends together and tack them together where they meet. If you leave a tiny space where they meet, you may not need to drill a hole when you're ready to string the finished beads. Make a second four-petaled flower in the same way.

Position the two flowers on opposite sides of a white wax ball, with one flower's petals pointing north, south, east and west, and the other petals pointing northeast, southeast, southwest and northwest. It may help to very lightly tack the center of each flower to the ball, but be very careful not to make a blob of tacking wax on the wax ball because it could end up inside your metal bead where you would be unable to reach it to clean it up.

Now gently bend the petals to follow the curve of the white ball. The petals from the top flower and the bottom flower should each extend partway into the space between the petals of the other, a bit beyond the "equator", or midpoint.

Tack the petals again to attach the top flower to the bottom flower at the ball's equator. This will provide a continuous net work, or pathway, for the molten metal.

Now it's time to consider sprues. Attach a main sprue to the center of one of the flowers, but don't cover the hole you left in the center for stringing the bead. Instead, aim for the tacking right next to

the hole. If do cover the hole, you'll have to drill one in the metal bead for stringing.

Using the lid of an 8-ounce plastic cottage cheese or yogurt container as a base, mount the sprue the same way you would attach it to the rubber base of a flask. Do not try to create a mound, as on a rubber base, but put a puddle of the red wax on the container lid and attach the bottom of the sprue to the puddle.

You could probably consider this sprue enough, but you've already put in a lot of work on the project, so it might be wise to put in some secondary sprues for insurance. I usually use three, attached where the petals from the top flower are tacked to the petals from the bottom flower and about halfway down the main sprue.

A short vent could help ensure a complete cast by giving the molten metal a place to force out any air that became

trapped in the investment mold during the casting process. Attach about 1/4 inch of fine wax wire near the center of the top flower in the same way the main sprue is attached to the bottom.

The water-soluble wax ball has finally served its purpose, so it is time to dissolve it. Fill the plastic container with water that is about room temperature. Do not use hot or overly warm water because it might melt or distort the wax wire. Put the lid on the container. This will submerge the wax bead in the water. There are too many variables to predict exactly how long it will take for the white wax to be dissolved, but overnight usually works for me. If the white wax isn't gone yet, pour out the water and put fresh water in; it could be that the water is saturated.

To remove the sprued wax bead from the lid of the plastic container, flex the plastic lid slightly. The wax puddle should start to separate from the lid.

Weigh the sprued bead. My formula for determining how much silver you need for the cast is to multiply the weight by 12 and add 10 grams to help ensure an adequate button on the cast.

To cast the bead, put the model on a sprue base, debubble it, mix the investment, burnout the wax, and cast. After the pickle bath, the cast bead is best polished in a vibratory tumbler. ♦

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Show Dates from page 52

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**18-21—SAN BERNARDINO, CALIFORNIA:** Tailgate show; Orange Belt Mineralogical Society; Western Regional Little League Ball Park, 6707 Little League Dr.; Thu. 2-8, Fri. 8-8, Sat. 8-8, Sun. 9-7; free admission; silent auction, bulk rough, raffle, dealers, lapidary-related items, jewelry; contact Shane Ripley, 31975 Yucaipa Blvd. #1, Yucaipa, CA 92399, (909) 557-3605; e-mail: OBMS\_PR@yahoo.com; Web site: [www.meetup.com/Jewelry-Making-for-Fun-and-Profit/](http://www.meetup.com/Jewelry-Making-for-Fun-and-Profit/)

**19-21—HICKORY, NORTH CAROLINA:** 40th Unifour Gem, Mineral, Bead, Fossil & Jewelry Show; Catawba Valley Gem & Mineral Club; Hickory Metro Convention Center, 1960 13th Ave. Dr. SE, I-40, Exit 125; Fri. 9-6, Sat. 9-6, Sun. 10-5; adults \$4, seniors \$4, students and children free; contact Baxter Leonard, 2510 Rolling Ridge Dr., Hickory, NC, 28602, (828) 294-6924; e-mail: [gailandbaxter@aol.com](mailto:gailandbaxter@aol.com)

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**19-21—JACKSON, MICHIGAN:** Show, "Treasures & Gems in 2010"; Gem & Mineral Society of Jackson; Jackson County Fairgrounds "Fair Event Center", 200 W. Ganson St.; Fri. 10-7, Sat. 10-7, Sun. 10-5; adults \$3, seniors \$2, students 50 cents, children and uniformed military and Scouts free; more than 20 dealers and demonstrators, gems, minerals, fossils, beads, bead making, jewelry, silent auctions, lapidary tools and supplies; contact James Bretes, 3022 Francis St., Jackson, MI 49203, (877) 872-8471; e-mail: [info@mgmsrockclub.com](mailto:info@mgmsrockclub.com); Web site: [www.mgmsrockclub.com](http://www.mgmsrockclub.com)

**19-21—ROME, GEORGIA:** Show, "Valley and Ridge Gem & Mineral Show"; Rome Georgia Mineral Society; The Forum, 2 Government Plaza; Fri. 10-6, Sat. 10-6, Sun. 11-5; free admission; minerals, gems, fossils, jewelry, crystals, demonstrations, exhibits, lectures, door prizes; contact Tim Biggart, (706) 232-7143; e-mail: [tbiggart@berry.edu](mailto:tbiggart@berry.edu)

**19-21—SPANISH FORK, UTAH:** Show, "Spring Prade of Gems Invitational"; Timpanogos Gem & Mineral Society; Spanish Fork Tennis Court, 475 S. Main St.; Fri. 10-7, Sat. 10-7, Sun. 10-5; free admission; Mr. Bones walking dinosaur, handmade jewelry, gems, minerals, fossils, lapidary supplies, demonstrations, educational displays, silent auction, rough rock; contact Larry Hataway, P.O. Box 103, Spanish Fork, UT 84660, (801) 798-2758; e-mail: [larry@spanishtrailssilver.com](mailto:larry@spanishtrailssilver.com); Web site: [spanishtrailssilver.com](http://spanishtrailssilver.com)

**20-21—BAKERSFIELD, CALIFORNIA:** 9th annual show, "Rock and Gem Rendezvous"; Sat. 9-5, Sun. 9-5; Kern County Shrine Club, 700 S. P St., corner of S. P and Bell Terrace; indoor/outdoor show, rocks, fossils, beads, new and used lapidary supplies, jewelry, rough material, finished gems, hourly drawing, silent auction, Spinning Wheel, demonstrations; contact Lewis M. Helfrich or Lynne G. Helfrich, (661) 323-2663; e-mail: [lewsrocks@netzero.net](mailto:lewsrocks@netzero.net)

**20-21—CEDAR RAPIDS, IOWA:** Show; Cedar Valley Rock & Mineral Society; Teamsters Union Hall, 5000 J St. SW; Sat. 8:30-6, Sun. 9:30-5; adults \$2, students \$1, children free; 33-inch Duckbill skeleton compliments of Michael and Barbara Sincak; contact Thomas Whitlatch, 1147 Staub Ct. NE, Cedar Rapids, IA 52402, (319) 551-3870; e-mail: [whitlatch@mchsi.com](mailto:whitlatch@mchsi.com); Web site: [www.cedarvalleyrockclub.org](http://www.cedarvalleyrockclub.org)

**20-21—LIVE OAK, TEXAS:** Show, "Fiesta of Gems"; Southwest Gem and Mineral Society; Live Oak Civic Center, 8101 Pat Booker Rd.; Sat. 10-6, Sun. 10-4; adults \$5, students and seniors \$3, children 50 cents, military discount, special school group rate; minerals, gemstones, fossils, jewelry, lapidary, demonstrations, exhibits; contact Robert

continued on page 62

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## Show Dates from page 60

### APRIL 2010

Bowie, (830) 935-3373; e-mail: krbotx@gtvc.com; Web site: swgemandmineral.org

**20-21—TAMPA, FLORIDA:** Show, "Fossil Fest 2010"; Tampa Bay Fossil Club; Florida State Fairgrounds, US 301 and I-4; Sat. 9-6, Sun. 10-4; fossils, artifacts, gems, minerals, shells, exhibits, "how to" seminars, kids' games, fossil mine, raffles, door prizes, silent auction; contact Barbara Fite, (813) 977-0892; e-mail: bfite@tampabay.rr.com; Web site: www.tampabayfossilclub.com

**20-21—VALLEJO, CALIFORNIA:** Show and sale, "Spring Bling"; Vallejo Gem & Mineral Society; Vallejo Elks Lodge, 2850 Redwood Pkwy.; Sat. 10-5, Sun. 10-5; adults \$3, student \$2, children free; rocks, gems, jewelry, door prizes, silent auction, "wheel of fortune"; contact Phyllis Malacki, 370 W. M St., Benicia, CA 94510, (707) 745-3255; e-mail: vgm01@yahoo.com; Web site: www.iwired.org

**20-21—WEST PALM BEACH, FLORIDA:** Show; Frank Cox Productions; South Florida Fairgrounds, 9067 Southern Blvd. (Hwy. 92); Fri. 10-5, Sat. 10-5, Sun. 10-5; jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (841) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

**24—GOLDEN, COLORADO:** Show, "Rings & Things BeadTour"; Rings & Things; Holiday Inn Denver West Village, 14707 W. Colfax Ave.; Wed. 12-4; free admission; gemstones, bead strands, wholesale prices, findings, stringing supplies; contact Dave Robertson, P.O. Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com

**26-27—COLVILLE, WASHINGTON:** 10th annual show; Panorama Gem & Mineral Club; Fort Colville Grange Hall, 157 Hwy. 20 E.; Fri. 8:30-6, Sat. 9-5; contact Bill Allen, (509) 935-8779; e-mail: Sago@theofficenet.com

**26-28—ADA, OKLAHOMA:** Show, "The Rock 'n Gem, Mineral & Fossil Show 2010"; Ada Gem, Mineral & Fossil Club; Pontotoc County Agri-Plex, NE corner of state Hwy. 99 and Richardson Loop Bypass; Fri. 10-6, Sat. 9-5, Sun. 10-5; free admission; demonstrators, fluorescent displays, dealers, kids' fossil dig, spinning wheels; contact Ed Vermillion, P.O. Box 782, Purcell, OK 73080, (405) 527-6431; e-mail: okieed42@windstream.net; Web site: http://www.freewebs.com/agmfo/index.htm

**26-28—BRIDGETON (ST. LOUIS COUNTY), MISSOURI:** 50th annual show; Rock Hobby Club; Machinist Hall Auditorium, 12325 St. Charles Rock Rd.; Fri. 4-9, Sat. 10-7, Sun. 10-5; adults \$3.50, students \$2, children under 5 free; exhibits, museum and university special exhibits, demonstrations, dealers, supplies; contact Vickie Corley, 1727 Parkway Acres, St. Louis, MO 63043, (314) 521-8896; e-mail: Missouri-gem@sbcglobal.net

**26-28—FORT COLLINS, COLORADO:** 49th annual show; Fort Collins Rockhounds; Lincoln Center, 419 W. Magnolia St.; Fri. 4-8, Sat. 9-6, Sun. 10-5; adults \$3, (\$5 weekend pass), students under 18 \$1, children 12 and under free with adult; Minerals of the American West with a special focus on quartz, exhibits and demonstrations by club members and invited guests, door prizes, silent auction, grab bags, seven gem and mineral dealers; contact Dave Halliburton, 2506 Pear Court, Fort Collins, CO 80521, (970) 493-6168; e-mail: fcrckhounds@yahoo.com; Web site: fortcollinsrockhounds.org

**26-28—INDIANAPOLIS, INDIANA:** 12th annual show; Treasures Of The Earth Gem & Jewelry Shows; Indiana State Fairgrounds, Ag/Horticulture Bldg., 1202 E. 38th St.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$5 (3-day ticket), children under 16 free; jewelry makers, goldsmiths and silversmiths size, reconstruct, repair, design or make original jewelry from customer-selected gemstones, opals and crystals, wire wrap, wire sculpture, stone beads, pearls, stone setting, dealers, amber, opal, fossils, minerals, door prizes, grand prize, 500 Earth Science Club display, silversmithing demonstrations and classes, lampwork bead demonstration, wire wrapping classes; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: vawimmer@verizon.net; Web site: www.toteshows.com

**26-28—MACOMB, ILLINOIS:** Fossil show; Mid-America Paleontology Society; Western Hall, Western Illinois University; Fri. 8-5, Sat. 8-5, Sun. 8-12; free admission; fossils only, buy, sell, swap, display, children's activities, silent auctions, keynote speaker Dr. Robert Frey, auction Sat.; contact Tom Williams, (815) 223-9638; e-mail: Paleotom234@dishmail.net; or Steve Holley, (309) 231-8861; e-mail: lfossil@hotmail.com; Web site: www.midamericapaleo.org

continued on page 68

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**OFF THE DOP****Iolite: A Sleeping Giant**

When tanzanite was first discovered, geologists thought it must be cordierite ( $Mg_2Al_4Si_5O_{18}$ ), magnesium aluminum silicate, which was named after geologist Pierre Cordier. Cordierite is better known by its trade name, iolite, and is sometimes called "water sapphire" because some people believe it has the violet-blue color of fine sapphire. The name iolite comes from "ion", the Greek word for violet.

Iolite ranges from shades of yellowish gray to blue to blue-violet. Its refractive index is 1.52 to 1.57, it has good birefringence, and its Mohs hardness is 7 to 7.5. Its cleavage is poor in one direction. Its crystal habit is orthorhombic, but crystals are rare; it is usually massive or compact grains embedded in metamorphic schists and gneisses. Iolite's specific gravity is 2.53 to 2.78. Although its color is attractive and popular, iolite is not extremely rare and is therefore affordable.

Pleochroism is very pronounced in iolite; when turned in various directions, it can look violet-blue, yellow-gray, or light blue. Iolite is trichroic, meaning it displays three different colors in one stone, but since blue and yellow are the colors most readily seen in it, it is most often called dichroic. Gemologists and the jewelry trade seem to have accepted this description.

Tanzanite, a blue-violet gemstone variety of the mineral zoisite, also has strong pleochroism and can be easily confused with iolite. Tanzanite, however, is usually more strongly colored; its pleochroic colors vary from dark blue to green-yellow and red-purple and it has greater fire due to a higher refractive index of approximately 1.7.

I purchased a piece of iolite to cut and used angles similar to those used for quartz for my design. For most of us, that would indicate pavilion break and main angles of 44/42 or 43/41. Recently, however, I have been keeping my pavilion angles within 1 1/2, as U.S. Faceting Guild founder Fred VanSant once recommended, in order to increase the brilliance and sparkle of my gems. Due to the range of refractive indexes, the critical angle range for iolite is 39.56 degrees to 41.14 degrees. Taking the possibility of a half-degree of machine error into account, I decided to set the pavilion mains at 41.7 degrees and my crown mains at 37 degrees. I set the crown mains as high as I could to maintain yield, while not making the stone look out of proportion or



hurting its optical performance. Then I set the break and star angles so that I had an acceptable table size.

Orientation of the rough to show the violet-blue color is critical. A cut gem that looks yellow-brown or gray will have a lower value. Tanzanite and many other popular blue gems are irradiated or otherwise enhanced, but iolite's beautiful violet-blue color is completely natural. Iolite has reasonably good hardness, but due to cleavage, its toughness is only fair—not good for rings—and some special attention is required for its care.

Finished gems are available in sizes from 1 carat to 10 carats, but gems over 5 carats are considered rare and are more valuable. Prices for 1- to 5-carat iolites ranged from \$5 to \$15 per carat wholesale in 2007, and extra fine stones in the same sizes ranged from \$45 to \$75 per carat according to "The Guide" (www.gemguide.com). Rough prices currently range from \$6.50 to \$8.50 per carat at New Era Gems (www.newera.gems.com). In my opinion, retail prices for well-cut extra-fine iolite in the \$90 to \$225 per carat range would not be out of line to day. When I feel I have an extra-fine stone, though, I usually take it to an independent appraiser who is a member of the National Association of Jewelry Appraisers so that I can present appraisal documentation to a prospective buyer.

In my opinion, iolite is a sleeping giant waiting to be discovered by many hobby and studio faceters and their customers. ♦

Send your comments and questions about any of my columns to Off the Dop, P.O. Box 1041, Medina, OH 44258, or e-mail me at jimperkins@zoominternet.net.



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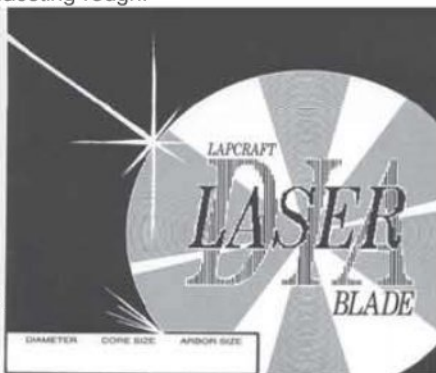
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**26-28—ORLANDO, FLORIDA:** 41st annual show; Central Florida Mineral & Gem Society; Central Florida Fairgrounds, 4603 W. Colonial Dr.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$4, students and seniors \$2, children under 12 and Scouts in uniform free with paying adult; sluice mining, faceting demonstrations, silent auctions, gem identification, Kids' Korner, mineralogist on site, door prizes, grand prize; contact James Johnstone, 12745 Newfield Dr., Orlando, FL 32837, (407) 625-6336; e-mail: jj030@msn.com; Web site: www.thumblicker.com

**26-28—SANDY (SALT LAKE CITY), UTAH:** Show, "Gem Faire"; Gem Faire Inc.; South Towne Exposition Center/ Exhibit Hall 5, 9575 S. State St.; Fri. 12-7, Sat. 10-6, Sun. 10-5; \$5 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

**26-28—SARASOTA, FLORIDA:** Show; Frank Cox Productions; Municipal Auditorium, 801 N. Tamiami Trail (Hwy. 41); Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (841) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

**27—WOODBURY, MINNESOTA:** Annual show; St. Croix Rockhounds, Valley Creek Mall, 175 Weir Dr.; Sat. 9-3; free admission; educational show, no dealers, rock and mineral identification; contact Bill Cordua, 414 Lewis St., River Falls, WI 54022, (715) 425-3139; e-mail: william.s.cordua@uwrf.edu

**27-28—ANGELS CAMP, CALIFORNIA:** Annual show and sale; Calaveras Gem & Mineral Society; Calaveras County Fairgrounds, Hwy. 49 at Frogtown USA; Sat. 10-5, Sun. 10-4; adults \$4, kids 12 and under free with adult; rocks,

minerals, jewelry, beads, supplies; contact Tak Iwata, (209) 928-5579; e-mail: Tak2me@msn.com

**27-28—CHAMBERSBURG, PENNSYLVANIA:** 32nd annual show; The Franklin County Rock & Mineral Club; Shalom Christian Academy, 126 Social Island Rd.; Sat. 10-5, Sun. 10-4; adults \$4, children under 12 free with adult; jewelry, gemstones, minerals, fossils, door prizes; contact Mike Mowen, (717) 264-9024; e-mail: mlmo@innet.net

**27-28—HAMBURG, NEW YORK:** Show, "Trilobites: Under the Seas of Western New York"; The Buffalo Geological Society; Market & Grange Bldgs., The Fairgrounds in Hamburg, 5600 McKinley Pkwy.; Sat. 10-6, Sun. 10-5; adults \$5, children 12 and under free; demonstrations, beads, jewelry, private gem collections, unique gifts, children's mini-mine, "Grandpa's Corner"; contact Steve Birtz, 2230 Fix Rd., Grand Island, NY 14072, (716) 773-6386; e-mail: SBirtz@aol.com

**27-28—HOLYOKE, MASSACHUSETTS:** Show; Connecticut Valley Mineral Club; Holiday Inn at Ingleside, I-91 Exit 15; Sat. 10-5, Sun. 10-4; adults \$4, children 12 and under free with adult; minerals, gemstones, jewelry, crystals, beads, fossils, lapidary and mineral arts, demonstrations, exhibits; contact Lee Champigny, (413) 320-9741; e-mail: pullG4fun@verizon.net

**27-28—LEMOORE, CALIFORNIA:** 2nd annual show; Lemoore Gem & Mineral Club; Trinity Hall; Sat. 10-6, Sun. 10-6; contact Judy Pereira, 335 W. D St., Lemoore, CA 93245, (559) 924-4052

**27-28—PLYMOUTH MEETING, PENNSYLVANIA:** Show and sale, "Philadelphia Mineral Treasures and Fossil Fair"; Philadelphia Mineralogical Society; LuLu Temple, 5140 Buttler Pike; Sat. 10-5, Sun. 10-4; adults \$5, children \$1; minerals, fossils, books, gems, jewelry, free kids' specimens and fossil dig, educational displays, personal collections,

scouting merit badge information, professional speakers; contact Douglas Klieger, 26 Cabot Ct., Chesterbrook, PA 19087, (610) 644-2492; e-mail: dklieger@verizon.net; Web site: www.PMS.Moonfruit.com

**27-28—ROSEVILLE, CALIFORNIA:** 48th annual show; Roseville (Placer County) Fairgrounds, 800 All America City Blvd., off Washington; Sat. 10-5, Sun. 10-4; adults \$5, seniors (60+) \$4, kids 12 and under free; more than 30 vendors, crystals, gold, geode cracking, beads, gemstones, fossils, polished stones, handcrafted jewelry, opal, world-class mineral specimens, tourmaline, sunstones, bugs in amber, mineral identification, "Kids' Junction", demonstrations, silent auctions, exhibits, raffles, lapidary shop open house, information and discount coupon on Web site; contact Gloria Marie, (916) 216-1114; e-mail: gloriaroseville.rockrollers@gmail.com; Web site: www.rockrollers.com

**27-28—SAYRE, PENNSYLVANIA:** 41st annual show; Che-Hanna Rock & Mineral Club; Athens Twp. Volunteer Fire Hall, 211 Herrick Ave.; Sat. 9-5, Sun. 10-5; adults \$3, students \$1, children under 8 free; Carnegie Museum exhibits and silent auctions, Paleontological Research Institute fossil exhibit, kids' activities, club displays, retail dealers; contact Bob McGuire, 224 Church St., Lopez, PA 19628, (570) 928-9238; e-mail: uvbob@epix.net

**27-28—SWEET HOME, OREGON:** 62nd annual show; Sweet Home Rock & Mineral Society; 1641 Long St.; Sat. 10-6, Sun. 10-4; contact Joe Cota, (541) 451-2740

**28—BOISE, IDAHO:** Show, "Rings & Things BeadTour"; Rings & Things; Best Western Vista Inn at the Airport, 2645 Airport Way; Sun. 12-4; free admission; gemstones, bead strands, wholesale prices, findings, stringing supplies; contact Dave Robertson, P.O. Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com

continued on page 70

# Arizona Mineral & Fossil Show

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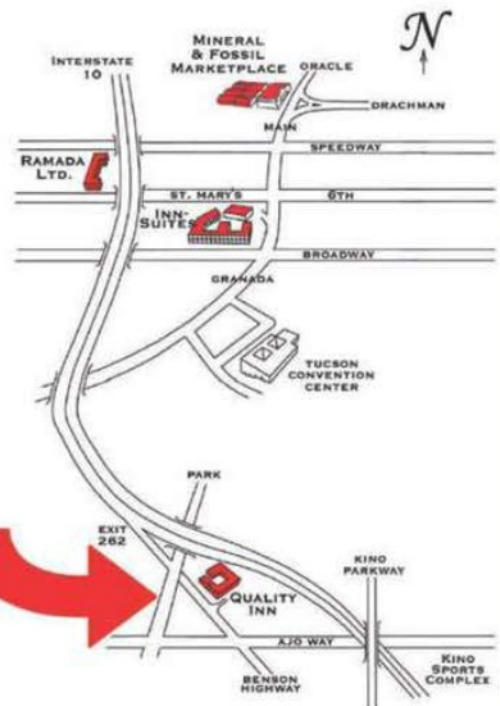
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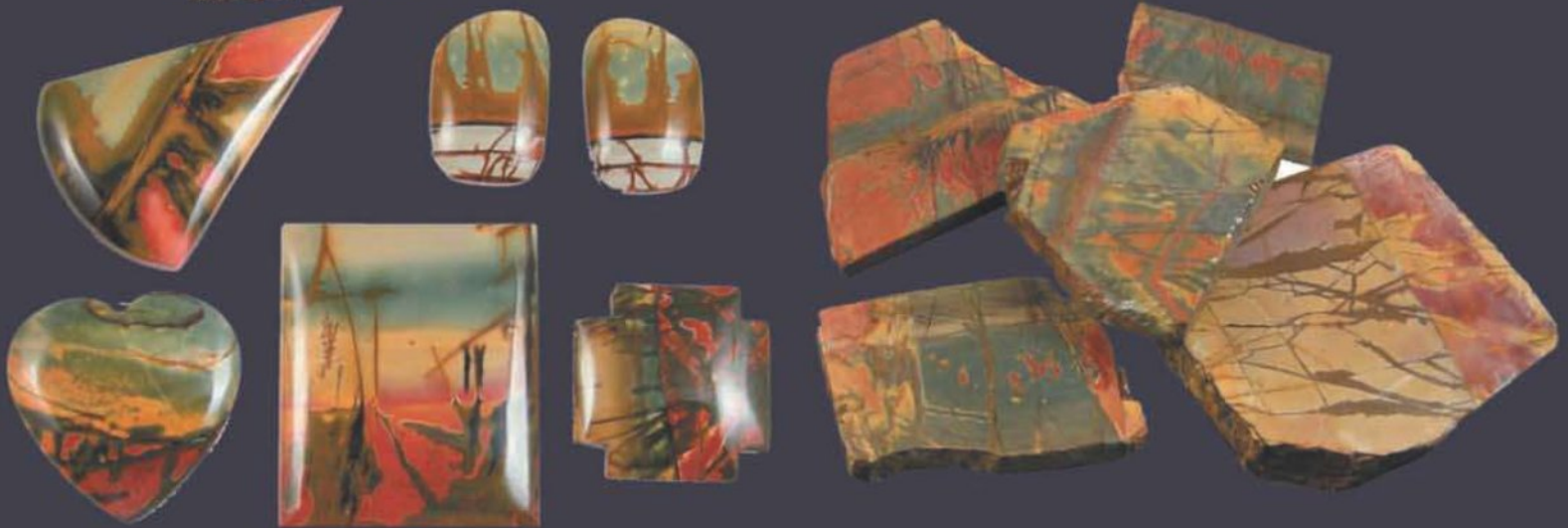
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# Abigail Powers Fillmore

## She Had Her Own Career Before She Married Her Husband

by Ron Meyer

**A**bigail Fillmore was a first among U.S. first ladies: the first to hold a job after marrying a future president—in her case Millard Fillmore, the nation's 13<sup>th</sup> chief executive.

Like her husband, Abigail rose from humble roots. In fact, because of her hardscrabble upbringing, historians have been unable to piece together parts of her early life. Adding to the dearth of information is the fact that her son had her personal correspondence burned after her death in 1853.

Historians have gathered enough surviving correspondence from friends, relatives and other contemporaries to piece together a fairly accurate mosaic.

In February, the United States Mint was scheduled to release a half-ounce \$10 gold commemorative coin honoring Abigail Fillmore. This coin is being issued, for sale to collectors at a premium, in tandem with the \$1 coin honoring her husband.

\* \* \*

Abigail Powers was born on March 13, 1798, in Stillwater, New York. The town lies north of Albany and is close to where the Battles of Saratoga were fought during the American Revolution.

Abigail's father, Lemuel Leland Powers, was an ordained Baptist minister. He was born in Littleton, Massachusetts, on June 15, 1756. He died on May 18, 1800, when Abigail was 2. Powers was one of four Baptist ministers who served a group of five associated churches in the New York-Vermont-Massachusetts border region.

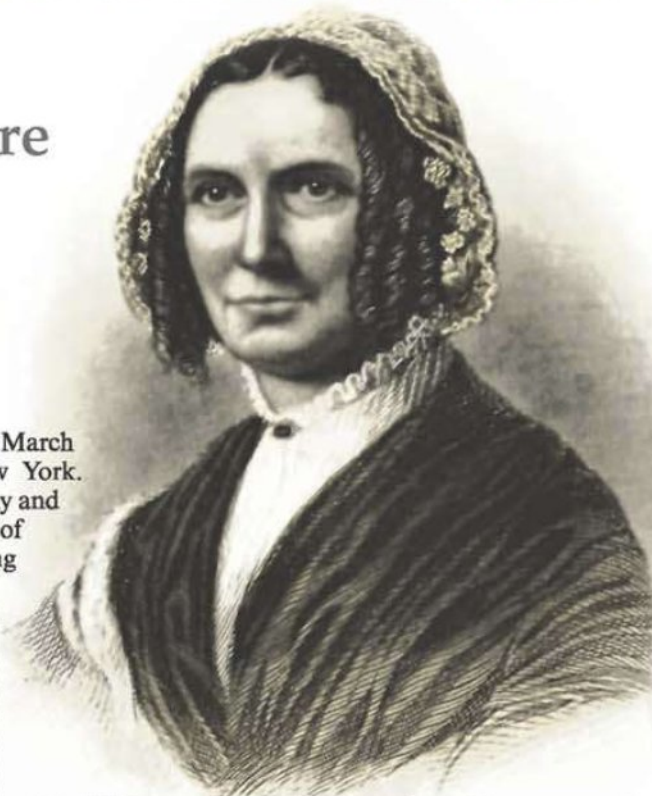
Abigail's mother, Abigail Newland Powers Strong, was born on Feb. 22, 1758, in Massachusetts. Abigail Strong's father (Abigail Fillmore's grandfather) was a prominent Baptist minister, and her brother was Royal Newland, a wealthy businessman in Stillwater who had been a Continental Army wagon driver during the Battles of Saratoga. Newland bought most of the property where the battles took place, and built and ran the Stillwater mill.

Lemuel Powers and Abigail Newland were married on April 16, 1777, in Northbridge, Massachusetts. They had seven children—five boys and two girls. Abigail was the youngest.

Lemuel's death left his wife an impoverished widow. In 1801, her oldest son Cyrus—young Abigail's older brother by 19 years—moved to Sempronius in Cayuga County, New York.

In April 1804, Abigail took her remaining six children to Albany to join a wagon train heading to Cayuga County, where they moved in with Cyrus. She also took the large number of books Lemuel had left.

At that time, western New York was part of the nation's frontier. Yet, despite living in an isolated area, the younger Abigail got an excellent education by contemporary standards both at home from her mother and at the one-room log schoolhouse where Cyrus taught.



*Abigail Fillmore entertained many members of the arts community, but she took great pleasure in befriending authors Washington Irving, Charles Dickens and William Makepeace Thackeray.*

In 1818, the widow married Benjah Strong of Cayuga County. Strong had six children—three boys and three girls, giving the younger Abigail a total of 12 siblings.

Despite having no father for most of her childhood ("before I was old enough to appreciate my loss," as she later wrote), Abigail, along with her brothers and sisters, did receive a rich educational legacy in the form of his large personal library.

Young Abigail developed a love of literature, and she also became proficient in math, government, history, philosophy and geography. William L. Barre, a family friend, later said that Abigail "received all the advantages of a liberal education."

From 1814 to 1826, Abigail taught school in several small New York towns. She initially taught in the same building in Sempronius where two of her brothers and a cousin had taught, but in 1815 the town opened a schoolhouse in Sayles Corners that became Sempronius' first district school.

After having taught part-time for three years, Abigail became the district's full-time teacher in 1817.

In 1819, Abigail supplemented her income by teaching at the private New Hope Academy in nearby New Hope. One of the students was Millard Fillmore, an aspiring lawyer.

LIBRARY OF CONGRESS

Millard was immediately attracted to his auburn-haired teacher, who was two years his senior. Like Abigail, he had been born into a poor family.

Abigail was 21 and Millard 19. Abigail served as Millard's inspiration. He was about 5 feet, 9 inches tall and was considered quite handsome. Abigail was about 5-foot-6 with light auburn hair and blue eyes.

Abigail helped Millard develop solid study habits. They studied together when they encountered subjects where they both lacked knowledge.

Fillmore also had developed a love of learning and books and had become a voracious reader. He was studying law under a judge when his family abruptly moved to East Aurora, a town near Buffalo.

Despite their separation, Millard and Abigail drew closer. He later realized he had been "unconsciously stimulated by the companionship" of his teacher.

In the summer of 1824, she became a private tutor to three of her first cousins in the town of Lisle, New York. While there, she accepted an invitation to open a private school nearby. She accepted the offer and resumed regular teaching.

Millard was so short of money he could not afford the cost of visiting Abigail, whose teaching posts kept her on the move. They didn't see each other for three years, but kept in touch by letter.

In the interim, he became apprenticed to a lawyer, started to teach in Buffalo and was able to begin a law practice in East Aurora. Across the street, he built a home he would later share with his wife.

On Feb. 5, 1826, Millard Fillmore and Abigail Powers were married in her brother Cyrus' home. Although raised a Baptist, she and Millard were married by an Episcopal minister. They both later became Unitarians.

He was a new lawyer eager to establish a practice. She was a teacher who continued to work for a year after her marriage, thus becoming the first future first lady to draw a salary independent of her husband after marriage.

The couple had two children—a son, Millard Powers, born in 1828, and a daughter, Mary Abigail, born in 1832.

In 1829, Abigail remained in East Aurora while Millard traveled to the state capital, Albany, to begin serving as a member of the New York Legislature. During his absence, Abigail began purchasing books of poetry, literature and classics to build on his collection of law books. Eventually, the couple amassed a personal library of more than 4,000 books.

Two years later, Millard returned to practice law in Buffalo, where they had moved from East Aurora. Both Abigail and Millard worked on establishing a lending library and college in the city.

Abigail learned French and scientific



*The Fillmores would live here from 1826-1830. It is the only home in the country actually built by a President.*

horticulture, cultivating floral species in a conservatory built onto their home. She also learned to play the piano.

Millard was elected to Congress in 1832, but Abigail didn't accompany him to the nation's capital. He was reelected several times, and Abigail lived with him in Washington from 1836 to 1842.

The Fillmores left their son and daughter in New York with relatives. Abigail's letters to them during their separation were balanced between academic admonishments and maternal love.

Abigail found the long separations from her extended family depressing. She learned by letter from her daughter in 1838 that her mother had died.

Abigail frequently attended sessions of Congress and listened to debates, monitoring the progress of various bills, especially those affecting recess periods when she could return home. Although she followed most of the "rules" of society, she did not take the pretentiousness very seriously.

One of her surviving letters was written while she was a guest at a hotel in Newport, Rhode Island. She described the people there as "very fashionable."

"It is amusing to look on and see the great vanity of costume and the great effort made to rival each other at display ... but it does not interest me. ... I seldom—never go into the parlor."

She attended at least one horse race in Washington, but Abigail preferred museum exhibits, art galleries, theater and concert performances and, especially, lectures. She enjoyed the company of intellectuals, calling one talk with a theologian "such a mental treat."

Equally uncommon for women of her era was Abigail's pleasure in physical activity. She enjoyed sea bathing, but despised the "waste of time" necessary for dressing and arriving at the shore.

In 1842, Abigail suffered a serious break in an ankle bone and failed to let it heal properly. She was bedridden and housebound for months and couldn't indulge her penchant for walking. Finally, after using crutches for two years, she was able to walk on her own, but not without pain. And her health began to decline.

In 1847, Millard became New York state comptroller. The two decided to live in an Albany boardinghouse. By the following year, Abigail was suffering back and leg problems and lung inflammation.

Millard was elected vice president in November 1848 and inaugurated on March 4, 1849. Abigail did not attend the ceremonies. She remained in Buffalo except for a brief visit to Washington in April 1850.

Abigail was vacationing with her children at the New Jersey shore when she learned that President Zachary Taylor had died on July 9, 1850, and

that her husband was now president. He briefly joined them there, and they all took up White House residence in October.

Although she has been portrayed as retiring and uninterested in politics, Abigail Fillmore served as political adviser to her husband. She also hosted open house receptions on New Year's Eve in 1850 and 1852. She received callers in proper social protocol on Tuesday mornings, hosted public receptions on Friday nights and held large formal dinners on Thursdays and small intimate dinners on Saturday nights.

But her health continued to deteriorate. She suffered from headaches, rheumatism and other maladies. She avoided receptions whenever possible because of the extended time presidents and first ladies had to spend personally greeting guests. She often called upon her daughter, Mary Abigail, to substitute for her.

Abigail was the first first lady whose likeness became well known to the public. Photography made great strides in the 1850s, and a full-length photograph of the First Lady was mass-produced on small, hard paper cards known as *carte de visites*. They sold widely to a public eager to glimpse the First Lady.

Of the singers, musicians, artists and writers she entertained, Abigail derived her greatest pleasure in befriending authors Washington Irving, Charles Dickens and William Makepeace Thackeray. Thackeray's famous *Vanity Fair* was said to be her favorite contemporary novel.

The Fillmores were later credited with having installed a steam-heated iron cooking range for the kitchens and a bathtub in the White House. They might have simply placed the initial order for the cooking range, since one was installed in 1854 under Franklin Pierce, and might have had the rudimentary plumbing extended to the family bathroom, which was renovated in the fall of 1853. But there's no documentation for either claim.

Millard and Abigail Fillmore attended Pierce's inauguration on March 4, 1853, an especially raw, wintry day.

Abigail contracted pneumonia and died on March 30, 1853.

She was buried in Buffalo. ❸



# MANY FACETS

by Guest Faceters

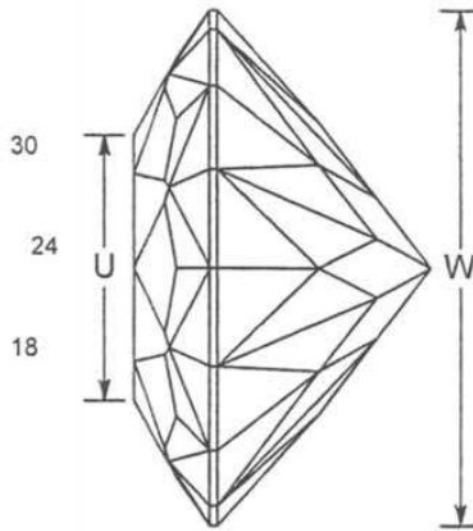
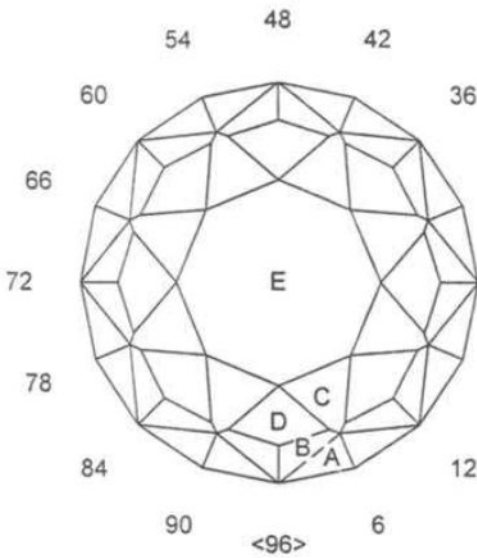
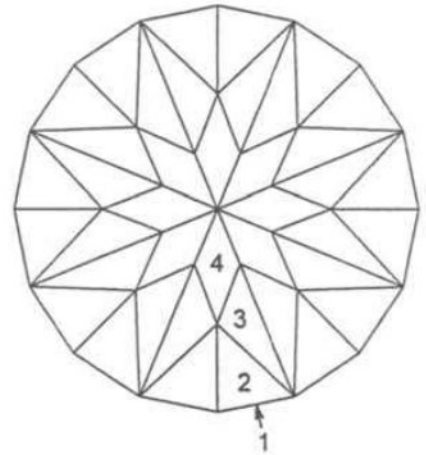
Faceters are welcome to submit their original designs for publication. Mail materials to Many Facets Submissions, *Rock & Gem* magazine, 290 Maple Ct., Ste. 232, Ventura, CA 93003.

This cut is sure to please everyone. I made it when requested to cut five individually unique stones. When I was playing with the facets, I came about the idea of the "hearts", hence the name. This cut does not window and has a lot of dispersion.

My friend David Corn supplied me with several pieces of different-colored CZ to cut, which is why I used CZ angles. David and I are volunteer faceting instructors at William Holland School of Lapidary Arts in Young Harris, Georgia.

As you cut this, you will find it as easy as any other Round Brilliant, except for the facet, which helps create the illusion of the heart. I have found that one must go very slowly when cutting the D-tier facets, set the angle at 29 degrees, stop the lap, and hand cut the facet on the 1200 lap. This facet is floated in, as there is not a meet point to contact. If you cut too much, you may lose the illusion of the heart.

—William Compliment



Hearts  
 Angles for R.I. = 2.160  
 89 + 16 girdles = 105 facets  
 8-fold, mirror-image symmetry  
 96 index  
 $L/W = 1.000$   $T/W = 0.514$   $U/W = 0.514$   
 $P/W = 0.418$   $C/W = 0.148$   
 $Vol./W^3 = 0.197$

## PAVILION

1	90.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93
2	43.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93
3	41.75°	04-08-16-20-28-32-40-44-52-56-64-68-76-80-88-92
4	37.75°	96-12-24-36-48-60-72-84

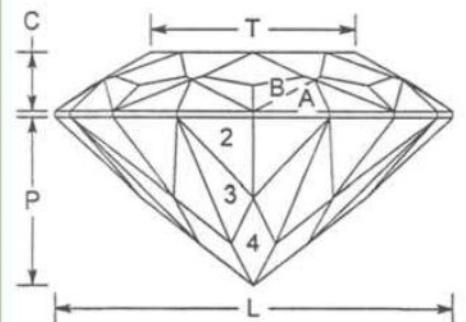
Cut to size.  
 Cut to TCP.  
 Meet girdle.  
 Cut to center point.

## CROWN

A	41.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93
B	35.00°	01-11-13-23-25-35-37-47-49-59-61-71-73-83-85-95
C	22.00°	06-18-30-42-54-66-78-90
D	29.00°	96-12-24-36-48-60-72-84

Level girdle.  
 Meet girdle.  
 Meet A and B.  
 Caution: This facet cuts quickly.

E 0.00° Table



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auction, dealers, raffles, door prizes; contact Lois Zima or Jeanine Mielecki; (847) 298-4653; e-mail: jaynine9@aol.com; Web site: www.desplainesgeologyclub.org

**10-11—GOODING, IDAHO:** Annual show; Petrified Watermelon Pickers; Idaho State School for the Deaf and Blind, Recreation Gymnasium, 1450 Main St.; Sat. 9-5, Sun. 10-4; free admission; rock, dealers, jewelry, gemstones, door prizes, grab bags, silent auction, demonstrations, educational displays, club member specimens and lapidary demonstrations; contact Dixie Reale, P.O. Box 402, King Hill, ID 83633, (208) 293-4340; e-mail: dixiereale@mac.com; Web site: www.kountinghouse.com/club

**10-11—JOHNSON CITY, NEW YORK:** 41st annual show; New York Southern Tier Geology Club; Johnson City Senior Citizen Center, 30 Brocton St.; Sat. 9-6, Sun. 10-4; adults \$3, kids under 12 free; dealers, silent auctions; contact Al Conklin, 187 Forest Hill Rd., Apalachin, NY 13732, (607) 625-4140; e-mail: allanconklin@aol.com

**10-11—KINGMAN, ARIZONA:** Show, "Gems of Arizona"; Mohave County Gemstones; Kingman Academy of Learning High School, 3420 N. Burbank St.; Sat. 9-5, Sun. 9-4; free admission; demonstrations (obsidian knapping, faceting, wire wrapping), mineral displays, silent auction, dealers, cash raffle, hourly door prizes, children's activities; contact Nan Russell, (928) 846-0927, or Donna Robinson, 3202 E. Leroy Ave., Kingman, AZ 86409, (928) 263-1480; e-mail: gemstoners@live.com; Web site: www.gemstoners.org

**10-11—LANCASTER, CALIFORNIA:** Show; Antelope Valley Gem & Mineral Club; Lancaster High School, 44701 32nd St. W, between Lancaster Blvd. and Ave. J; Sat. 9-5, Sun. 9-5; free admission; demonstrations, vendors, tailgaters, silent auction table, raffle drawing, games; contact Jules Ficke, 4233 W. Ave. L-4, Lancaster, CA 93536, (661) 943-5157; e-mail: av\_gem@yahoo.com; Web site: www.avgem.weebly.com

**10-11—MARIPOSA, CALIFORNIA:** 10th annual show; California State Mining and Mineral Museum, Mariposa Gem & Mineral Club, California State Mining and Mineral Museum Association; Mariposa County Fairgrounds, Hwy. 49; Sat. 10-6, Sun. 10-4; gems, minerals, crafts, speakers, mineral exhibits, educational activities, raffles, silent auctions; contact Dianne Vereschagin or Darci Moore, (209) 742-7625

**10-11—PARIS, ONTARIO, CANADA:** 38th annual show; Brantford Lapidary & Mineral Society; Paris Fairgrounds, 139 Silver St.; Sat. 10-5, Sun. 10-5; adults \$3, children 12 and under free; dealers, gems, minerals, fossils, stones, lapidary equipment and supplies, fine jewelry, supplies, beads, demonstrations, exhibits, silent auction, "Mine for Gems" display; contact Robert Parry, P.O. Box 29, 138 Sugar Maple Rd., St. George, ON N0E 1N0, (519) 448-1236; e-mail: robert@roberthalloriginals.com; Web site: www.brantfordlapidarymineral.ca

**10-11—POCATELLO, IDAHO:** Show; SouthEast Idaho Gem & Mineral Club; Bannock County Fairgrounds, 10588 Fairgrounds Rd.; Sat. 10-6, Sun. 10-5; contact Martin Rakatansky, (208) 233-2538; e-mail: rak80@cableone.net

**16-18—ALPINE, TEXAS:** Show, "Wonders from our desert and beyond"; Chihuahuan Desert Gem & Mineral Club; Kokernot Lodge, Rte. 223 bypass; Fri. 9-6, Sat. 9-6, Sun. 11-5; free admission; Kids' Corner, door prize, dealer demonstrations, video "What's Hot in Tucson"; contact Mary Brogan, P.O. Box 1111, Alpine, TX 79831, (432) 837-3824; e-mail: marybrogan@rocketmail.com; Web site: www.agates123.com/cdgm/

**16-18—RICKREALL, OREGON:** Show, "Rocks of Oregon"; Willamette Agate & Mineral Society of Salem; Polk County Fairgrounds, 520 S. Pacific Hwy. W; Fri. 9-6, Sat. 10-6, Sun. 10-4:30; contact Kristi Edwards, 1236 SE Seaport Circle, Corvallis, OR 97333, (541) 738-6811; e-mail: edwardskk@gmail.com

**16-18—SARASOTA, FLORIDA:** Show; Frank Cox Productions; Municipal Auditorium, 801 N. Tamiami Trail (Hwy. 41); Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (841) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

**17-18—DOTHAN, ALABAMA:** 3rd annual show; Dothan Gem & Mineral Club; Westgate Park James Grant Center, 501 Recreation Rd.; Sat. 9-5, Sun. 10-4; free admission; door prizes, silent auction, jewelry, minerals, cutting rough, slabs, gem trees, tumbled stones, mineral displays, equipment demonstrations; contact Arnie Lambert, 920 Yorktown Rd., Dothan, AL 36301, (334) 792-7116; e-mail: arlambert@comcast.net

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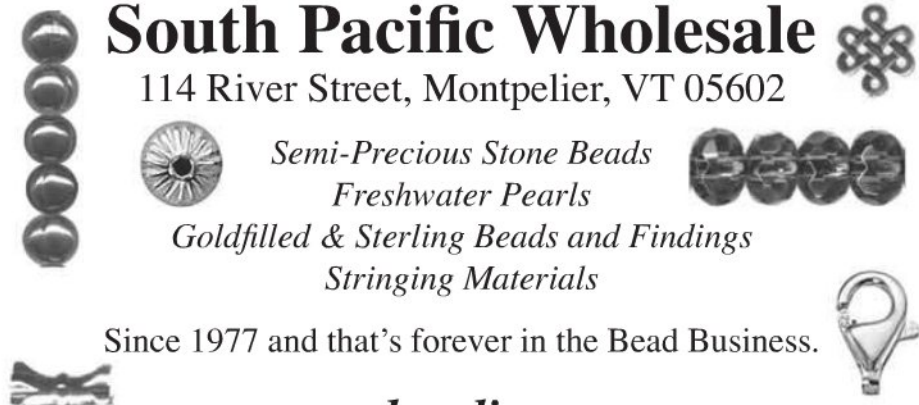
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## Collecting with an Edge

The superb emerald on this issue's cover is different from emeralds that have come from classic and well-known localities. Instead of being on schist or calcite like Russian and Colombian emeralds, it occurred on quartz! The specimen represents a new source of collector gem emeralds in Zambia, which I describe in detail in this issue ("Zambia's Gem Emeralds", page 12). Those of you who attend the Tucson Gem & Mineral Show™, Feb. 11-14, 2010, will see for yourself these exceptional gem crystal specimens.

Zambia has been producing emeralds for some years now—the original discovery was made in 1928—but until recently, the collector world has seen few very fine specimens on matrix from this Central African nation. The choice specimen on this month's cover is just one of a host of equally spectacular specimens that were recovered as a result of a cooperative partnership between Gemfields PLC, which owns the Zambian emerald mine, and The Collector's Edge, an American company best known for its spectacular rhodochrosite discoveries.

Collector's Edge, which is one of the world's leaders in developing specimen mining ventures, is also one of this country's premier mineral dealers and boasts a major specimen preparation laboratory. These Zambian emerald specimens are just the latest example of the major contributions to the mineral world that have been made by Collector's Edge. The company has been involved in very productive specimen mining ventures and is capable of some of the best specimen preparation work being done in the world.

Collector's Edge is the brain child of Bryan Lees, a graduate of the Colorado School of Mines, collector, dealer, and specimen treatment expert. Bryan started out as a mineral dealer, but soon developed expertise in specimen mining, along with the skills and technical facilities necessary for preparing specimens for the marketplace.

Bryan's first important specimen mining effort was at Stoneman, Colorado, the source of wonderful blue barite crystals. This deposit was well known among



**This spectacular 7-inch gold specimen, known as "The Dragon", was found in the Colorado Quartz Mine with the help of a metal detector.**

western amateur collectors, who had been collecting there sporadically for decades. Then Lees took the next logical step and operated the property as a mining project. After studying the geology and determining the best way to mine the better specimens, his team went to work. His success in this venture is evidenced by the large quantity of fine blue barite specimens that were extracted and made presentable for sale.

Bryan, a dedicated Colorado collector, had seen rhodochrosites from the Sweet Home Mine that were exceptional, but severely limited in number. He took the huge step of organizing a consortium of investors to open the Sweet Home Mine, near Alma, Colorado, for specimen mining. Though this old silver mine had given up an occasional choice rhomb of red rhodochrosite, it was never a good silver producer. Production of both rhodochrosite and silver had always been sporadic and a gamble. Bryan determined to prove the property was a viable specimen source, which he did.

Over a period of 10 years, Bryan and his mining crews brought to grass the world's finest rhombic rhodochrosite specimens in

quantities that satisfied the entire collector market! For several years, the flow of choice collector rhodochrosite specimens from the Sweet Home Mine was immense. The number of stunning, even hard-to-believe specimens was far beyond what anyone ever expected to see from this old mine. By now, everyone knows of this great specimen mining venture. It has been immortalized in video, shown on the Denver news, and exhibited at major shows, creating an excitement the mineral world has seldom seen.

Three of the specimen finds from this crystal mining project ended up in museums as the world's finest examples of rhodochrosite. The largest rhodochrosite crystal found by Collector's Edge is the Alma King, a 5-inch perfect rhomb on matrix that is now a highlight exhibit in the Denver Museum of Nature and Science. The huge slab upon which the crystal rests is covered with small, sparkling quartz crystals, with minor fluorite and sulfide crystals scattered about. As you marvel at this monster red prism, you can also watch and listen to the video that actually shows Bryan pulling this huge crystal from the pocket in which it had formed. The crystal had cleaved from its matrix, but skillful specimen preservation put it back from whence it came!

Another exceptional Denver Museum exhibit is "The Wall". This is an entire section of actual mine wall that measures an 8 feet by 8 feet. Scattered heavily all over that wall are bright-red rhodochrosites! This remarkable display, donated by the Adolf Coors Foundation, is displayed in a faux mine exhibit that replicates the tunnel from which "The Wall" was extracted.

Taking a huge section of mine wall apart, preparing it for exhibit, and re-assembling it in a museum, all without doing major damage to the rhodochrosites, was a major test of the skills and technical knowledge possessed by the Collector's Edge staff!

The third major find from the Sweet Home Mine is the "Alma Queen", a specimen that some feel is the world's best example of the species. It resides in the Rice Museum of Northwest Rocks and Minerals in Hillsboro, Oregon.

One of the important side projects of the Sweet Home effort was the development of one of the finest specimen preparation labs ever assembled. With expert technicians and the most advanced equipment, the Collector's Edge lab has emerged as the best available anywhere.

Another Colorado specimen mining project by Collector's Edge tackled a common and popular collecting site: The Pike's Peak area is a source of fine amazonite in quantity. Coupled with dark smoky quartz prisms, these amazonite specimens are known the world over.

In 1997, working with owner Joe Doris, they tackled a claim that eventually produced what became known as the Tree Root pocket. This find of amazonite and smoky quartz is still considered the finest discovery of these specimens in the area for maybe 200 years! This one pocket produced plates of large, superbly colored blue amazonite crystals with lustrous smoky quartz crystals free standing on the amazonite crystal base. Several of the Pike's Peak area specimens are considered among the finest ever mined here.

That same year, Collector's Edge became associated with the people operating the Colorado Quartz Mine in California. Despite its name, it was actually a wonderful source for superbly crystallized gold. The mine was never a really great ore producer, but on occasion a vug in the quartz would open up and yield one or more fantastically crystallized gold specimens. It was never a steady producer of gold or profit!

Using a new mining technique—scanning the tunnel walls with metal detectors in search of hidden pockets—the miners began to produce superbly crystallized gold specimens, some of the best found in recent decades. The high point of this venture was when an electronic signal suggested a possible pocket of gold. The miners contacted Bryan, who joined them underground and carefully opened the hidden pocket. The pocket only held one specimen, but what a specimen! Bryan extracted what has since been named "The Dragon", an amazing wire- and crystal-gold specimen that stands about 7 inches high. It has no matrix, but consists entirely of interlocking, curving, crystallized gold clusters in an undulating form. Many who have seen the specimen on display at Denver and in Tucson agree it resembles a dragon rearing its vicious head! The specimen now resides in the Houston Museum of Science.

Another mining venture that came about because of Collector's Edge's repu-



BOB JONES PHOTO

**This superb, vibrant green fluorite from Riemvasmaak, North Cape Province, South Africa, was prepared by Collector's Edge.**

tation was when miners at the Twin Peaks open-pit gold mine in Humboldt County, Nevada, cut into a very fine vein of crystallized orpiment. Realizing there was some specimen collecting potential, the mine management and Collector's Edge formed a partnership to extract the choice crystallized orpiment without disrupting the mining of gold. The orpiment proved to be some of the finest specimens of arsenic sulfide ever found in America, especially in recent years.



BOB JONES PHOTO

**Another Collector's Edge project mined choice amazonite and smoky quartz specimens in the Pike's Peak area of Colorado.**

Currently, Collector's Edge has gone international, providing staff and expertise for the recovery of gem emerald crystals in Zambia. The extracted crystals go to the Collector's Edge lab for preparation. The emeralds were found locked in masses of crystalline quartz, which is actually a rare association for gem emerald. It was the expertise of the folks at Collector's Edge that revealed these green beauties and turned them into exceptional collector specimens.

Collector's Edge is also involved in the recovery and processing of breathtaking, deep-green, octahedral fluorite crystal groups from Africa. The source of these amazing bright-green fluorites is Riemvasmaak, North Cape Province, South Africa. The area is well known for its fluorite, which is found in various crystal pockets. Often, the fluorite is covered with a quartz druse, which masks their inherent beauty.

Fluorite was found in small pegmatites around Riemvasmaak (pronounced "reem-fuss-mark"). Quartz was apparently the final mineral to crystallize in these deposits, as it is all over the fluorite, which is itself a fairly late-forming mineral. Quartz also forms a sturdy matrix for much of the fluorite.

The problem miners faced was to remove the drusy quartz without having a negative effect on either the fluorite or the matrix. Naturally, Collector's Edge had the expertise to accomplish the task.

Once exposed, the fluorites proved to be well crystallized octahedrons and cubo-octahedrons. Crystals can be colorless or beautiful shades of orange, yellow, blue, purple or—the most popular and intense color—green. It was these vibrant, virtually transparent green crystals that proved to be the most spectacular fluorites from the region. Collector's Edge is now successfully marketing these marvelous specimens of an exceptionally fine common calcium fluoride.

Continuing their international scope, Bryan and Collector's Edge have developed a partnership with a group of Chinese mine owners. The Wudong Mine is a developing rhodochrosite source. Collector's Edge, with well-known expertise in handling rhodochrosite, is supplying the know-how, the equipment, and the training to extract these specimens with care. You can soon expect to see choice red rhodochrosites from China available for sale.

My point in telling you all this is to highlight the marvelous and important job Collector's Edge has been doing in bringing a variety of superb collector specimens to the hobby. Beginning with a flood of choice blue barites and red rhodochrosites, this organization has done more to develop the concepts of specimen mining, preparation and marketing than any other in recent times. The great variety of fine species it has given us from a half-dozen sources has certainly raised the awareness of all collectors to the quality of minerals that are still to be found in the Earth's crust. Their contributions to the mineral hobby and science deserve this recognition. 🍀

Bob Jones holds the Carnegie Mineralogical Award, is a member of the Rockhound Hall of Fame, and has been writing for *Rock & Gem* since its inception. He lectures about minerals, and has written several books and video scripts.





## FIELD NOTES

**Slick Finish**

Where do I find that acrylic (I believe) coating that can be applied to rocks and minerals to give that "wet look" and bring out the colors of the specimen? I have a large sodalite mineral in matrix that I would like to coat for a possible showing of Minerals of the World at the Mount Prospect Library.

—John Kula  
via e-mail

I think you can get the effect you are after with a few coats of clear acrylic spray. An old, tried-and-true brand is Krylon®, which is available at home centers, hardware stores, craft stores, and of course on the Internet. Here is a link to a Krylon product that might just be the answer for you: [www.woodcrafter.com/ask0500triplethickglaze.aspx](http://www.woodcrafter.com/ask0500triplethickglaze.aspx).

—Bill Kappele  
Shop Talk columnist

**Camping Closure**

I just received a call from Bonnie Richardson, and sad to say it wasn't good news. Seems that some people have to ruin it for the rest of us just about everywhere these days, and Richardson's Rock Ranch [Madras, Oregon] is not exception.

Because of problems this summer with theft and destruction of property by some individuals—she assured me that they were not the people they know who camp there year after year—Richardson's is no longer allowing overnight camping at the shop.

Please pass this on to anyone you think might head there, since they will not make exceptions for those who show up next year expecting to camp as usual.

—Tim Fisher  
Eugene, OR

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And promises us when mortality ends

An "after life" will soon begin!

—Ralph Willis

**Thunder Egg Theory**

I greatly enjoyed the November 2009 issue on agates. I've never seen any mention of spirals in Oregon thunder eggs. There seems to be a spherule, or "seed", around which the rhyolite forms. Then the rhyolite splits inside, leaving the spherule on one side and a curved impression on the other. Eventually, the hollow fills with silica gel, which appears to swell as it hardens, pushing the rhyolite still farther apart. The "seed" spherule contains a spiral formation that resembles a marine shell in cross section, but I don't think it is. Does anyone know what causes these spirals?

—Nancy Martsch  
Sherman Oaks, CA



Field Notes submissions are subject to editing. Address questions to "Editor" for a private response or to "Readers" and provide the contact information you'd like published. Send to Field Notes, *Rock & Gem* magazine, 290 Maple Ct., Ste. 232, Ventura, CA 93003.

**Forest Service Pass Changes**

The U.S. Forest Service has announced it plans to eliminate the 50 percent discount at National Forest campgrounds that has traditionally been available to holders of lifetime Senior and Access (permanent disability) passes. The change will apply at campgrounds operated by private concessioners, which represent 50 percent of National Forest camping capacity and 82 percent of reservable campsites.

In a notice in the Dec. 1, 2009 Federal Register (<http://edocket.access.gpo.gov/2009/E9-28744.htm>), the agency outlined a new policy that would replace the half-price rule that has been in place since the mid-1960s with a 10 percent discount. The policy would also require Senior and Access passholders to pay a fee at National Forest day-use sites that are currently covered in full by their passes.

Seniors 62 and older pay a one-time \$10 fee for their lifetime pass. Lifetime passes for the permanently disabled are free. Together, Senior and Access passes represent more than 78 percent of all pass sales.

Under current policy, concessioners are required to honor Senior and Access passes for campground fees under the same terms as if the Forest Service operated the facility directly, meaning that a 50 percent discount must be offered. Most highly-developed campgrounds are now concessioner-run.

As the concessioner program has expanded over the past 30 years, it has moved away from a small mom-and-pop business model to one dominated by a few large corporations.

**Source: Western Slope No-Fee Coalition, [www.WesternSlopeNoFee.org](http://www.WesternSlopeNoFee.org)**

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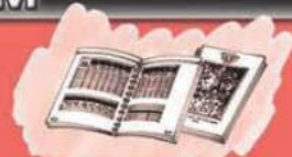
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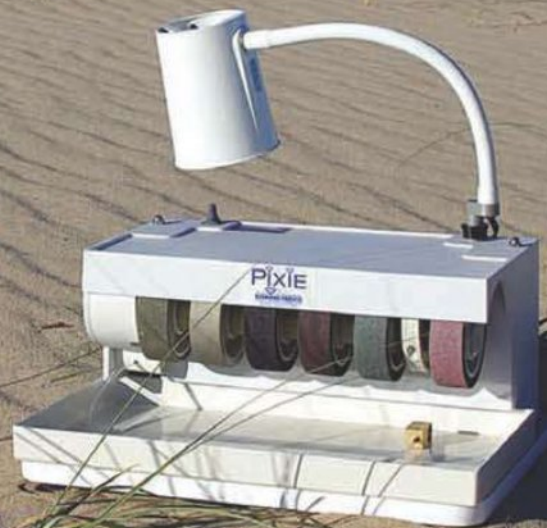


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