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JULY 2011

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This gold specimen was mined in the early to mid-1900s at the Red Ledge mine in Sierra County, California. It was documented in the 1932 USGS paper "Gold Quartz Veins of the Allegheny District, California". (Joe Budd photo/Jim Gibbs collection)

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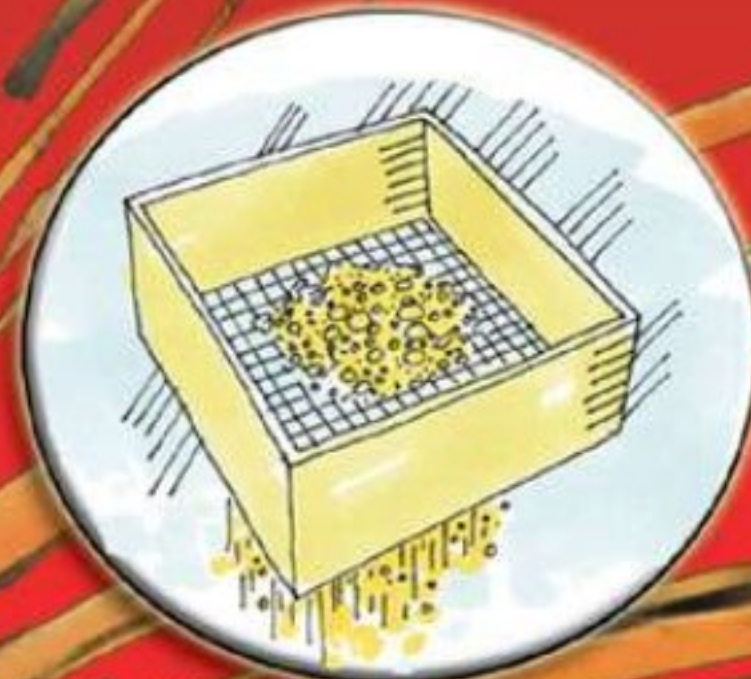
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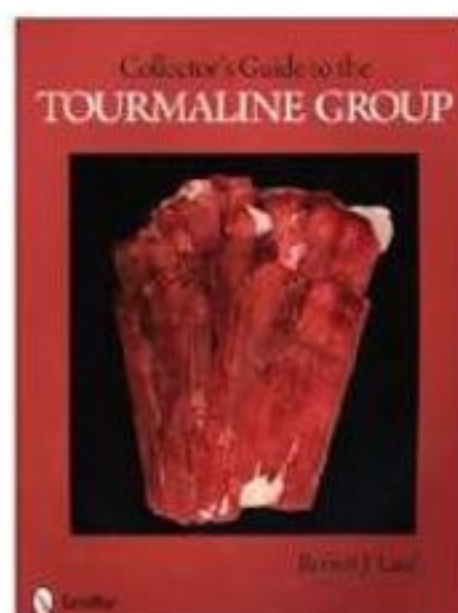
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Collector's Guide to the Tourmaline Group

by Robert J. Lauf
\$19.99

Tourmaline's complex chemistry means it is not a single mineral, but a group of minerals. The crystals, ranging from colorful to drab, are favorites among collectors. *The Tourmaline Group* is one in a series of texts that attempt to give collectors a better understanding of the important groups of "rock-forming" silicates. Author Lauf is a metallurgical engineer who has authored a number of books on mineralogy.

A section on taxonomy lists the 14 accepted species and their formulas, explains their classification and crystal structures, and lists the possible chromophores that influence their colors. The section on tourmaline formation discusses the types that occur in igneous and metamorphic rocks and the alterations and pseudomorphs that may form. The third section covers the 14 species of tourmaline, with photos that show either the entire specimen or the crystal and part of the matrix. More than 120 clear, close-up photos illustrate the text. (Schiffer Publishing, 2011)



Kim Poor Collection Showcases Lost Brazilian Gems

Brazilian artist and jewelry designer Kim Poor is launching her new collection, which has been created around stones from the legendary Brazilian lapidary and designer Haroldo Burle Marx. Burle Marx was a well-respected gemologist who was celebrated for the unique cut of his stones. Poor's Burle Marx collection celebrates the beauty of these stones in a series of jewelry pieces that have been conceived as miniature sculptures.

The very last of his gems, discovered years after his death, were passed to Poor to honor Burle Marx's memory. Through her designs, Poor is able to showcase these rare and exceptional gemstones, many of which are indigenous to Brazil. Poor's collection is inspired by the beauty of the movement of water as it collides with precious stones, and reunites more than 40 Brazilian gems. All the pieces are sculpted in gold or silver using aquamarines, rose quartz, amethysts, and imperial citrines. These striking pieces include rings, necklaces, bracelets and earrings. Poor divides her time between Rio de Janeiro and London, where she creates her unique hand-crafted designs. For the last six years, she has had her own boutique on Elizabeth Street, the stylish heart of Belgravia, where her pieces can be seen firsthand. (www.kimpoor-jewellery.com)



Revere Academy Scholarship Contest for Beaders

The Revere Academy of Jewelry Arts, located at 760 Market St., Suite 900, in San Francisco, is offering a new scholarship aimed at the beading community. The jewelry school is now offering a complete scholarship for any of its three-day classes to the winner of its new contest for beaders. The winner will choose from dozens of classes offered each year in a wide range of subjects such as fabrication, stone setting, and jewelry design.

The new scholarship contest is open to anyone who makes beaded jewelry and would like to learn more about traditional jewelry making. The winner can select the class of their choice and receive full tuition, plus airfare from anywhere in the U.S., as well as lodging in San Francisco and kit fees. Applications ask for examples of your beaded jewelry along with a statement of why you want to attend the Revere Academy.

The application deadline is Aug. 15, 2011 and the winner will be announced Oct. 1, 2011. There is no fee to complete the online application. For more details, visit www.revereacademy.com/guide/scholarship/scholarship-for-beaders or call (415) 391-4179.



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CRAFTSMAN OF THE MONTH

I found my first piece of nephrite jade in Wyoming in 1978," writes July Craftsman of the Month James Rundle of Firth, Idaho. "I met an elderly gentleman who had his own claim in the desert, by the name of "Hap". He taught me what to look for, windowed a piece of the jade, and that's what started my lapidary experience, and experience that I've enjoyed for over 30 years.

"For this project, I chose my favorite black nephrite, a piece of Australian white opal, and two strips of gold-filled bevel. I slabbed the jade to $\frac{5}{16}$ inch thick and drew my own pattern on it. I trim sawed the jade to my marks and ground the rough edges on a 100 grit textured diamond wheel. Then, using dop wax, I started shaping and doming the stone on a 100 grit diamond wheel. I continued with a 220 grit silicone belt on a 3X8 expanding drum, proceeded to 400 and 600 grit, then used a 50,000 grit diamond belt and Rapid Polish #61 on leather for the final polish.

"I measured and cut the stone in half, then trued up all the cuts using a 600 grit diamond flat lap. I then slabbed a 2.5 mm slab of nephrite for the backing and smoothed it on a 600 grit diamond flat lap. Next, I selected the opal for my center piece. I trimmed it and flattened it on both sides with a 600 grit diamond flat lap. Using



a trim saw, I sawed it so it was 2mm thicker than the finished jade stone. I cut to pieces of gold-filled bevel to go on each side of the opal. After checking the pieces for fit, I washed them in lacquer thinner.

"I mixed up two-part 330 epoxy and put a thin film on each piece to be glued. I held them together until the glue had set some and placed them under a heat lamp, holding it all tightly together until the glue hardened. I then went back to the 600 grit flat lap and cleaned off all the excess glue and used lacquer thinner to finish up. I mixed more 330 epoxy to attach the backing piece and let it sit for three hours. I trimmed all the excess backing off the nephrite and ground it down smooth, sanding it with 220 grit silicone carbide on a 3X8 expanding drum. Next, I proceeded to 400, 600 and 50,000 grit diamond belts, then re-polished the whole stone with Rapid Polish #61 on leather.

"For the mounting, I chose 26 gauge sterling silver for the backing and galley wire for the bezel. I cleaned and polished both pieces of silver, fitted the bezel around the stone, soldered it with medium solder, and dipped it in pickling solution for cleaning. I placed the bezel on the 26 gauge backing and used binding wire to hold it down while I soldered it with extra easy wire solder. After dipping it in pickling solution for cleaning again, I trimmed away the excess backing, being sure to leave enough at the top of the pendant for a $\frac{1}{16}$ -inch hold for the chain bail. I then installed the bail and a 24-inch silver chain." ♦



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. Save it as a document file.
- Take at least one sharp, close-up, color photo of the finished project. Photographic prints (no laser prints) or high-resolution (300 dpi at 4 inches by 5 inches) digital photos are acceptable.
- Burn your document file and digital photo (.tif or .jpg) to a CD.
- Mail your CD, photo, and a printed copy of your manuscript, along with your name and street address (required for prize 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. Contact the editor at (805) 644-3824 ext. 129 or editor@rockngem.com with any questions about these requirements.

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.



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SHOW DATES

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JUL. 22, 23, 24	EUGENE, OR
JUL. 29, 30, 31	LYNDEN, WA
AUG. 5, 6, 7	HILLSBORO, OR
AUG. 12, 13, 14	SAN DIEGO, CA
AUG. 19, 20, 21	SACRAMENTO, CA
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JUNE-JULY 2011

29-3—MADRAS, OREGON: 62nd show; All Rockhounds Pow-Wow Club of America; Jefferson County Fairgrounds; Wed. 10-5, Thu. 10-5, Fri. 10-5, Sat. 10-5, Sun. 10-5; free admission; dealers, carvings, clocks and motors, crystals, faceted gemstones, fossils, findings, intarsia, jewelry, minerals, rock equipment, rough and polished rock, swap tables, door prizes, rock toss, auction, nightly entertainment, club member field trips; contact Cliff Matteson, (253) 475-8433

JULY 2011

1-3—FARMINGTON, NEW MEXICO: Annual show; San Juan County Gem & Mineral Society; Farmington Civic Center, 200 W. Arrington St.; Fri. 10-6, Sat. 10-6, Sun. 10-5; free admission; silent auctions, prize drawings, raffle Sun.; contact Mickie Calvert, 5986 Hwy. 64, Farmington, NM 87401, (505) 632-8288; e-mail: mickie2@earthlink.net

1-3—FISHERSVILLE, VIRGINIA: 24th annual show, "Fishersville/Waynesboro Area Gem, Mineral & Jewelry Show"; Treasures Of The Earth Gem & Jewelry Shows; Augusta Expoland, 277 Expo Rd., I64 Exit 91; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$3 (3-day ticket), children under 16 free; jewelry makers, goldsmiths, silversmiths, gem trees, wire wrap, wire sculpture, pearls, stone beads, stone setting, dealers, amber, opal, minerals, fossils, door prizes, classes; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

1-3—RALEIGH, NORTH CAROLINA: Show; Frank Cox Productions; State Fairgrounds, 1025 Blue Ridge Rd.; Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

7-10—CASCADE LOCKS, OREGON: Annual show; Cindy Allison, Cascade locks Marina Park; Thu. 8-6, Fri. 8-6, Fri. 8-7, Sat. 8-7; free admission; contact Cindy Allison, 87987 9th St., Veneta, OR 97487, (541) 554-8295; e-mail: gemsareus@yahoo.com

8-10—MARIETTA (ATLANTA), GEORGIA: Show; Frank Cox Productions; Cobb County Civic Center, 548 S. Marietta Pkwy.; Fri. 1-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

8-10—PORTLAND, OREGON: Wholesale and retail show; Gem Faire Inc.; Oregon Convention Center, 777 NE MLK Jr. Blvd.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

8-10—SHARONVILLE, OHIO: Show and sale; GemStreet USA; Sharonville Convention Center, 11355 Chester Rd.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$7, seniors (60+) and students (12-17) \$5, children under 12 free; gems, jewelry, beads, fossils, minerals; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

9-10—AUSTIN, TEXAS: Wholesale and retail show; The Bead Market; Travis County Expo Center, 7311 Decker Ln.; Sat. 10-5, Sun. 10-4; free admission; pearls, gemstones, silver, vintage beads and buttons, findings, PMC, seed beads, lampwork and glass beads, tools, books, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

9-10—BETHEL, MAINE: 50th annual show; Oxford County Mineral & Gem Association; Telstar High School; Sat. 9-5, Sun. 10-4; adults \$2, children under 12 free; dealers,

specimens, jewelry, gem rough, museum-quality displays, fluorescent mineral booth, demonstrations, gold panning, capping, door prizes, grand prize; contact Randy Withee, 34 Morse Rd., Norway, ME 04268, (207) 595-8346; (207) 595-8346; e-mail: oxfordcountyminerallandgemassoc@gmail.com; Web site: www.oxfordcountyminerallandgemassocia-tion.blogspot.com

9-10—CODY, WYOMING: Show; Wyoming State Mineral & Gem Society; Cody Auditorium, 1240 Beck Ave.; Sat. 9-6, Sun. 9-3; admission \$3; contact Stan Strike, (307) 587-6448; e-mail: strikes@bresnan.net

9-10—CULVER CITY, CALIFORNIA: 50th annual show; Culver City Rock & Mineral Club; Culver City Veterans Memorial Auditorium, 4117 Overland Ave.; Sat. 10-6, Sun. 10-5; free admission; demonstrations, jewelry classes, club displays and exhibits, youth games, more than 35 dealers, gems, jewelry, minerals, fossils, tools, beadwork, castings, wire-wrap, carvings, glass-work, rough slabs, polished cabs, jewelry displays, door prizes, free specimens for junior rockhounds; contact Robert Thirlaway, (310) 462-2269; e-mail: fiestaofgems@gmail.com; Web site: www.culvercityrocks.org

9-10—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

9-10—SYRACUSE, NEW YORK: 45th annual show, "Gems Along the Erie Canal: A Diamond Celebration"; Gem & Mineral Society of Syracuse; New York State Fairgrounds, Center of Progress Bldg., I-690; Sat. 10-6, Sun. 10-4; competitive exhibits, lectures, workshops, demonstrations, kids' activities, minerals, fossils, beads, metaphysical stones, AMFS and EFMLS Convention meetings July 6-8; contact Cathy Patterson, (315) 638-8817; e-mail: cathy@patterson@verizon.net; Web site: www.gmss.us

14-16—NYSSA, OREGON: Show, "Thunderegg Days"; Nyssa Chamber of Commerce; Nyssa Elementary School Grounds, 105 Main St.; Thu. 10-9, Fri. 10-9, Sat. 10-9; free admission; daily rock tours, search for thunder eggs, moss agate, petrified wood, or pink plume, rock and gem vendors; contact Susan Barton, 105 Main St., Nyssa, OR 97913, (541) 372-3091; e-mail: nyssachamber@nyssachamber.com; Web site: www.nyssachamber.com

15-17—CENTERVILLE, TENNESSEE: 38th annual show, "Middle Tennessee Gem & Mineral Show"; Dick Dixon; Hickman County Fairgrounds; Fri. 10-6, Sat. 10-6, Sun. 10-5; contact Dick Dixon, (304) 825-6421

15-17—INDIANAPOLIS, INDIANA: Show and sale; GemStreet USA; Indiana State Fairgrounds, The Pioneer, Our Land Bldg., 1202 E. 38th St.; adults \$5, children under 12 free; gems, jewelry, beads, fossils, minerals; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

15-16—MINOCQUA, WISCONSIN: Annual show; Lakeland Gem Club; Lakeland Union High School, 9573 State Hwy. 70; Fri. 10-6, Sat. 9-5; free admission; meteorites, olivine/peridot, artisans, gem and mineral jewelry, gems, beads, minerals, fossils, native copper, jewelry, children's activities, speakers, demonstrations, silent auctions, door prizes; contact Pattie Hartmann, PO Box 125, Eagle River, WI 54521, (715) 477-2519; e-mail: gypsy1120@coslink.net

15-17—REEDSPORT, OREGON: Annual show; Lower Umpqua Gem & Lapidary Society; Reedsport Community Bldg., 415 Winchester Ave.; Fri. 10-6, Sat. 10-6, Sun. 10-4; free admission; dealers, demonstrators, Spin the Wheel, silent auction, door prizes, displays, raffle, gems, minerals, opals, turquoise, crystals, faceted gems, silversmithing, fossils, lapidary tools and equipment; contact Bill Hendrickson, 100 River Bend Rd., Space 17, Reedsport, OR 97467, (541) 271-6816

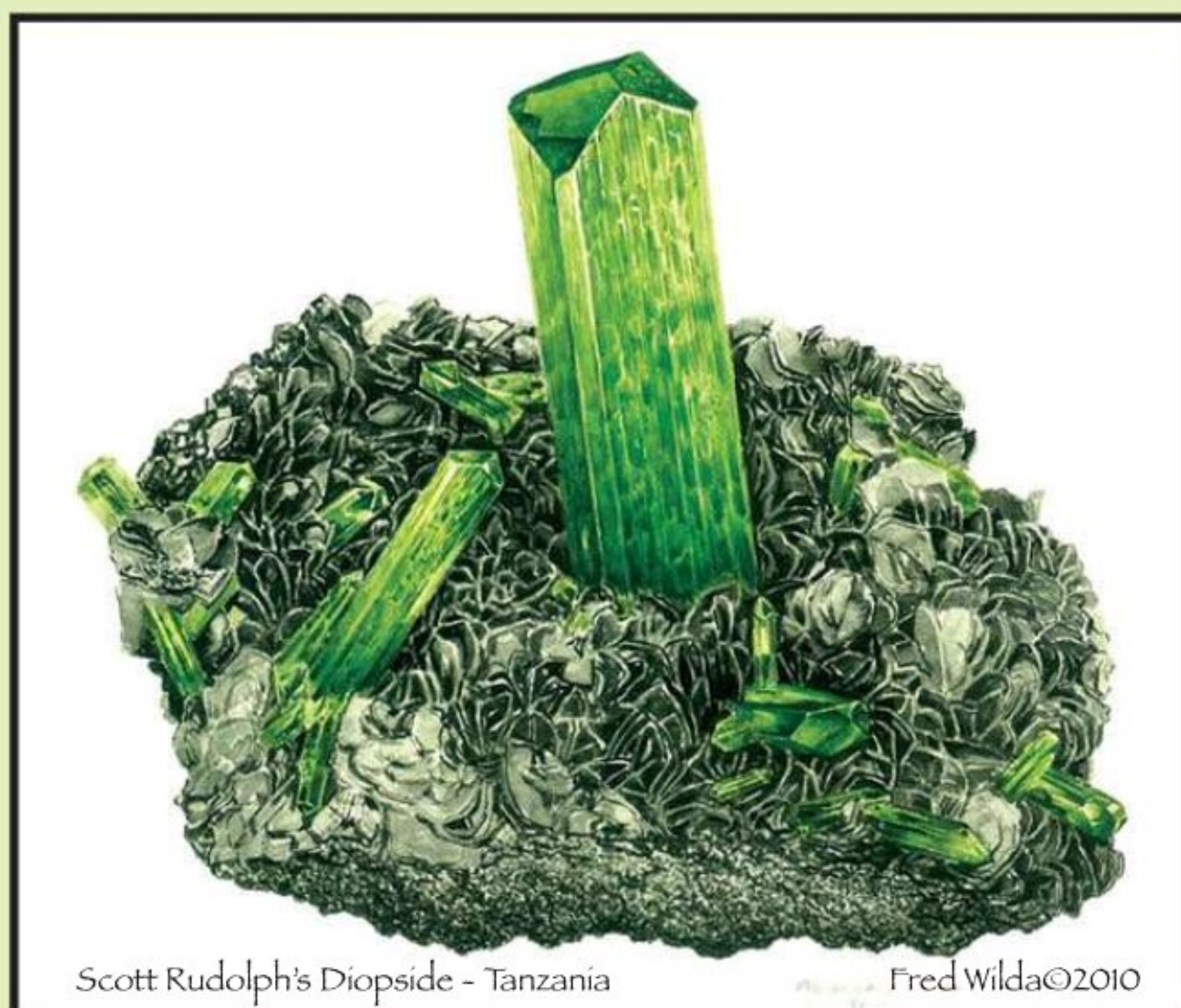
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EAST COAST GEM, MINERAL & FOSSIL SHOW

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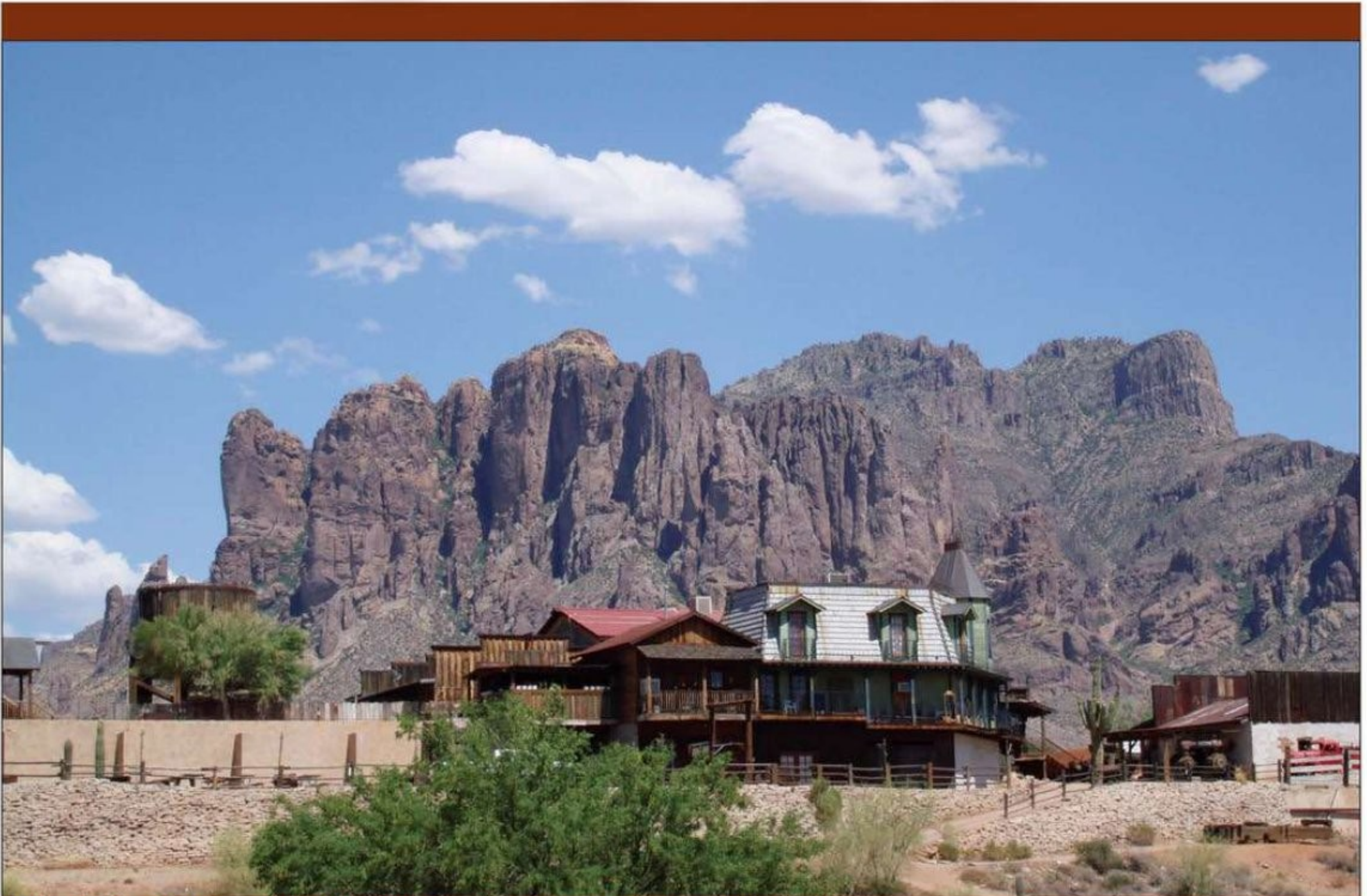
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CENTRAL ARIZONA G·O·L·D



The town of Goldfield, Arizona, is situated against the backdrop of the magnificent Superstition Mountains.

Mine Tours, Museums and the Superstition Mountains

Story by Helen Serras-Herman/Photos by Helen and Andrew Herman

The very idea of gold stirs the imagination of rockhounds and lapidaries alike. The mystery of hidden wealth, the fascination with the stories behind the mines, and the attraction of what can be created from the beautiful metal are all reasons they find old gold mines so alluring and inspiring. In central Arizona are the Goldfield mines, in Goldfield, and the Vulture Gold mine, near Wickenburg. Al-

though limited quantities of gold ore may be found by the owners, both mines are closed for production and only open for tours. A visit to these two historic mines will enhance your knowledge about the difficulties of hardrock mining, as well as the successes and failures of gold-seeking. You may be inspired to go prospecting or just enjoy all the legends and stories disseminated for over a century.



Today Goldfield is filled with authentic-looking buildings, people in period costumes, shops and restaurants.



This gold nugget with quartz, found in Santa Cruz County and now in the vault of the Arizona Desert Museum, is similar to gold nuggets found in many places in Arizona.

THE GOLDFIELD MINE

In the shadow of the legendary Superstition Mountains, 40 minutes east of Phoenix, there is a region where the line between legend and truth is blurred. The Lost Dutchman mine, the Spanish Peralta mines, and a gold-mining settlement that became a ghost town are some of the main attractions. A legend about found and lost gold and speculations about the gold that is still in the ground are enough to give anyone gold fever.

Take U.S. Highway 60 East from Phoenix to Apache Junction. Make a left turn at Idaho Road, and then a right on state Route 88, the historic Apache Trail, and follow the signs to Goldfield Ghost Town.

The Apache Trail Historic Road is a loop road that covers some of the most rugged terrain in Arizona. There are breathtaking views of steep-sided canyons, glorious geological formations, and three beautiful lakes all along this scenic road. It starts at Apache Junction and takes you 180 degrees east to Globe. The U.S. Highway 60 historic roadway and part of the Apache Trail Loop Trip will bring you back via the south section of the loop. The Apache Trail is an engineering feat, a road constructed to bring water and supplies to the workers building the Roosevelt Dam. It runs high through the Sonoran Desert and reaches the river beds of the Salt River, where the Salado Indian civilization flourished for over a thousand years. The road was completed in 1905, but a portion of it is still not paved. The first and easier part of the trip includes the Goldfield mine attractions and ends at Tortilla Flat, a town of six souls that was the last stagecoach stop along the Apache Trail, nestled in the Superstition Mountain Wilderness, two miles past Canyon Lake.



The 25-minute guided tour at the Goldfield gold mine takes you underground into a re-constructed mine that is very close to the original, now flooded, mine.

LOST DUTCHMAN MUSEUM

Your first stop on the Apache Trail should be the wonderful Superstition Mountain & Lost Dutchman Museum (www.superstitionmountainmuseum.org). Located just 3½ miles from Apache Junction, the museum has a variety of exhibits that allow you to see what the Old West was really like and a wealth of information about the old gold mines of the area.

A map of the Superstition Wilderness Area with all the points of interest welcomes you, and there is a stunning display

of more than 40 books about the legend of the lost gold, many of them out of print. It's a great illustration of the power of the legends of and the quest for gold. After looking at that book display, you are very thankful that the museum offers such an extensive bookshop! You now have gold fever—or at the very least you want to know more about the history of the area. The museum is open daily 9 a.m. to 4 p.m. Admission is \$5 for adults and \$4 for seniors. There is also a well-stocked gift shop.



In the Vulture mine power plant, which also served as the machine shop, time has almost stood still. All the tools are left there in place, as if the workers are just out for lunch.



Inside the assay office, the ore was processed and the gold melted down, separated and poured into bars.

The mine that bore the legend is called the Lost Dutchman mine, named after Jacob Waltz, a German immigrant known as the "Dutchman". In the museum you will see an exhibit of 20 artists' renderings of Waltz, although there are no known authentic pictures. It is believed that he had found the richest gold mine in the world, possibly an old Spanish mine, but took the secret to his grave in 1891. Forty-eight and a half pounds of gold ore were found under Waltz's bed after his death that assayed at 9,000 ounces of gold per ton. That is mind-boggling! A photo on display in the museum shows a matchbox that was made from that rich gold-in-quartz ore. On his deathbed, Waltz supposedly spoke about a mine that lay in the shadow of Weaver's Needle, a volcanic monolith formation in the heart of the Superstitions.

According to the legend, Waltz left the following clues about the location of the mine: "From my mine you can see the military trail, but from the military trail you cannot see my mine. The rays of the setting sun shine into the entrance of my mine. There is a trick in the trail to my mine. My mine is located in a north-trending canyon. There is a rock face on the trails to my mine."

Since Waltz's death in 1891, thousands of gold seekers and treasure hunters have searched for the mine in vain. More than 60 people have lost their lives in the search. Although the act that created the Superstition Wilderness Area banned mineral prospecting in the mountains beginning in 1984, many travelers hope that they will stumble across the fabled gold mine. As recently as July 2010, three treasure hunters from Salt Lake City, Utah, were lost forever in the Superstition Mountains. For

days, rescue teams on horses and helicopters combed the rugged terrain area near Lost Dutchman State Park and the Superstition Wilderness, an area of 242 square miles filled with steep canyons, rocky outcroppings, cacti, and thick brush. Although the dangers from the Apaches, who killed many in the region to protect their sacred lands and ignited the legendary Apache curse, are long over, the summer temperature soars above 110°F, making the area deadly to unprepared hikers.

Although the existence of the fabled Lost Dutchman mine is still debated, Waltz was a real historic figure, born in 1908 in Wurtenburg, Germany. He became a mining engineer and immigrated to America in 1845. After searching for gold in Georgia, North Carolina, and California, he came to Arizona in 1863, prospecting in the Bradshaw Mountains and the Prescott area. In 1868, he moved to the Salt River Valley, where he prospected, mined and farmed. There are several books that tell his story. *Thunder God's Gold*, by Barry Storm, is filled with enthusiasm, interpretation and speculation. It was originally published in 1945 and was made into the movie "Lust for Gold", starring Glenn Ford.

According to the legend, Waltz and his partner, Jacob Weiser, came out of the Superstition Mountains with gold nuggets they had found at a "secret mine". One version of the story states that the old mine was the same one discovered in the early 1870s by the Peralta family from Sonora, Mexico, and that Waltz and his partner had learned about its location from one of their descendants. According to many, the volcanic terrain in the Superstitions makes the tale unlikely. Another version suggests

that Waltz was taking gold from the Vulture mine and passing it off as a new find, even though there has been no evidence of this.

As many as 130 treasure hunters have claimed to know where the gold mine is. Very recently, I spoke to one of them who was adamant about knowing the exact location, but claimed that, because it is on forest trust land, it cannot be accessed and dug out. He told me he followed all the cryptic clues, the stone tablets, and the heart-shaped rock map, and it all pointed to the location of the mine, which is not where most people think it is.

As fascinating a story as the Lost Dutchman mine is, and as much gold fever as I may induce with this article, please remember that you are not allowed to dig in the Lost Dutchman State Park, on Arizona State Trust Land, or on private property without permission. But feel free to follow the numerous variations of the legend by reading the many published books and articles online.

GOLDFIELD

Only a short drive up the Apache Trail is the Goldfield Ghost Town. This is a true 1890s boomtown that served 50 working mines in the Superstition Mining District before it was abandoned. It has now been revived with around 20 businesses: museums, shops, restaurants, a saloon, and a mine. Goldfield Ghost Town & Mine Tours Inc. (www.goldfieldghosttown.com) has taken great care in researching and maintaining the authenticity and architecture in the reconstruction of the old town. You can ride a narrow-gauge railroad that circles the town for a mile and a half, offering a narrated scenic ride and views of the historic

buildings and the famous Black Queen, Bulldog and Mammoth mines.

At the Goldfield Historic Museum, in the heart of the ghost town, you can learn more about the first very rich goldstrike in 1892 and the 4,000 miners who lived there for five rich years. There are 13 treasure maps on display, from the so-called old Spanish maps to more recent ones. This is a wonderful little museum with very friendly staff, eager to share their knowledge. Once again, a great selection of books and DVDs awaits you here. Admission is \$4 for adults, \$3 for seniors.

The first gold strike in the district was made in 1892, less than a year after the Dutchman's death, by Orlando Merrill. Merrill and his two partners sold the claim to Haff & Sullivan Mining Co. from Colorado, and soon the news spread of this rich discovery. It is reported that the mines produced \$3 million worth of gold, when gold was valued at \$20.67 per ounce. By October 1894, there were four stagecoach lines operating from Mesa to Goldfield, a distance of 23 miles.

The town originally boasted three saloons, a boarding house, a general store, a blacksmith, a brewery, a meat market, and a schoolhouse, but almost as quickly as it grew, it came to a screeching halt when the gold vein suddenly faulted and the grade of the ore dropped. By November 1897, the Post Office closed and a mass exodus left the town dead. The town came back to life a couple more times between 1910 and 1926, and then lay dormant as a ghost town until its revival in 1988. Today, Goldfield is filled with authentic-looking buildings, people in period costumes, shops, restaurants, and an underground mine.

Needless to say, our first stop was at the Goldfield Mine Tours. The guided tour takes you underground to a reconstructed mine very close to the original, now flooded, mine. Although we've been on many mine tours in real mines, it is always worth listening to the well-versed guides on the history of the local mine, looking at the gold mining equipment that was moved there from the original mines, and learning more about the mining procedures and the local legends and lore. The mine tour takes about 25 minutes; admission is \$7 for adults and \$6 for seniors. For more details or a schedule, call (480) 983-0333.

Nearby, at the Prospector's Palace, you can learn how to pan for gold and do some actual panning yourself. You can also visit the Goldfield livery horseback riding stables or the unusual Superstition Reptile exhibit, take a guided tour of Lu-Lu's Bordello and



The gold ore from the Black Queen mine in Goldfield, Arizona, is very rich.

Treasure Hunting in Arizona

You can pan for gold in Arizona or go hunting with a metal detector, but be sure to check with local authorities and park rangers before you head out. Check the Arizona State Land Department Web site, www.land.state.az.us, for Arizona State Trust Land usage, as well as the State of Arizona Department of Mines and Mineral Resources Web site, <http://mines.az.gov/>.

It is best to join a club, such as the Havasu Gold Seekers in Lake Havasu City (www.havasugoldseekers.com) or the Roadrunners Prospector Club in Phoenix (www.roadrunnergold.com) and go hunting with them.



Following the trail back to the assay office, you will see the vast tailing deposits, estimated to contain \$7 to \$12 of flour gold per ton.

learn about the history of the women in the 1800s, or enjoy the free gunfight shows.

We made one more worthwhile stop at the Pro Mack South shop. It had a lot of information about prospecting in the Superstition Mountains, and some gold ore from the local Black Queen and the Mammoth mines was being offered for sale. At the time of this writing, according to www.promackminingsupsouth.com, this shop has relocated to Apache Junction.

VULTURE MINE

Waltz also prospected in the area of our next mining tour stop, the Vulture mine, and was employed there as a consultant. Driving northwest from Phoenix on U.S. Highway 60, you come into the old historic town of Wickenburg, which is famous for its Western flair. Just 12 miles southwest of Wickenburg is the Vulture gold mine, discovered in 1863 by Austrian immigrant Henry Wickenburg, the town's founder.

Legend has it that he was trying to retrieve a vulture that he had shot, when he found the quartz outcrop. Although Wickenburg sold the mine after a few years, it became one of the most productive gold mines in the history of Arizona, producing more than \$200 million worth of gold. President Franklin Roosevelt closed the mine in 1942, during World War II, and the miners left, believing they would return in six months, but the mine never re-opened. It is believed that two to three times more gold remains embedded in the quartz ore.

Today, the mine is open almost daily for self-guided tours. Stop by the office first to make your donation of \$10 per person and to get a brochure and map of the trail. Allow a couple of hours to walk the trail, which first takes you by the "Glory Hole". As the story goes, in 1923 some miners were working in one of the large underground chambers. Because the Vulture mine was a hardrock mine, the mining company did not use supporting timbers, but instead left ore columns in place. These miners were chipping away at these columns when they suddenly gave way, and 100 feet of rock collapsed on the miners' heads. Seven miners and 12 burros were killed. The collapse left a huge pit known as the Glory Hole.

Mining during evening hours and weekends, known as "personal mining", often took place at the Vulture mine, mostly in parts of the mine where the company was not working anymore. Although the early mine owners did not allow it and meted out harsh punishment, the later owners



Just 12 miles southwest of Wickenburg is the Vulture gold mine, discovered in 1863 by Henry Wickenburg, the town's founder.



The Vulture mine office/shop sells white quartz specimens from the mine with painted "gold" veins that we could not resist having!

may have silently allowed it, as they were not able to pay the miners at times.

Follow the trail to the blacksmith's shop and the main shaft. At the entrance to the main shaft, which is over 2,000 feet deep, there is a concrete slab that marks where Wickenburg made his "strike". In the assay office, built in 1884, you will see old equipment, and in the adjacent house, the billion storage room, there is an underground vault where gold and silver was stored until it left the mine.

Then pass by the original 80-stamp mill and the new ball mill and tailing recovery structure before you reach a large metal building that houses the power plant and served as the machine shop. Here is where time has almost stood still. All the equipment is still there, just a bit dusty and rusty, waiting for the miners. This is a rare sight, eerie and awe-inspiring. All the tools are left there in place, as if the workers are just out for lunch. The big diesel engine that turned the generator to produce electricity for the mine operation is also located inside the power house. This engine was built in Germany, shipped here in parts, and assembled at the machine shop in 1904.

Following the trail back to the assay office, you will see the vast tailing deposits, estimated to contain \$7 to \$12 of flour gold per ton. One would fathom that, with the price of gold being so high today, the owners should be rushing to reopen the mine, and I asked whether they planned to. But extracting that gold from the ground still requires expensive equipment that many of the current mine owners do not have the money for.

Close to Wickenburg's original home, which is still standing, there is a tree with a gruesome history. It is the "Hanging Tree" from which 18 miners were hung because they were high-grading (stealing) gold. It is said that half of the Vulture mine's gold was stolen. Among those accused of high-grading were Waltz and his Apache Indian friend Ken-Tee. Their living quarters were

searched and, even though no gold was found, they were dismissed from employment at the Vulture mine.

John and Marge Osborn have been the owners and caretakers of the Vulture mine since 1970. They are ready to retire and are hoping to sell the mine. Currently, the Vulture Mine Preservation & Restoration Association (www.savevulturemine.org), an all-volunteer organization formed in 2009, is making a big effort to purchase and restore the historic mine.

When we visited the mine in 2009, the Osborns' son-in-law Martin Hogan was kind enough to share some mine stories. A great DVD titled "The Vulture Mine" (www.jpc-training.com/pg05.htm) tells the story of the mine, as does the book *The Vulture: Gold Mine of the Century*, by Gene Botts and John and Marge Osborne (Quest Books, 1998). At the office/shop there are a few rough materials and minerals for sale, and some white quartz specimens from the mine with painted "gold" veins that we could not resist having!

When we visited again in November 2010, Marty and his wife, Roma, told us that the mine had been featured on the Travel Channel program "Ghost Adventures" and that they are now conducting ghost tours at the mine site on Sunday evening. Call (602) 469-7770 or (602) 469-7662, or e-mail vulturegoldmine@yahoo.com in advance for reservations. You can also visit www.jpc-training.com/vulture.htm for a lot of good information and the hours of operation.

The Vulture mine is located 12 miles south of the intersection of U.S. Highway 60 and Vulture Mine Road in Wickenburg. The road is very good, paved all the way. Just watch for the ups and downs as the road winds through the washes. When you leave, you can continue driving south on Vulture Mine Road and, when it ends at Wickenburg Road, take a left toward Tonopah. Then make another left on Tonopah Road and a right on 339th Avenue, which will bring you directly to I-10.

CANYON LAKE AND ROOSEVELT DAM

If you continue on the Apache Trail, make a short lunch stop at Canyon Lake and board the Dolly Steamboat that cruises the secluded inner waterways of the lake. The trip is serene and inspirational. The 90-minute narrated nature tour departs daily at 12 noon and 2 p.m. Reservations are recommended at www.dollysteamboat.com

After the relaxing experience on the Dolly Steamboat, if you want to continue on to Apache Lake and the Roosevelt Dam, be prepared and forewarned about the washboard dirt road, the hairpin curves, and the switchbacks going in steep downhill drops and uphill climbs. The road is often packed with boat trailers and campers going to and from the lakes, but the magnificent views will reward you. This drive reminds you that the Apache Trail road was built as a supply road for the Roosevelt Dam, and it was a great improvement compared to the pre-1906 Yavapai trail that connected the Tonto Basin with the Salt River Valley.

The average speed on this road is 20 mph and it took us over an hour for the 14 miles from Tortilla Flat to the Apache Lake Marina & Resort, where we stayed the night. An equally gruesome trip of another 20 miles awaits you from Apache Lake to Roosevelt Lake and Dam. Make a quick stop at the dam and then a really worthwhile visit to the Tonto National Monument Visitor's Center at 26260 N. state Route 188, where a paved path takes you high up to magnificent 700-year-old cliff dwellings in shallow caves built by the Salado Native American people.

If all this isn't enough adventure for you, you can continue on the Apache Trail to Globe to buy some Sleeping Beauty turquoise or visit the museums and other local attractions there. 💎

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by William A. Kappelle

SHOP TALK

Watch Your Eyes



I decided to write this column after watching a TV program the other day. This particular program is one where a bunch of guys build custom motorcycles. I like to watch it to see the fabrication, in spite of the fact that most of the folks on the program seem to be brain dead when it comes to safety practices. I watched the way they used hand grinders: with sparks flying everywhere and not a pair of safety goggles in sight. Other infractions included operating bench grinders and metal lathes without eye protection and using tig or mig welders without masks or goggles.

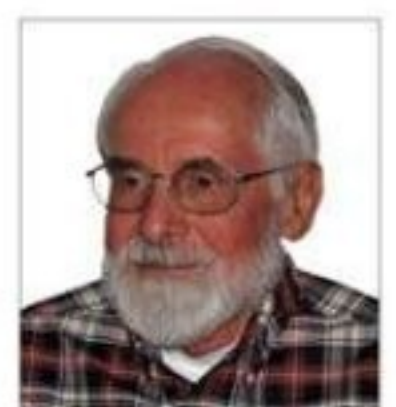
Now I realize that all of this is none of my business, and I certainly don't want the government's goggle police poking into our shops, but I do think an occasional reminder of the seriousness of working around machines that spit out stuff that could injure our eyes is in line. Fortunately, most of the lapidary's equipment doesn't do much of that, but grinding and sanding can throw out chips that can be injurious. The sad thing when someone does get injured is that it is so simple today to pick up an inexpensive pair of safety goggles and be sure of protection. The hard thing for many of us is to remember to put them on. How many times have we all done that little grinding job on a chisel or screwdriver and failed to put on the goggles because the job would only take a minute? I have said many times that I am glad I have to wear glasses because I always have them on. Ever since I first started wearing them years ago, I have had safety glass lenses. When I switched to plastic lenses, I made sure that they were polycarbonate. I think it is mandatory now. I would strongly suggest that if you wear glasses that you be sure the lenses are impact rated, and if you don't wear them get some safety glasses or goggles and wear them even if the job will only take a minute.

Well, I guess I have pontificated long enough on the eye safety subject. But how about those of us who have protected our eyes, but are getting a little long in the tooth and short in the arms? The eyeglasses help with the short arms, but we still might need a little help with seeing those scratches from the fine grind or seeing that flat spot on top of the cab before we get to the polish stage.

The old standby, of course, is the jeweler's loupe. These little magnifiers come in a range of powers that will show up that flat spot even to very old eyes. However, the user has to hold the loupe up to his eye and either hold the stone close to it or bend down and look at it in a vise or on the bench. Loupes work fine, but can be a little awkward to use. Those flip-up visors with the magnifying lenses work much like the loupe, but leave the hands free. I use one of those lamps with a circular fluorescent bulb and a large magnifying lens in the middle. It is easy to pull around and move up and down to get it in the most comfortable position.

I got an e-mail from a large jeweler's store the other day with information about a new twist on the flip ups. This is a pair of titanium eyeglass frames with flip-up telescopic lenses. This allows the user to sit upright instead of bending over with his nose close to his work. The frames can be fitted with clear lenses for safety or with lenses in the user's prescription. They were pretty pricey, but would be a great investment if you had to be at the bench eight hours a day. They can be found at www.riogrande.com and enter the keywords "binocular telescopes" in the search field. ♦

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



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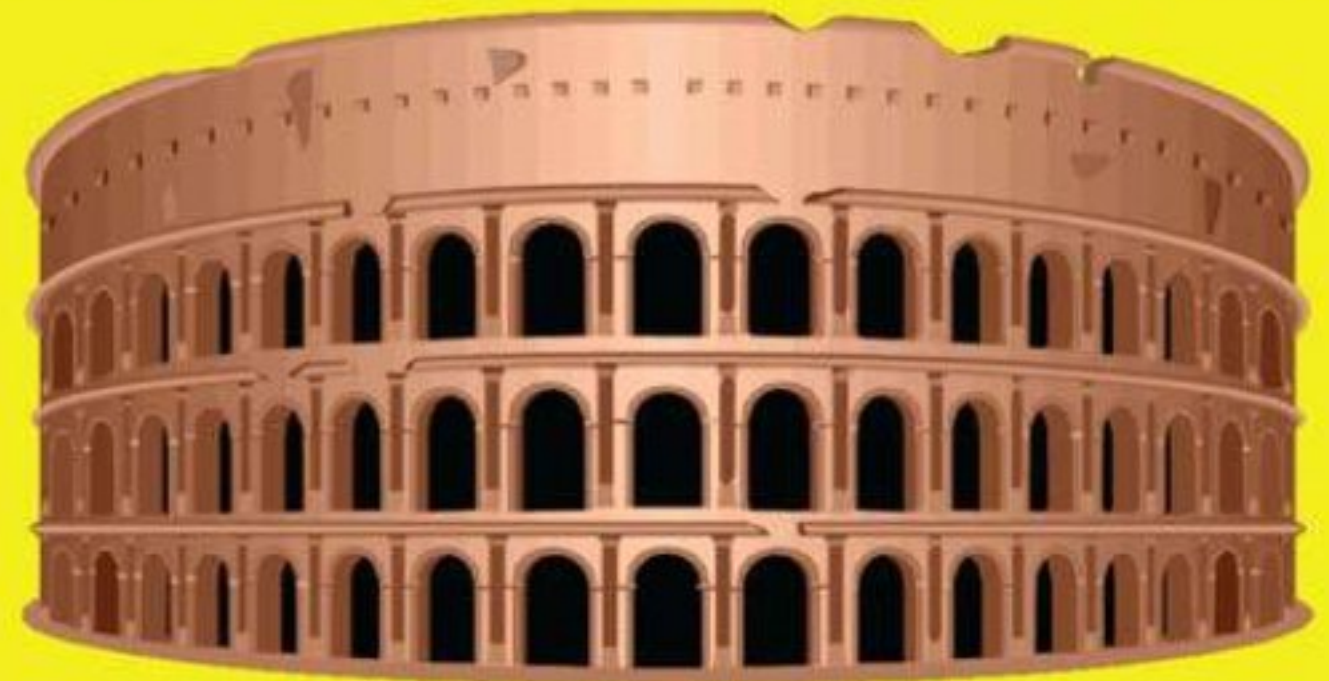
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Mexico's Coconut GEODES

The Treasure Inside Thrills Kids and Collectors

Story by Bob Jones



BOB JONES PHOTO

This Mexican coconut geode, opened at the Turlock show, is filled with lovely white, sheetlike crystalline calcite.

One of the more important mining efforts going on in Mexico has probably done more to get youngsters interested in minerals than any other mineral activity. The minerals being mined are coconut geodes, which are sold in every rock shop and at most mineral shows. Countless kids have gotten their first mineral thrill when they saw an ugly coconut geode cracked open, revealing a crystal lining of real beauty. What kid can resist the thrill and the desire to know more about these wonders of nature?

Walk through many mineral shows and you might hear a murmur of wonder and excitement coming from a small crowd gathered at a dealer's booth. Be sure to check it out. In the middle of the excitement stands a dealer next to an odd-looking machine with long red handles and a heavy articulating chain. By the time you wander over to see what's going on, someone in the crowd, usually a child, has just been handed the two halves of a grayish, rounded rock. The child grins with excitement because this rather



BOB JONES PHOTO

While cracking geodes, one person holds it so it doesn't fall while another person does the honors with the lever!

JAY TINKER PHOTO/PRIVATE COLLECTION



LEFT: The Warsaw Formation, near Keokuk, Iowa, is the source of this unusual double geode filled with quartz and calcite crystals.

BELOW LEFT: Roy Jones displays the interior of an amethyst-lined geode that has just been cracked.

BOB JONES PHOTO



ugly rock is hollow and the inside is lined with bright quartz crystals.

Another child, anxious to have such a prize, picks a gray-white spherical rock and hands it to the dealer. The dealer wraps the odd-looking chain around the rock, tightens it using the upper red handle, and braces for action. If the child is able, the dealer allows him to activate the upper handle. A cracking sound is heard and the split rock is caught before falling to the floor.

The child, as well as the crowd, sees the interior of the geode for the first time since its creation. The crowd gasps delightedly as the geode reveals its interior secret: sparkling quartz crystal points. On those crystal points there may be small calcite crystals or sparkling black crystals of another mineral.

The average size of a Mexican Coconut geode is about 4 inches across. Smaller ones may only be 1 inch across, but once in a while a giant geode—a foot or more across—is unearthed and cracked open. Part

of the excitement of opening a coconut geode comes from the anticipation of what might be revealed.

Of course, the geodes to be cracked at a show are hand picked. As these geodes are mined, they are checked by weight to be sure they are hollow. Only those that pass that test are sold for cracking. The solid rocks are used for other purposes.

Mexican geodes seem common enough. You see them at every show and in many rock shops. But in reality, these hollow oddities of nature are uncommon. Sure, tons of these spheres are mined, but only about 20% of what comes to grass are hollow. The solid rocks, which are technically not geodes, are filled with concentric layers of silica, so they are sliced in half with a diamond saw. They may be color stained metallic salts, since the quartz layers can absorb this dye, and are used for decorations like bookends, desk ornaments, and even door stops.

The just-opened geode may contain more than quartz. Sometimes you'll find, perched right on top of the bright quartz points, a lot of microcrystals of black manganese oxide, pyrite and, hopefully, snow-white calcite, either rhombic crystals or thin, bladed, sheetlike calcite. The white calcite is a lovely contrast to the slightly amethystine quartz lining.

Calcite is probably the more common crystallized mineral found in geodes. The geodes found in the Warsaw limestone formation near Keokuk, Iowa, often have fine calcites on their quartz crystal linings. Secondary crystals inside the Mexican coconut geodes are less common, so they are exciting when found.

The microcrystals seen on the quartz lining of geodes are usually a manganese oxide. Since there are several different manganese oxides, these little guys could be common pyrolusite, less common ramsdellite, or some other hard to identify manganese oxide. Less often, a tiny siderite or goethite crystal might be seen inside a coconut geode.

You have to wonder how and where these fascinating hollow coconut geodes formed. Certainly, there are lots of geode sites on this continent, but the most important and productive dig is in Mexico. Traveling south on Mexican Federal Highway 45 from El Paso, Texas, toward Ciudad Chihuahua, Mexico—which is not necessarily a good idea currently—you'll drive right by the vast area in which coconut geodes are being mined. There's no sense in stopping in hopes of picking up a geode off the desert floor. The surface has been picked clean and is now under claim for geode mining. Highway 45 also takes you through important agate specimen areas, including Ojo Laguna, Gallegos, Rancho Coyamito, and Moctezuma. It is around these villages that collectors and miners extract Mexico's most colorful and famous banded agates. But the geode deposits are largely south of these famous spots, near the town of Encinillas.

It's a true story that a cowboy riding the range to keep an eye on cattle discovered the geode area in 1960. If you had stopped there in the '60s, you very well could have picked up a selection of these rounded beauties. The area in which the cowboy was riding was littered with odd, rounded rocks ranging

Mexico's Coconut GEODES from page 21

BELOW: This geode was a good choice, since it is hollow and its interior is lined with amethyst points.

TOP RIGHT: Digging in the state of Utah's Dugway Geode Park, which has been set aside for rockhounds, can be very rewarding.

BOTTOM RIGHT: Roy Jones sets up a geode so that his young customer can actuate the lever to crack it!



BOB JONES PHOTO



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from an inch or so to 5 inches across. Out of curiosity, he gathered a few of these rocks and took them to the ranch, where some of the rocks were found to be hollow!

The surface occurrences of these fascinating rocks have long since been picked clean, so mining has moved underground, reaching depths that range from a few feet to 100 feet. The narrow shafts, just wide enough for a human to descend into, were all dug by hand! Hand-dug tunnels radiate out from these shafts, seeking pockets of the geode treasures. Not surprisingly, the miners remove as little clay as possible in their search, so the early tunnels are seldom more than 3 feet high and a little wider than is needed for a person to crawl forward!

There is a decided difference between coconut geodes and the agates from the famous deposits listed above. For one thing, the agates of Northern Mexico are recognized as among the finest, most colorful agates ever found. They are solid, or nearly so, and filled with thin to fairly wide, colorful bands of quartz. Many are referred to as "fortification" agates because of their castellated patterns. Others are less organized, with curves and broken bands. Still others are not completely

solid, but have a small central opening lined with discrete quartz points.

The quartz chalcedony lining in coconut geodes forms from the high concentration of silica carried by invading solutions. Chalcedony is quartz silica that crystallizes in submicroscopic, hairlike prisms rather than discrete quartz points. As the silica content in the water is reduced with chalcedony growth, discrete crystals form quartz points from the remaining silica and line the coconut geodes.

The ranch on which coconut geodes are mined is Rancho Mesteno Norte, east of Encinillas. A year after the first coconut geodes were found by that cowboy, a claim was filed, and serious mining and marketing of coconut geodes started in 1965. I saw my first coconut geode at the annual Phoenix Gem & Mineral Show in '65, which happened to be their public debut!

Coconut geodes form in what is called a volcanic ash flow tuff. It all began millions of years ago when a whole series of volcanic flows and eruptions covered the Mexican landscape. About 44 million years ago, one rhyolitic flow surged slowly over the ground. The lower part of this flow, in

contact with the existing surface, chilled quickly, forming a vitreous volcanic glass. This glass slowly broke down due to penetrating surface waters forming bentonite clay, the host rock of the geodes.

The geode zone is known as the Liebres Formation. It isn't very thick, only up to about 3 feet, which accounts in part for the small tunnels, as miners dig only the rocks that might contain geodes.

It was during the development of the original rhyolitic flow that gases slowly accumulated in the flow and creating small to large openings in it as it cooled. These openings were where geodes could form. Much later, quantities of hot, molten rhyolite domed up nearby, bringing quantities of hot solutions that invaded the volcanic glass formation. It's important to remember that rhyolite is exceedingly rich in silica, the stuff that forms both chalcedony and quartz! These invading waters were hot enough to dissolve quartz and other minerals from the rhyolite before filling the open gas cavities. These minerals were deposited in the openings as the solution cooled.

Over time, the thin original layer of volcanic glass altered to clay, which made re-

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Mexico's Coconut GEODES from page 22



BOB JONES PHOTO

At the Motherlode Mineral Society show in Turlock, California, your geode can be cut with a diamond saw.

covery of the geodes somewhat easier than digging in solid rhyolite rock. The geodes occur randomly in the bentonite clay. A miner, who has to work on his belly, may dig several feet and find nothing, but when a geode does emerge from his efforts, several other geodes are often found nearby. Such clustered occurrences are called "pods". I ran into this same phenomenon when digging geodes in the Warsaw Formation near St. Francisville, Missouri, years ago.

Once the local collectors had gathered whatever loose material was on the surface, they had no choice but to start digging shafts in the exposed geode-bearing outcrops, following the exposed clay seam down in search of the geodes. The random tunneling from a shaft, called "rat holing", produced geodes in some quantity, and the market grew. Gift shops, mineral shops, and show dealers began carrying coconut geodes. This required greater and greater production.

While some tunneling by the old method is still going on, the current mining method is a major effort called "room and pillar" mining. Greater removal of barren clay creates roomlike openings large enough for miners to stay in while working. Enough of the hard clay is left behind as support pillars to keep the ceiling from falling in. The removal of more and more clay reveals more and more geodes. As a result, production of geodes these days runs into tonnages rather than a few buckets a day.

No one knows for sure what impact this simple, but satisfying, activity of splitting open geodes has had on our hobby. How many youngsters have become collectors after they saw their first exciting crystals in a coconut geode they picked from a dealer's pile? One person I've talked with, my eye doctor, became a mineral collector this way. Granted, he has only decorated his office with a few crystallized specimens and a fossil or two, but who knows what impact that has had on the many people who visited that office and sat staring at these natural treasures while waiting?

My point is that the simple act of cracking a geode and revealing its hidden secrets to people who are unfamiliar with minerals has surely had a salutary effect on our hobby. In fact, for this very reason, it is my opinion that every mineral show, regardless of how large or how small, should have an ongoing geode-cracking demonstration.

Even the biggest show going, the Tucson Gem & Mineral Show™, has had at least one geode-cracking dealer for years. First it was a fellow from Texas named Dalton Prince. Dalton delighted in cracking geodes for his young customers. He was especially pleased when the child selected a geode with an exceptional interior. There is no way to estimate how many youngsters Dalton brought into the hobby through his geode-cracking art! I'll bet it was in the hundreds, maybe thousands.

The current geode man at the Tucson Show is Les Presmyk of De Natura Minerals. The geode-cracking corner in his sales booth is almost always a popular spot as geode after geode reveals its inner secrets at the hands of Les or his assistant, Roy Jones. Roy, a good friend of mine, is the son of Dick Jones, one of Arizona's significant specimen prospectors. Dick opened more specimen-producing localities than anyone else I know. His passing in the late 1980s left a real gap in the search for good specimens. He brought to light the linarites of the Grand Reef mine. He re-discovered the Hawthorne, California epidote locality. He revealed the huge anhydrite crystals coated with gypsum from the Naica silver mine. Dick was a diligent rockhound!

The next time you go to a show, check around to see if any dealer has one of the red-handled geode crackers. Watch as youngsters are awed and excited as geodes are cracked to reveal lovely crystal-lined interiors. Better yet, try your hand at geode cracking. Dealers often allow—and even invite—visitors to select a geode and crack it. What better way to add one of these mineral oddities to your collection? ♦

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OCK SCIENCE

by Steve Voynick

Classifying Native Elements

Of the 92 natural elements, only 32 metals, semimetals and nonmetals occur in native form. The most familiar of these are the metals gold, silver, copper, iron, tin, lead, mercury and platinum. Examples of the native semimetals are arsenic, antimony and tellurium; nonmetallic native elements include carbon and sulfur. Only six native elements—gold, silver, copper, sulfur, carbon and platinum—occur in significant quantities. Fourteen others are rare, and the remaining 12 are extremely rare.

While the general definition of “native element” is a nongaseous element with a distinct crystalline structure and an uncombined chemical state, the term is also used in a more confusing context of mineralogical classification, which is apparent in the native elements class of the Dana mineral classification system. It is often assumed that this class would have 32 members—one to represent each of the 32 individual native elements. But the Dana native elements class actually has 132 members, 100 of which consist of two or more elements in alloy form.

While all mixtures of metals are alloys, certain criteria must be met for natural alloys to qualify as minerals, and therefore members of the Dana native elements class. They must have 1) consistent composition; 2) a crystal structure in which elements occupy specific lattice positions; and 3) strictly metallic atomic bonding. Examples of these alloy-type minerals are auricupride (copper-gold), cabriite (palladium-tin-copper), danbaite (copper-zinc), eugenite (silver-mercury), hunchunite (gold-lead), and kolymite (copper-mercury).

One natural alloy that is not classified as a native-element mineral is electrum, a rather common, indefinite mixture of gold and silver. Despite its metallic bonding, electrum has neither a consistent composition nor a definite lattice structure. Depending upon which element predominates, electrum is correctly classified as native gold or native silver.

Metals sometimes combine with semimetals such as tellurium to form minerals that may or may not, depending upon their atomic bonding, be included in the native element class. The mineral stistaite, which consists of tin and tellurium, is classified as a native element, yet calaverite (gold and tellurium) is considered a telluride mineral in the sulfide class. While both minerals have consistent compositions and definite lattice structures, stistaite has strictly metal-



Native silver is one of the 32 elements that can occur in a native or uncombined chemical state.

lic bonding, while calaverite (gold telluride) has covalent bonding.

Native metals often form in unusual mineralogical environments. Less reactive elements like gold and platinum, and sometimes copper and silver, are hydrothermally emplaced in native form. Native copper, silver, tin and lead generally form only in sulfur-deficient mineralogical environments that preclude sulfide-mineral development. Native iron forms only in anaerobic, chemical-reduction environments that are rich in organic sediments or in the anaerobic conditions of extraterrestrial environments. Native mercury forms through the chemical reduction of cinnabar (mercury sulfide).

The nonmetal native sulfur is usually deposited through direct sublimation of sulfur-rich volcanic gases. Because native carbon can enter into a variety of atomic-bonding arrangements, it can occur as graphite through the chemical reduction of organic material in metamorphic environments or as diamond in conditions of extreme temperature and pressure.

Most mineral collectors are concerned with less than a dozen native element species, usually those that consist of single elements. But mineralogical classification, recognizes many more native elements. ♦

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



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“The Condor Lady”

An Interview with Ana de los Santos

A Story by Kathleen Fink
na de Los Santos is a working mother with an unusual career: running a one-woman agate mining and import business specializing in banded gemstones from Argentina. Ana goes to remote mines in Argentina to obtain rough Condor, Puma, Black River, and other agates; sends the agates to Buenos Aires for shipment to the



ALFREDO COSTA MURTA PHOTO

Top Condors rival the best Mexican agates. Ana cut thousands of Condors to find this outstanding specimen.

United States; high grades the agates, selecting those she is going to cut; studies how to cut them; prepares polished agates for sale; and sells them at gem and mineral shows across the United States.

I spoke with Ana as she set up her Condor agates for sale at a Tucson show a few years ago. We sat at the tiny inlet in the center of her sales space. Closely-packed display trays of colorful polished agates surrounded us. I was charmed by Ana's outgoing and welcoming personality. Her fashionable dress and graceful gestures projected a feminine style; this miner and agate business owner would never travel without her high heels! New customers do not always realize that she is the business owner. They will come to her booth and ask, "Where's the boss?," but they gladly discuss business with her once she tells them, "Here ... you are talking to her!"

The native of Buenos Aires first came into contact with the business working with her husband, Luis de los Santos, who is credited with discovering and importing Con-

dor agates from Argentina. She has taken over the business, which is officially named STPGM after Saint Paul Gems and Minerals, the original name of Luis' business. When she first considered running an agate-import business on her own, her many friends in the business supported and encouraged her. Lydia Deets, an engineer and rock hunter, exposed Ana to the different types of machines that were available for cutting and polishing stones and helped her try the machines so she could determine which ones were right for her. Soon, they were fixing and modifying several machines that are now lined up and running in Ana's shop.

Ana runs her agate business out of Fontana, California. She travels to shows all over the United States, goes to Germany once or twice a year, and normally takes at least one

trip a year to Argentina to collect her agates. While on the road, she talks to her two daughters every day and stays in close touch with friends and family. She might be on her cell phone explaining the details of a recipe to a friend while at the same time talking to a customer or discussing a contract for a new show. Ana noted that her ability to juggle many tasks is a strength that many women share. This ability is not only critical for her career, but allows her to travel while keeping up with the many elements of her life that are important to her.

Through careful planning and experience, Ana has determined what works best for her. As an example, some of Ana's display furniture and moving gear have been custom made to a smaller size so that she can more easily manage setting up and breaking down her sales space on her own.

ANA DE LOS SANTOS PHOTO



Condor agates are hand picked in the remote and rugged San Rafael area of Argentina. Much of this vast area has yet to be searched for these amazing agates.

PHILIP STEPHENSON PHOTO



Ana's outgoing and welcoming personality lends itself to the sales aspect of her business.

PHILIP STEPHENSON PHOTO



You can tell this is a seam Condor agate by its angular shape.

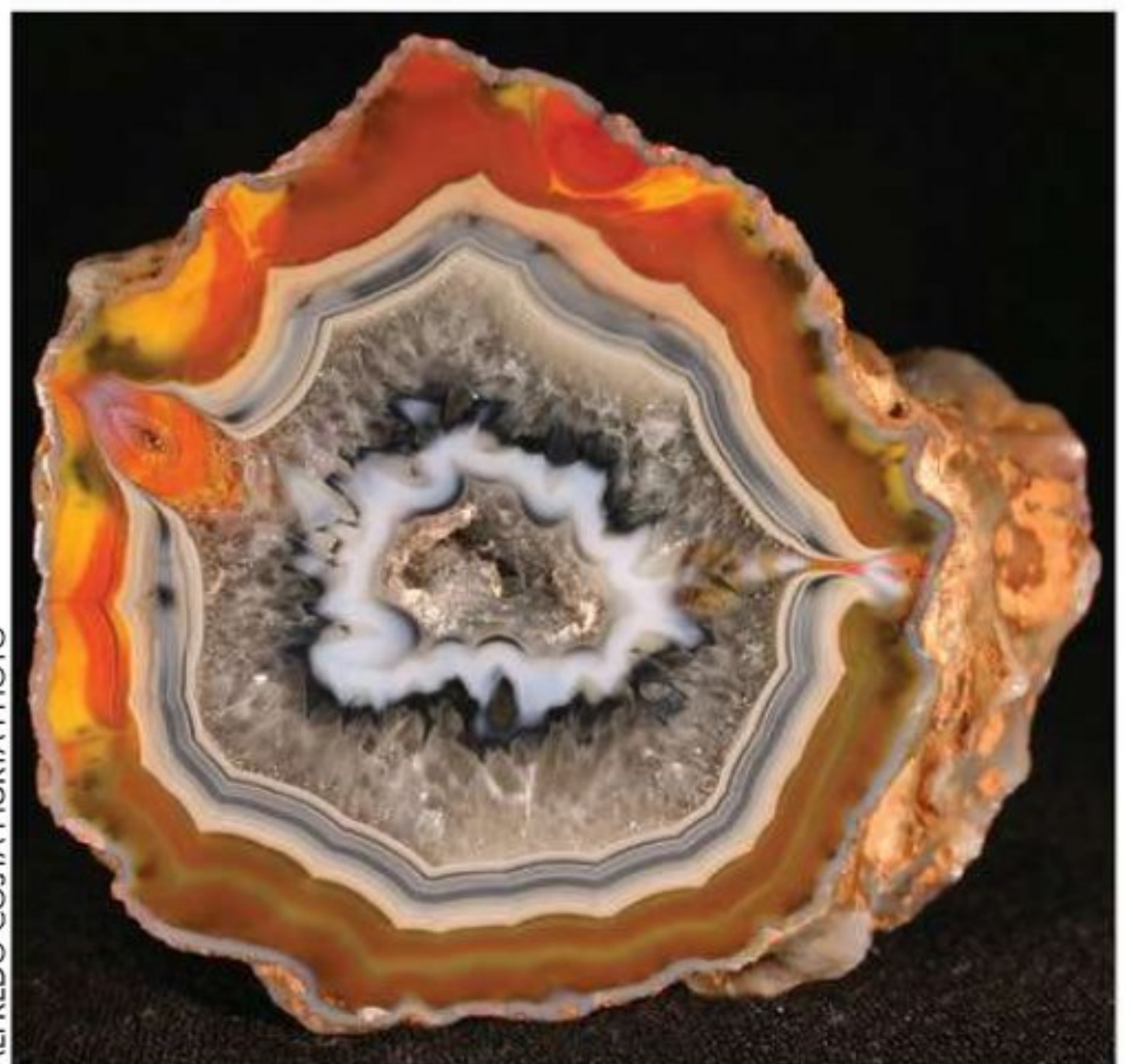
Although she travels alone, Ana is never lonely at the shows. She has personal relationships with many customers and dealers, and she feels that building such relationships comes more naturally to women than to men. When she meets with her customers/friends, they not only talk about rocks, they catch up on what is happening with their families.

Another trait that has come in handy for Ana is flexibility. Although she knows Argentina intimately and is familiar with the culture, totally unexpected things can happen, making it necessary to be flexible, resourceful and persistent. One time, shortly after Ana arrived in Argentina, she learned that farmers were about to go on strike and would soon be blocking traffic on the roads she planned to travel. Still, Ana left Buenos Aires for the two-week trip to the mines, prepared to make changes, if necessary.

Events moved faster than expected. Anticipating delivery problems, gas stations started reducing the amount of fuel allotted to each customer. Ana had planned for this eventuality with extra fuel supplies stored in her car. Still, she had to figure out how to shorten the trip to five days to race back with the rough agates ahead of the striking farmers. By working around the clock, everything was accomplished and she left for Buenos Aires happy, knowing that the truck with her agates would soon arrive.

A few days later, Ana could not believe it when she learned the truck had been stolen and all her agates had disappeared with it! She

ALFREDO COSTA MURTA PHOTO



This "floaters" Condor has agate "floating" on quartz crystals at the center. Notice the rough nodule surface.



KATHLEEN FINK PHOTO

Ana also sells colorful Puma agates, which are coral replacements.



ALFREDO COSTA MURTA PHOTO

Colors crossing agate bands, as in this dramatic example, is referred to as chromatography, a common occurrence in Condors.



KATHLEEN FINK PHOTO

Macro quartz crystals are often found in the centers of Condor agates.

immediately called the police and rallied her family and friends. After all her effort, she was not about to let her precious agates get away. She insisted on seeing the proper police official. She knew that the agates had made it to Buenos Aires, but evidently the two drivers had been kidnapped with the truck when it was leaving the warehouse on its way to her business, barely another 45 miles away! Three days later, the police called to say they had found the truck, but it was empty.

After more phone calls, Ana finally got the news she wanted: her stones had been located, and the pallet of rough was at the warehouse and ready for delivery. Ana responded, "God bless you! Leave my agates right there! I'm on my way to pick them up myself." Nobody told Ana how they got the agates back and Ana didn't ask. She was just grateful to recover them.

Ana says she loves every aspect of her business, starting with the stones themselves. Her business allows her to meet with agate collectors and miners from all over the world and to share and learn from them. Dave Wilber is one collector from whom she has learned a great deal. With other miners, all that is needed to communicate is showing their beautiful agates to each other, a language that needs no translation. She looks forward to going to the agate fields in Argentina, which is always an adventure with new types of agates waiting to be found.

Ana regularly attends the Desert Gardens Gem & Mineral Show, the Tucson Electric Park RV Gem Show, and the Tucson Gem & Mineral Society Show in Arizona; the Cedar Valley Rocks & Minerals Show in Iowa; the Council Spring Tailgate, the Conejo Gem & Mineral Show, the Glendora Gems Gem & Mineral Show, and the Fiesta of Gems in California; The All Rockhounds Pow-Wow Club of America show in Oregon; the Agate Days Show in Minnesota; the Denver Gem & Mineral Show and the Grand Junction Gem & Mineral Show in Colorado; and the Billings Gem & Mineral Show in Montana. She can be reached at Ana400@aol.com.💎



KATHLEEN FINK PHOTO

A rare agate color combination with olive green started appearing in Condor finds.

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Show Dates from page 10

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15-17—SAN RAFAEL, CALIFORNIA: Annual show; Gem Faire Inc.; Marin Center, 10 Avenue of the Flags; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

16-17—CONWAY, NEW HAMPSHIRE: Annual show; Saco Valley Gem & Mineral Club; Kennett Middle School, 176 Main St. (Rte. 16); Sat. 10-5, Sun. 10-4; adults \$3, seniors \$2, children under 16 are free; displays, keynote speaker, children's corner, Treasure Hunt; contact Robert York, 15 Falcon Way, Hales Location, NH 03860, (603) 356-4424; e-mail: SacoMineralClub@aol.com; Web site: sacovalleygmc.org

16-17—ERIE, PENNSYLVANIA: 42nd annual show; Gem City Rock & Mineral Society; JMC Ice Arena, 423 W 38th St.; Sat. 10-6, Sun. 10-5; adults \$3, seniors \$2, children under 12 free; rocks, gems, jewelry, minerals, fossils, wire wrapping, findings, beads, Mini-Mine, Discovery Blocks; contact Bob Gallivan, (814) 454-6770; e-mail: gallivan@lycos.com; Web site: www.gemcityrockclub.org/show.htm

16-17—FLAGSTAFF, ARIZONA: Show, "Flagstaff Jewelry, Gem, & Mineral Show"; Radisson Woodlands Hotel, 1175 W. Rte. 66; Sat. 10-5, Sun. 10-4; adults \$3, children under 12 free with adult; contact Sharon Szymanski, (480) 215-9101, or Val Latham, (602) 466-3060

16-17—FORT WORTH, TEXAS: Wholesale and retail show; The Bead Market; Amon Carter Exhibit Hall Will Rogers Center, 3400 Burnett Tandy Dr.; Sat. 10-5, Sun. 10-4; free admission; dealers, gemstones, pearls, silver, findings, seed beads, vintage beads and buttons, glass beads, lampwork, PMC, tools, books, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

16-17—MOOSE LAKE, MINNESOTA: 42nd annual show, "Agate Days"; Carlton County Gem & Mineral Club, Moose Lake Area Chamber of Commerce; Moose Lake High School gym and parking lot, 413 Birch Ave.; Sat. 9-5, Sun. 9-4; free admission; dealers, Lake Superior agate, cutting materials, specimens, crystal groups, fossils, gems, jewelry, lapidary equipment, rough rock tailgaters, door prizes, field info, Agate Stampede Sat.; contact Al Hyopponen, 4902 Jean Duluth Rd., Duluth, MN 55804, (218) 525-7766; e-mail: willow73@cpinternet.com

16-17—SANTA MONICA, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; Santa Monica Civic Auditorium, 1855 Main St.; Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

22-24—BOONE, NORTH CAROLINA: 17th annual show, "High Country Bead, Gem, Mineral & Jewelry Show"; Treasures Of The Earth Gem & Jewelry Shows; National Guard Armory, 274 Hunting Hills Ln. (near the hospital); Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$2 (3-day ticket), children under 16 free; jewelry makers, U.S. goldsmiths and silver-smiths, repairs while you wait, gem trees, wire wrap, wire sculpture, pearls, stone beads, stone setting, amber, opal, mineral and fossil dealers, door prizes, grand prize; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

22-24—EUGENE, OREGON: Wholesale and retail show; Gem Faire Inc.; Lane County Events Center, 796 W. 13th Ave.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

22-24—HAMBURG, NEW YORK: Show and sale; Gem-Street USA; Erie County Fairgrounds, The Grange Bldg., 5600 McKinley Pkwy.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$7, seniors (60+) and students (12-17) \$5, children under 12 free; gems, jewelry, beads, fossils, minerals; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

23-24—FREDERIC, WISCONSIN: 44th annual show; Indianhead Rock & Mineral Society; Frederic High School; Sat. 10-5, Sun. 10-4; free admission; contact Roy Wickman, (715) 357-3223, or Dick Huset, (715) 648-5620

23-24—KALISPELL, MONTANA: Annual show; Northwest Montana Rock Chucks; Flathead County Fair Grounds, Grandstand Bldg., 265 N. Meridian Rd.; Sat. 10-6, Sun. 10-4; adults \$1; demonstrations, silent auction, door prizes,

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minerals, jewelry, kids' activities; contact Milah Gano, P.O. Box 433, Lakeside, MT 59922, (406) 844-3560; e-mail: mallards_g@hotmail.com

23-24—TENINO, WASHINGTON: 17th annual show, "Rock & Gem Rendez-Vous"; Washington Agate & Mineral Society, Tenino Rock Cruisers; Parkside Elementary School, Stage St. South (I-5 exit 88); Sat. 9-6, Sun. 9-5; free admission; dealers, demonstrations, door prizes, spinning wheel, displays, during the Oregon Trail Days Celebration; contact Daniel De Boer, 5107 Brenner Rd. NW, Olympia, WA 98502; e-mail: keylock1@live.com

27-31—FRANKLIN, NORTH CAROLINA: Annual show; South East Gems & More; Whistle Stop Mall parking lot, 1281 Georgia Rd. (Hwy. 441N); Wed. 9-6, Thu. 9-6, Fri. 9-6, Sat. 9-6, Sun. 9-4; free admission; dealers, silver and goldsmithing, rough, slabs, fossils, minerals, metaphysical, findings, gemstones, custom jewelry and repairs; contact Mark or Patricia Smith, 751 Hutto Pond Rd., Aiken, SC 29805, (706) 490-4550; e-mail: segems@ymail.com

28-31—FRANKLIN, NORTH CAROLINA: Retail show; Gem & Mineral Society of Franklin; Macon County Community Bldg., 1288 Georgia Rd.; Thu. 10-6, Fri. 10-6, Sat. 10-6, Sun. 11-4; adults \$3, seniors and students \$2, children 12 and under free; minerals, beads, handcrafted jewelry, rough and cut stones, lapidary equipment, demonstrations, door prizes, gold and silver jewelry, findings, jewelry repairs and mounting; contact Linda Harbuck, 425 Porter St., Franklin, NC 28734, (800) 336-7829; e-mail: lindah@franklin-chamber.com; Web site: www.visitfranklinnc.com

29-31—LYNDEN, WASHINGTON: Annual show; Gem Faire Inc.; NW Washington Fair & Events Center, 1775 Front St.; Fri. 12-6, Sat. 10-6, Sun. 10-5; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

29-31—PRESCOTT, ARIZONA: 8th annual show and sale; Embry Riddle Aeronautical University, 3700 Willow Creek Rd.; Fri. 9-5, Sat. 9-5, Sun. 9-4; adults \$2, children 12 and under free; contact Maggi Lieber, (520) 831-0017, e-mail: fullierox@hotmail.com; or Judy Sullins, (928) 445-1117, e-mail: sullinsjs@cableone.net; Web site: www.prescottgemmineral.org/shows.htm

30-31—OKLAHOMA CITY, OKLAHOMA: Wholesale and retail show; The Bead Market; Oklahoma State Fairgrounds Expo Hall 3, 3212 Wichita Walk; Sat. 10-5, Sun. 10-4; free admission; pearls, gemstones, vintage beads and buttons, seed beads, findings, silver, books, tools, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

30-31—RIVERHEAD (LONG ISLAND), NEW YORK: 30th annual show; Long Island Mineral & Geology Society; Riverhead High School, 700 Harrison Ave.; Sat. 10-5, Sun. 10-5; adults \$5, children under 12 free; exhibits, sales, minerals, gems, fossils, lapidary, jewelry makers, repairs, wire wrapping, precious and semiprecious beads, pearls, amber, antique jewelry, geode cracking, grand door prize; contact Frank Basile, (631) 398-6066; e-mail: cypnut@optonline.net

30-31—SOUTH BURLINGTON, VERMONT: 32nd annual show; Burlington Gem & Mineral Club; Tuttle Middle School, 500 Dorset St.; dealers, exhibits, lectures, demonstrations, children's activities, silent auction, door prizes; Sat. 10-5, Sun. 10-5; adults \$3, seniors and students (6-16) \$2, children under 6 free with adult; contact Jeff Higgins, (802) 849-6076; e-mail: www.burlingtongemandmineralclub.org

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5-7—HILLSBORO, OREGON: Wholesale and retail show; Gem Faire Inc.; Washington County Fairgrounds, 873 NE 34th Ave.; Fri. 12-6, Sat. 10-6, Sun. 10-5; jewelry, gems, beads, crystals, silver, rocks, minerals; adults \$7 weekend pass, children 11 and under free; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

5-7—NIPOMO, CALIFORNIA: Annual show; Orcutt Mineral Society; St. Joseph's Church Recreation Hall, 298 S. Thompson Ave.; Fri. 10-5, Sat. 10-5, Sun. 10-5; free admission; Treasure Chest Drawing Sun.; contact Gloria Dana, 426 Calisto Ln., Nipomo, CA 93444, (805) 929-6429; e-mail: info@omsinc.org; Web site: www.omsinc.org

5-7—NORTH BEND, OREGON: Annual show; Far West Lapidary & Gem Club; North Bend Community Center, 2222 N. Broadway; Fri. 10-5, Sat. 10-5, Sun. 10-4; adults \$1, children under 14 free; demonstrations, wheel of fortune, silent auctions, kids' treasure pool, dealers, rough rock, findings, beads, lapidary equipment, finished jewelry, slabs, carvings,

continued on page 40

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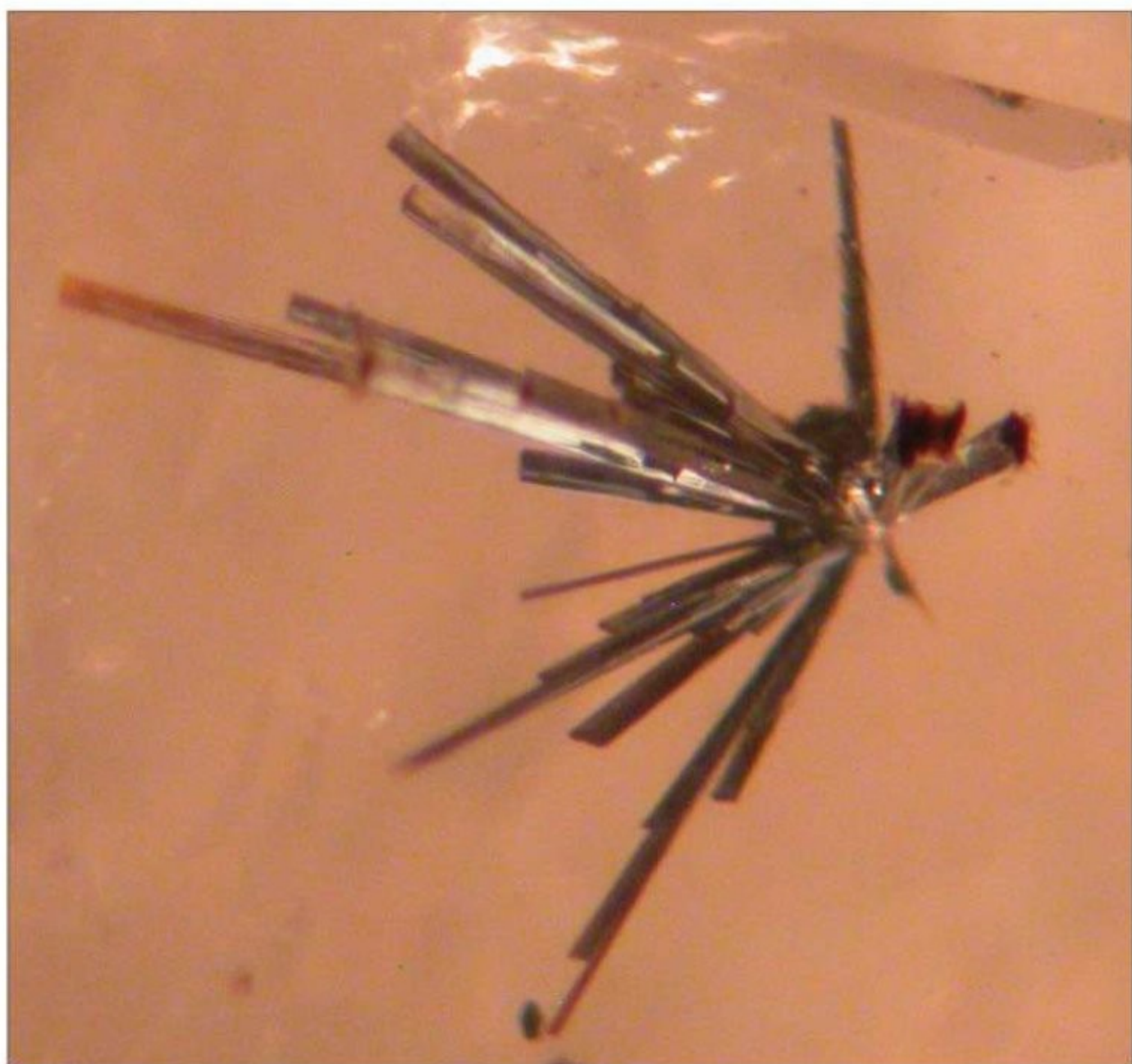
Taking Quality Photos with a Microscope Doesn't Have to Be Expensive

Story and Photos by David Bright

Taking photographs with a microscope initially appears to be a daunting and expensive project. Many people believe they will need to have a special trinocular microscope to which to mount a camera. It is possible, however, to take quality photos with a stereo microscope without breaking the bank.

Pupil cameras designed specifically for microscopes are widely available on the Internet, but they have serious limitations. First, they are relatively low-resolution and have only a few manual controls. Secondly, they are meant specifically for use on a microscope, so they don't have much versatility. I can use a normal digital camera and make an inexpensive adapter to allow this point-and-shoot camera to attach to the microscope's eyepiece.

The method described here is used by the director and students at the Asian Institute of Gemological Sciences in Bangkok, Thailand. We needed to produce quality photomicrographs without spending much



You can take quality photos with a stereo microscope without spending a lot of money.

money and without any complicated procedures—the same situation many rockhounds are in!

Instead of a pupil camera, we used the Nikon Coolpix™ family of cameras that have a 28 mm filter thread. These include model numbers 950, 990, 995 and 4500. The important difference between these models is that they have differing resolution; the higher the model number, the better the resolution. All of them are out of production, but are still available in used condition from Internet auction sites. These used cameras can be had for a fraction of their original cost. The camera's flash will not be needed when it is used with the

microscope, so buying a camera with a broken flash is acceptable and cheaper.

Besides the camera, the key components of this project are the 28 mm filter and one of the microscope's eyepieces. These two pieces will become the camera's microscope adaptor. Some video cameras use 28 mm filters, and video camera filters are usually sold in sets that contain many aluminum step-up rings. If you have a video camera, you may already own one of these 28 mm step-up rings. As for the microscope eyepiece, it must be the standard 23 mm in diameter. Generally, this is not a problem because it is the normal size.



Create the camera adaptor by securing a 28 mm camera filter to the microscope's eyepiece with epoxy.

Step 1. If you are using a 28 mm filter, you must break the glass out of the filter. Be sure to get all the glass out of the inside of the filter. It will be very important to get good, flat contact between the filter and the eyepiece, otherwise the camera view will be off center. (If you are using a 28 mm step-up ring, you will skip this step.)

Step 2. Place a small amount of epoxy adhesive on the inside of the filter ring (this is the side where the glass was). Then place the filter ring over the viewing end of the microscope eyepiece. Make sure that the filter ring and eyepiece make a good, flat contact. Follow the directions on the adhesive to determine how long to hold the piece in place. Try not to glue your fingers to the assembly, and do not get any epoxy on the lenses of the eyepiece!



Make sure that all the glass has been removed from the camera filter.



Carefully place epoxy adhesive inside the shoulder of the filter. This will not take much adhesive.



Hold the filter with epoxy in place for the time recommended by the epoxy manufacturer.



Any overflow of epoxy can be more easily removed while the epoxy is still soft.



The Nikon Coolpix family of cameras come in a range of resolutions and are available in used condition from Internet auction sites for a fraction of their original cost.

Step 3. Thread the eyepiece and filter assembly onto the camera and insert these into the microscope.

Step 4. The camera must be set to its macro mode (see camera instructions). Because the time for exposures will be long, I advise using a remote release or the camera's self timer. It is extremely important to avoid even the smallest vibration during exposure. Place the object to be photographed under the microscope and focus the microscope as normal using the unobstructed eyepiece. Use the same lighting as you would to observe the object in a normal situation. After the camera is on, you will notice that it has a lot of vignetting (tunnel vision). Just zoom the camera lens in enough to eliminate the vignetting.

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Photomicrography *on a Budget* from page 35



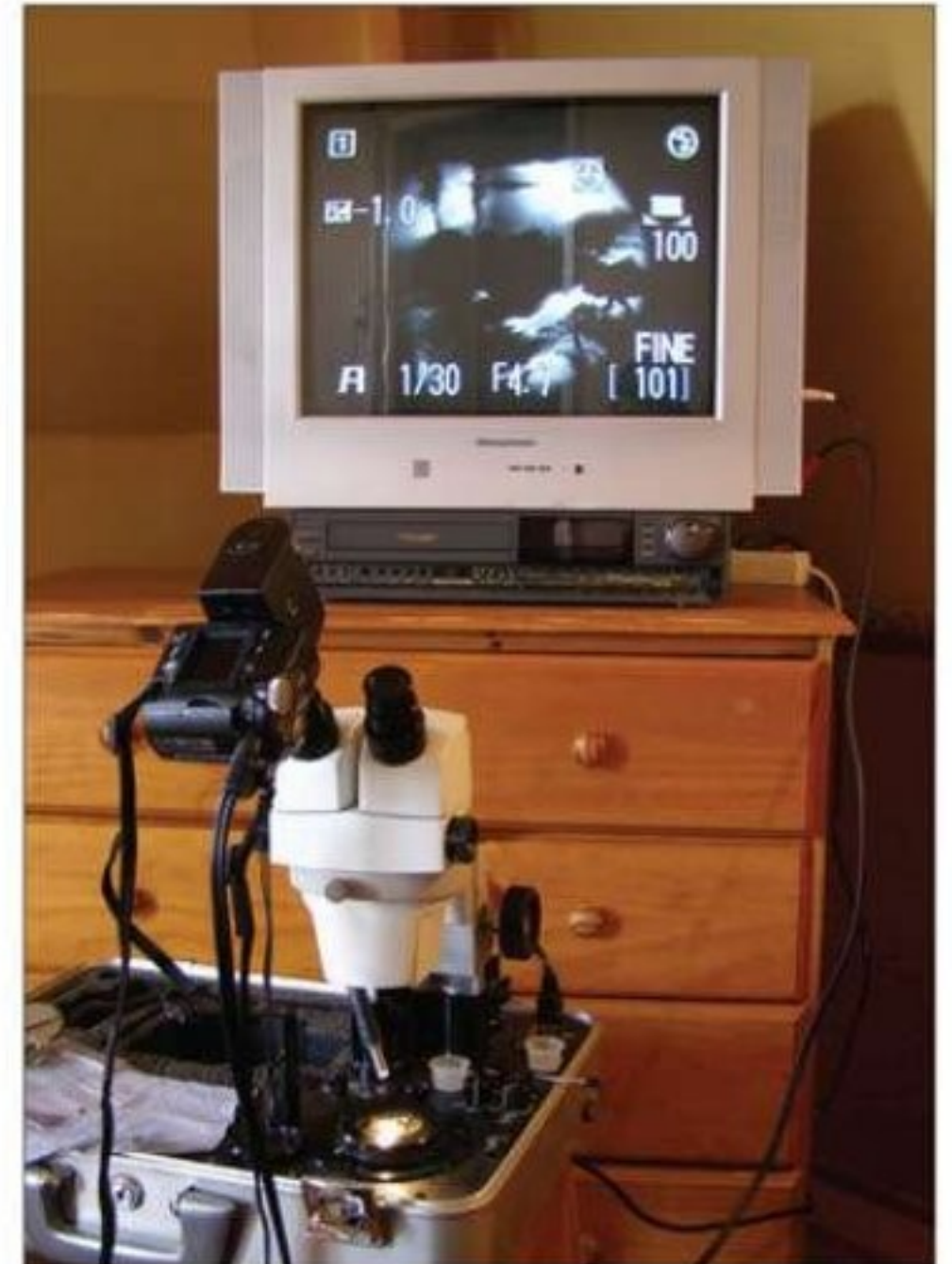
Thread the eyepiece and filter assembly onto the camera and set the camera to macro mode.



Insert the eyepiece with the camera now attached into the microscope.



The Nikon Coolpix series of cameras has a swiveling display that can make viewing much easier.



Attaching the camera to a television with the video output connector makes fine focusing much easier.



When the camera is first turned on, a large amount of vignetting is seen. Zooming the lens in will eliminate the vignetting.



Photos made with a microscope will always have a very limited depth of field; crystals in the lower right and upper left are too close or too far away to be in focus.



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Step 5. You are ready to take photos! The camera can be used in the auto focus mode with no flash, but it will have a mind of its own. After the microscope is roughly focused, you need to make fine focus adjustments through the camera's LCD screen. When taking photos, it is important that the object be in focus to the camera and not to your eye. Now, fully depress the shutter release. You will notice that the camera focus changes. Quickly re-adjust the microscope focus while the self-timer is counting down, then let go to avoid any vibrations. The camera can also be set in the manual focus mode. Once the focus is set on the camera, it is easiest to make fine adjustments with the microscope's focus knob.

Step 6. (Optional) You will quickly realize that it is difficult to confirm the camera's focus on the small LCD screen. It is very helpful to connect the camera to a television with the video output connections (see camera instructions). This allows for a much larger view, making focusing a breeze. A monocular microscope can be used with this technique, as well. Attaching the camera to a television monitor makes it possible to share what you are seeing with others—a real educational opportunity!

Making quality photomicrographs takes practice and patience. You will need to experiment to find the technique that works best for you. Thankfully, making mistakes with a digital camera costs you nothing but time, since you do not have to pay for film developing. Learning to focus properly and getting a good exposure take time to master, but the results will definitely be worth the effort. 💎



These clusters of dark needles in a quartz fragment from Morocco make great subjects for a photomicrography project.



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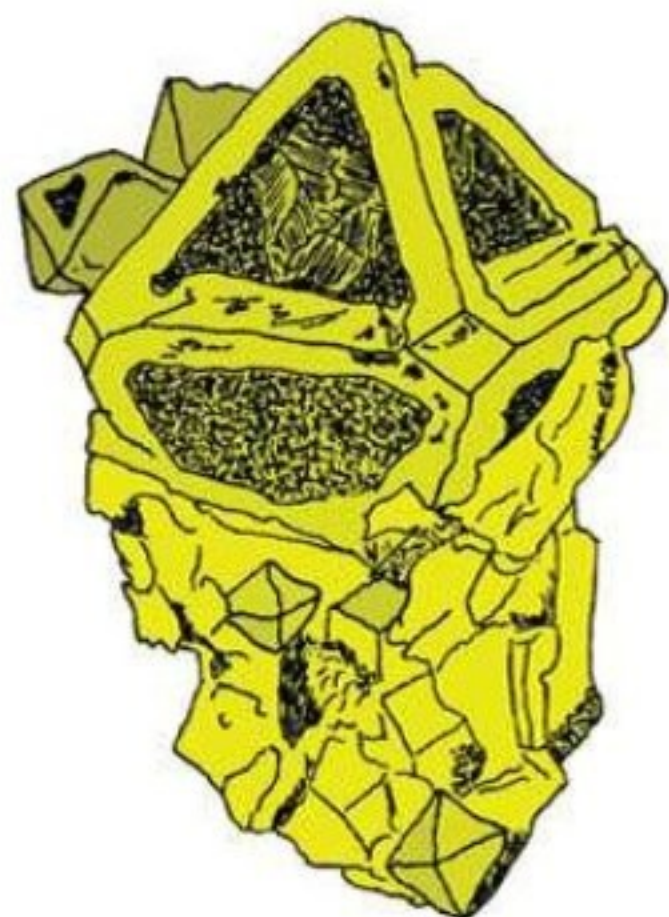
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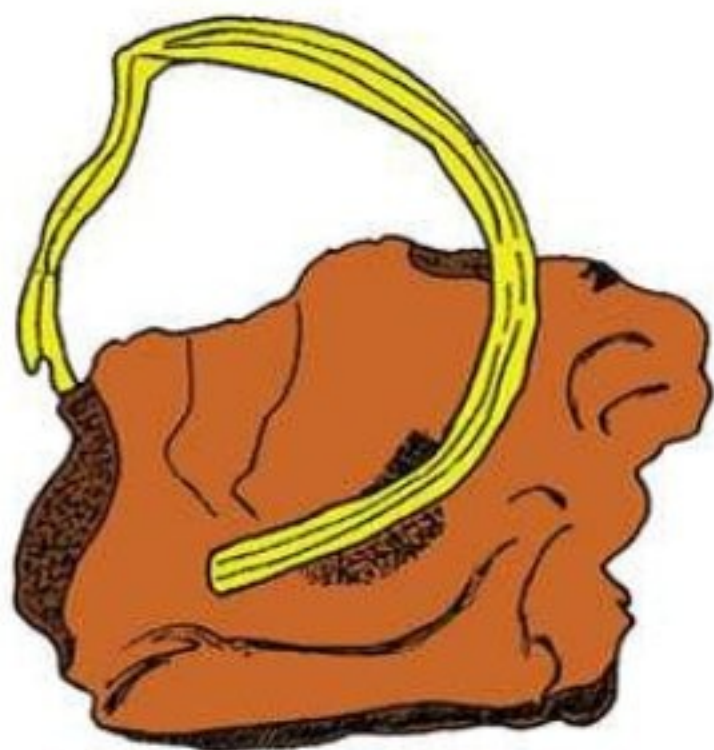
Sometimes a "gold" nugget is actually a mixture of gold and silver. Gold mixed with silver is very pale yellow. Mineral collectors call this mixture electrum.

Most gold deposits in the world have a half-ounce of gold in every ton (2,000 pounds) of rock! Gold is so valuable that mining it is still worthwhile.

Gold is used by dentists to fix teeth because it does not break down under the conditions in your mouth. (Ask your relatives if they have any gold teeth!)

Polished gold is like a very shiny mirror. Because it reflects heat and light so well, it is used on spacecraft and satellites as a radiation shield.

Gold is useful in medicine. Injections of gold salts are used to treat arthritis and gold nanoparticles are effective against some kinds of cancers.



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The Quiz is open to U.S. residents 17 and younger. Mail your answers to **July Quiz, Rock & Gem magazine, P.O. Box 6925, Ventura, CA 93006-9899**. Five winners will be drawn from the valid entries received by **July 31, 2011**. 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 vial of California gold flakes, generously donated by the California State Mining and Mineral Museum Association.

The Quiz

1. Gold mixed with silver is called ____ .
2. At a half-ounce of gold per ton, how many pounds of rock are needed to produce a pound (16 ounces) of gold?
3. Gold is useful in spacecraft because it reflects ____ and ____ so well.
4. ____ is a shiny, black volcanic rock.
5. ____ is a valuable gemstone that is used in cutting tools like jackhammers.



Check your answers at www.rockngem.com beginning August 1.

Life As a Rock

Third and fourth graders in Mrs. Bodine's class at Trinitas Classical School in Grand Rapids, Michigan, were challenged to write a paragraph about the life of a rock or mineral from the rock's perspective.

Sid the Obsidian

I make a shiny appearance at the rock show. In the past, I lived in a volcano. One day, the volcano exploded. I shot out like a rocket. You would not believe how I felt! After many years, nice gentleman found me and put me in a rock show to display my shiny, black design.

—Owen T.



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Limey the Limestone

My student loves to have me in his rock jokes at school. It was nice at home, except when I was blown into the water and floated and ended up in a glacier! I was smashed by layers of rocks! That hurt! Finally, I ended up in a lake. A boy named Ben picked me up and asked a geologist about me. He said, "That is limestone." The boy took me home. He had also found Saphi the Sapphire. She is beautiful. One of his jokes is: Does limestone have lime in it? One more thing, Saphi and I are in love. I love this new home!

—Ben M.



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Grant the Granite

My friends and I love being looked at by lots of people at the museum. A long time ago, I was living under ground in a volcano. I once was metamorphic until I melted into igneous. Even before I saw the sun I was metamorphic. I was on the beach as a sedimentary rock. Then, I felt pressure and I changed. That is how I became granite.

—Annika W.



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Robby the Ruby

I can not believe that I am being sucked by a two year old! I remember when I was found in a stream bed. It was a summer day and a grown up found me. He put me in his pocket and ran to his house. Unfortunately, he ran so fast that I dropped and fell out! Now I am in this two year old's mouth. PS: Could you take me to your house?!

—Henry M.



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Goldie Gold

My name is Goldie. I am in a museum. I am a good addition to the mineral collection. A long time ago, I was deep under the earth in veins running through. I was cold and lonely under the ground. One dark day, I saw a light and then I saw water beside me. A man picked me up and brought me to the museum. I like being part of the museum collection.

—Paige B.

Dime the Diamond

My humans think I am the best way to get underneath the earth's ground. I live here in New York City, connected to a jack hammer, with a job to help my owner, the builder. A long time ago, I lived in Libya with other diamonds, and on a sandy desert. Over time, layers of rock piled on me. I felt heat and pressure for a long time. I'm glad I was found by a miner and sold because my value was \$1000. I'm also glad I am with my owner now as a part of a jackhammer.

—Benjamin S.



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Sally the Soda Can

I'm Sally the soda can. I'm at a human's house. I used to be in a mine when I was aluminum. It was fun to sit around a mine every day. One day, a miner picked me up and put me in a very hot place—then I morphed into a soda can. Although it hurt to be put in a hot place, and it hurt to be melted, I enjoy my life now as a can.

—Alec B.



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Cole the Coal

My geologist thinks I am interesting to study. I like the lab. I used to be under the ground. I heard tons of thumps! Thump! Thump! And then some creeek! From machines and blah! Blah! Blah! from humans. I was annoyed. Over time, tons of sediment came over me, and boy did that sting. I felt a lot of heat and pressure. After all that, I am glad to be in the lab.

—Cole W.

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Show Dates from page 33

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gemstones, mineral specimens; contact Don Innes, 54416 Arago-Fishtrap Rd., Myrtle Point, OR 97458, (541) 396-5722; e-mail: donin11@hughes.net

5-7—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, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

6—ISHPEMING, MICHIGAN: 36th annual show; Ishpeming Rock & Mineral Club; Ishpeming Elks Club, 597 Lake Shore Dr.; Sat. 9:30-4:30; free admission; mineral displays, dealers, kids' area, silent auction, hourly prizes, raffle, mineral demonstrations, field trips Fri. and Sun., Cracker Barrel session Sat., live auction, raffle, program; contact Ernest Johnson, 1962 W. Fair, Marquette, MI 49855, (906) 228-9422; e-mail: ejohnson@nmu.edu

6-7—WATERVILLE, MAINE: 41st annual show; Water-Oak Gem & Mineral Society; Mount Merici School, 152 Western Ave.; Sat. 10-5, Sun. 10-4; adults \$2, children under 12 free; minerals, jewelry, supplies, beads, faceted stones, demonstrations, lapidary art, fluorescent minerals, books, magazines, gems, fossils, exhibits, dealers; contact Ellery Borow, (207) 547-3154

6-7—SAN FRANCISCO, CALIFORNIA: Annual show; San Francisco Gem & Mineral Society; Presidio Golden Gate Club, 135 Fisher Loop; Sat. 10-6, Sun. 10-5; adults \$7, seniors and students \$6, children under 12 free with adult; exhibits, dealers, gemstones, fossils, minerals, crystals, beads, lapidary equipment, lectures, demonstrations, jade carving, chain maille weaving, wax carving, Etruscan chain forming, silver clay modeling, door prizes; contact Carleen Mont-Eton, 4134 Judah St., San Francisco, CA 94122, (415) 564-4230; e-mail: publicity@show.sfgms.org; Web site: www.sfgms.org

11-14—BUENA VISTA, COLORADO: 28th annual show; Contin-Tail LLC; Rodeo Grounds, Greg Dr. and Rodeo Rd.; Thu. 9-5, Fri. 9-5, Sat. 9-5, Sun. 9-5; free admission; more than 100 dealers, rocks, minerals, fossils, gemstones, jewelry, tools, equipment, demonstrations, fluorescent mineral display Fri. and Sat., free rocks for kids; contact Carolyn Tunnicliff, 1130 Francis St. #7010, Longmont, CO 80501, (720) 938-4194; e-mail: ctunnicliff@comcast.net; Web site: www.coloradorocks.org

12-14—DALTON, GEORGIA: 20th annual show, "North Georgia Gem, Mineral & Jewelry Show"; Treasures Of The Earth Gem & Jewelry Shows; Northwest Georgia Trade & Convention Center, 2211 Dug Gap Battle Rd., I-75 Exit 333; Fri. 2-7, Sat. 10-6, Sun. 11-5; adults \$3 (3-day ticket), children under age 16 free; jewelry makers, goldsmiths and silversmiths, jewelry repair and design, wire wrap, wire sculpture, stone beads, pearls, stone setting, dealers, amber, opal, fossils, minerals, door prizes, grand prize; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: vawimmer@verizon.net; Web site: www.toteshows.com

12-14—PASS CHRISTIAN, MISSISSIPPI: Annual show; Harrison County Gem & Mineral Society; West Harrison Community Center, 4470 Espy Ave.; Fri. 12-6, Sat. 9-6, Sun. 10-4; adults \$3, children under 12 free with adult; geologist rock ID, prize raffle; contact Tomsey Westermeyer, 9270 Serenity Dr., Pass Christian, MS 39571, (228) 586-5279; e-mail: tomsey@cableone.net; Web site: www.gulfportgems.org

12-14—SAN DIEGO, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; Scottish Rite Center, 1896 Camino del Rio S; Fri. 12-6, Sat. 10-6, Sun. 10-5; jewelry, gems, beads, crystals, silver, rocks, minerals; adults \$7 weekend pass, children 11 and under free; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

12-14—WEST SPRINGFIELD, MASSACHUSETTS: Show, "East Coast Gem, Mineral & Fossil Show"; Martin Zinn Expositions; Better Living Center, Eastern States Exposition, 1305 Memorial Dr.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$6, children 12 and under free with adult; more than 200 dealers, door prizes, guest speakers, museum-quality exhibits, gem panning, large wholesale section, Scott Randolph collection; contact Martin Zinn Expositions, PO Box 665, Bernalillo, NM 87004-0665; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

13-14—AUSTIN, TEXAS: Annual show; Austin Bead Society; Palmer Events Center, 900 Barton Springs Rd.; Sat. 10-6, Sun. 11-5; adults \$5; handcrafted jewelry, supplies, raffles, \$1 off admission with donation of two cans of food; Sat. 10-6, Sun.

11-5; contact Austin Bead Society Bazaar, 900 Barton Springs Rd., Austin, TX 78704, (512) 773-8323; e-mail: austinbead.society@yahoo.com; Web site: austinbeadsociety.org

13-14—EDMONDS, WASHINGTON: Annual show; Maplewood Rock & Gem Club; MRGC clubhouse, 8802 196th St. SW; Sat. 9-5, Sun. 10-5; free admission; more than 20 dealers, rough rock, jewelry, minerals, fossils, free rocks for kids; contact Susan Cooper, 1526 192nd St. SE, #A2, Bothell, WA 98012, (206) 650-5971; e-mail: duckkansas@hotmail.com; Web site: maplewoodrockclub.com

13-14—RICE LAKE, WISCONSIN: 15th annual show; Northwest Wisconsin Gem & Mineral Society; University of Wisconsin, Barron County; Sat. 10-5, Sun. 10-4; free admission; contact Roy Wickman, (715) 357-3223, or Dave Skrupky, (715) 986-2547

13-14—WALNUT CREEK, CALIFORNIA: Show, "Contra Costa Crystal Fair"; Pacific Crystal Guild; Civic Park Community Center, 1375 Civic Dr.; Sat. 10-6, Sun. 10-4; adults \$6, ages 12 and under free; 30 dealers, minerals, gems, crystals, beads, metaphysical healing tools; contact Jerry Tomlinson, PO Box 1371, Sausalito, CA 94966, (415) 383-7837; e-mail: jerry@crystalfair.com; Web site: www.crystalfair.com

18-21—WOODLAND PARK, COLORADO: 2nd annual show; Rock Gypsies; Woodland Park Saddle Club, 19250 E. US Hwy. 24; Thu. 9-5, Fri. 9-5, Sat. 9-5, Sun. 9-5; free admission; outdoor show, more than 40 dealers and jewelers; contact Rock Gypsies, (719) 360-9665, or Kim or Bodie Packham, 87 Plum Creek Rd., Divide, CO 80814; e-mail: runninboar@hotmail.com

19-20—TAHLEQUAH, OKLAHOMA: Show; Tahlequah Rock & Mineral Society; Tahlequah Community Bldg., 300 W. 1st St.; Fri. 9-6, Sat. 9-5; free admission; rocks, minerals, fossils, gems, jewelry, demonstrations, auction, children's activities, educational displays; contact Sara Brasel, (918) 458-0801; e-mail: crosstimbersrd@earthlink.net

19-21—BRIDGETON, MISSOURI: 19th annual show and sale; Greater St. Louis Association of Earth Science Clubs; Machinists Hall Auditorium, 12365 St. Charles Rock Rd.; Fri. 3-8, Sat. 10-8, Sun. 11-5; contact Robert Morse, (636) 462-4423; e-mail: rmorse@centurytel.net

19-21—LAKE GEORGE, COLORADO: Retail show; Lake George Gem & Mineral Club; US Hwy. 24, next to Post Office; Fri. 9-6, Sat. 9-6, Sun. 9-5; free admission; contact John Rakowski, PO Box 171, Lake George, CO 80827, (719) 748-3861; e-mail: President@LGGMClub.org; Web site: www.LGGMClub.org

19-21—LEBANON, PENNSYLVANIA: 14th annual show and sale, "Gem Miner's Jubilee"; Mid-Atlantic Gem & Jewelry Association; Lebanon Expo Center, Rte. 72 and Rocherty Rd.; Fri. 10-6, Sat. 10-6, Sun. 10-4; adults \$6, children under 12 free; gems, jewelry, minerals, fossils, beads; contact MAGMA, (301) 565-0487; Web site: www.gem-show.com

19-21—SACRAMENTO, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; Scottish Rite Center, 6151 H St.; Fri. 12-6, Sat. 10-6, Sun. 10-5; jewelry, gems, beads, crystals, silver, rocks, minerals; adults \$7 weekend pass, children 11 and under free; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

19-21—SARASOTA, FLORIDA: Show; Frank Cox Productions; Municipal Auditorium, 801 N. Tamiami Tr. (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, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

20—SHELTON, WASHINGTON: Tailgate rock sale and swap; Shelton Rock & Mineral Society; Shelton Soccer Park, 2202 E. Johns Prairie Rd.; Sat. 9-5; free admission; tailgaters \$15 pre-registration, \$20 on-site registration; contact Richard Buchholz, (360) 427-2497; e-mail: giggpig@aol.com

20-21—BOSSIER CITY, LOUISIANA: Annual show; Ark-La-Tex Gem & Mineral Society; Bossier Civic Center, 620 Benton Rd.; Sat. 10-6, Sun. 10-5; adults \$4, students \$1, children under 6 free; door prizes, youth activities, demonstrations, exhibits; contact Charles Johns, 9314 Overlook Dr., Shreveport, LA 71118, (318) 687-4929; e-mail: cwsejohns@bellsouth.net; Web site: www.larockclub.com

20-21—LIVE OAK, TEXAS: Wholesale and retail show; The Bead Market; Live Oak Civic Center; 8101 Pat Booker Rd.; Sat. 10-5, Sun. 10-4; glass, gemstones, pearls, lampwork, PMC, vintage beads and buttons, jewelry, books, tools, silver, findings; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

continued on page 42

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July 15 - 16 Minocqua, WI: Annual show, Lakeland Gem Club; Lakeland Union High School, 9573 State Hwy. 70; Fri. 10-6, Sat. 9-5

August 4 - 7 Spruce Pine, NC: NC Mineral and Gem Festival; Pinebridge Coliseum; 97 Pinebridge Ave., Spruce Pine, NC 28777; Thu. - Sat 10am - 6pm, Sun. 12:30pm - 5pm

August 12 - 14 West Springfield, MA: East Coast Gem, Mineral & Fossil Show; Better Living Center, Eastern States Exposition; 1305 Memorial Dr, West Springfield, MA; Fri. & Sat. 10am - 7pm, Sun. 10am - 5pm

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Show Dates from page 40

AUGUST 2011

26-28—COSTA MESA, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; OC Fair & Event Center, 88 Fair Dr.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

26-28—SOUTH BEND, INDIANA: 48th annual show and sale; Michiana Gem & Mineral Society; St. Joseph County 4-H Fairgrounds, Esther Singer Bldg., 5177 S. Ironwood Rd., at Jackson Rd.; Fri. 2-7, Sat. 10-6, Sun. 10-4; adults \$3, children (6-12) \$1, under 6 free; dealers, gems, fossils, minerals, jewelry, demonstrations, exhibits, Kids' Korner, silent auction; contact Marie Crull, (574) 272-7209; e-mail: crullb2@sbcglobal.net; Web site: http://sauktown.com/Michiana

27-28—COLUMBUS, OHIO: Show and sale; BeadStreet USA; Veterans Memorial Hall, 300 W. Broad St.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$5, children under 12 free; vintage beads, lampwork, gemstones, Swarovski crystals, seed beads, fibers, precious metal findings, jewelry, tools, equipment, educational materials; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

27-28—CONCORD, NEW HAMPSHIRE: 48th annual show; Everett Arena, 15 Loudon Rd.; Sat. 9-5, Sun. 10-4; adults \$5, children under 12 free with adult; contact Scott P. Higging, (207) 439-1107; Web site: www.capitalmineralclub.org

27-28—FORT SMITH, ARKANSAS: Wholesale and retail show; The Bead Market; Fort Smith Convention Center, 55 S. 7th St.; Sat. 10-5, Sun. 10-4; free admission; gemstones, pearls, glass, lampwork, silver, findings, vintage beads and buttons, Swarovski Elements, crystals, books, tools, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

27-28—FREEPORT, NEW YORK: Annual show and sale; Kaleidoscope Gem Shows; Freeport Recreation Center, 130 East Merrick Rd.; Sat. 10-5, Sun. 10-5; adults \$5.50 (\$5.00 with this ad), children 12 and under free with adult; dealers, gems, minerals, jewelry, fossils, beads; contact Ralph Gose, PO Box 1418, Melville, NY 11747, (631) 271-8411; e-mail: ralph_gose@kaleidoscopegemshows.com; Web site: kaleidoscopegemshows.com

27-28—JASPER, TEXAS: 17th annual show; Pine Country Gem & Mineral Society; Sat. 9-5, Sun. 10-5; The Event Center, 6258 Hwy. 190W, 5 miles west of Jasper; adults \$2, students and children free; rocks, gems, jewelry, minerals, door prizes, grand prize, spinning wheel, silent auction, lapidary demonstrations; contact Lonnie Stalsby, 258 CR 066, Jasper, TX 75951, (409) 382-5314

27-28—MADRID, NEW YORK: 45th annual show; St. Lawrence County Rock & Mineral Club; Madrid Community Park, 1835 St. Hwy. 345; Sat. 9-4:30, Sun. 9-3; free admission; contact William deLorraine, (315) 287-4652; e-mail: wdellie@verizon.net; Web site: www.stlawrencecountymineralclub.org

27-28—MOUNTAIN HOME, ARKANSAS: Show; Ozark Earth Science Gem, Mineral & Fossil Club; Senior Center in Cooper Park, 1101 Spring St.; Sat. 10-6, Sun. 10-5; free admission; door prizes, mineral and gem displays, interactive children's events, minerals, fossils, handmade jewelry, demonstrations; contact Edward Hakesley, 821-1 Alexis Circle, Mountain Home, AR 72653, (870) 424-0956; e-mail: edscamp3@yahoo.com; Web site: www.ozarkearthscience.org

27-28—PEORIA, ILLINOIS: Annual show; Geology Section of Peoria Academy of Science; The Grand Hotel, 4400 N. Brandywine Dr.; Sat. 9-5, Sun. 10-5; free admission; displays, dealers, panning flume, kids' area, fluorescent display; contact Jim Travis, 2812 N. Peoria Ave., Peoria, IL 61603, (309) 645-3609; e-mail: boatnick@aol.com; Web site: www.pasgeology.com

SEPTEMBER 2011

2-4—SANTA BARBARA, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; Earl Warren Showgrounds, 3400 Calle Real; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

2-5—CRAWFORD, NEBRASKA: 25th annual show; Northwest Nebraska Rock Club; Crawford City Park, Main St.; Fri. 8-6, Sat. 8-6, Sun. 8-6, Mon. 8-6; free admission;

agate bed field trips, 13th annual Agate Collectors presentations, buy, sell, trade, rocks, fossils, artifacts, jewelry; contact Wade Beins, PO Box 569, 120 Gordon Ave., Chadron, NE 69337, (308) 430-1399; e-mail: agates@bbc.net

3-4—ARLINGTON, TEXAS: Annual show; Arlington Gem & Mineral Club; Arlington Convention Center, 1200 Ballpark Way; Sat. 10-6, Sun. 10-5; adults \$6, seniors and children \$3, Scouts in uniform free; silent auctions, Gem ID, Kids' Korner, door prizes, gem, lapidary and jewelry displays and demonstrations, Rock Food Table; contact Jack Spinks, 209 Overlook Dr., Midlothian, TX 76065, (214) 335-9452; e-mail: jlsplinks@sbcglobal.net; Web site: www.agemclub.org

3-4—AUGUSTA, MAINE: 21st annual show; Kennebec Rocks & Minerals Club; National Guard Armory, Western Ave.; Sat. 10-5, Sun. 10-4; door prizes, demonstrations, capping, lapidary, mineral displays, dealers, minerals, jewelry, gems, fossils, geode slicing, kids' mineral mine, "Rocky" the rockhound dog; contact KRMC, (207) 873-6270

3-5—SILVER CITY, NEW MEXICO: 28th annual show; Grant County Rolling Stones Gem & Mineral Society; Grant County Business and Conference Center, Hwy. 180E, next to Ace Hardware; Fri. 10-5, Sat. 10-5, Sun. 10-4; free admission; mineral ID, Wheel of Fortune, silent auction, dealers, rough rock, minerals, handcrafted jewelry, field trips, special exhibits; contact Marcia Andre, (575) 534-0006; e-mail: rollingstonesgmsshow@gmail.com; Web site: http://rollingstonesgms.blogspot.com/

9-11—FERNDALE, CALIFORNIA: 7th annual show, "Wildcat Gem Fest"; Wildcat Gem Society; Humboldt County Fairgrounds, 1250 5th St.; Fri. 12-7, Sat. 10-6, Sun. 10-5; free admission; door prizes, games, raffles, silent auction, more than 40 dealers, gems, minerals, fossils, crystals, jewelry; contact Mike Martin, P.O. Box 189, Miranda, CA 95553-0189, (707) 943-1575; e-mail: micknorma@directv.net

9-11—MARIETTA (ATLANTA), GEORGIA: Show; Frank Cox Productions; Cobb County Civic Center, 548 S. Marietta Pkwy.; Fri. 1-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

9-11—TOLEDO, OHIO: 40th annual show; Toledo Gem & Rockhound Club; Stranahan Theater Complex, 4645 Heatherdowns Blvd.; Fri. 2-8, Sat. 10-6, Sun. 11-5; adults \$4, seniors and students \$3, children under 12 free; Midwest Federation of Geologic Societies Annual Convention, more than 22 dealers, minerals, jewelry, fossils, lapidary supplies, silent auction, club sales, scholarship raffle, exhibits, demonstrations, kids' area, mini classes; contact Jerri Heer, 247 Decatur St., Toledo, OH 43609, (419) 389-9204; e-mail: jheerx6@aol.com; Web site: www.rockyreader.com

9-11—WINSTON-SALEM, NORTH CAROLINA: 40th annual show; Forsyth Gem & Mineral Club; Educational Bldg., Dixie Classic Fairgrounds, 27th St., gate #9; Fri. 10-7, Sat. 10-7, Sun. 12-5; contact W.A. Marion, 1163 Bear Creek Church Rd., Mocksville, NC 27028; e-mail: MarionA1@yadtel.net

10-11—DOWNEY, CALIFORNIA: Annual show; Delvers Gem & Mineral Society Women's Club of Downey, 9813 Paramount Blvd.; Sat. 10-6, Sun. 10-4; free admission; more than 20 dealers, displays, demonstrations, books, grab bags; contact Guynell Miller, 7315 Cloverlawn, South Gate, CA 90280-2819, (562) 633-0614; e-mail: guynellallen@sbcglobal.net; Web site: http://groups.yahoo.com/group/delvers

10-11—NEW MILFORD, CONNECTICUT: Show; Danbury Mineralogical Society; New Milford High School, Rte. 7; Sat. 10-5, Sun. 10-4; contact John Pawloski, (860) 354-0296; Web site: www.danburymineralogicalsociety.org

10-11—POWNA, VERMONT: Show; Northern Berkshire Mineral Club; American Legion Post #90, Rte. 7, Sat. 10-6, Sun. 10-4; adults \$4, children 15 and under free with adult; minerals, gems, jewelry, gifts, children's fish pond, prizes; contact Larry Michon, PO Box 297, North Adams, MA 01247, (413) 663-8430

10-11—ROSEBURG, OREGON: Annual show, "Oregon Really Rocks"; Umpqua Gem & Mineral Club; Douglas County Fairgrounds, I-5 Exit 123; Sat. 10-6, Sun. 10-4; contact Eileen Paul, (541) 672-5229; e-mail: beadpatch@cmspan.net

10-11—SILOAM SPRINGS, ARKANSAS: Fall swap; Northwest Arkansas Gem & Mineral Society; clubhouse parking area, Hwy. 43 N; Sat. 9-5, Sun. 10-5; admission free; gem wash, auction Sat.; contact David Leininger, (479) 263-1424; e-mail: hulagrub@aol.com; Web site: www.nwarockhounds.org

continued on page 62

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Story and Photos by Bob Jones

The state of Missouri has led the United States in the mining of the elemental metal lead, primarily from the gray lead sulfide galena, since before the Civil War! Long before Europeans explored the area, Native Americans collected and dug this lead mineral, even digging shallow pits to expose deposits.

When the French explored the Mississippi River Valley in the early 1700s, they reported the presence of lead minerals in quantity, not only in surface deposits, but in small caverns, which were shown to them by their Native American guides. In later years, mines were developed in the southeastern part of the state, but these deposits pale when compared to the major sources in Missouri that were found in the 1800s and 1900s. The Tri-State District became active in the 1800s and the central Viburnum Trend was discovered and mined after World War II.

It was in 1720 that two French explorers, M. La Motte and Francois Renault, found the first lead deposits in southeast Missouri around Bonne Terra. These modest deposits proved to be harbingers of two vast lead deposits in the central and western parts of the territory.

As exploration opened the western Missouri region, huge near-surface deposits of galena and sphalerite were found in the extreme southwest corner of the state. These deposits spilled over into the Oklahoma and Kansas territories and became known as the Tri-State District. This metal-rich area proved to cover over 1,000 square miles.

The mining of galena and other minerals initially centered around Joplin, Missouri, but it wasn't long before mines opened up in Oklahoma and Kansas, as well. These Tri-State deposits, as they became known, began producing significant amounts of galena for lead in the early 1800s. Production continued to



This choice doubly terminated calcite from the Tri-State lead and zinc district shows a faint shade of violet at one termination.

expand as demand for lead and the associated metal zinc increased, only ending after World War II.

Missouri's second major lead source, the central lead belt, is commonly referred to as the Viburnum Trend. It was so named because its deposits tend to run north-south, with the northern most mines located near the town of Viburnum. While the Tri-State district is no longer active, Viburnum Trend mines are still producing lead, copper and, much to the delight of collectors, choice mineral specimens, including galena, sphalerite, calcite and pyrite, were initially abundant, though after an initial surge, specimen production has slowed dramatically.

The Tri-State region, located where Oklahoma, Missouri and Kansas intersect, has been a favorite source of galena, sphalerite and calcite specimens for well over 100 years. The pity is that, like the old saying "familiarity breeds contempt", these mineral species occurred in such vast quantities that, for decades, they were largely ignored by serious collectors or, at best, taken for granted. For decades, fine specimens of all three species sold for nominal prices and were never highly touted by dealers and collectors, save for a small band of locals. After all, dark minerals like galena and sphalerite were never favorite collectibles, and calcite, the only bright spot in the Tri-State suite of minerals, was a "commoner"! Therefore, Tri-State minerals really didn't gain serious recognition until after the mines shut down in the 1960s.

These three species were so common at one time that you could find the backyards and front porches of many miners piled with specimens. The production of specimens from these mines supported several local dealers, and travelers would avail themselves of a specimen or two at reasonable prices. Today, the number of specimens offered from the Tri-State district has diminished markedly, and they have finally gained a small measure of respect.

There are significant differences between the historically significant Tri-State deposits and the much more recently discovered and still-active Viburnum Trend. The latter is best known for highly lustrous galena, superb calcites that often show wonderful phantoms, unusual, lustrous pyrite "bars", and richly colored calcites. There were also smaller amounts of marcasite and sigenite.

The Tri-State area is noted for galena, calcite, marcasite and sphalerite, but has also yielded some quite fine examples of other lead minerals in limited amounts. These include smithsonite, leadhillite, pyromorphite and cerussite, species that are not found in the Trend deposits. Note, too, that the Trend ore deposits are almost bereft of the

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A fine example of cubic galena crystals once available from the Tri-State area by the hundreds of thousands. Note the tiny red sphalerite crystals in the upper center.



The faces of these sharp cubes of galena show the classic "hobnail" pattern of partially developed crystals.



This is a choice example of a cockscomb marcasite, a very popular, but easily decomposed, species from the Tri-State mines of Missouri, Kansas and Oklahoma.



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These galenas are modified on the octahedron and dodecahedron and the crystal faces are lightly pitted.

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zinc sulfide sphalerite, which is a major ore in the Tri-State deposits.

For those who collect these regions seriously, owning a specimen of these secondary lead minerals, which are found in just one or two places in the Tri-State deposits, is a significant goal. Both regions, however, are important sources of fine collector specimens of galena and calcite in particular.

Both deposits, vast as they are, were formed in much the same way. In fact, most lead-rich deposits in the Mississippi Valley, extending all the way from Missouri through Illinois and Kentucky to Wisconsin, are of similar origin. They are called medium- to low-temperature Mississippi Valley-type lead deposits. These valuable deposits were all formed when warm hydrothermal solutions invaded horizontal layers of carbonate rock and cherty formations. Trapped in the limestone environment by overlying, more permeable rock layers, the solutions took advantage of and even created openings in the limestone in which countless thousands—more likely millions—of crystals developed. Some of the crystal-lined openings encountered during mining at both sites were vast, large enough for miners to stand in the pocket while collecting.

Early mining in the Tri-State District was very simple, as the deposits were so close to the surface; in some cases, they outcropped, so they could be mined using hand tools. Small prospects blossomed all over the landscape. Gradually, the mines were consolidated, which led to serious mining that produced vast tonnages of lead and zinc.

The Tri-State galena crystals are almost always simple cubes and are usually dull, modestly lustrous at best. The cubes were often 2 inches and longer on an edge, with some exceeding that size. They were usually stacked in groups on the gray matrix. Most galenas are smooth-faced, but it is not

unusual to find galena cubes with octahedral modifications in which the cube corners seem cut, giving them small triangular faces. Many galenas show unusual growth features on their faces. Some are hopped due to growth only on the crystal edges, or have faces that never filled in completely. Others have what John Sinkankas referred to as "hobnail" faces, cube faces studded with the raised corners of small, partially developed octahedrons. The size of a group of Tri-State galenas was often limited only by the skill and strength of the miner in bringing a cluster to the surface.

For a short time after the mines shut down in the 1960s, locals could go underground and collect, but the water level began to rise as soon as the pumps were shut down, so amateur underground collecting soon became impossible.

The Tri-State sphalerite occurred in two common forms. Though the species develops in the cubic system, as does galena, cubes of sphalerite are unknown here. The common crystal form was the tetrahedron, which sometimes came close to an octahedral shape. On many specimens, the sphalerites occur as bright-red, gemmy crystals under ¼ inch, but sometimes they almost cover the matrix upon which larger crystals of galena and calcite later formed. These gemmy tetrahedrons of zinc sulfide are the most colorful Tri-State species found in quantity. Because of their color, miners called them "ruby jack" sphalerites.

More important as a zinc ore is "black jack" sphalerite, which occurred in large masses and crystal groups that were often of large size. The most sought after sphalerite crystals were those showing spinel twinning, in which two tetrahedrons share a common plane. Black jack crystals up to 2 inches on an edge were common, though crystals a foot across are known.



This twinned violet calcite crystal is the most highly prized of all the calcites from the Tri-State mines.

These usually lack luster and are often slightly rounded.

The Tri-State calcites are among the more notable species found there and occurred in great abundance. Most formed in scalenohedral shapes, the typical dog-tooth, tapering crystal shape ranging in color from white and milky to slightly amber. The crystals could achieve considerable size; specimens over a foot long were not rare and larger crystals exceeded a yard long! Most crystals have good luster.

The variety of crystal habits in Tri-State calcite is fascinating. Several different twin types were common. One type looked like thick rabbit ears. Another common type is doubly terminated, as two dog-tooth crystals attach base to base, sharing a plane. Other crystals formed penetration twins, as one crystal grew right through a second crystal.

As for color, most Tri-State calcites are milky to white. Others tend to shade into a pale yellow. The prized crystals are rhombic in form and show lovely colors that range from amber to a delicate lavender. A few lavender crystal twins were also mined here. These are broadly rhombic, with a deep re-entrant angle. The common Tri-State minerals are usually found on a gray cherty matrix that is quite hard and angular.

Another sulfide here is marcasite, a silver-gray iron sulfide. The common form is called "cockscomb", as the bladed crystals form in tight, subparallel, diverging clusters with sharp edges and pointed terminations in the orthorhombic crystal form. Specimens are very attractive, as they can be several inches across with crystals over 1 inch high. You seldom see Tri-State marcasite for sale these days simply because it has a nasty habit of decomposing in moist air. Collectors who know of this problem will not collect the mineral, or if they do,

will not store the marcasite in a cabinet or drawer with other minerals, for as it decomposes it gives off acidic fumes that are harmful to other minerals.

Any trip into the Tri-State area required a stop to visit either Boodle Lane or Rosie Rosenbury. These two old-timers were the better-known local dealers who had specimens displayed on tables, on porches, and wherever else they had space.

The Viburnum Trend lead deposits were not discovered until after World War II, when aerial magnetic surveys suggested anomalies that proved, through drilling, to be huge deposits of lead ore. Again, the deposits are the typical Mississippi Valley type. Luckily, the host rock is fraught with cavities, caves, and open seams into which the hydrothermal brine solutions could deposit their rich loads. As solutions cooled or encountered a change in chemistry, galena, calcite, pyrite and chalcopyrite crystallized out. It was not unusual for miners to open huge cavities whose floors, walls and ceilings were lined with crystals.

The Viburnum Trend deposits are situated on the western side of the Ozark Dome, a geological structure with a high center that gradually slopes away in all directions. This does not imply that the hydrothermal solutions were connected with the formation of the dome.

Several mines in the trend, including the Buick, Sweetwater, Brushy Creek, and Fletcher, are familiar to collectors. These mines produced very similar assortments of species—galena, calcite, pyrite and dolomite—to the Tri-State region. The operating mines in the trend extend south from the town of Viburnum to the town of Ellington, a distance of over 30 miles.

The Buick mine is probably best known for its pyrite bars, complex stacks of pyrite cubes with myriad face offsets. These un-

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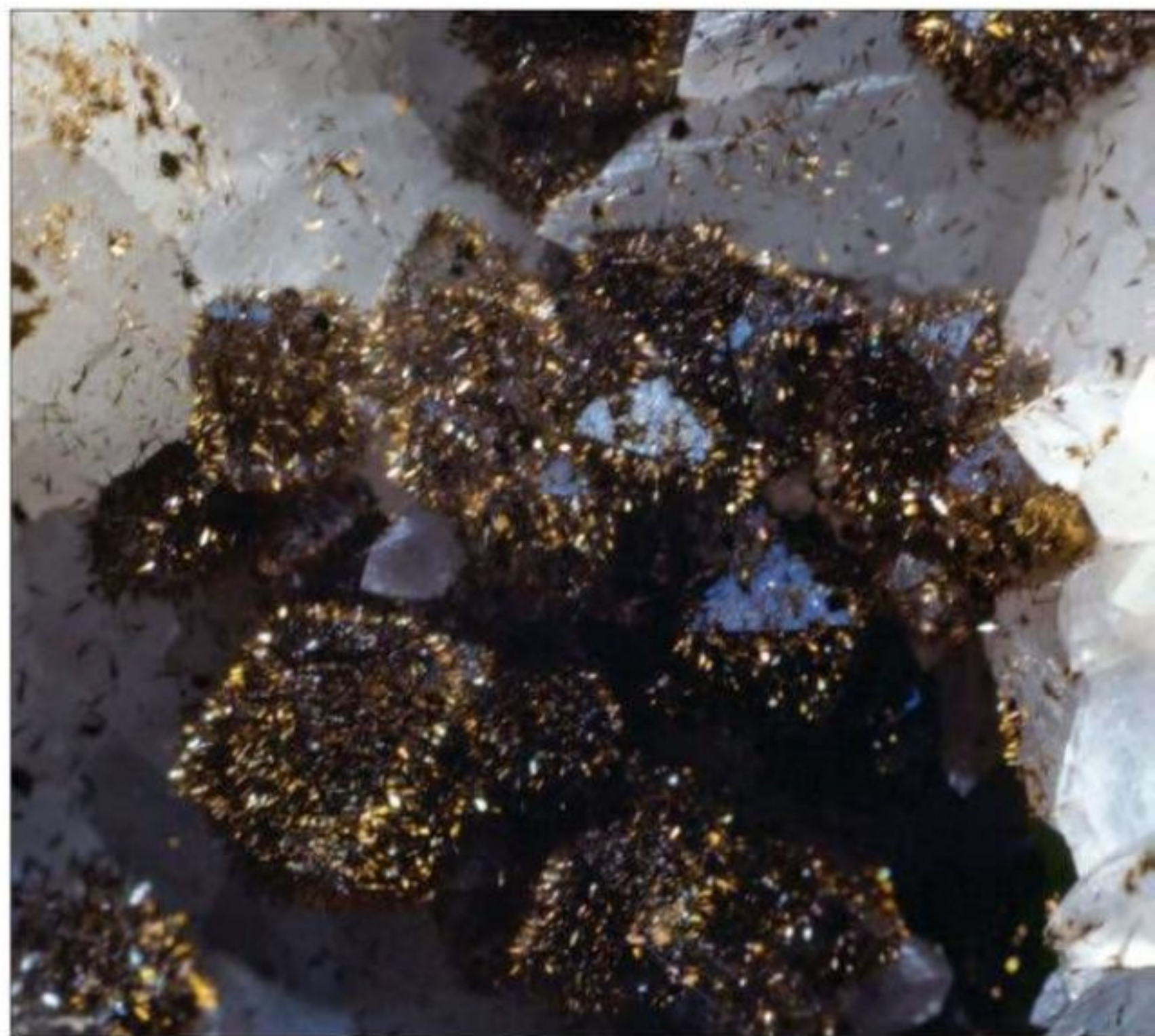
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This superb octahedral galena lacks luster, which is not usual for Tri-State galenas.



This marcasite on galena from the Tri-State area is tarnished with iron oxide.



Fine doubly terminated calcite came from the Sweetwater mine in Missouri's Viburnum Trend.

usual pyrites have crystals that are seldom more than an inch across, but the bar itself can be upwards of a foot long. Some curve slightly and a few are attached to each other. If broken crossways, an interesting starlike crystal pattern is revealed, as well as a small central hole that often runs the length of the bar. The luster of these unusual pyrite specimens is good, but not brilliant, due in part to the face offsets, uneven crystal surfaces, and rectangular growth plates. Another odd form of pyrite seen here is the radiating spherules or domed balls of tiny crystals that are never large, but are quite unusual.

Marcasite, another iron sulfide that can resemble pyrite, can form curved surfaces

or develop as mammillary specimens in the Trend deposits. It forms brassy botryoidal plates with good luster. A little more unusual are the colloform-type marcasites, very small, low-profile, rounded crystal clusters. There are also small stalactitic growths of marcasite with good luster whose surfaces show small crystal faces. Much more familiar are the cockscomb clusters of marcasite crystals that occur as small clusters of crystals to an inch or so.

The two most common, and very attractive, minerals found here in quantity are galena and calcite. The finest galena crystals have an exceptionally brilliant luster, which is really quite uncommon for the mineral. Most galena is dull at best, but the Viburnum galenas can be mirror bright. They are simple cubes of superb size with minor face offsets. Choice single crystals up to 4 inches on an edge are common here, though cubes a foot or more on an edge have been encountered. Such massive crystals are a challenge to collect by hand! Often, the larger specimens extracted are not reported in cube size, but in weights of nearly a ton.

Many of the trend's galena cubes are enhanced by having a second generation of smaller cubes or cubo-octahedrons attached in clusters at the base of the larger cubes. Not all the Viburnum galenas are lustrous. The most lustrous seem to have come mainly from the Sweetwater mine, which is also a major source of superb calcites in a variety of forms.

The sheer quantity of the Viburnum calcites makes it difficult to describe them. The trend produced hundreds of thousands of calcites, many in groups, many as singles,

and just as many specimens with a host of individual crystals clustered on a matrix of limestone and brassy sulfide. The number of cavities that produced calcites is almost countless. In one mine, contract specimen diggers encountered a series of interconnected openings, some of them room-size, that extended well over 100 yards. Every opening, every pocket was lined floor to ceiling with crystals. Some cavities were large enough that two or three miners could stand in the cavity and collect.

The calcites vary from white to gray, pale yellow to strong amber yellow. The Fletcher mine produced calcites that were colored red by included iron oxides. The most exciting calcites are the twins. The more attractive twins are what we call fishtails: two crystals side by side sharing a common prism face and terminating with a large "V" reentrant angle, not unlike a fish's tail. These are highly prizes, as they are the least common of the calcite twins here.

Many of the Viburnum calcites are phantom; some show just a single phantom interior, while others show repeated phantoming. The inner crystals are outlined mainly with sulfides: microscopic pyrites, tiny chalcopyrites, and, in some cases, marcasite crystals. Many of the phantoms recovered are scalenohedrons over 6 inches long with sharp terminations.

Few of the calcite, galena and sphalerite specimens the Tri-State area produced are seen for sale today, and the supply of Viburnum Trend specimens has dropped dramatically. Still, specimens from both these important lead localities are well worth obtaining as representatives of Missouri's two great lead districts. 💎

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WESTERN MAINE MINERAL ADVENTURES

Screen for Beryl Gems from Mount Mica

Story by William Safer



COROMITO MINERALS PHOTO

The contents of a great Mount Mica pocket find consist mostly of the gem-quality, green tourmaline crystals for which this area of southwestern Maine is famous.

As a veteran of prospecting for tourmaline in the area of Paris, Maine, back in the 1980s, I was surprised by the many changes I discovered when I returned to the area 25 years later. I had given my 8-year-old nephew the “collecting bug” and his dad had arranged a few days in this area to allow his son some time to collect and learn more about his new hobby.

BELOW: My Mount Mica finds have been cut into some nice gems, including (top to bottom) a 2.55-carat rich red tourmaline, a 1.90-carat faceted piece of rose quartz, and a 5.17-carat deep-green, free-form tourmaline cut from a gem-quality specimen.



WILLIAM SAFER PHOTOS

Mount Mica is now privately owned, as are a number of other mines in the Paris area. Gone are the days when you could pay Mrs. Brown in the farmhouse down the road from the diggings and sign a release form to get a full day of gem hunting. Many of the former free hunting areas are not free anymore, and the world-famous Perham's Mineral & Gem store closed its doors in the summer of 2009 after decades of service to the gem and mineral enthusiasts of America.

A field trip was arranged with the owners of Western Maine Mineral Adventures, Jody and Zolt Matolcsy. My nephew, Noah, my brother Gary, and I began our adventure by checking into the Mollycokett Motel, next door to the gem-screening area. This quaint and cozy hotel in a superbly quiet and serene rural area of Maine has lovely, comfortable rooms. The attached restaurant has a fireplace made up of many locally found rocks and minerals, including striking pieces of rose quartz and blue beryl.



WESTERN MAINE MINERAL ADVENTURES PHOTO

A very comfortable screening area allows you to wash, screen and inspect your finds while having an expert nearby to evaluate your finds.

We made the short walk from the motel to the gem-screening area and met with Jody and Zolt, who were the some of nicest people and very knowledgeable about the gems and minerals in the area. They have a direct connection with Gary Freeman, the owner of Mount Mica and other mines. Each day,

dump material from Mount Mica is brought to the screening area, and visitors pay \$10 to shovel a bucketful, then take it to the screening area where a screening table, two types of gem screens, and water are waiting.

After you have screened, washed and examined your finds, Jody, Zolt and other staff members are on hand to help you identify what you have found. Very rarely does someone go home emptyhanded.



WILLIAM SAFER PHOTO

A five-minute limit on the Mount Mica dump pile ensures that no one spot is monopolized by one person and gives every visitor a fair chance to dig good gem gravel.



WILLIAM SAFER PHOTO

These small terminated tourmaline crystals have the famous grass-green color that Mount Mica is famous for.



WILLIAM SAFER PHOTO

My bucket of Mount Mica dump material yielded pink and green tourmaline, as well as optical quartz and watermelon tourmaline.

My bucket, which took about an hour to screen and examine, contained watermelon tourmaline, optical quartz, garnet, and small tourmaline crystals in different shades of green. People have also found gem-quality, facetable pieces of colored tourmaline in these buckets, along with other gems such as beryl and garnet.

More expensive buckets are available from which the large rocks and dirt have been removed to allow a better chance of finds, but Jody and Zolt say that the "dig your own bucket" gem material offers a great chance of finding gem material.

For very young children, there are buckets that have been "salted" with some colorful stones. Screening this dirt, with the help of parents, can impart a definite thrill of discovery. There is also a small gift shop with local and worldwide mineral items to purchase, as well as books and guides.

Noah, with the help of Gary and me, found a number of tourmaline pieces, along with optical quartz. Noah was even given a lovely piece of watermelon tourmaline by Zolt. He was thrilled beyond words!

In case you or your children get tired and can't finish screening your gravel, bring along a strong bag or bucket and you will be allowed to take the remainder of your gem gravel home to finish screening. If you are pressed for time, you can take a whole bucket home to screen at your leisure. If you can't make it to the screening area at all, arrangements can be made to have a "bucket" of material shipped to you.

You can also hunt at Mount Mica and some of the other local mines by arrang-

ing a private trip through Jody and Zolt. Mount Mica trips take place on Sundays; other mine trips take place on weekdays. The cost of these trips is \$25 per hour, per person. Experienced diggers lead these trips and show you where to prospect and how to identify your finds.

We chose to make a trip to the Orchard Pit mine, which is also owned by Freeman. Lovely golden beryl and blue beryl are among the gems that can be found at this mine. It was a lovely day, and after arriving at the mine, were showed good areas in which to start digging. Jody and Zolt's children are following in their parents' footsteps, and within a few minutes of arriving at the Orchard Pit mine their young son found a nice piece of golden beryl.

More blue and some golden beryl was found, as well as some quartz crystals. A light rain began to fall toward the end of the trip, but that only made the colors show up better as we dug and screened for specimens!

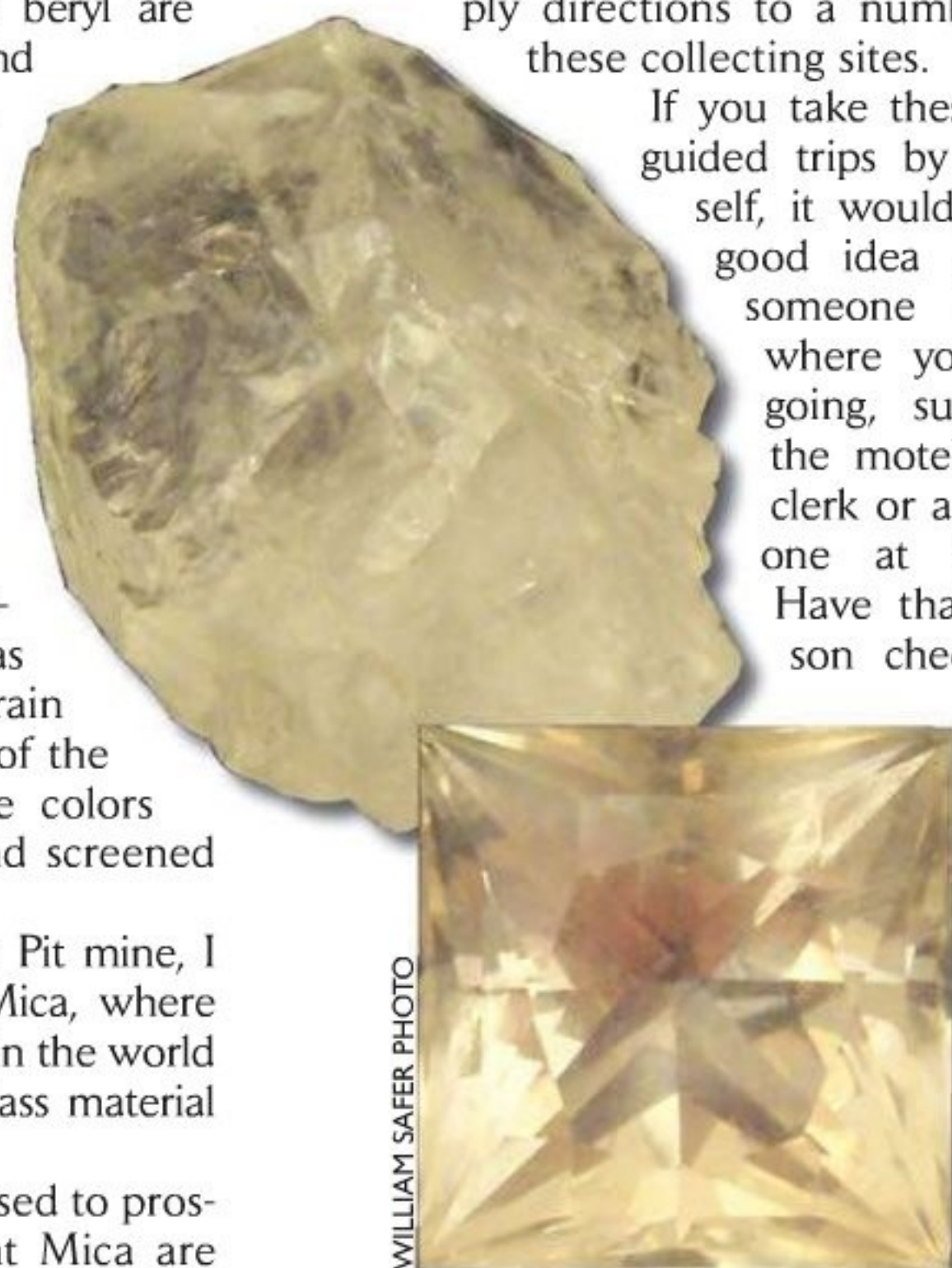
On the way to the Orchard Pit mine, I saw the entrance to Mount Mica, where some of the finest tourmalines in the world have been found and world-class material keeps on being discovered.

Although the days when I used to prospect for tourmaline at Mount Mica are gone, the excitement is still there! It is a little more complicated now, but with a little arranging and scheduling and with

the help of Western Maine Mineral Adventures, it still can be done.

It is worth the trip to hunt for gems and minerals in one of the best areas in the world for these pegmatite materials. There are also free and unguided collecting sites that you can visit on your own. The owner of the Mollycokett Motel (www.mollycokettmotel.com) will supply directions to a number of these collecting sites.

If you take these unguided trips by yourself, it would be a good idea to let someone know where you are going, such as the motel desk clerk or a loved one at home. Have that person check on



WILLIAM SAFER PHOTO

I had a piece of super-clear Mount Mica optical quartz I found faceted into a 8.09-carat Princess Leia cut stone.



WILLIAM SAFER PHOTO

This superb specimen of green and black tourmaline was found in gem gravel from Mount Mica.

you at a prearranged time, and if you have not returned, they will have an idea of where to start looking for you.

Pocket-size GPS units can be lifesavers. There are a number of them on the market. Hammacher Schlemmer's Web site (www.hammacher.com) also sells a pocket homing device that is very simple to use. You press a button to mark where you started and again when you get to your destination; then you press another button, and an arrow will guide you back to where you began. The unit costs around \$79.

The nearby towns of South Paris, Paris and Norway have a lot to see: quaint little shops and restaurants as well as antique shops and boutiques.

Western Maine Mineral Adventures is located at 1148 S. Main St. in Woodstock, Maine, right off state Route 26, next to the Mollycokett Motel. Contact Zolt and Jody at (207) 674-3440 or visit <http://digmaine.com> for more information. If you want a memorable, fantastic gem and mineral hunting adventure, give them a try. I know you will be happy that you did! ♦



WILLIAM SAFER PHOTO

This large, terminated, green tourmaline crystal from the famous Mount Mica rewarded a gem screener!

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OFF THE DOP

by Jim Perkins

Aligning the Girdle

Most machine manufacturers do not provide a girdle aligner with their machines; they feel each person can find his own method for aligning the girdle. Nevertheless, aligning the girdle is an important step in the faceting process. The Polymetric Instruments faceting machine allows faceters to lift the entire quill assembly out of a cradle to inspect the stone during faceting. The keyed dop is simply another way of doing the same thing.

Let's review the steps prior to aligning the girdle on a round brilliant design: Grind the pavilion first to establish a temporary center point. Set the size of your stone by cutting facets opposite each other. Cut the remaining girdle facets to the same depth and polish them.

Return the quill block to the height and angle necessary to finish cutting and polishing the pavilion mains, if applicable.

We are now ready to transfer our stone so we can cut and polish the crown and table. Wax transferring is the traditional method. Set the cone dop into the fixed end of the transfer fixture, set the fixture vertically and melt wax into the cone. Clean the stone's pavilion to remove any contamination and put the flat dop with the finished pavilion into the moveable side of the transfer fixture. Use the key system of the manufacturer's transfer fixture and dops properly.

Apply heat to the cone to melt the wax; do not heat the stone or flat dop. Push the moveable end of the transfer fixture and stone into the melted wax. Let the stone and wax rest until the wax hardens. Apply heat to feather the wax edges on the stone or the bond will be weak. Let the stone and wax rest again until the wax hardens. Carefully remove both dops and stone from the transfer fixture.

Place the end of the cone dop into either side of the transfer fixture, allowing the flat dop to hang midair. Wrap the stone with a strip of wet paper towel to prevent the wax in the cone dop from softening and allowing the stone to move while the flat dop is heated, or the stone may fall off the dop. Let the stone rest until the wax is hard once again.

The initial girdle alignment needs to be checked and, if required, adjusted once the dop is placed in the machine quill. There are too many variables in the transfer process and the machine. These cause rotational angle errors, so it is prudent to



confirm the girdle alignment before you cut the crown.

I found an accessory from The Graves Co. for aligning girdles that I like (#90-067 Girdle Aligner, \$7.18). To align the girdle, put the dop in the quill and secure it. Secure the master lap using the lap hold down. Place the girdle aligner on top of the master lap. Use a Sharpie® permanent marker to "paint" the girdle facets.

Set the angle of inclination to 90° and index to a girdle facet. Lower the quill block so the girdle facet is just touching the top edge of the girdle aligner. Wipe the stone left to right across the edge of the girdle aligner. Look at the resulting mark on the girdle facet. If it crosses the facet edge to edge, the girdle is aligned. When the girdle is marked on only one side of the girdle facet, adjust the radial cheater wheel until the mark is edge to edge.

The numbers on the cheater are simply place holders when the girdle is aligned by moving the cheater. Whatever number is showing at the cheater wheel witness mark is our "reference zero". When the witness mark is between numbers on the cheater wheel, mark the space with a pencil or Sharpie. When cutting and polishing the table using a 45° table adapter, return the cheater to "machine zero", then return to "reference zero" in order to finish the crown facets. Note the position and direction the cheater was moved from machine zero to reference zero on an index card. ♦

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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Natural American TURQUOISE



MIKE WADDELL PHOTO

Lone Mountain turquoise nodules can be solid blue or have a fantastic spider-web pattern, and is highly regarded for its ability to hold color and not fade.

The Lone Mountain Mine Produces Quality Gems

Story by James Nalley

The story of turquoise has been associated with the landscape, history, and native Indian tribes of the American Southwest. As William Turnbaugh states in his book *Indian Jewelry of the American Southwest* (Schiffer Publishing, 1997), "Turquoise is a legendary stone; it represents the sky ... to look upon the Sky Stone in the morning was to bring success for the rest of the day; it brought good health and happiness; it represented the heroes and the deeds and the settings of the creation myths. It was a gift from the Gods and a gift to the Gods" (p. 59). For generations, this symbolic stone was essential to the social and ceremonial aspects within each tribe and it is still present

to this day. The population of the tribes of the Rio Grande Pueblo is divided into two main groups: the Summer and Winter people, also known as the Squash and Turquoise people. According to the Navajo myth, "Bluebird wore a beautiful robe of blue beads and on his head a bright blue cloud. In his right hand he held a rattle made of blue turquoise and in his left a stalk of blue corn. And when the people asked what he had brought, Bluebird said; 'I bring you blue sky, summer rain and soft corn.'" Today, the proud people of the Southwest wear turquoise in their everyday activities and the young are often adorned with tiny turquoise earrings to honor and continue the tradition.

BELOW: Thousands of artifacts have been excavated from the Chaco Canyon archaeological site since 1896.

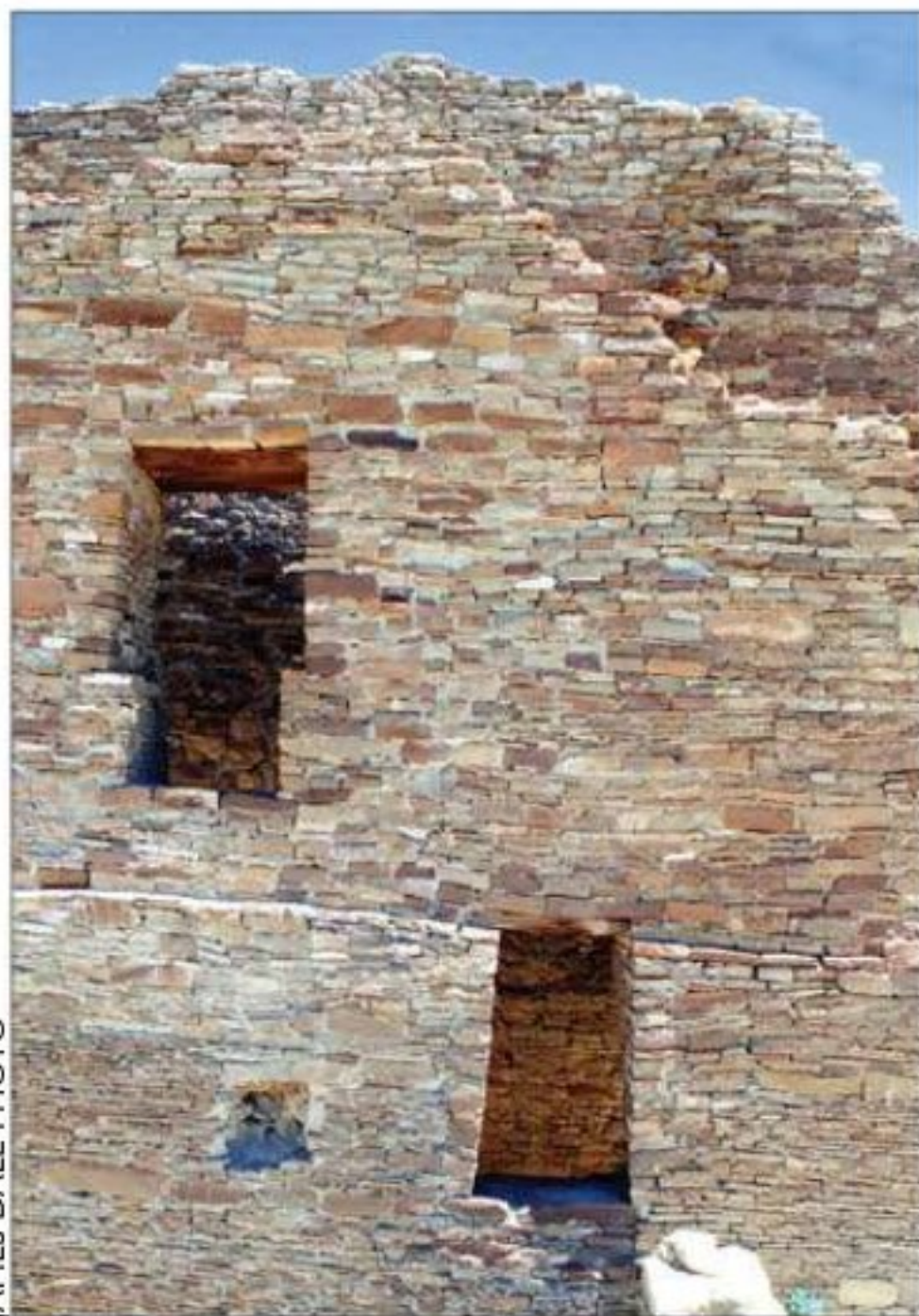
RIGHT: Jewelry artist Lee Yazzi chips away at the wall of the Lone Mountain open pit searching for more spider-web turquoise.

CENTER RIGHT: Pueblo Bonito, one of the largest structures within Chaco Canyon, included approximately 600 rooms that stretched over three acres.

BOTTOM RIGHT: Many jewelers are buying old turquoise jewelry just to harvest the stones. This silver belt buckle by Lee Yazzi is made with gem-quality Lone Mountain stone.



MIKE WADDELL PHOTO



JAMES DALE PHOTO



BOB ADAMS PHOTO

Turquoise can be a flawless blue or laced with matrix. Its hardness may indicate gemstone quality, or it may be soft and permeable. Its colors range from the yellow greens called Orvil Jack to the sky blue of Sleeping Beauty. You will even see a deeper color of indigo called Lander Blue. The dry and rocky landscapes of the Desert Southwest are the perfect environment for turquoise. Created over centuries by groundwater penetrating through igneous rock, turquoise is a phosphate of aluminum and copper. These trace elements are deposited in fissures and pockets in the host rock to form turquoise. In general, when the copper content is high, the stone is bluer, and when the iron amount is high, the stone tends toward green.

Turquoise miners begin the mining process in search of these particular colors. Using a large bulldozer to remove the topsoil, which is called "overburden", the miner is on the watch for any indication of turquoise. Once a pocket or vein has been discovered, the larger equipment is replaced



MIKE WADDELL PHOTO

by a smaller piece of equipment that provides more accurate dirt removal. When a turquoise vein is exposed, the miners utilize air hammers to drill down the sides and free more of the vein. As the removal process requires more delicacy, the miners begin using hand picks and other small tools to carefully remove the turquoise. Then they clean, process and sort the stones at another location.

Located in northwestern New Mexico, Chaco Canyon is a well-preserved archaeological site from which thousands of artifacts have been excavated. The settlement was the center for the production and trade of turquoise from approximately 850 to 1250 CE. Within this relatively small area, Pueblo Bonito was one of the largest structures; it included approximately 600 rooms that stretched over three acres. From 1896 to 1899, excavations by archaeologists from the American Museum of Natural History in New York City uncovered turquoise in nearly every space. Much of the turquoise discovered was later determined to have originated from the Cerrillos Mining District, which is 125 miles east of Chaco Canyon and 20 miles south of Santa Fe, New Mexico. The Spanish name Cerrillos means "little hills", in reference to the landscape. There is also evidence of mining in the area as early as 500 CE.

One of the area's most productive mines is Mount Chalchihuitl, a Nahuatl name that translates into "blue stone". A name like this also suggests that the trade of turquoise extended as far as Oaxaca, Mexico, long before the arrival of the Spanish in 1519. Evidence also shows that Cerrillos turquoise was used in the crowns of the Mixtec royalty, as well as on the pendants of Montezuma II, the last Aztec emperor. Over the centuries, several different groups were in charge of the Cerrillos mines, ranging from the original Indian tribes to Spanish colonists and ultimately the American mining companies. By the late 1800s, the Tiffany mine had produced well over \$2 million worth of turquoise from the Cerrillos region.

EYE FOR NATURAL TURQUOISE

As with any precious stone, purchasing turquoise requires caution. Due to the rarity of natural American turquoise and the consequent rise in price, many claim that their pieces are authentic and natural when they might not be at all. It is often difficult to prove whether a stone's color and quality is true and good. To make things worse,



A rare discovery has been the "fossil turquoise", in which plant fossils have dissolved away, leaving cavities that are then filled with turquoise deposits.

the techniques of dying and stabilizing turquoise with epoxy, resin or waxes have improved. These procedures are usually done to mask the stone's natural softness. Turquoise may also be reconstituted using a mixture of powdered turquoise and plastic. Called "block turquoise", this stuff has been around since the 1930s. The technologies used today have become so complex that it is almost impossible to tell whether a stone is natural or reconstituted. Fortunately, there are three reliable and simple tests you can use to check the authenticity of a stone:

Hot Needle Test: If the stone is natural, then the tip of a hot needle should char the turquoise. If it melts the stone, then the stone has either been stabilized with plasticizing substances or the stone is simply not real.

Knife Scratch Test: Turquoise can usually be scratched by a steel blade. If the scratched edges look tattered under magnification, then the stone is probably a real one. But if the edges look smooth, the stone is probably stabilized.

Ultraviolet Light Test: Turquoise that has been plasticized often fluoresces under ultraviolet light.

Unless you have the specific access and freedom to perform any of these tests on a variety of stones, they are impractical. But before purchasing Indian jewelry, make sure you are dealing with a trustworthy merchant. Technologies are so advanced that it has become easy to treat other types of stone, including jade, coral, and mother-of-pearl, to look like natural turquoise, and unscrupulous dealers will try to pass it off as such to their customers.

By 1900, New Mexico was the largest producer of turquoise in the United States, with the most of the stones originating from the Cerrillos mines. But by 1910, Nevada's turquoise production had surprisingly passed New Mexico's. Competition between the two states only lasted until 1950, by which time most of the great turquoise mines throughout the West had shut

down. Three main reasons are usually mentioned. First, many of them had simply become depleted. Second, many were abandoned because of the strict regulations and economics. As Susan Arritt says in her essay "Exploring the Miracle of Turquoise", "Some blame strict occupational safety regulations. Others point to the \$50,000 to \$100,000 cash bonds that must be paid in advance to ensure that land and vegetation are reclaimed."

The third reason was competition from China. Noted turquoise trade experts Joe Lowry and Joe Dan Lowry, who run the Turquoise Museum of Albuquerque, say, "Since the 1980s, China has become the largest source, accounting for as much as half of today's worldwide turquoise trade. ... Chinese turquoise is more affordable than American turquoise because the supply is abundant, labor costs are lower, and there are fewer environmental restrictions governing mining in China. ... [M]ajor deposits are found in the Hubei Province north of Xian."

The difference between the mines of the American Southwest and of China is that the Chinese turquoise is not identified by source name; it is simply called "Chinese turquoise". Today, China is continuing to produce a great amount of turquoise, mostly from the Ma'ashan mine, northwest of Shanghai, and from Hubei Province. Competition has become fierce because the colors of Chinese turquoise are similar to those from the closed mines in Nevada. But the big difference is that Chinese turquoise is usually stabilized with a clear epoxy that aids in hardening the stone for jewelry use. The major side effect of the application is that stabilized stone is more likely to change color over time.

To make matters worse for the U.S. market, China has also lowered its prices to the point that they dominate the market based on affordability, though not quality. The latest statistics show that China still accounts for 80% of the stone on the U.S. market.

Even though China continues to dominate the world turquoise market, many artists and collectors still prefer turquoise originating from the remaining handful of mines operating in the American Southwest. They are even paying top prices for these rare, gem-quality stones. The operating mines include Carico Lake in Lander County, Nevada; the Sleeping Beauty in Globe, Arizona; and the Kingman, also in Arizona. Mines that continue to yield small

amounts, of turquoise that is high in quality, mining has continued on a much smaller scale for specific buyers.

The Lone Mountain Mine in Nevada, which reopened in 2000, is one such mine. Gene Waddell, one of the owners of the mine, has brokered turquoise to jewelers for over 30 years. A highly recognized expert on turquoise, Gene was raised in the Indian jewelry and art business that was started by his parents in 1938. At that time, B.C. Waddell, Gene's father, owned the West Y Trading Post in Gallup, New Mexico. He had once owned the Fox Turquoise mine in Nevada, as well.

During World War II, B.C. was a copper miner at the Castle Dome mine in Yuma County, Arizona. One day, he noticed turquoise on the ground at the mining site and began selling it. Gene says, "My dad sold Castle Dome turquoise to C.G. Wallace at Zuni Pueblo, who in turn sold it to Leekya Deyuse for his carvings." The senior Waddell brokered and sold turquoise of high quality to many Native American jewelers, focusing only on the mines that were still producing in the 1950s and '60s, which included Lone Mountain.

After college, Gene joined the business and started selling turquoise throughout the Southwest. It was in these early years of learning the trade that he built close professional relationships with many jewelers, whom he would later represent at the Waddell Trading Co., formed by Gene and his wife, Ann, in 1973. By the 1980s, they were focusing on the finest Indian jewelry and developed a reputation of dealing with the best Hopi and Navajo artists. In 2006, Gene opened a gallery in Scottsdale, Arizona, and he continues to represent many award-winning contemporary Native American artists to this day.

About the scarcity of American turquoise on the market, Gene says, "Many jewelers are buying old pieces just to harvest the stones. Even if the silverwork is mediocre, they will still pop out the good stones to re-use them in their own work. Collectors want great natural American turquoise and it is found from Lone Mountain."

Among contemporary jewelers, Lone Mountain turquoise is highly valued for its rich colors and hardness. The mine is located in Esmeralda County, Nevada, a little west of Tonopah. Like many other turquoise mines, it was originally operated as an underground tunnel-and-shaft operation. Reaching depths of 250 feet or more, it eventually trans-



MIKE WADDELL PHOTO

Jewelry artist Lee Yazzie (left) and Gene Waddell, one of the owners of the Lone Mountain turquoise mine, have collaborated for over 30 years.

formed into a series of haphazard tunnels made by miners in search of precious veins of turquoise.

The turquoise nodules can be solid blue or have a fantastic spider-web pattern. Another rare discovery has been the "fossil turquoise", in which plant fossils have dissolved away, leaving cavities that have been filled with turquoise deposits. Along with hardness, the turquoise is highly regarded for its ability to hold color and not fade. In fact, the Lone Mountain turquoise in many pieces of jewelry that were created as early as the 1930s is just as blue as when they were made.

The original Lone Mountain mine was claimed back in 1920 by a man named Lee Hand, who named it the Blue Jay Mining Lode. Later, after seeing that so many other mines had also been named Blue Jay, Hand changed the mine's name to Lone Mountain. In 1927, Bert Kopenhaver, who had leased the mine from Hand, found the beautiful spider-web turquoise at a depth of about 40 feet. This discovery made it one of the top mines in the Southwest, producing a great variety of turquoise, including some of the finest examples of spider-web turquoise.

In the 1960s, Lone Mountain was converted from large tunnel to small open-pit operations. It continues to be mined in this fashion today. Gene says, "In 1979, I purchased Lone Mountain with the Kind family of Austin, Texas, and Santa Fe, New Mexico. I have had several different partners over the years and the property has only been mined six out of the last 28 years. The reason for this is the expense of mining and the regulations for small mine owners makes it very difficult to be profitable. But with the value of the classic American turquoise mines being so great, it is feasible for this great mine to once again be of great value."

But even for this mine, the yield of high-grade turquoise has been quite limited. Gene estimates that the Lone Mountain

mine has only produced approximately 300 pounds of gem-quality turquoise over its entire lifetime. "When the mine was producing in the 1980s, he says, "we might mine as much as 300 pounds of turquoise a month, but of that, maybe only 3 to 5 pounds would be gem quality." A large, but long and narrow open pit facing north-south now marks the primary mine excavation. It is open periodically, depending on weather, and is usually in operation from approximately June through October.

Today, Lone Mountain's beautiful blue spider-web variety still gives the rare and valuable Lander Blue a run for its money. In a partnership that is both marketable and personally fulfilling, it is not unusual for a turquoise broker like Gene to work closely with artists who create fine pieces for them. One of these artists is Lee Yazzie of Gallup, New Mexico. "I feel blessed that I have a lot of ideas, a lot of designs that I haven't even made yet," says Lee. "And they are still coming. But I owe a lot to Gene Waddell, who has been a silent partner of mine. We've worked together and he's been so supportive of me for over 30 years. Our friendship and mutual respect have allowed me to create the things I create."

Raymond Yazzie, also a Navajo jeweler and gallery owner from Gallup, uses Lone Mountain nuggets in his work. A master lapidary, Raymond gives credit to his brother Lee for getting him started in jewelry trade. Initially hired to clean the lapidary sticks for his brother, the Raymond soon became Lee's apprentice. When he was 14, Raymond won the Best of Show at the 1973 Gallup Inter-Tribal Indian Ceremonial in Gallup. He designed and inlaid a silver concha belt made by Hopi jeweler Manuel Hoyungwa that appeared in the August 1974 issue of *Arizona Highways* along with two of Lee's bracelets, putting both brothers on the jewelry map. Today, the Yazzies teach younger jewelers and have been a vital part of the community of artists in the Gallup area.

Turquoise is everywhere in the streets and plazas of the American Southwest. Many different types of this precious stone can be identified on sight. Perhaps you could spot a spider-web piece from the Lone Mountain mine, but you will certainly realize that, in this part of the country, turquoise is symbolically more precious than gold and a beautiful, enduring expression of Native American culture. 💎

Mineral Society; Dutchess County Fairgrounds, Rte. 9; Sat. 10-5, Sun. 10-4; adults \$5, seniors \$4, students \$2, children under 12 free; special exhibits by New York State Museum and Vassar College, more than 30 dealers, free rocks for kids, fossils, minerals, gems, jewelry, beads, books, lapidary demonstrations, fossil and fluorescent exhibits; contact Carolyn Reynard, (845) 471-1224; e-mail: sunstone33@verizon.net; Web site: www.mhvgms.org

23-25—HILLSBORO, OREGON: 31st annual show and sale; Portland Regional Gem & Mineral Show; Washington County Fairplex, 873 NE 34th, across from Hillsboro Airport on Cornell Rd.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$5, children under 12 free with adult; dealers, member exhibits, special exhibits, demonstrations, Kids' Corner, door prizes, silent auction, raffle; contact Joshua Heater, 22563 South Day Hill Rd., Estacada, OR 97023, (971) 570-5456; e-mail: j.frankray@hotmail.com; Web site: www.portlandregionalmineral.org

23-25—SANDY, UTAH: Wholesale and retail show; Gem Faire Inc.; South Towne Exposition Center, 9575 S. State St.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

23-25—SANTA FE, NEW MEXICO: Annual show; Palace of the Governors, New Mexico History Museum; Palace of the Governors courtyard, 113 Lincoln Ave.; Fri. 9-7, Sat. 9-4:30, Sun. 9-4:30; free admission; dealers, specimens, talks, demonstrations, contact Inessa Williams, 113 Lincoln Ave., Santa Fe, NM 87501, (505) 476-5106; e-mail: inessa.williams@state.nm.us; Web site: www.nmhistorymuseum.org

24—COLUMBUS, OHIO: Wholesale show; Rings & Things; Courtyard by Marriott Columbus West, 2350 Westbelt Dr.; Sat. 1-5; free admission; gemstones, bead strands, findings, stringing supplies; contact David Robertson, PO Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/city.php?city=Col

24-25—COLUMBUS, NEBRASKA: Annual show; Loup Valley Gem & Mineral Club; Knights of Columbus Hall, 3115 6th St.; Sat. 9-6, Sun. 10-5; adults \$1, children under 10 free with adult; contact Ben Vrana, 3576 Linden Dr., Columbus, NE 68601, (402) 563-3265; e-mail: mlempe68601@yahoo.com

24-25—FRANKLIN, NEW JERSEY: 55th annual show; Franklin Mineral Museum; 50 Washington Ave.; Sat. 9-6, Sun. 10-5; adults \$7, children \$4; expanded fluorescent area; contact Pat Seger, 22 Palomino Trail, Vernon, NJ 07462, (862) 266-4472; e-mail: pesolutions.minerals@gmail.com; Web site: www.franklinmineralmuseum.com

24-25—MISSOULA, MONTANA: Show, "Amber"; Hellgate Mineral Society; Ruby's Inn and Convention Center, 4825 N. Reserve St.; Sat. 9-6, Sun. 10-5; contact Bob Riggs, 14 Holiday Ln., Missoula, MT 59801, (406) 543-3667

24-25—MONTEREY, CALIFORNIA: Annual show; Carmel Valley Gem & Mineral Society; Monterey Fairgrounds, 2004 Fairgrounds Rd.; Sat. 10-6, Sun. 10-5; adults \$3.50, children free with adult; more than 50 displays, gems, minerals, fossils, 15 dealers, jewelry, cut and uncut gemstones, beads, crystals, rough and polished rocks, mineral specimens, fossils; demonstrations, jewelry making, sphere making, rock grinding, polishing, silent auction, kids' activities; contact Janis Rovetti, 1047 Roosevelt St., Monterey, CA 93940, (831) 372-1311; e-mail: janis12@sbcglobal.net; Web site: cvgms.com


24-25—RICHARDSON, TEXAS: Wholesale and retail show; The Bead Market; Richardson Civic Center, 411 W. Arapaho; Sat. 10-5, Sun. 10-4; free admission; gemstones, glass beads, lampwork, vintage beads and buttons, Swarovski Elements, crystals, pearls, bone beads, jewelry, books, tools; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

24-25—SHARONVILLE, OHIO: Show and sale; BeadStreet USA; Sharonville Convention Center, 11355 Chester Rd.; adults \$5, children under 12 free; vintage beads, lampwork, gemstones, Swarovski crystals, seed beads, fibers, precious metal findings, jewelry, tools, equipment, educational materials; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

24-25—SOUTH SIOUX, NEBRASKA: 46th annual show; Siouland Gem & Mineral Society; South Sioux City Senior Center, 1501 W. 29th St.; Sat. 9-6, Sun. 10-4; adults \$1.50, students 12 and older 50 cents, children under 12 free; exhibits, four dealers, agates, rough and polished speci-

continued on page 66

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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.

While reading Marcel Tolkowsky's 1919 book *Diamond Design* (www.folds.net/diamond_design/index.html) and Al Gilbertson's *The American Cut: The First 100 Years* (GIA, 2007), I realized the significance of Tolkowsky's contributions to the science and art of diamond and colored stone cutting. Many other people also played important roles in developing the American Cut diamond, which in many circles is still considered the best of diamond cutting in the world. Using as much information as I could find in the two books, I filled in the missing information and came out with the proportions for one of Marcel's "ideal" cuts. I cut it from cubic zirconia and it will be an interesting addition to my collection of historically significant diamond replicas.

—Jim Perkins



Tribute to Marcel Tolkowsky's Ideal Diamond

CAD by Jim Perkins, jimperkins@zoominternet.net

© January 2011

Designed to be cut in cubic zirconia.

Angles for R.I. = 2.160

57 + 16 girdles = 73 facets

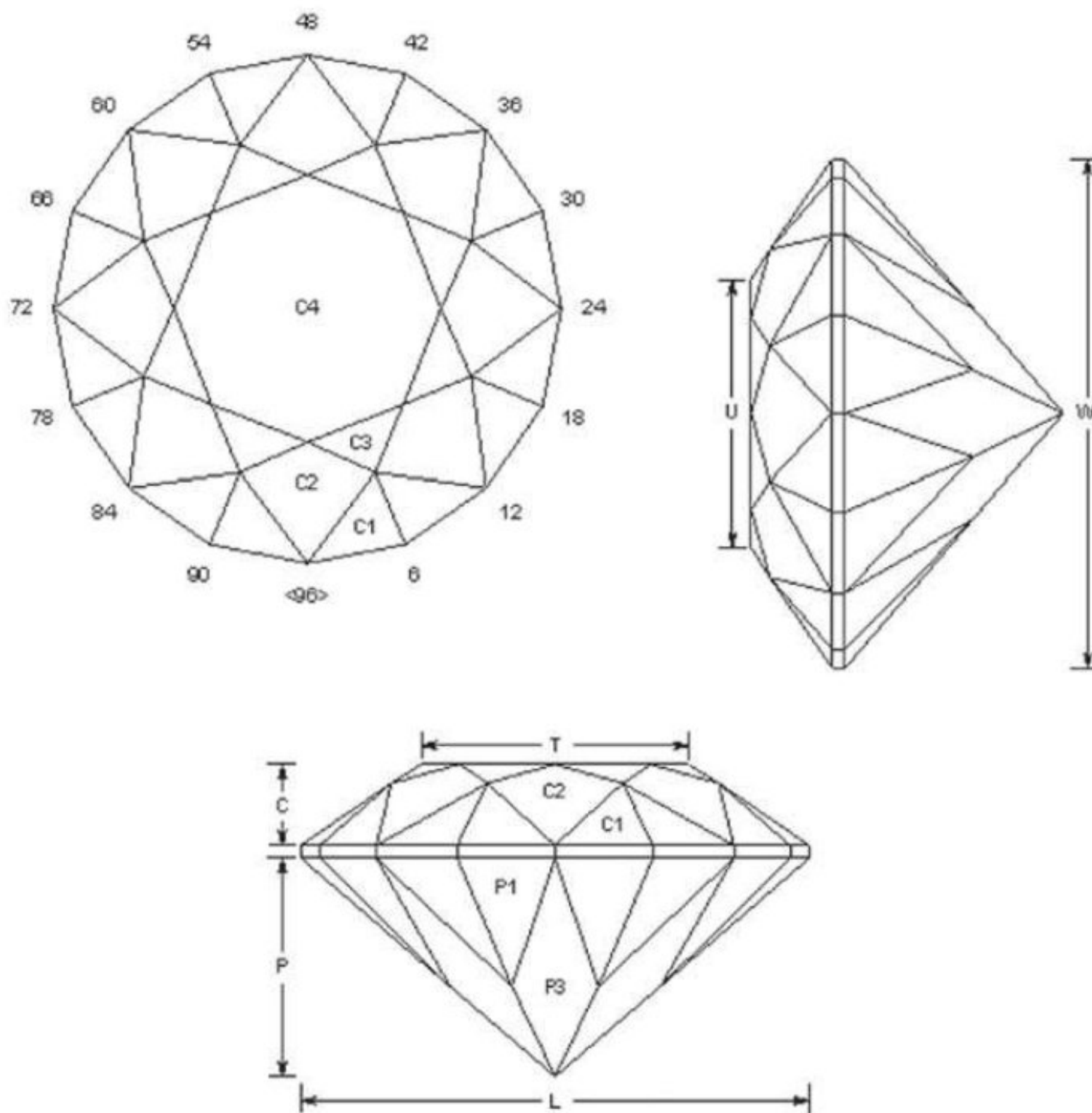
8-fold, mirror-image symmetry

96 index

L/W = 1.000 T/W = 0.530 U/W = 0.530

P/W = 0.431 C/W = 0.160

Vol./W³ = 0.211

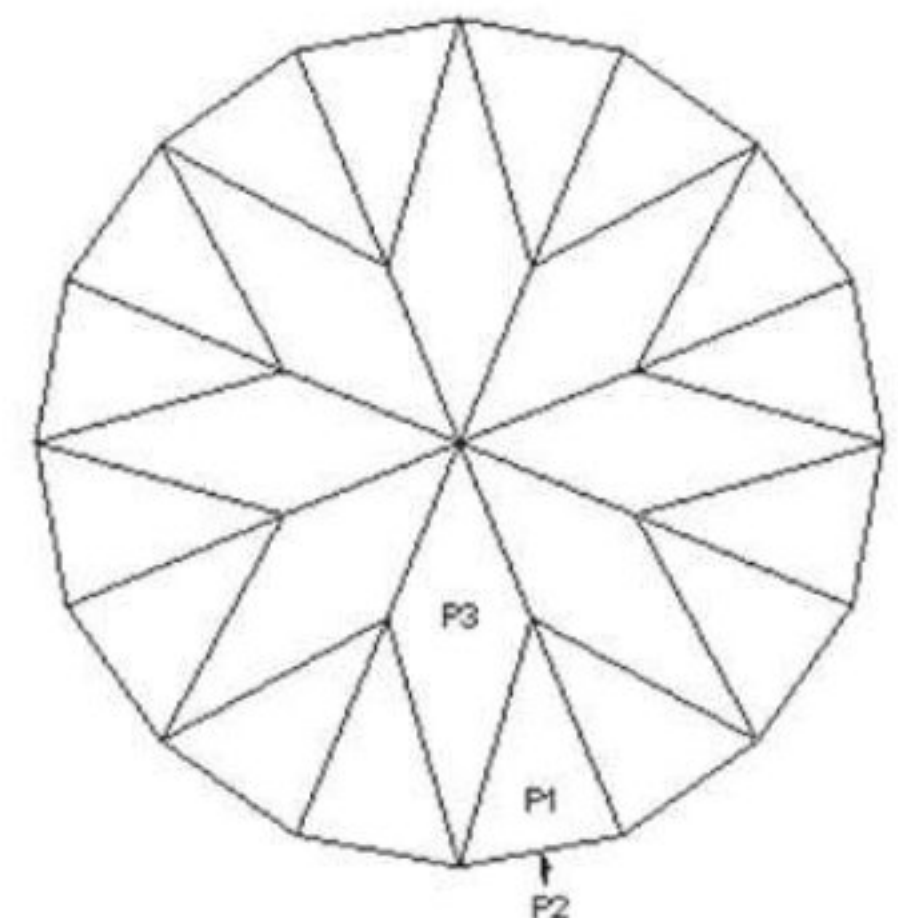


PAVILION

P1	43.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93	Create a center point
P2	90.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93	Set size; polish girdle facets
P3	40.75°	96-12-24-36-48-60-72-84	PCP; GMP

CROWN

C1	39.20°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93	Set girdle height
C2	34.30°	96-12-24-36-48-60-72-84	GMP
C3	20.40°	06-18-30-42-54-66-78-90	MP @ C1 - C1
C4	0.00°	Table	MP @ C2



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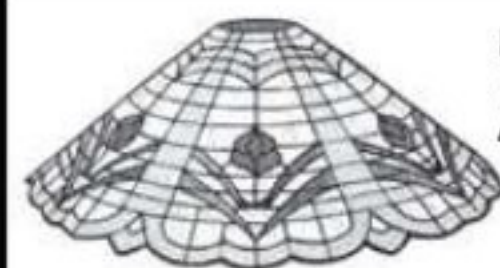
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Show Dates from page 63

mens, gems, beads, geodes, minerals, faceted jewelry, fossils, door prizes, spin the wheel, silent auction, displays, Siouland dinosaur hunters exhibits; contact Bob Powell, (712) 378-2775

24-25—TRAVERSE CITY, MICHIGAN: Annual show; Grand Traverse Area Rock & Mineral Club; History Center of Traverse City, 322 Sixth St.; Sat. 10-5, Sun. 11-4; dealers, rocks, gems, minerals, jewelry, demonstrations, jewelry making, rock cutting and polishing, kids' area; adults \$2 (includes Con Foster Museum entry), children under 12 free with adult; contact Lauren Vaughn or Cynthia Vaughn, (231) 276-6150; e-mail: Maple2b@aol.com

SEPTEMBER-OCTOBER 2011

30-2—DEL MAR, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; Del Mar Fairgrounds, 2260 Jimmy Durante Blvd.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

30-2—ANCASTER, ONTARIO, CANADA: Annual show; Robert Hall Originals; Ancaster Fairgrounds, 630 Trinity Rd.; Fri. 9:30-6, Sat. 10-6, Sun. 10-5; adults \$6, children under 12 free; jewelry, crystals, fossils, rock specimens, more than 30 dealers, free seminars on rocks, fossils and crystals, jewelry class signups; contact Robert Parry, 138 Sugar Maple Rd., St. George, ONT N0E 1N0, (519) 448-1236; e-mail: robert@roberthalloriginals.com; Web site: www.roberthalloriginals.com

30-2—DALLAS, NORTH CAROLINA: Show; Gaston Gem, Mineral & Faceters Club; Gaston County Park (Biggerstaff Park), Hwy. 279; Fri. 9-6, Sat. 9-6, Sun. 9-5; free admission; raffles, grab bags, water sluice, mineral and fossil specimens, gemstones, beads, cutting material, wire wrapping, jewelry; contact Jackay McDaniel, (704) 865-6748; e-mail: jackaythegrizz@aol.com

OCTOBER 2011

1-2—JACKSONVILLE, ARKANSAS: 39th annual show; Central Arkansas Gem, Mineral & Geology Society; Jacksonville Civic Center, 5 Municipal Dr.; Sat. 9-5, Sun. 9-5; free admission; more than 20 dealers, demonstrations, exhibits, door prizes, Kids' Dig, geode cracking, Rock Spin, mineral identification, grand prize; contact Lenora Murray, 218 Old Hwy. 11S, Hazen, AR 72064, (870) 255-3679; e-mail: lenoramur@aol.com; Web site: central-arrockhound.org

1-2—JEFFERSON, WISCONSIN: 39th annual show; Rock River Valley Geological Society; Jefferson County Fair Park, Jackson Rd. and Peurner Rd.; Sat. 10-5, Sun. 10-4; dealers, minerals, rocks, fossils, gems, jewelry, demonstrations, wire wrapping, faceting, cabochon cutting; contact Robert Schweitzer, (920) 674-2544

1-2—LEXINGTON, KENTUCKY: 21st annual show; Rockhounds of Central Kentucky (ROCK); Kentucky National Guard Armory, 4301 Airport Rd.; Sat. 10-6, Sun. 12-5; adults \$1, children 6-12 50 cents (\$3 per family), Scouts in uniform free; dealers, minerals, jewelry, equipment, club sales and exhibits, Kentucky agate, door prizes, kids' quarry, silent auctions, fluorescent display, grand prize; contact Allen Ferrell, (859) 277-2469; e-mail: kyrock2010kentucky@yahoo.com; Web site: www.lexingtonrockclub.com

1-2—OMAHA, NEBRASKA: 56th annual show; Nebraska Mineral & Gem Club; Westside Community Center, 108th and Grover St.; Sat. 9-6, Sun. 10-5; contact Tim Kautsch, (402) 397-9606; Web site: www.nerockgem.us

1-2—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

1-2—STAFFORD, TEXAS: Wholesale and retail show; The Bead Market; Stafford Centre, 10505 Cash Rd.; Sat. 10-5, Sun. 10-4; free admission; dealers, glass beads, seed beads, gemstones, pearls, lampwork, PMC, Swarovski Elements, crystals, jewelry, vintage beads and buttons, books, tools; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

1-2—WALNUT CREEK, CALIFORNIA: Show, "Contra Costa Crystal Fair"; Pacific Crystal Guild; Civic Park Community Center, 1375 Civic Dr.; Sat. 10-6, Sun. 10-4;

adults \$6, ages 12 and under free; 30 dealers, minerals, gems, crystals, beads, metaphysical healing tools; contact Jerry Tomlinson, PO Box 1371, Sausalito, CA 94966, (415) 383-7837; e-mail: jerry@crystalair.com; Web site: www.crystalair.com

1-2—WAYNESBORO, VIRGINIA: Annual show; Shenandoah Valley Gem & Mineral Society; Kate Collins School, 1625 Ivy St.; Sat. 10-6, Sun. 12-5; adults \$1, children under 6 free; jewelry, amber, gemstones, cutting rough, slabs, cabs, crystals, display pieces, beading material; contact Roland Stetler, 73 Avalon Ln., Lexington, VA 24450, (540) 463-6098; e-mail: svgem-min-club@live.com

2—WEST HENRIETTA, NEW YORK: Show; Rings & Things; RIT Inn & Conference Center, 5257 W. Henrietta Rd.; Sun. 12-5; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

5—DENVER, COLORADO: Retail show; Rings & Things; Ramada Plaza Denver North, 10 E. 120th Ave.; Wed. 12-5; free admission; gemstones, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact David Robertson, PO Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/city.php?city=Den

7-9—INDIANAPOLIS, INDIANA: 13th annual show, "Fall Indianapolis Gem, Mineral & Jewelry 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 gems, stones, 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 demonstrations, wire wrapping classes; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

7-9—PLEASANTON, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; Alameda County Fairgrounds, 4501 Pleasanton Ave.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

7-9—SEQUIM, WASHINGTON: Show, "Nature's Treasures"; Clallam County Gem & Mineral Association; Boys & Girls Club, 400 W. Fir St.; Fri. 10-5, Sat. 10-5, Sun. 10-2:30; contact Terry Stockman, PO Box 98, Sequim, WA 98382; e-mail: terlin@wavecable.com; or Foster Thompson; e-mail: fostert@olympen.com

7-10—MOAB, UTAH: Annual show; Moab Points & Pebbles Rock Club; Old Spanish Trail Arena, 3641 S. Hwy. 191; Fri. 10-7, Sat. 10-7, Sun. 10-4; free admission; dealers, field trips, spin wheel, door prizes, displays; contact Jerry Hansen, PO Box 186, Moab, UT 84532; e-mail: moabrockclub@live.com; Web site: www.moabrockclub.net

8-9—AUSTIN, TEXAS: Wholesale and retail show; The Bead Market; Travis County Expo Center, 7311 Decker Ln.; Sat. 10-5, Sun. 10-4; free admission; dealers, lampwork, glass beads, vintage beads and buttons, bone beads, PMC, silver, findings, books, tools, jewelry, Swarovski Elements, crystals, pearls; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

8-9—BILLINGS, MONTANA: Annual show; Billings Gem & Mineral Club; Billings Hotel & Convention Center, 1123 Mallowney Ln.; Sat. 10-5, Sun. 10-4; contact Lynn Edwards, (406) 855-3675; e-mail: bentlyn77@yahoo.com

8-9—FORT WORTH, TEXAS: Annual show; LMRA Stone Steppers; Lockheed Martin Recreation Association, 3400 Bryant Irvin Rd.; Sat. 9-6, Sun. 9-6; free admission; rocks, gems, minerals, flinters, prospecting equipment, GPAA, jewelry, pottery, stained glass, children's activities; contact Steve Shearin, 860 Stafford Station Dr., Saginaw, TX 76131, (817) 733-5368; e-mail: steve.l.shearin@lmco.com

8-9—MARYSVILLE, WASHINGTON: 37th annual show, "Rocktoberfest"; Marysville Rock & Gem Club; Totem Middle School Cafeteria, 7th St. and State Ave.; Sat. 10-5, Sun. 10-5; free admission; contact Bill Moser, (425) 238-8222; e-mail: bill-jj@comcast.net; or George Haage, (425) 339-2272; e-mail: haag@frontier.net

8-9—ORLANDO, FLORIDA: Annual show; Florida Fossil Hunters; Central Florida Fairgrounds, 4603 W. Colonial Dr.; Sat. 9-5, Sun. 10-4; adults \$4, children \$1; fossils, rocks, minerals, gems, artifacts, children's dig pit, educational exhibits, silent auctions, supplies; contact Valerie First, 223 Ringwood Dr., Winter Springs, FL 32708, (407) 699-9274; e-mail: vjfirst@aol.com; Web site: www.floridafossilhunters.com

8-9—TEMPLE, TEXAS: Annual show; Tri-City Gem & Mineral Society; Mayborn Convention Center, 3303 N. 3rd St.; Sat. 9-6, Sun. 10-5; adults \$3; silent auctions, raffles, door prizes, grand prize, demonstrations, dealers, rough slabs, cabs, faceted gems, equipment, finished jewelry; contact Chip Burnette, 2630 Polk St., Killeen, TX 76543, (254) 630-3573; e-mail: burnette@acweb.com

8-9—TOPEKA, KANSAS: Annual show; Topeka Gem & Mineral Society; Kansas Expocentre AG Hall, 17th and Topeka Blvd.; Sat. 10-6, Sun. 10-5; adults \$4, ages 13-17 \$1, under 13 free with adult; demonstrators, displays, dealers, lapidary supplies, rough rock, beads, jewelry; contact M. Mowry, 1934 SW 30th St., Topeka, KS 66611, (785) 267-2849; e-mail: rock2plate@aol.com

8-9—TRONA, CALIFORNIA: 70th annual show, "Gem-O-Rama 2011"; Searles Lake Gem & Mineral Society; Lapidary and Show Bldg., 13337 Main St. (at Trona Rd.); Sat. 7:30-5, Sun. 7:30-4; free admission; more than 20 dealers, 50 exhibits, geode cutting and sales, demonstrations, gem dig, door prizes, field trips; contact Jim or Bonnie Fairchild, (760) 372-5356; Web site: www.iwvisp.com/tronagemclub/

8-9—WORTHINGTON, PENNSYLVANIA: Show; Kit-Hanne Rock & Gem Club; West Franklin Fire Hall, Linton Alley and Cherry St.; Sat. 10-5, Sun. 10-5; donation requested for admission; six dealers, silent auction, displays, kids' gem mine, door prizes; contact Albert Zabinski, PO Box 456, East Vandergrift, PA 15629; e-mail: kithanne@facetersco-op.com; Web site: www.facetersco-op.com/zabinski/club.htm

8-10—ORLANDO, FLORIDA: Retail show; Florida Fossil Hunters; Central Florida Fairgrounds, 4603 W. Colonial Dr.; Sat. 9-5, Sun. 10-4; adults \$4, children \$1; fossils, rocks, minerals, gems, artifacts, supplies, books, children's dig pit, silent auctions, educational material; contact Valerie First, 223 Ringwood Dr., Winter Springs, Florida 32708, (407) 699-9274; e-mail: vjfirst@aol.com; Web site: http://Floridafossilhunters.com

9—SPOKANE, WASHINGTON: Show; Rings & Things; Mirabeau Hotel Spokane Valley, 1100 N. Sullivan Rd.; Sun. 11-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

13-15—MOUNT IDA, ARKANSAS: 25th annual World Champion Quartz Crystal Digging Contest; Mount Ida Area Chamber of Commerce; Montgomery County Fairgrounds, Fairgrounds Rd.; Thu. 8-3, Fri. 9-3, Sat. 9-3; adults \$80 (\$95 after Oct. 1); dig quartz crystals, keep all you find, meet other miners, maybe win a prize; contact Maureen Walther, Mount Ida Area Chamber of Commerce, Mount Ida, AR 71957, (870) 867-2723; e-mail: director@mountidachamber.com; Web site: www.mountidachamber.com

13-16—FRANKLIN, NORTH CAROLINA: Annual show; South East Gems & More; Whistle Stop Mall Parking Lot, 1281 Georgia Rd. (Hwy. 441N); Thu. 9-6, Fri. 9-6, Sat. 9-6, Sun. 9-4; free admission; dealers, silver and goldsmithing, rough, slabs, fossils, minerals, metaphysical, findings, gemstones, custom jewelry and repairs; contact Mark or Patricia Smith, 751 Hutto Pond Rd., Aiken, SC 29805, (706) 490-4550; e-mail: segems@ymail.com

14-16—COSTA MESA, CALIFORNIA: Wholesale and retail show; Gem Faire Inc.; OC Fair & Event Center, 88 Fair Dr.; Fri. 12-6, Sat. 10-6, Sun. 10-5; adults \$7 weekend pass, children 11 and under free; jewelry, gems, beads, crystals, silver, rocks, minerals; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

14-16—FRANKLIN, NORTH CAROLINA: Retail show; Gem & Mineral Society of Franklin; Macon County Community Bldg., 1288 Georgia Rd.; Fri. 10-6, Sat. 10-6, Sun. 11-4; adults \$3, seniors and students \$2, children 12 and under free; minerals, beads, handcrafted jewelry, rough and cut stones, lapidary equipment, demonstrations, door prizes, gold and silver jewelry, findings, jewelry repairs; contact Linda Harbuck, 425 Porter St., Franklin, NC 28734, (800) 336-7829; e-mail: lindah@franklin-chamber.com

continued on page 71

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14-16—WARREN, MICHIGAN: Annual show; Michigan Mineralogical Society; Macomb Community College Expo Center, South Campus, 14500 E. 12 Mile Rd., Bldg. P; Fri. 9-7, Sat. 10-7, Sun. 11-5; adults \$8 (3 days \$12), seniors (62+) \$5, children (5-17) \$4, Scouts in uniform \$3; Ice Age woolly rhino and giant ground sloth skeletons, school groups Fri., exhibits from Smithsonian Institute, Carnegie Museum, A.E. Seaman Museum, Lizzadro Museum, Royal Ontario Museum, Cincinnati Museum, University of Waterloo, Wayne State University, Cranbrook Institute of Science, lectures, dealer displays, free mineral identification; contact Carol Werner, 3401 Briarhill Rd., Hartland, MI 48353-2406, e-mail: briarhillwerner@comcast.net; Web site: http://michmin.org/

15—MOUNTAIN HOME, IDAHO: Show; Eureka Rock & Gem Club; Senior Citizen Center, 1000 N. 3rd E.; Sat. 9-4; contact Margaret Stallknecht, (208) 740-0937; e-mail: mes tallknecht@yahoo.com

15—SEATTLE, WASHINGTON: Show; Rings & Things; Seattle Center Pavilion, 305 Harrison St.; Sat. 12-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

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15-16—CLIO, MICHIGAN: Annual show; Flint Rock & Gem Club; Carter Middle School, 300 Upland Dr., off Vienna Rd./M-57; Sat. 10-5, Sun. 10-5; adults \$3, children (6-18) \$1.50, Scouts in uniform free; displays, minerals, crafts, lapidary demonstrations, children's activities, dealers, jewelry, gems, minerals, rough specimens, door prizes, raffles; contact Mary Poma, 806 Homedale St., Saginaw, MI 48604; Web site: www.flintrockandgem.org

15-16—COTTAGE GROVE, MINNESOTA: Annual show, "Great Lakes, Great Rocks 2011"; Minnesota Mineral Club; National Guard Training and Community Center, 8180 Beldon Blvd.; Sat. 10-5, Sun. 10-4; adults \$2, children \$1; exhibits, tailgate sales, dealers, programs, kids' corner, demonstrations; contact Phil Gotsch, (763) 717-1641; e-mail: agatephil@earthlink.net; Web site: www.minnesotamineralclub.org

15-16—GRAND JUNCTION, COLORADO: 64th annual show; Grand Junction Gem & Mineral Club; Two Rivers Convention Center, 1st and Main; Sat. 9-6, Sun. 10-5; adults \$3, children 12 and under free with parent; dealers, demonstrations, children's corner, special attractions; contact Wayne McMackin, 191 Lumley, Grand Junction, CO 81503, (970) 640-9271; e-mail: wcmackin@msn.com; Web site: www.grandjunctionrockclub.org

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O N THE ROCKS

The “Good Old Days”

While visiting shows around the country, I enjoy chatting with old-timers who, like me, have been collecting for four or five decades. Long-time dealers are particularly interesting to visit with, as they have been directly involved in the hobby for so many years. Invariably, the conversation turns to the pricing of minerals and reminisces about “the good old days” when minerals were cheap—at least by today’s standards.

To be sure, minerals were exceedingly abundant about 40 years ago. More mines were operating, which ensured a better supply of minerals. Today, environmental inhibitions, insurance restrictions, and the like have put the surreptitious extraction of minerals by miners on the wane. The exception is contract specimen mining, which is so important to sustaining the market today.

In those “good old days”, around World War II, there had been a boom in mining and many mines were still operating or recently closed, but still accessible. Also, many mines were still cutting through the oxide zones of deposits or, at the very least, miners could go back into the old oxide zone workings on their free time and extract specimens to make a little extra pocket change. In some instances, it seemed that the supply of minerals would never end. Certain minerals were found in such quantity that, at any given show, you could choose from dozens of pieces at prices that were as varied as the specimens. That is seldom the case today.

In my experience, the 1970s was a very fruitful decade for collector minerals. Mine operators didn’t seem so paranoid about specimen collecting as long as production was maintained. Miners were able to collect when they were off shift. Certainly, the safety controls in mines today are much stricter than they were 40 years ago. And maybe the competition for specimens among collectors was not as intense as it is today. Whatever the reasons, the ‘70s were what I consider the halcyon days for mineral specimens. Adamite, cerussite, diopside, galena, fluorite, calcite, barite, pyrite and others were available in great abundance. This fact begs the question, If the quantity



The prize cerussites from Tsumeb, Namibia, were the groups of reticulated twins in clusters the size of the palm of your hand.

of specimens was so immense, where have all those specimens gone?

Adamite was readily available 40 years ago, but you don’t see many of these zinc arsenates around these days. The reason for its abundance is simple. After World War II, the Ojuela mine, the source of huge quantities of adamite, shut down. But local miners did not want to lose their income, so they formed a co-operative and continued mining for both ore and specimens! Naturally, mineral dealers quickly realized they could drive to Mapimi, the town at the mouth of Mina Ojuela and other local digs, to obtain specimens. Miners were more than happy to collect and sell flats and flats of minerals, mainly adamite.

The miners could also haul their booty to Tucson or El Paso, Texas, and sell to local wholesalers who, in turn, supplied dozens of dealers and rock shops with the bright yellow-green mineral. At that time, a very simple marketing system existed: Miners supplied wholesalers and wholesalers supplied dealers who sold to collectors at rock shows. That system, which had the effect of maintaining a stable price structure, has been completely destroyed. It’s dog-eat-dog now.

To give you an example of the quantity of adamite that was available in the ‘70s, I can recall visiting a small show in Globe, Arizona,

and chatting with Jack Amsbury and his delightful wife, Hortensia. They were dealers who spent lots of time buying minerals in Mexico and selling them at shows throughout the Western United States. At that time, the Amsburys had just come from Mexico and had some very nice adamites on their table. When I asked about them, Jack pointed to a dozen apple boxes under the table and told me I could take my pick for two bucks a pound! The boxes were stuffed with great specimens of adamite. I had a heck of a time deciding what to spend my few bucks on because the specimens were so good. This situation was repeated again and again at shows and at wholesale shops. Where are those tens of thousands of specimens now?

Mapimi was also the main source—in fact the only source—for legrandite, a bright-yellow zinc mineral that forms in lovely diverging fans and sprays of crystals.

A few legrandites had shown up in 1963 and quickly sold, since they were so rare. But the legrandite supply shut off abruptly because the water table in the mine rose and flooded the area in which it occurred. The water table remained up until the ‘70s, when it gradually subsided and miners were once again able to gain access to the specimens.

On this second dig, miners found that the specimens that had been exposed to the water were badly altered, but as they broke into solid rock, fresh pockets of bright-yellow legrandite were opened and quantities of quality specimens were collected! Flats of fine legrandite issued forth—never as many specimens as adamite, but still plenty for a rare mineral. In 1978, the famous legrandite specimen that I named “Aztec Sun” came to light.

The story of the Aztec Sun is fascinating. Jack was on one of his visits to Mapimi and was shown some average legrandites that were for sale. After much persistence by Jack, the miner pulled a box from under his bed where the best stuff was kept. In that box was the Aztec Sun! After catching his breath, Jack bought it and headed up to Tucson. Driving out of Mapimi on the only road serving the town, Jack passed a mineral dealer he knew

heading into Mapimi. He found out later that the dealer was headed to the same miner's house, knowing about the legrandite Jack had just bought! Jack thought he'd had a really close call in getting that specimen.

When Jack got to Tucson, he called me up and told me I would not believe what he had! After passing through several hands, the Aztec Sun ended up in the Miguel Romero collection in the University of Arizona. This collection was eventually sold to Rob Lavinsky of The Arkenstone. He sold the Aztec Sun to the Houston Museum of Nature and Science, where it now resides.

In 1979, the year after the Aztec Sun discovery, I got a call from Susie Davis, Tucson's leading wholesale dealer. She suggested I bring some fellow collectors down to Tucson because she had a really good batch of yellow mimetite. Off we went the next Saturday and, sure enough, Susie had bought a huge quantity of botryoidal yellow mimetite from Mexican dealer Benny Fenn. She had dozens and dozens of flats of the most beautiful botryoidal mimetite stashed in her small warehouse, which was formerly a bicycle shop.

Benny had discovered the mimetite while mining granular cerussite for its lead content. The walls of the cerussite vein were lined with mimetite, so he collected it and sold it to Susie. I don't know what he got for the mimetite, but Susie was selling the specimens wholesale for \$5.75 a pound! Yes, those were the good old days. Where are all those yellow mimetites now?

As if the adamite and mimetite were not enough to please all collectors, during the '70s, especially 1978, Mexico was producing a cornucopia of wulfenite from several sources. The majority of the wulfenite was being mined from the Erupcion mine at Los Lamentos, Chihuahua. This mine is not too far south of El Paso. It produced vast quantities of bright-orange to chocolate-brown, blocky wulfenite on white onyx calcite in a great contrast of colors. Flats and flats of these lovely and very sturdy wulfenite specimens showed up in Tucson in the '70s.

Again, these specimens were being sold by the pound or by the flat. You could buy a flat of wulfenite containing a half-dozen orange and a like number of brown wulfenite crystal groups. Seems to me the flats I bought cost me \$80 each! What surprises me is that I still see the occasional orange pseudocubic wulfenite in a display, but I haven't see any of the chocolate-brown clusters for years! They simply are not as showy as the orange beauties.

Tsumeb, Namibia, was just as prolific as the mines of Mexico! The first large quan-



This is a choice example of the adamite that came from Mapimi, Mexico, in huge quantities in the 1970s.

tity of Tsumeb diopside to be offered at the Tucson Show was in 1971. This was only a preview of what showed up in 1979, an amazing quantity of the green copper silicate. To recognize this "bonanza", I labeled 1979 "The Year of the Diopside" in my book "A Fifty-Year History of the Tucson Show" (Mineralogical Record, 2004).

The Tsumeb diopside was something else! Diopside was a well-known mineral that was first found in Kazakhstan before 1800. It was later found in the mid-1900s as excellent geodelike specimens in Africa. But diopside remained an uncommon mineral until Tsumeb came online.



This choice example of yellow botryoidal mimetite was mined in 1979 at San Pedro Corallitos (Chihuahua), Mexico.

When mining reached the unique, deep second oxide zone in Tsumeb, diopside was encountered in quantity. Volumes of fine examples of the green copper silicate hydroxide poured forth. I estimated that there had to be upwards of 1,000 flats of diopside in Tucson during the 1979 show. It was everywhere. Dealers had piles of flats in their booths and under their tables. Some tables were covered with boxes of the green mineral, and the wholesale room was loaded with them. The supply seemed endless!

The diopside specimens consisted of tightly packed trigonal crystals with bright luster. Crystals typically measured 1/4 inch to 1/2 inch on an edge, with a few spectacular crystals almost reaching 1 inch long. As mining continued, diopside continued to flow from Tsumeb for a few years, but the supply was nothing like the 1979 bonanza.

And where there was Tsumeb diopside, there were lovely snow-white, twinned

cerussite crystal groups. The vast majority had formed in herringbone-twinning patterns. They were mainly colorless, but some of them had a smoky hue. The prize cerussites were the groups of reticulated twins in clusters the size of the palm of your hand. The most impressive member of the cerussite clan was the "snowflake" clusters of cerussite sixlings. They consisted of twinned crystals that radiated from a central point to form

perfectly oval crystal clusters with spikes of cerussite blades protruding around the perimeter of the "snowflake". These were few in number.

When you look back a half century or so, you may recall the vast amount of scalenohedral calcites and blocky cubic galena that was available in the Tri-State area of Missouri, Kansas and Oklahoma. When I'd visit Rosie Rosenberry or Boodle Lane, two very active Tri-State dealers, I could walk through backyards filled with specimens, many piled on tables, while the really big ones rested on the ground! Not quite so abundant, but far costlier than you could

afford, were specimens of marcasite and sphalerite. Small, bright-red crystals of sphalerite were called "ruby jack", and there were black crystals up to an inch across!

Back in the middle of the 20th century, you could drive through Cave-in-Rock, in Southern Illinois, and it seemed every front porch was lined with thousands of fluorite specimens.

When I first visited Silverton, Colorado, in 1957, the amount of pink rhodochrosite on snow-white quartz was mind-boggling. Right alongside the rhodochrosite was pale-green fluorite in lovely octahedrons. These were being extracted

from the American Tunnel near Gladstone, an abandoned town just outside Silverton. The tunnel had been drifted through veins of quartz loaded with pink rhodochrosite and pale-green fluorite to reach the rich gold veins that lay beyond.

This is just a glimpse at what it was like to collect minerals 40 or more years ago. It certainly explains why they were called "the good old days", but it does not answer the key question: "Where have all those minerals gone?"

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.



Polishing Tips

Mike B.'s request ("Polish Problem", in the May 2011 Field Notes column)—and Jim Perkins' response—deserves an additional comment:

Using a very well worn Last Lap charged with 50,000 diamond powder and Graves extender fluid, I have been quite successful polishing both sphalerite and fluorite faceted gems. The sphalerites were up to 20 carats and the fluorites up to 80 carats. All polishing was with no water and the stones were held to a slow-turning lap for only a very few seconds to avoid heat buildup.

I apply a small amount of diamond powder with a clean toothpick carefully "flicked" onto three or four areas of the lap. Then, a few drops of fluid are spread, with the powder, around the lap with my washed fingertip. I use a small piece of clean paper towel to wipe the facet each time I remove the gem from the lap and check my progress with a loupe.

Prepolishing is always done with a worn 1,200 lap that probably works like a 3,000 lap. Although I do have some wax laps, I've found I have not needed them for these gems.

I've also been successful faceting amber. My largest gem is about a 3.5-cm-long oval now set in a gold basket pendant. Here, copious amounts of water were used while polishing with an aluminum oxide Ultra-Lap. I've shown this gem to many dealers, your editor Bob Jones, museum curators, and experienced faceter friends, and none have ever seen a pattern-cut faceted amber. This was the most difficult gem I've ever cut and is a challenge for even the most experienced cutter.

I am now in my 26th year of teaching faceting at the Eastern Federation's Wildacres Workshop.

—Reivan Zeleznik
Stamford, CT
rzlapidary@yahoo.com

Remembering Roger

I was caught unaware of Roger Pabian's death. I did not know him personally; however, we had exchanged several phone conversations over the years. As I was reading the insert in Field Notes (May 2011), it occurred to me that we rockhounds come into contact with people from all over the world at a show, in the field collecting, on the phone, etc. It made me wonder how many people I have encountered have

passed on, unknown to any but family. The idea of a small spot in your magazine entitled "Remembering" each month would allow family to insert a notice advising us of the death of a rockhound whom we may know or have encountered at some point in our quest for rocks. We all touch each other in some way when we meet; some we may forget and some remain in our thoughts as "that fella I met that day". But when we die, no one out there knows.

—Paul Chapman
via e-mail

Field Notes is the perfect forum for sharing this type of information. Submissions may be as simple as a photo and caption or as long as 200 words. Electronic submissions to editor@rockngem.com are appreciated. *Rock & Gem* has no way to verify death notices, so please do not submit unless you are either a family member or have notified the family beforehand.

—Editor

Buckle Blanks

There used to be a manufacturer called TBS that made great belt buckle blanks from solid brass with recesses for mounting cabs so that the stone and buckle could be ground and polished as a unit (see photo). Unfortunately, TBS is no longer in business.

I have sent numerous e-mails to different companies and foundries looking for a source and most have not even given me the courtesy of a reply. Is there anyone who can point me in the right direction to find this type of buckle?

I am looking for a size in the neighborhood of 2 inches by 3 inches or 2.5 inches by 4 inches, preferably oval shaped.

—Mike Curry
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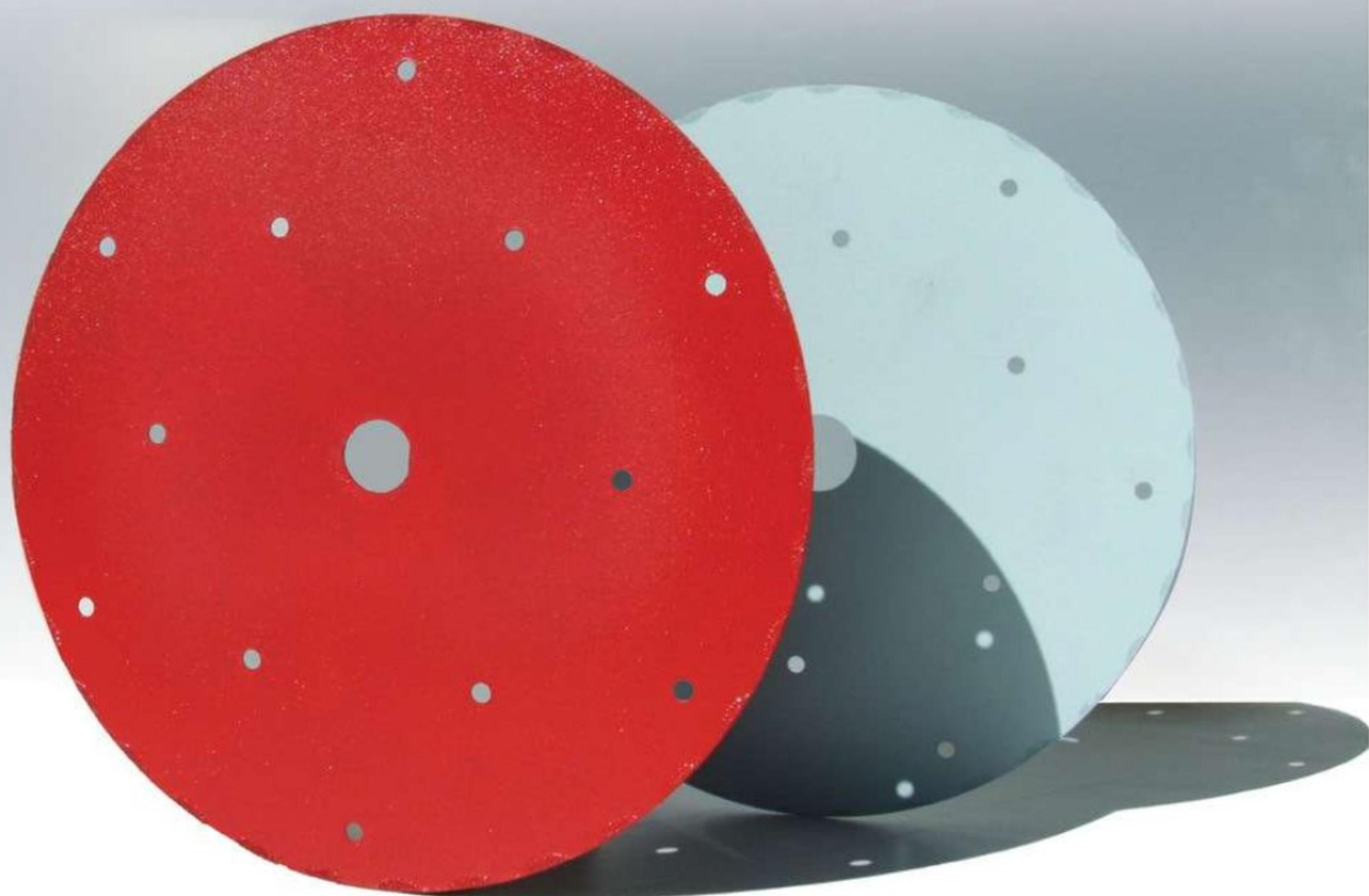


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And add to its long history.

—Ronald J. Yadusky, BS, MD, FACS



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