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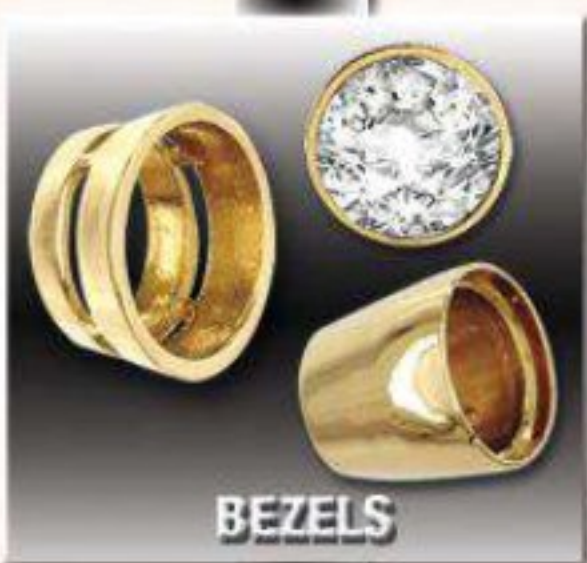
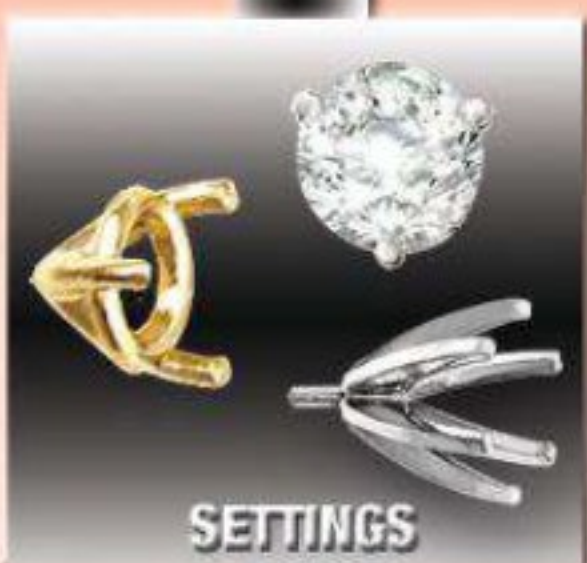


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Rock & Gem

Volume 41, Number 12

December 2011

ON THE COVER

The Red Cloud mine, in La Paz County, Arizona, is one of the state's prolific sources of fine, collectible wulfenite. This specimen was recovered during mining in 1997. (Joseph Budd photo/Tom Hall collection)

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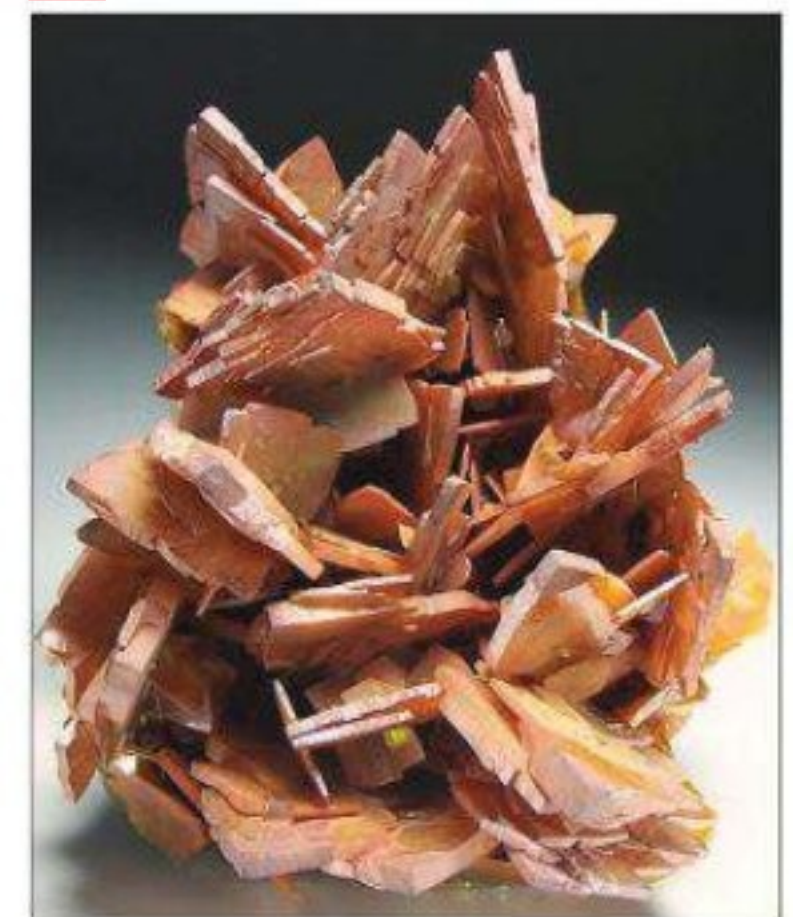
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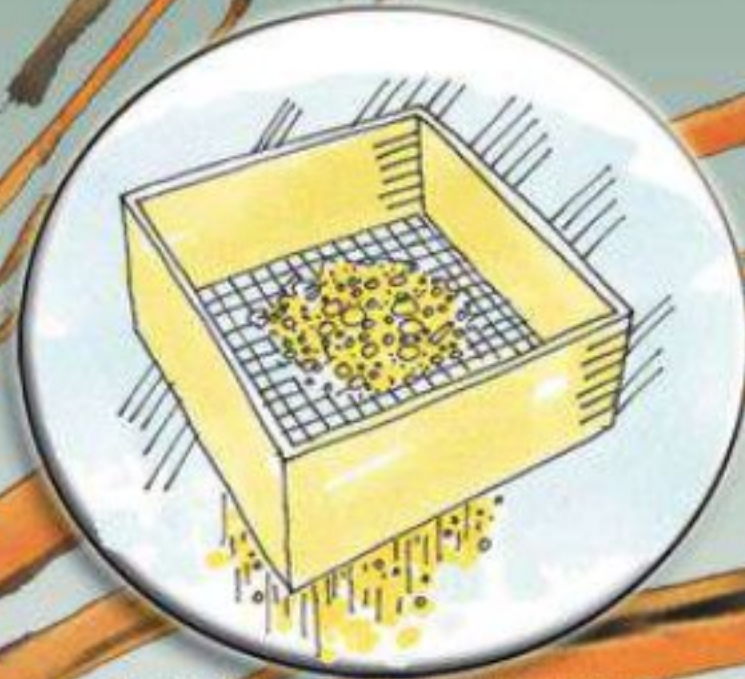
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PICKS & PANS

News and Reviews

Mike Groben Endowed Scholarship Fund

A long-time stalwart of our science and hobby is Mike Groben, of Coos Bay, Oregon. He has been an active mineral collector who, in 1961, became paralyzed when he was seriously injured while working as a timber cruiser. He has been wheelchair bound ever since. He has overcome this adversity with great fortitude, continuing to actively collect minerals in the field from his wheelchair. Mike regularly attended major shows like Tucson until recently, but still remains active.

When *Mineralogical Record* magazine needed to be indexed, Mike organized the team to index the first 13 volumes of that magazine. From the inception of the Friends of Mineralogy, Mike was actively involved in that organization, holding offices and serving as a major force in organizing the Friends of Mineralogy Northwest Symposia. All this is evidence of Mike's determination, fortitude and courage in overcoming his handicaps, while striving to continue as an active mineral collector and staying involved in mineral collecting activities.

For these reasons, an Education Scholarship Foundation in Mike Groben's name has been organized by people recognizing the need to support others who have overcome great adversity as Mike has! Foundation monies will be made available to students attending Southwestern Oregon Community College. The only criterion for recipients to receive funds from the foundation is that the recipient is someone "who has overcome obstacles in his/her life". This would include returning military veterans!

If you wish to support this effort to establish the Mike Groben Scholarship program at Southwestern Oregon Community College, you may make a tax-exempt contribution to the 501-c3 nonprofit foundation. The tax ID number for your donation is 93-6031563. Your contribution can be directed to Southwestern Oregon Community College Foundation, 1988 Newmark Ave., Coos Bay, OR 97420. A credit card donation may be made by clicking on the "donate now" button on the college Web site, www.socc.edu.



—Bob Jones

Geology Underfoot in Yellowstone Country by Marc S. Hendrix \$24

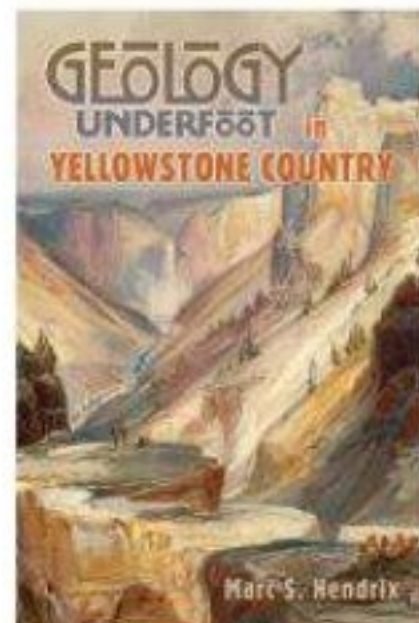
Anyone who plans on traveling to or even near Yellowstone National Park, located in the northwest corner of Wyoming, should have a copy of this excellent guide. The well-written text introduces the reader to the geology of the earth and the events leading up to the rock formations we see in the Yellowstone area today and encourages him to get out of the car for a close-up look.

The park itself is the result of about 2 million years of volcanic activity and holds the world's finest examples of geysers, hot springs, mud pots, and other thermal features. Volcanism started in this area 55 million years ago and has been ongoing ever since.

Each chapter of the 312-page guide takes you to a series of particular sites or areas near to and inside the park. The geologic features of each site, located through the use of GPS coordinates, are clearly described in detail. The information given is both useful and enlightening, so the traveler gets a good understanding of the forces that shaped this remarkable volcanic region.

Using a combination of excellent text, charts, maps and 181 color photographs and illustrations, the author provides the reader with an extremely useful and descriptive guide for the Yellowstone region. Using this guide will give you a greater appreciation and understanding of this most famous of our national parks. Even if you never visit Yellowstone Park, you'll feel as if you know the place well after reading this guide. (Mountain Press Publishing Co., 2011)

—Bob Jones



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CRAFTSMAN OF THE MONTH

As I was cutting a large piece of Pasco Marble," writes December Craftsman of the Month Homer Barrs, of San Diego, California, "I laid two slabs together and saw an ice-covered pond on Mount St. Helens with the dead trees, bare rocks and snow. I had a picture and no idea of how to show it off. So I let it sit.

"Years later, I cut several slabs of pink quartz that I had dug at the Hogg mine in Georgia and, as I was looking at them on a lit glass viewing table, I saw that they looked a lot like a sky with streaky ice clouds at sunset. At the time, I could not figure out how to show them off, either. Kim, a member of the San Diego Lapidary Society, suggested that I use glass to hold the pieces together and make a picture.

"I decided to combine the two ideas and make a shadow box. I had trouble getting the pink quartz slabs to stay together as they were cut, but I found that taping the face with clear 2-inch packing tape kept them together. If they broke, it would be easy to superglue them. After several attempts to smooth up the edges of the twelve slabs, I learned to bevel the sides at 45°, and by flipping the slabs over and moving them up and down, I could have a seamless cloud across the picture. I also used my 8-inch facet lap to smooth out the edges.

"Next, I cut the glass panes for the box frame. The back pane was 1/2 inch wider, but only 7 inches tall. I used 1-inch tape to make a barrier around the slabs to keep the epoxy from flowing out.

"I placed the glass panes on two large cardboard boxes so that I could get beneath them and see if any bubbles were created as I placed in the slabs. I also needed to make sure the slabs were properly aligned. I kept the slabs in order as I removed them and



poured in 1/8 inch of Parks Super Glaze epoxy. I used a hand torch and fanned the flame over the glaze to remove any bubbles. I replaced the slabs in their former order by placing one edge down first and lowering the slab slowly with a small wire to prevent any bubbles from being trapped between the slabs and the glass. The slabs started to separate on their own, so to prevent this I quickly taped them together and in place. When the glaze was cured, it held the slabs together and prevented the necessity of polishing the slab faces.

"I placed the completed panes in the frame I had made. It was nice, but the only time you could enjoy its sunset was when it had light behind it. I found a small (1/2 inch by 7 inches) light wand used in computers and installed it behind the second pane. Voila! my winter scene at Mount St. Helens crater." ♦



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, 3585 Maple St., 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

Mark Your Calendar!

Send show information at least four months in advance to *Rock & Gem Show Dates*, 3585 Maple St., Suite 232, Ventura, CA 93003-3517; e-mail: editor@rockngem.com; or use the electronic form at www.rockngem.com.

DECEMBER 2011

2-4—EL PASO, TEXAS: Annual show; El Paso Mineral & Gem Society; El Maida Auditorium, 6331 Alabama; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$3, seniors \$2, students \$3, children (under 12) free; gems, minerals, fossils, beads, jewelry, tools, books, equipment, geode cutting, silent auction, demonstrations; contact Jeannette Carrillo, 4100 Alameda Ave., El Paso, TX 79905, (915) 533-7153; e-mail: gemcenter@aol.com; Web site: epmgs.com

2-4—INDIANAPOLIS, INDIANA: Show and sale; GemStreet USA; Indiana State Fairgrounds, The Pioneer, Our Land Bldg. 1202 East 38th St, Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$5, children under 12 free; gems, jewelry, beads, fossils, minerals; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

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

2-4—SPRING HILL, FLORIDA: Annual show; Withlacoochee Rockhounds; Slovene American Club, 13383 County Line Road; Fri. 9-5, Sat. 9-5, Sun. 9-5; adults \$3, students \$1, children (under 12) free; demonstrations, gem and mineral auction, replica of Aaron's Breastplate, famous diamonds, dealers, rocks, minerals, fossils, jewelry; contact Ralph Barber, (352) 200-6852; e-mail: barbersbloomers@hotmail.com; Web site: http://withlacoocheerockhounds.com

3-4—YORK, PENNSYLVANIA: Show; Intergalactic Bead & Jewelry Shows; York Expo Center—Horticultural Hall, 334 Carlisle Ave.; Sat. 10-5, Sun. 10-5; dealers, precious and semiprecious gemstone beads, sterling silver, findings, freshwater pearls, hand-blown glass beads, vintage beads, crystals, demonstrations, jewelry classes; contact Angela, (888) 729-6904; e-mail: angela.couch@beadshows.com; Web site: www.beadshows.com

9-11—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

9-11—LONGMONT, COLORADO: Annual show; Flatirons Mineral Club; Boulder County Fairgrounds Exhibit Bldg., 9595 Nelson Rd. (at Hover); Fri. 10-6, Sat. 9-6, Sun. 10-5; \$3 Fri., \$5 Sat. or Sun., children under 13 free with adult; 16 dealers, gems, rocks, minerals, jewelry, lapidary equipment, exhibits, demonstrations, kids' gold panning, scavenger hunt, mineral identification game, dig site; contact Ray Gilbert, Flatirons Mineral Club, PO Box 3331, Boulder, CO 80307, (303) 774-8468; e-mail: HOSS1ONE@cs.com; Web site: http://bcn.boulder.co.us/community/fmc/fmcshow.htm

9-11—NORCROSS, GEORGIA: Annual show; Mammoth Rock Shows LLC; North Atlanta Trade Center, 1700 Jeurgens Court; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$4 for 3 days, children under 16 free; 50 dealers, minerals, fossils, rough rock, gold and silver findings, tools, lapidary equipment, beads, jewelry, loose and mounted precious stones, jewelry repair, drawings, grand prize; contact Richard Hightower, 7334 Quail Run Rd., Lizella, GA 31052, (478) 935-9345; e-mail: staff@mammothrock.com; Web site: www.mammothrock.com

9-11—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

10-11—FRANKLIN, TENNESSEE: Annual show; Mid-Tennessee Gem & Mineral Society; Williamson County AgExpoPark, 4215 Long Ln., I-65 exit 61; Sat. 9-6, Sun. 10-5; adults \$4 (2-day pass \$6), students (13-18) \$1, children under 12 free with adult; Faceters' Frolic, demonstrations, exhibits, silent auction, door prizes, grand prize, more than 30 dealers, beads, crystals, geodes, rough, cabochons, gemstones, finished jewelry, tools, supplies, minerals, fossils, stone carvings; contact John Stanley, 2828 Donna Hill Dr., Nashville, TN 37214, (615) 885-5704; e-mail: show@mtgms.org; Web site: www.MTGMS.org

10-11—RICHMOND, VIRGINIA: Show; Intergalactic Bead & Jewelry Shows; Richmond Raceway Complex-Colonial Bldg., 600 E. Laburnum Ave.; Sat. 10-5, Sun. 10-5; dealers, precious and semiprecious gemstone beads, sterling silver, findings, freshwater pearls, hand-blown glass beads, vintage beads, crystals, demonstrations, jewelry classes; contact Angela, (888) 729-6904; e-mail: angela.couch@beadshows.com; Web site: www.beadshows.com

16-18—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; 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

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1-31—QUARTZSITE, ARIZONA: Wholesale and retail show; Desert Gardens RV Park; 1055 Keuhn St. (I-10 Exit 17); 9-6 daily; free admission; crystals, minerals, rough, polished, jewelry, lapidary equipment; contact Sharon or Sandy, 1055 Kuehn St., Quartzsite, AZ 85346, (928) 927-6361; e-mail: dggemshow@ureach.com; Web site: www.desertgardensrvpark.net

6-8—MESA, ARIZONA: 40th annual show; Flagg Mineral Foundation; Mesa Community College, US 60 at Dobson, southwest parking lot; Fri. 9-5, Sat. 9-5, Sun. 9-5; free admission; Peralta Stone maps exhibit, fluorescent display, free children's activities, free samples for children and teachers, more than 100 dealers, crystals, minerals, fossils, club and museum booths; contact Dr. Ray Grant, PO Box 41834, Mesa, AZ 85274, (480) 892-0779; e-mail: Presmyk@cox.net; Web site: www.AZMinFun.com

6-15—QUARTZSITE, ARIZONA: Annual show; Tyson Wells Enterprises Inc.; Tyson Wells Show Grounds, 100 W. Kuehn St.; 9-5 daily; free admission; rocks, gems, minerals, jewelry, silver and gold smithing, faceting, precious metals, lapidary tools, equipment, supplies; contact Kym Scott, P.O. Box 60, Quartzsite, AZ 85346, (928) 927-6364; e-mail: tysonwells@tds.net; Web site: www.tysonwells.com

13-15—LARGO, FLORIDA: 36th annual show and sale; Pinellas Geological Society; Largo Cultural Center, Parkside Room, 105 Central Park Dr.; free admission; contact Hugh Sheffield, (727) 894-2440 or (727) 707-3236

20-22—GLOBE, ARIZONA: Annual show; Gila County Gem & Mineral Society; Gila County Fair Grounds, 3 miles north of Globe on US 60-70; Fri. 9-5, Sat. 9-5, Sun. 9-4; \$3 per adult or \$5 per couple, students and children free; live demonstrations, gold panning, fossil program, silent auction, door prizes, displays, minerals, jewelry; contact John O'Brian, PO Box 487, Miami, AZ 85539, (408) 421-2657; e-mail: rocksbynature@hotmail.com; Web site: http://gilagem.com/

20-29—QUARTZSITE, ARIZONA: Annual show; Tyson Wells Enterprises Inc.; Tyson Wells Show Grounds, 100 W. Kuehn St.; 9-5 daily; free admission; rocks, gems, minerals, jewelry, lapidary tools, equipment, supplies, arts and crafts; contact Kym Scott, P.O. Box 60, Quartzsite, AZ 85346, (928) 927-6364; e-mail: tysonwells@tds.net; Web site: www.tysonwells.com

continued on page 34

Tucson

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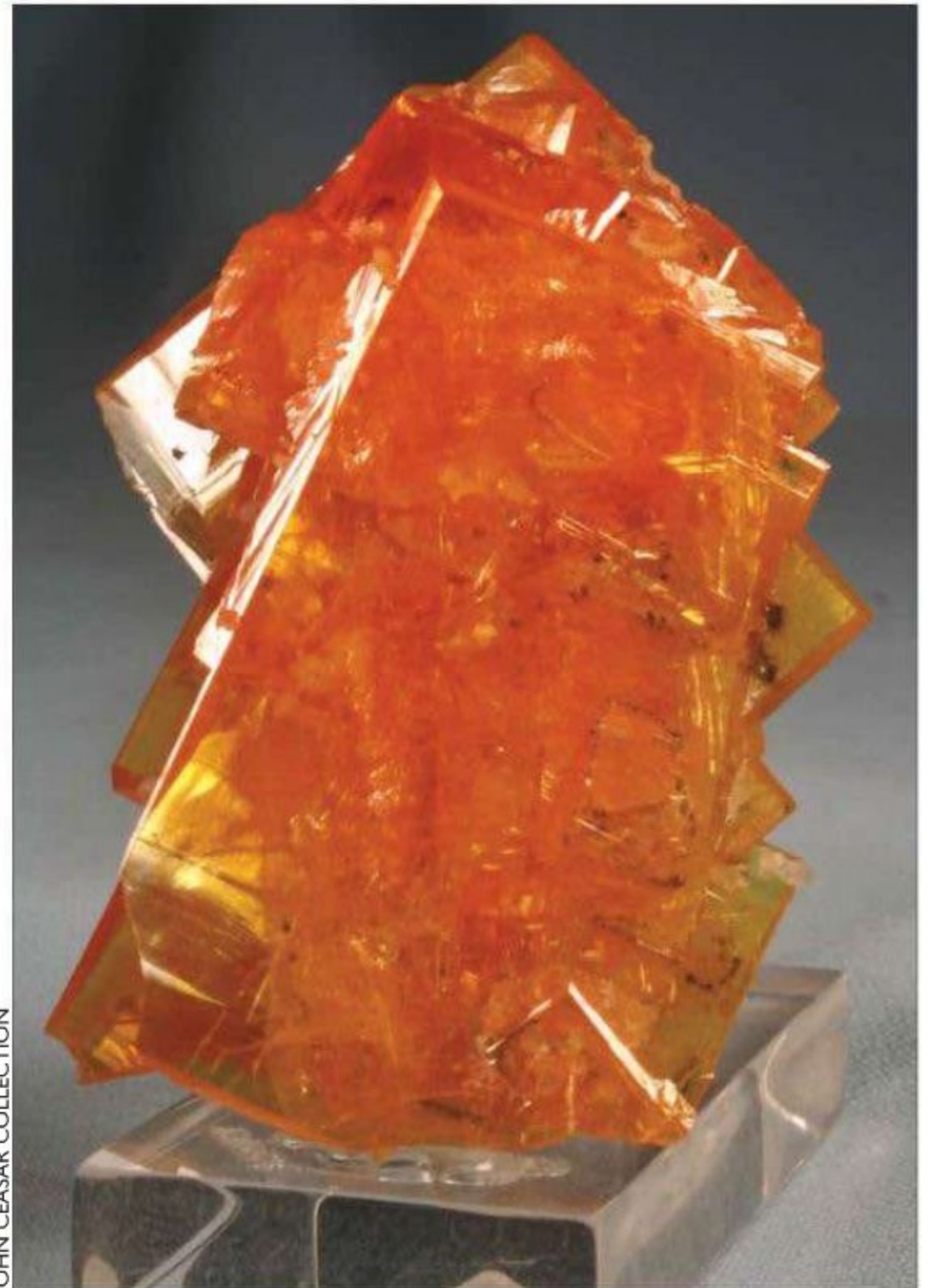
PART I: Common Collector Minerals of the Grand Canyon State

Story and Photos by Bob Jones

California has its gold and Michigan had its copper, but no state can boast as great a variety of minerals suited for industrial and collector use as Arizona. You may think that copper was the trigger that brought prospectors to Arizona. Actually, it was the search for the precious metals silver and gold, which goes back to the days when Spanish adventurers sought the fabled Seven Cities of Cibola whose buildings were supposed to be made of gold! Native Americans were not so concerned with gold, but eagerly sought the blue “sky stone” turquoise.

Extensive prospecting didn't really get started in Arizona until argonauts who were unsuccessful in the California gold fields headed back east into the Arizona Territory. Word of earlier gold and silver discoveries encouraged them to try their luck in spite of the dangers. One of these was Henry Wickenburg, who established the Vulture gold mine and lent his name to the town of Wickenburg. Two early important discoveries in Arizona caught the attention of prospectors: the discovery of huge chunks of native silver as float in the area now thought to be on the border of Arizona and Mexico; and the discovery of chunks of gold on the surface of what became known as Rich Hill, near present-day Congress.

With the discovery and development of the silver deposits at Tombstone and in the Silver District, north of Yuma along the Colorado River, Arizona's appeal to prospectors was confirmed. After the Tombstone discovery, prospecting in the southeast Arizona Territory intensified. Even Army scouts who were sent to deal with the locals kept a weather eye out for minerals. One such group found a specimen of lead carbonate cerussite in a creek at the base of what we now call Castle Rock, in Bisbee. Prospectors



JOHN CEASAR COLLECTION

in the area realized the copper bloom—bright blue-green copper staining on exposed rock—which heralded the presence of copper. Claims were staked and the rich copper deposits of Bisbee were developed by the 1880s. Because of the copper deposits at Morenci, Ajo, Bisbee, and elsewhere in the territory, copper production quickly eclipsed gold and silver production.

For a time, silver remained important, thanks to Tombstone and the Silver King mine near Superior. But as the territory—and later, state—of Arizona grew, four important products led the way to its economic success. These products became known as the “Four Cs”: copper, cotton, cattle and citrus. They formed the basis for Arizona's economic growth for a century and remain significant today.

Even though copper leads the parade of Arizona's important products, the native copper recovered in Arizona pales in comparison to the vast quantity of copper mined from the mines of Michigan's Upper Peninsula. The Michigan ore was virtually pure copper, and some pieces of native copper weighed multiple tons! Arizona's native copper, on the other hand, was largely a minor secondary mineral derived from the breakdown of the copper sul-

OPPOSITE PAGE: The Old Yuma mine was noted for its superb orange wulfenites, which are some of the best in the world.

RIGHT: It took Evan Jones and his partner 18 hours to collect this superb wulfenite at the Rowley mine.

BELOW LEFT: The Patagonia Mountains, near Arizona's border with Mexico, have produced large quantities of fine Japan law quartz twins.

BELOW RIGHT: Malachite in calcite from Bisbee is just one of the more exceptional collector specimens these famous copper mines produced.



EVAN JONES SPECIMEN

fides chalcocite, bornite and chalcopyrite, and required smelting to release the metal.

More important in Arizona's copper production, particularly in the late 1800s, were the abundant secondary minerals azurite, malachite and cuprite, also derived from the breakdown of those same primary copper sulfides. These secondary copper species were easily smelted, ran about 70% copper, and were abundant enough that, even though the ore was shipped to Swansea, Wales, for smelting, a profit could be realized.

The Morenci deposit in eastern Arizona was worked before Bisbee. Ajo was discovered and worked for silver by the Spanish, but evidence of copper in the form of copper bloom was everywhere. The Ajo site was actually the focus of an interesting scam before real production began: In

the 1850s, a promoter claimed to have a furnace that would smelt copper, gold and silver, and that each metal would pour out of a different spigot on his furnace!

Both Morenci and Ajo have been good sources of fine azurite and malachite, but Bisbee was by far the most prolific specimen producer. The Bisbee deposits proved to be exceptionally rich. The first mine to be opened was the Copper Queen, source of amazing quantities of azurite, malachite, cuprite, and later, high-grade copper sulfides.

Though the mines of Bisbee have been closed for some years now, their mineral specimens are still available and eagerly sought. This is because, during the years of production, the mining company did little to discourage miners from bringing home

specimens, most of which ended up entering the mineral specimen market!

The Bisbee deposits have produced more than 300 different mineral species, with azurite ($\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$) and malachite ($\text{Cu}_2\text{CO}_3(\text{OH})_2$) leading the parade. These two copper carbonates are a fascinating study because of their similar chemical compositions. Which one forms depends on the availability of oxygen in the copper-rich solution. A low-oxygen solution will likely form azurite, while a high-oxygen solution results in malachite. Azurite needs less oxygen than malachite to form, so it precipitates out of solution first. If the oxygen content increases in the solution, malachite is deposited. Continued fluctuations in the solution's oxygen content produces alternating layers of azurite and malachite!

RIGHT: For years, choice jackstraw cerussite was collected in quantity from the Flux mine in the Patagonia Mountains.

BELOW LEFT: The Old Yuma mine, near Tucson, was once a source of superb vanadinite, sometimes with calcite.

BELOW RIGHT: This choice malachite pseudomorph after azurite is one of the more sought after specimens from the mines at Bisbee, Arizona.



EVAN JONES COLLECTION



EVAN JONES COLLECTION



Oxygen plays a similar role in the formation of malachite pseudomorphs after azurite.

Though copper minerals represent a very significant suite of popular collectible minerals in Arizona, secondary lead minerals are the most eagerly sought by local collectors. This is because many of the lead species are colorful, abundant and readily accessible in now-abandoned mines. Arizona's elemental lead suite ranges from minerals as common as wulfenite, vanadinite and cerussite to uncommon species like leadhillite, boleite, pseudoboleite and linarite. Some really rare lead species like bideauxite and yedlinite are also found, but only in a few specimens.

Of all the lead species found in Arizona, vanadinite and wulfenite are certainly the more common collector species. More than 100 mines in the state produce wulfenite and a dozen or so mines disgorge huge amounts of vanadinite, so these two colorful lead species are found in every local collector's cabinet.

Wulfenite, a lead molybdate, is probably the more common collector species in Arizona. A half-dozen mines are very well known and have been generous to local collectors. These include the famous old silver-producing Red Cloud and Defiance mines. The Mammoth-St. Anthony, Glove and Rowley mines, old gold producers, have also produced thousands of specimens. In addition, there are a series of smaller, but important, wulfenite producers, including the Hilltop and 79 mines, and the Toughnut mine at Tombstone, which is famous for its silver production.

Ask any mineral collector which mine produced the finest wulfenites ever found, and most will immediately mention the Red Cloud mine. These vibrant red beauties, some of which approach 3 inches on an edge, are certainly the finest red wulfenite crystals.

But which mine has produced the finest orange wulfenite crystals in the world? Some will mention Tsumeb, Namibia, or Mibladen, Morocco. Few will think of the

Old Yuma mine, from which you can see downtown Tucson! At a symposium lecture in 2000, noted mineralogist Richard Bideaux stated that the Old Yuma "probably produced the finest bright-orange wulfenite in the world". Since Bideaux started collecting at this deposit in 1948 at the age of 13, purchased it in the late 1970s, and eventually sold it to the federal government in the 1990s, he knew whereof he spoke!

Vanadinite is another superb lead mineral that was mined at the Old Yuma. Bright-red crystals with orange tips measuring over an inch, in hand-size clusters, were common from this old gold mine. In fact, during World War I, some 30,000 tons of wulfenite and vanadinite, mainly in crystal form, were mined at the Old Yuma. Too many of those specimens were lost to the smelter!

Another vanadium ore source in Arizona was the Apache mine, near Globe. Again during World War I, tons of loose crystals of this red hexagonal mineral were shipped to the smelter. The Apache mine

EVAN JONES COLLECTION



The copper mine at Morenci produced this choice stactitic azurite.

was a favorite site of Arizona collectors. Hundreds of cardboard flats filled with fine vanadinite specimens were brought to grass over many years. Working with a partner, I personally removed more than 100 flats of vanadinite.

Other noteworthy vanadinite localities include the small J.C. Holmes prospect and the Gray Horse mine. The Holmes prospect was noted for quantities of lovely tan to brown crystals groups that were sometimes over an inch long. The Gray Horse produced large slabs of rock covered with 1-inch hoppered, orange-red crystals. Examples of these spectacular specimens make up the reproduction vanadinite pocket in the Congden Earth Science Center at the Arizona Sonora Desert Museum.

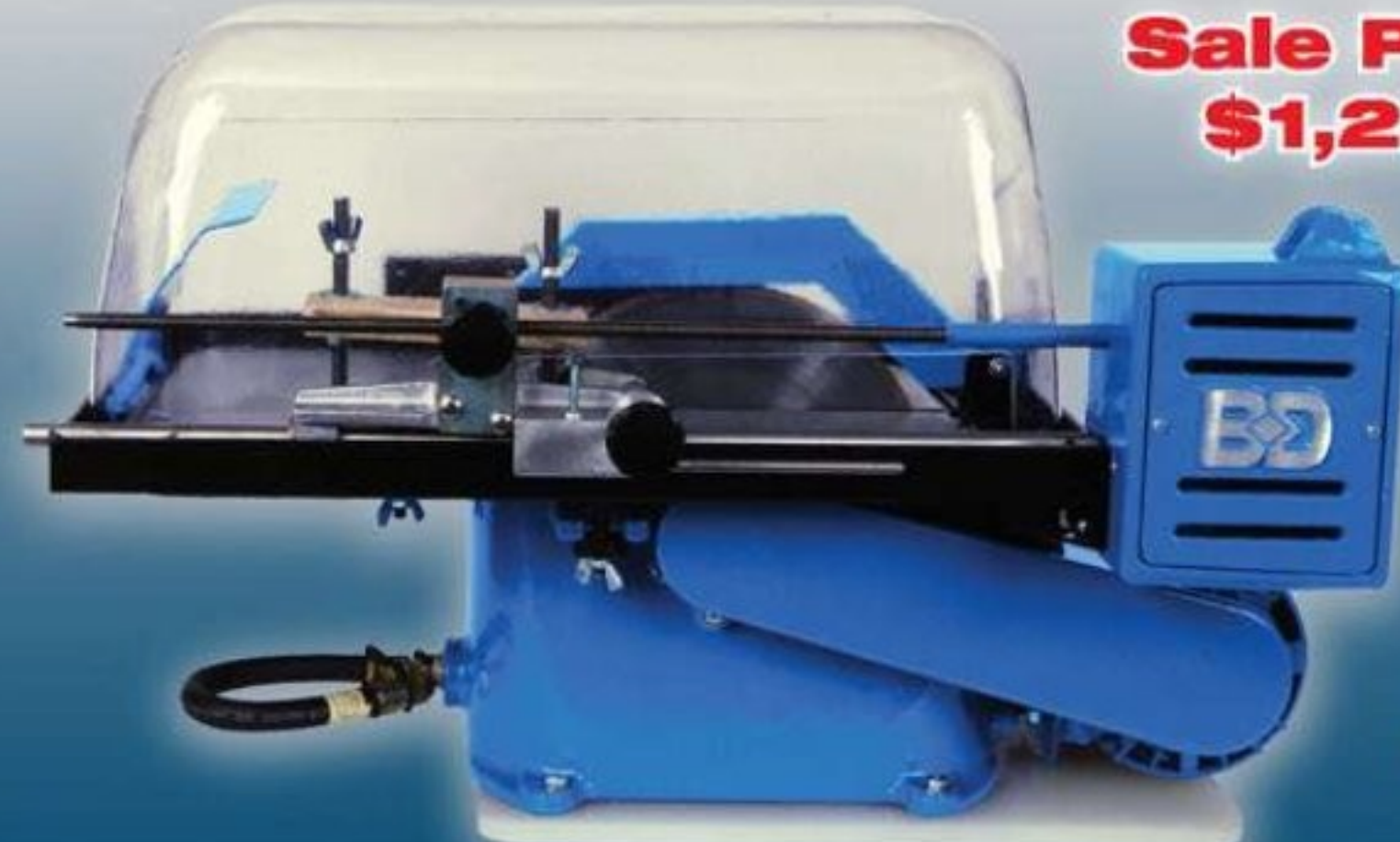
The Puzzler mine, located in the Silver District, produced quantities of unusual olive-green to brown vanadinite. In that same area, quantities of bright-red vanadinite crystals have been found in several mines that are not far from the Red Cloud mine. Two localities, the Flux mine in the Patagonia Mountains and the gold mine at Tiger, are very well known for the lead carbonate cerussite.

Specimens from the Mammoth-St. Anthony mine at Tiger, which is well known for its suite of rare lead minerals, are rich in fine twinned cerussite specimens. In fact, cerussite is an aide in identifying specimens from Tiger, since it is nearly ubiquitous there. Locals have learned to check for cerussite if they suspect a specimen may be from Tiger. Tiger cerussite is almost always lovely white "V" twins and was one of the last species to develop in the deposit. Some crystals are unusual heart-shaped twins, while others are intertwined clusters of twins in masses that measure several inches across.

The Flux mine produces an altogether different form of cerussite: white, sticklike



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ARIZONA: from page 15



The gem mine on Four Peaks Mountain, east of Phoenix, has produced superb amethysts like this 300-carat gem, which is in the collection of the Arizona Sonora Desert Museum.

crystals that are commonly called "jackstraw" cerussite. If they are lightly tinted yellow by iron oxide, these cerussites do indeed look like broken clusters of straw. Flux mine jackstraw cerussites occur in the soft, vuggy, near-surface gossan of a large lead-silver mine, located near the Mexican border in the Patagonia Mountains. White crystals up to 6 inches long have formed in clusters that can measure a foot or more across. In many cases, the cerussite is so profuse as to nearly or completely fill a vug the size of a bread box. The brittleness of the jackstraw crystals and the extreme softness of their gossan matrix create collecting problems. Most specimens lack matrix and the crystals are randomly attached to each other at every possible angle.

Quartz and calcite are certainly common species in Arizona. The finest quartz comes from the Patagonia Mountains, where lovely Japan law twins made up of flat 1- and 2-inch quartz crystals are found in quartz seams.

In the Holland mine, also in the Patagonia Mountains, Japan law quartz twins—some of the best in the world—were reportedly encountered during mining with individual crystals approaching 3 feet in length. Unfortunately, none of these amazing twins have survived, though examples of 1-foot crystals exist.

Excellent water-clear quartz crystals, some showing a distinct twist, occur with fine andradite garnets on the Apache Reservation near Globe. Permission to collect is necessary, so the supply of these lovely 4- to 6-inch crystals is limited.

Lovely sceptered quartz crystals have been mined in quantity at the Fat Jack mine, located near Crown King. The crystals are water clear, measure an inch or two long, and are topped by scepter crystals of a pale, delicate shade of amethyst. The property is under claim, but

local clubs are sometimes allowed to collect specimens there.

In the gem world, the Four Peaks Mountain amethyst deposit, located 70 miles east of Phoenix, produces gem material that is as good as it gets. The crystals are not free standing, but line the walls of vugs in clusters of quartz points that are tightly packed together. The amethyst crystals are zoned, but when properly cut, they result in gems of an intense red-violet color that are the equal of gems from Korea and Russia. I once made the long trek to the Four Peaks amethyst deposit. Unfortunately, the day before I went, it snowed and the narrow and precipitous trail was very slippery. By the time my group had navigated the trail, we were out of time, so we did not collect anything. Besides, the dumps were covered with snow!

As for calcite, the finest and most interesting Arizona specimens are from the copper mines in the limestone formations. Many caves in limestone produce calcite stalactites and stalagmites, but they are not particularly exciting and are best left alone!

From Bisbee, in particular, calcite in a host of forms is common, including fine scalenohedral crystals in small clusters. Some of the calcite is red due to included chalcotrichite or green due to included malachite and are highly prized. Stalactites from the copper mines can be stained green with included copper salts and are also valued. Most interesting are those calcites that look more like helictites. These calcites are crystalline, almost water clear in some cases, and have taken on wild, unpredictable forms. As these calcites developed, they grew randomly in all directions under the influence of outside factors. Some calcites form perfect loops, while others grow at right angles to each other. Just about any odd shape you can imagine is probably found in Bisbee calcites. ♥



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SHOP TALK

by William A. Kappeler

Slag Glass

Some years back, my wife, Cora, and I were driving around Kentucky researching our book on scenic driving for Falcon Press. On this particular morning, we were headed for Mammoth Cave. At Cave City, we spotted a large rock shop just off the road. Well to me, that is like seeing a sign advertising free ice cream, so we turned in to see what we might find.

As soon as we got out of the car, we were greeted by a huge row of tables covered with enough goodies to make any rockhound swoon. The first thing we saw, though was something neither of us had ever even heard of, let alone seen. Several large tables were piled high with slag glass. There were little marble-size pieces, huge chunks weighing many pounds, and every size in between. I was about to say that they came in all the colors of the rainbow, but I am not sure that even the rainbow has as many colors as were on display on those tables.

At that point, we didn't care what it was; we just started picking out a few pieces that would yield some 30mm by 40mm cabs. Unfortunately, we had flown to Kentucky from our home in Southern California, so we were limited as to the amount of slag we could take home. Trying to get a bunch of those bowling ball-size chunks onto the plane would have been a problem. Granted, in those days the airlines weren't thinking about terrorism, but they sure were thinking about extra weight. Even if such a load had been allowed, it would have cost far more to get it home than it cost to purchase in the first place.

Well, when we had picked out a handful or two, we headed inside to pay up and to ask a few questions. It turned out that the lady at the shop was named Cora, too, so Cora and Cora got on like sisters. Cora told Cora that slag glass was just the waste from a glass foundry in a neighboring state. The foundry made beautiful decorative glass objects, but at the end of the pours, there was always some material left

over. This slag was just poured out on the ground in back of the foundry. Rock shops from all over the south would haul truckloads of it away and sell it to Californians who happened to be driving by. I'm sure the foundry was happy to get rid of it, the rock shops were happy to get it, and the Californians (and others) were happy to buy it. I don't remember exactly how much we paid for it, but it was very inexpensive.

A little surfing on the Internet told me that today the price averages around \$2 to \$3 per pound. By the way, if you go surfing on the Internet, I suggest you search for the key words "slag glass rock shops" or "slag glass factory waste".

There is a type of glass that comes in sheets, much like stained glass, and is used in

lamp shades and other decorative articles. Searching for just "slag glass" turns up dozens of sites with the wrong stuff.

Here are a few places you can get slag glass in person or online:

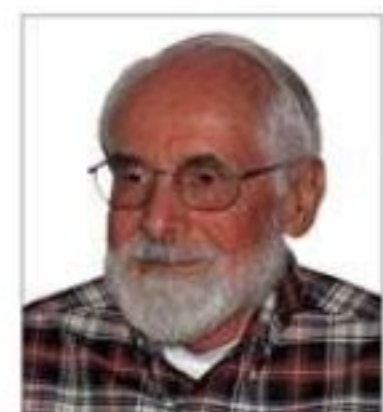
Dick's Rocks, Dicks Rock Museum & Red Rose Rockshop, 490 Moraine Ave., Estes Park, CO 80517, (970) 586-4180; <http://dicksrocks.com/store/slag-glass>

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Red Rose Rock Shop, 490 Moraine Ave., Estes Park, CO 80517, (970) 586-4180, or 7678 E. U.S. Highway 290, Ste. B, Johnson City, TX 78636, (830) 868-4130; www.redrosrockshop.com

Big Mike's Rock & Gift Shop, 566 Old Mammoth Cave Rd., Cave City, KY 42127, (270) 773-5144; www.mammothcave.com/big_mikes.htm

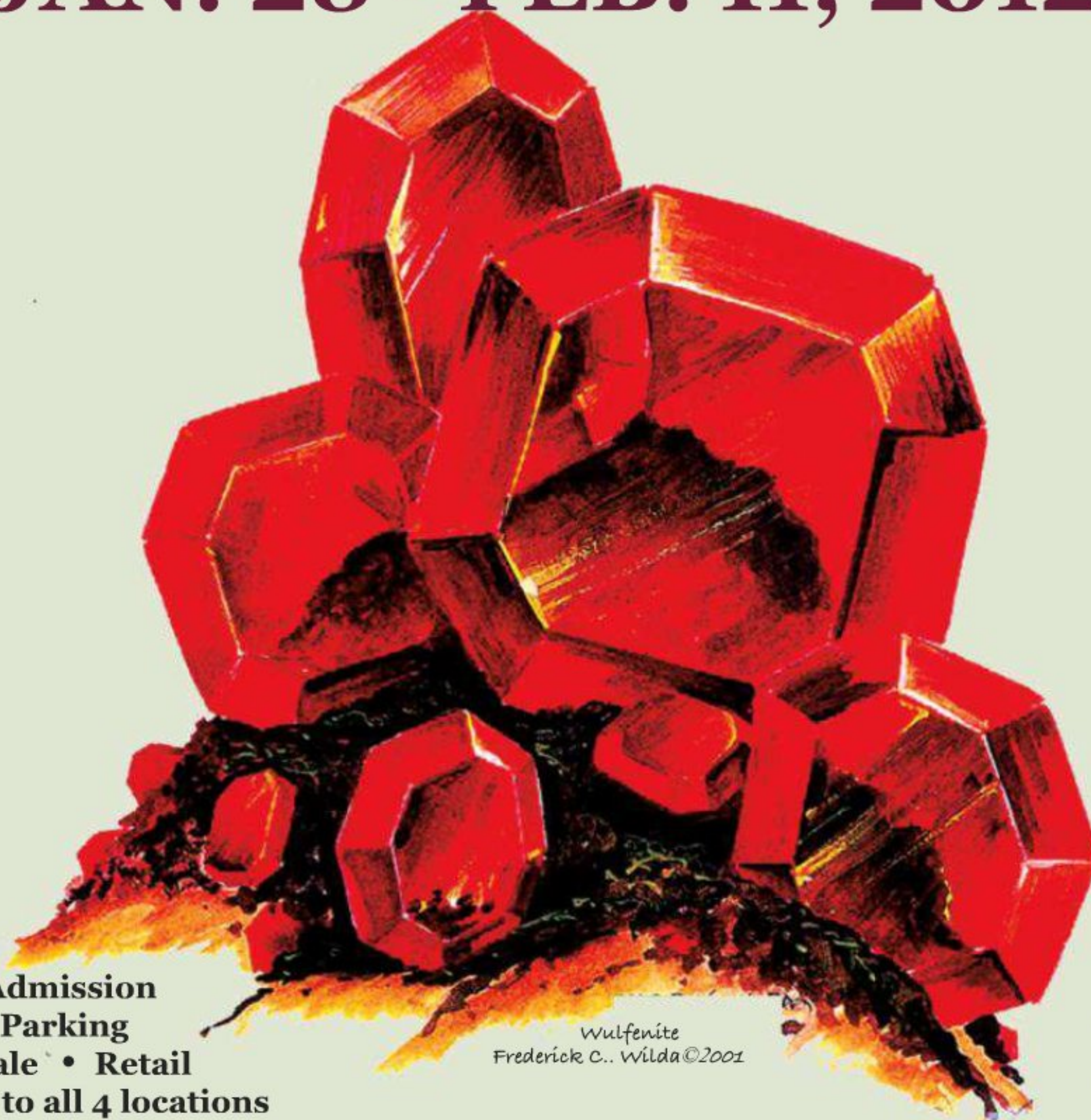
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CALANDRIA AGATE

The Latest Treasure of the Sierra Madre

Story by Brad L. Cross



PEDRO SAENZ PHOTO

ABOVE: Local residents walk the freshly-plowed fields in search of agate nodules that have weathered out of the surrounding hills and been transported to the valleys below

LEFT: A few of the Calandria agates have shadow-type banding and closely resemble a Laguna agate. Specimens like this one are quite rare.



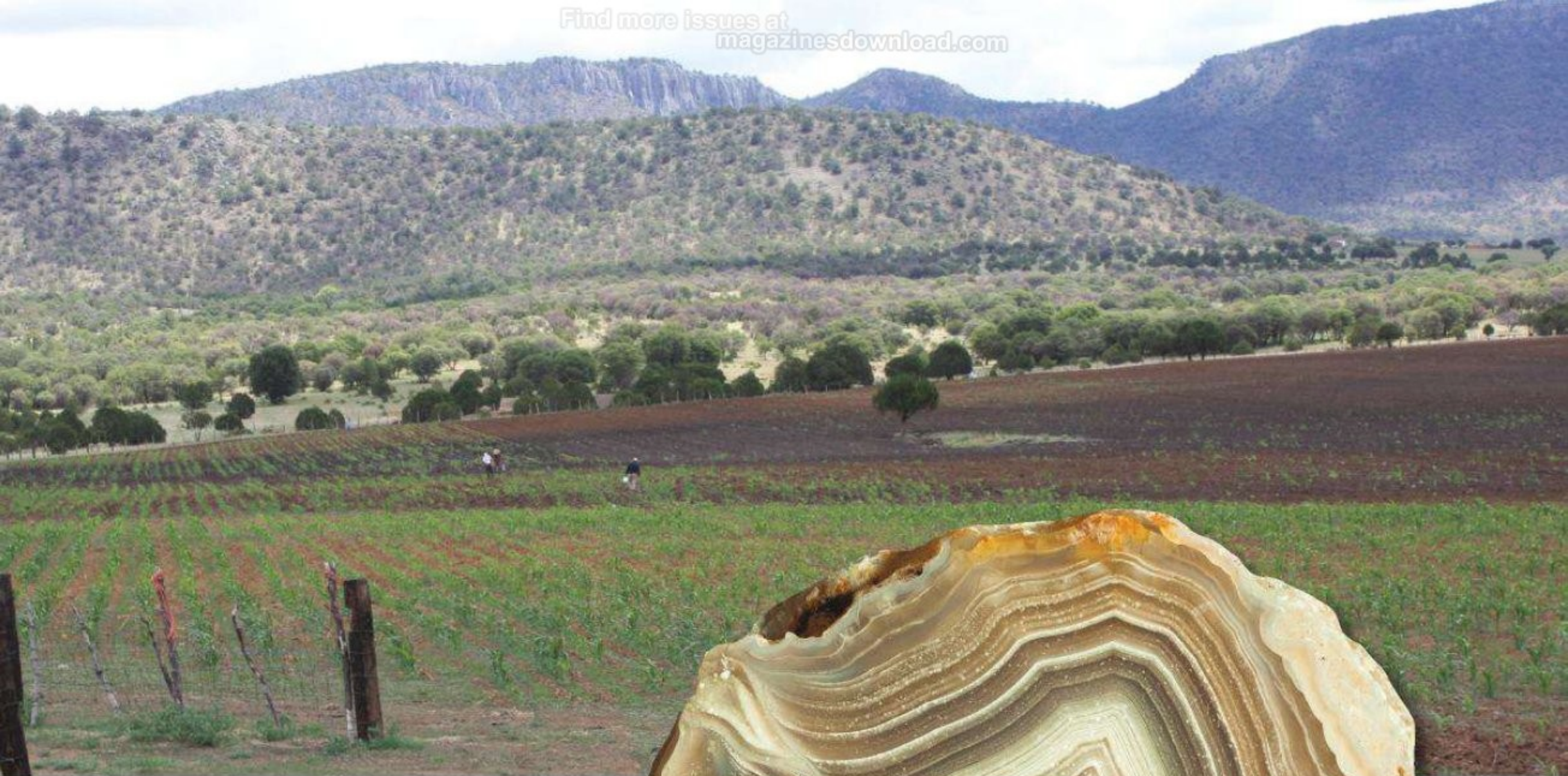
STEVE WHEELER PHOTO

The member of the oriole family that is known to residents of Chihuahua, Mexico, as the “Calandria” is remarkable for possessing a song far superior to that of any other bird in that state. Its song is powerful and beautiful—just like the bands of the agate that derives its name from the bird.

I first saw this agate in the 1970s when Ramon and Ernesto Pena, of Juarez, first brought it out from the Matachic and Santo Tomas area of Chihuahua. It was common in that day for new varieties of agate to be sold under existing agate names that were already popular with the lapidary world. Such was the case when many unknowingly purchased Calandria agate labeled as the famous Parcelas and Casas Grandes agate from popular localities farther to the north.

Calandria agate was basically forgotten until 2010, when my friend Pedro Saenz, of Chihuahua City, brought the agate back to light. He sold it exclusively to MP Products (www.lagunalace.com), of Kent, Washington, and it appears to be an instant success.

Agate from Northern Mexico was first reported by George Frederick Kunz in the 1902 publication *Transactions of the American Institute of Mining Engineers, Volume XXXII*, in which he discussed an occurrence of red-and-white banded agate that was discovered in 1895 by a Mr. E.J. Smith, of Chicago, Illinois. However, it wasn't until 1945, when the segment of Mexican Fed-

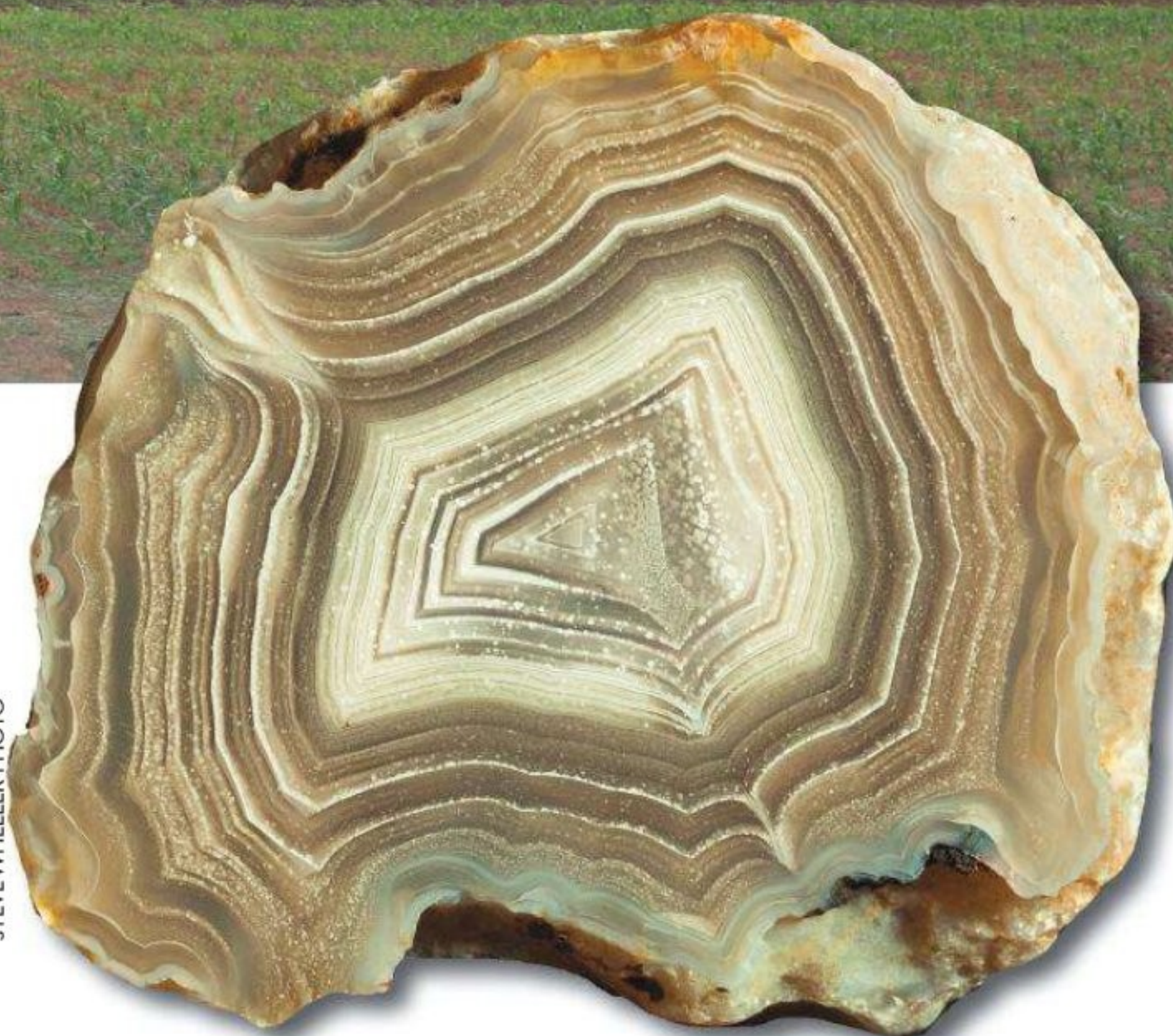


eral Highway 45 between the cities of Juarez and Chihuahua was completed, that agate was found alongside the highway about 130 miles south of El Paso, Texas. Imagine the excitement of finding banded agate nodules containing colorful combinations of red, yellow, orange, and purple scattered over the roadside.

This discovery initiated an agate rush throughout Chihuahua that would continue into the late 1960s. During this time, most of the agate discoveries were made by cowboys, who would find unusual and colorful rocks on the surface of the ground as they went about their daily chores on horseback. Word spread quickly that folks in the United States would actually pay money for beautiful rocks. In hopes of making some additional income, the cowboys would pick up the rocks and show them to friends who might have connections with the rock dealers or rock collectors in El Paso. If they were lucky and their recent find was good agate, they would walk the surface and collect sacks of agate, ultimately adding a few dollars to their pocketbook.

New discoveries of agate in Mexico are made much the same way today as they were more than 50 years ago. The agate deposits begin in the state of Chihuahua about 83 miles south of El Paso near the town of Villa Ahumada and then intermittently continue for another 70-plus miles through the railroad stations of Moctezuma and Gallego and finally on to Laguna. If you then travel 125 miles to the northwest, you will find the classic deposits of Casas Grandes, Parcelas and Apache agates. From there, the deposits run another 100 miles north to the U.S.-Mexican border, where Baker Ranch nodules and Big Diggins agate are found. Collectors complete the loop by traveling back to the east-

STEVE WHEELER PHOTO



The individual bands of most Calandria agates contain exceptionally large mineral particles that resemble snowflakes. Sometimes, they are so thickly packed they resemble a blizzard.

southeast and including the popular Mexican Crazy Lace beds located southwest of Villa Ahumada.

There are many parts of Mexico that still remain fairly unexplored. The rugged region in southwestern Chihuahua is one of those areas, and new agate discoveries continue to be made there. In recent years, this tremendous volcanic province has produced hollow thunder eggs (Copper Canyon area) that contain some of the most beautiful and unusual varieties of quartz found anywhere. The needle quartz, scepters, and reverse scepters of amethyst from these hollow surprise packages have excited mineral collectors throughout the world. Much to the lapidary's pleasure, a few new varieties of banded agate have also made their way north, including Calandria agate. I think it's safe to say that, as new discoveries continue to be made, the boundaries of the "agate belt" will continue to expand well beyond what we ever imagined.

The banded agates of Chihuahua rank among the most colorful and intriguing found anywhere in the world. As with all banded agates, what may appear to be a solid line or band is really not solid at all. Under a microscope, thousands of tiny particles of mineral matter, often of a slightly distorted oval shape, can be seen in the individual bands. A common observation in much of the Mexican agate is that the individual particles are quite small and colorful. This is not the case with Calandria agate. What makes this agate special are the exceptionally large mineral particles that compose each band. You don't need a microscope to see these special features. Most are reminiscent of large snowflakes. A number of the specimens even have the appearance of a blizzard.

While the agate lacks the bright and contrasting colors typically seen in other varieties of Mexican agate, the distinct and unusual banding give this material a special place in the agate world. The typical colors



STEVE WHEELER PHOTO

Some of the Calandria agates have distinct banding and lack the “snowflakes” seen in most specimens. The nice rose color in the very center of this agate complements the off-white bands that surround it.

of Calandria agate are white, gray and lavender. Many of the nodules closely resemble their cousin from some 120 miles to the north, the famous Parcelas agate. What easily distinguishes the two varieties are the large snowflake features observed in the individual bands of the Calandria agate. A number of the Calandria nodules also display shades of tan, yellow and rust, colors that aren't seen in Parcelas agate. On occasion, bands of red and orange are found in nodules that closely resemble Laguna agate, the classic agate locality more than 100 miles to the northeast.

Mexican agates, less than half of the Calandria agates have quartz centers.

All the Calandria agate found to date has been collected as surface material near the town of Tejolocachic, Chihuahua. Tejolocachic is located in the municipio (county) of Matachi, some 150 miles west of Chihuahua City. It is a quiet town of about 450 residents who rely primarily upon farming and timber as sources of income. The agate is collected by local farmers as they till their fields of beans and corn or walk the gentle slopes of the nearby hills.

The **outside (skin)** of a **Calandria agate** is *rough* and *deeply pitted*. The nodules are *heavily weathered* and **most** of the **skins** are *colorless* with *large areas that exhibit a white patina*.

The outside (skin) of a Calandria agate is rough and deeply pitted. The nodules are heavily weathered and most of the skins are colorless with large areas that exhibit a white patina. In polished samples, small fractures are sometimes found along the very outer edge of the nodule, but they do not penetrate deeply into the nodule and they rarely distract from the beauty of the specimen. Calandria agate nodules average less than 6 inches in diameter. While crystalline quartz forms in the center of most

Pedro Saenz has filed two claims in the area. The first is Santa Anita, a 100-hectare (247-acre) claim. When Pedro was prospecting in the area, he discovered the town's small cemetery. On top of the recent grave of a 93-year-old woman were agate samples. Her name was Ana and she had lived in the village her entire life. Pedro realized the material had been excavated from several feet below the surface and used it as a prospecting tool for agates. Although the cemetery is located within



PEDRO SAENZ PHOTO

Some local residents use screens to sift dirt and rock from plowed fields in search of the Calandria agate.

Pedro's claim, he assures me that he has no intention of digging in it. The Santa Anita claim was named in Ana's honor.

The second claim, called Calandria, is a 300-hectare (741-acre) concession and contains agate that is equal beauty to that of the Santa Anita claim. Under Mexican law, both concessions are valid for 50 years.

The agate collecting process in the Tejolocachic area is reminiscent of the 1940s, when agate was first collected from the surface at Laguna, Coyamito, Agua Nueva, and other famous agate localities. As cowboys collected nodules from different geographic areas of the vast ranches they worked,

all the nodules were grouped into one parcel and simply sold as “Mexican agate”. Many of the agates were broken and most others had shallow surface fractures from abrasive weathering action. The skin, or rind, of the agate was completely gone in some cases, and many of the exterior clues we use today to identify exactly where the agate

originated were erased. As the popularity and value of the agate increased, mining claims were filed on the various pods of agate and names were assigned based on an agate's specific locality or characteristic. Laguna, Apache, and Moctezuma are just a few of the names we know today.

After the float material was collected from the surface, miners began digging pits and trenches in the host volcanic rock, recovering nodules that were complete and without flaws. Specific charac-



PEDRO SAENZ PHOTO

Pedro Saenz officially filed the Santa Anita and La Calandria claims in 2010. Under Mexican law, both of these concessions are valid for 50 years.

teristics, such as the pit size in the skin, and internal features such as color and the distinctiveness of individual bands became more prominent and consistent, giving us the tools we use today to identify on which ranch or area of the ranch the agate originated.

There is great potential in the agate deposits found near Tejolocachic. When the initial agate beds of Chihuahua were discovered in the 1940s, the pioneers didn't envision that the simple Mexican agate they held in their hands would be available in the many colorful varieties we treasure today. When I first viewed Calandria agate, I immediately recognized that, based on internal characteristics alone, these agates originated from multiple sources. The highly weathered

skins simply reiterated my thoughts and hinted at the long journey these agates had taken to arrive at their current home of Tejolocachic. It will take a few more years of exploration and mining to put the pieces of the puzzle together so that we will fully know where each of these different appearing varieties of Calandria agate actually originated. However, when the full story of the isolated Tejolocachic area is finally told, I don't think we will be surprised to see that it fully parallels that of the well-known and well-defined agate deposits just to the north.

Pedro assures me there will be a fresh supply of Calandria agate at the MP Products booth at the Tucson Show in February 2012. Be sure to stop in and view these special beauties! ♥

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The Morrison (Colorado) Natural History Museum, one of the West's finest small paleontological museums, recently announced the discovery of footprints of juvenile sauropods, large, long-necked, herbivorous dinosaurs that include the ponderous *Camarasaurus* and *Apatosaurus*. These tracks were made by hind feet only and the space between them was twice as great as would be expected for slow-moving sauropods.

These 148 million-year-old footprints are the first ever found of *running* sauropods. Museum staff members have concluded that baby sauropods ran much like basilisk lizards, modern quadrupeds that run on their hind legs only when disturbed. This discovery has spurred paleontologists to further study the biomechanics—the relationship of skeletal and muscle structure as revealed by and extrapolated from fossilized bones—of running juvenile sauropods.

The new clues about dinosaur behavior provided by the Morrison museum's baby sauropod tracks are another contribution to the rapidly growing subsience of dinosaur ichnology, a word derived in part from the Greek *ichnos*, meaning "footprints".

When dinosaur tracks were first recognized in the 1800s, they were considered little more than paleontological oddities. As recently as the 1960s, many paleontologists considered them valuable only in terms of paleobiology and studied them to obtain information about taxonomic identification, paleogeographic species range, and the manner and approximate speed of locomotion. Today, dinosaur tracks are much more broadly interpreted and are providing insight into dinosaur behavior and physical habits, paleopathology, and the nature of the paleoenvironment.

That juvenile sauropods were capable of bipedal running is only the most recent behavioral trait revealed by dinosaur tracks. Another is that in dinosaur herds, adults and juveniles appear to have traveled in separate groups. In the field of paleopathology, ichnology is revealing how dinosaurs compensated for injuries and other abnormalities by modifying their manner of locomotion (for example, limping). Dinosaur tracks have also provided records of foot injuries and deformities.

Most dinosaur trackways were created in moist zones of vegetation-free sediments typical of marine shorelines. By geographically correlating dozens of individual track-



Dinosaur ichnology is providing new insight into animal behavior and the paleoenvironment.

ways, paleontologists have now established the location of shorelines as they existed during the Cretaceous Period.

In the United States, trackways made by the same types of dinosaurs within the same geologic horizon of Cretaceous sediments (or in stratigraphically equivalent sediments) occur in a line between South Dakota and Texas that represents the western shore of the Interior Seaway. This warm, salty Cretaceous sea had a broad coastal plain that hosted a booming dinosaur population. Present-day Morrison is near the center of that Cretaceous shoreline.

Other paleoenvironmental clues come from the study of dinoturbation, the trampling of sediments by dinosaurs. Dinoturbation helped to preserve small life forms where fossilization might not otherwise have taken place. As dinosaurs moved, they compacted small plants and animals in the sediments, the first step toward creation of a fossil record.

The study of dinosaur tracks is an invaluable complement to the study of dinosaur fossils. The fossil footprints of running baby sauropods found near the Morrison Natural History Museum are another example of how dinosaur ichnology is helping to paint the best picture yet of those remarkable creatures called dinosaurs. ♦

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 MINERAL of the MONTH CLUB

Providing Quality Specimens and the Stories Behind Them

Story by Steve Voynick

Color, luster, crystal shape, mineralogical associations, and overall aesthetics are factors that contribute to the appeal of mineral specimens. But Richard Sittinger, who owns and manages the Mineral of the Month Club with his wife, Cheryl, believes that there is much more to minerals than just appearance. "Certainly, visual appeal is important," says Richard. "But what adds to that appeal and really makes mineral collecting an educational experience is the story behind the specimens."



In July 2011, club members received a gem-quality specimen of beryl (variety aquamarine) from Erongo, Namibia.

Providing quality mineral specimens and the stories behind them has spelled success for the Mineral of the Month Club. Now going into its sixteenth year, the Cambria, California, company has amassed many impressive statistics. To date, the Sittingers have mailed their members more than 50,000 specimens of more than 170 different minerals. Literally ranging from actinolite to zircon, these specimens have come from every continent except Antarctica. And each specimen has been accompanied by a "write-up"—a detailed, professionally written, 10-page report explaining every aspect of that particular mineral.

The concept of a club that mails mineral specimens to its members each month was actually originated in 1972 by Russ and Alexandra Filer of Yucaipa, California. The Filers operated their mineral-of-the-month club until 1982, providing its members with small, inexpensive, study-grade specimens. The Filers' club was quite successful—at its peak, it had nearly 1,500 members.

In the 1990s, when they were seeking a way to establish themselves in the mineral-specimen business, Richard and Cheryl borrowed the Filers' basic idea. But they made some big changes, upgrading specimen size and quality, offering two membership levels, and providing a detailed, informational report about each specimen.

Richard and Cheryl launched their Mineral of the Month Club in March 1996. Their first featured mineral was pyrite: perfectly formed cubic crystals from the classic locality at Navajún, La Rioja, Spain. Preparing that first mailing took little time and even less postage because the club had only seven members.

But the combination of mineral specimens and comprehensive write-ups has worked well. Today, the Mineral of the Month Club has nearly 500 members—enough to require a part-time assistant to help out with the job of labeling, packing and mailing the monthly specimens.

“Some of our success is due to the general increase in interest in minerals and mineral collecting,” says Richard. “But our members tell us that a bigger reason is the quality of both our specimens and our write-ups.”

The Mineral of the Month Club now offers three membership levels. The basic Silver Level, which is popular among students and beginning collectors, costs \$88 per year and provides study-size specimens ranging from ½ inch to 2 inches in length. Gold Level members pay \$291.50 per year for better specimens ranging in size from 2 inches to 3½ inches that are suitable for both study and display. At the Platinum Level, members have the option of ordering large, top-quality specimens that make fine display pieces. And all members have the option to “pass” on any month’s mineral should it not interest them.

To meet the demands of each monthly mailing, Richard and Cheryl must buy 500 to 600 specimens of each featured mineral. That’s more than 7,000 specimens annually, a volume that substantially reduces cost. This benefit is passed along to club members in the form of higher specimen quality. This volume buying means that club specimens are often better than those available for the same price at rock shops and shows.

Finding sources for 600 specimens each month that are not only of the same species and from the same locality, but of suitable quality, size and cost is a challenge. To do it, Richard and Cheryl maintain close ties with an international network of top mineral dealers and specimen miners who are familiar with the club’s unusual monthly re-



JEFF SCOVIL PHOTO

Information about the political intrigue shrouding their Pakistan source accompanied the brookite specimens members received in May 2007.

quirements. Because of these contacts, featured minerals are often from new finds or classic localities, or are of unusual species.

Richard recalls one transaction that took place at the Tucson, Arizona, gem and mineral show in 2007. A foreign dealer who spoke virtually no English had a large selection of specimens from a new find. Richard hand-selected 684 specimens, then was shocked when the dealer asked for more than \$30,000.

“I couldn’t begin to afford that much,” Richard says. “I tried to explain that I was not questioning the value of his specimens, but that I was limited in how much I could pay to accommodate our membership levels. My best offer seemed embarrassingly low. But the next day, I was amazed when he accepted it. As a result, our members

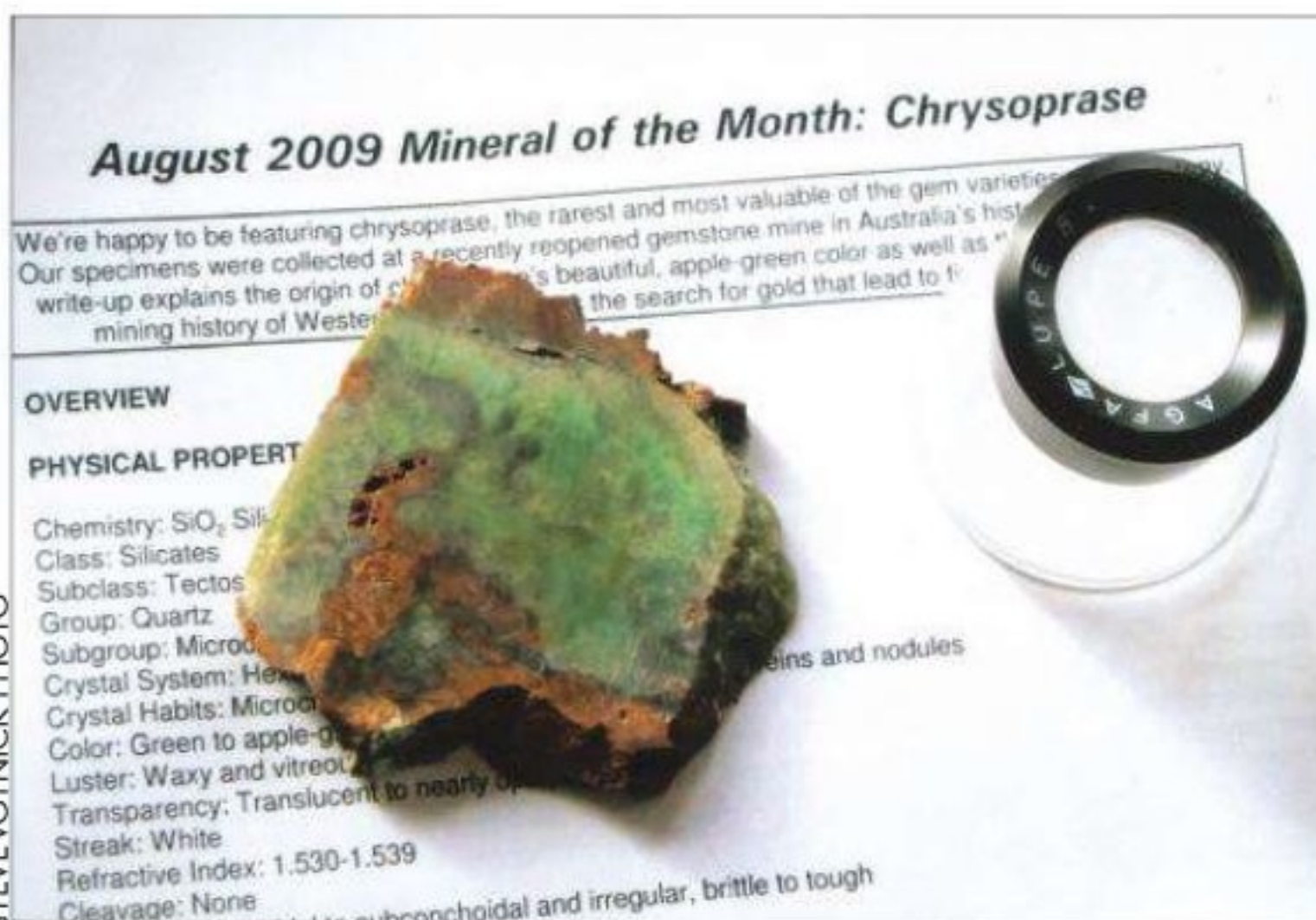
received specimens with a value many times greater than what they paid through our club. Some of our Silver Level specimens retailed for \$60 each, and some Gold Level specimens had \$200 price tags on them—yet our members paid just a fraction of that.”

The write-up that accompanies each specimen includes details on the mineral’s physical properties, name origin, chemical composition, crystal type and structure, collecting localities, jewelry and decorative uses, history and lore, and technological uses. There are even references to facilitate additional reading. A special section focuses on a particular, sometimes unusual aspect of the featured mineral, and an “About Our Specimens” section explains how, where and when each specimen was collected.

“Mineral collectors today have higher levels of education than ever before,” Richard notes. “They’re interested in the world around them, they’re curious, and they want to learn. But specimens from rock shops or shows have only simple locality statements. Many collectors want more, and that’s the point of our write-ups—to give them what they need to make mineral collecting an educational experience.”

The write-ups require considerable time and research. Each includes details on geologic origin and mineralogical formation, colorful locality descriptions, locality histories, and even relevant information about local culture and politics, should they apply to collecting. Each write-up is more than 5,000 words in length—roughly twice that of a feature article in *Rock & Gem*.

Many members are especially interested in the historical accounts of mineral localities. When the club featured adamite and wulfenite from the famed Ojuela mine at Mapimí (Durango), Mexico, members learned that the Ojuela silver-lead deposit was discovered in 1598 and became a major source of silver for the Spanish Crown.



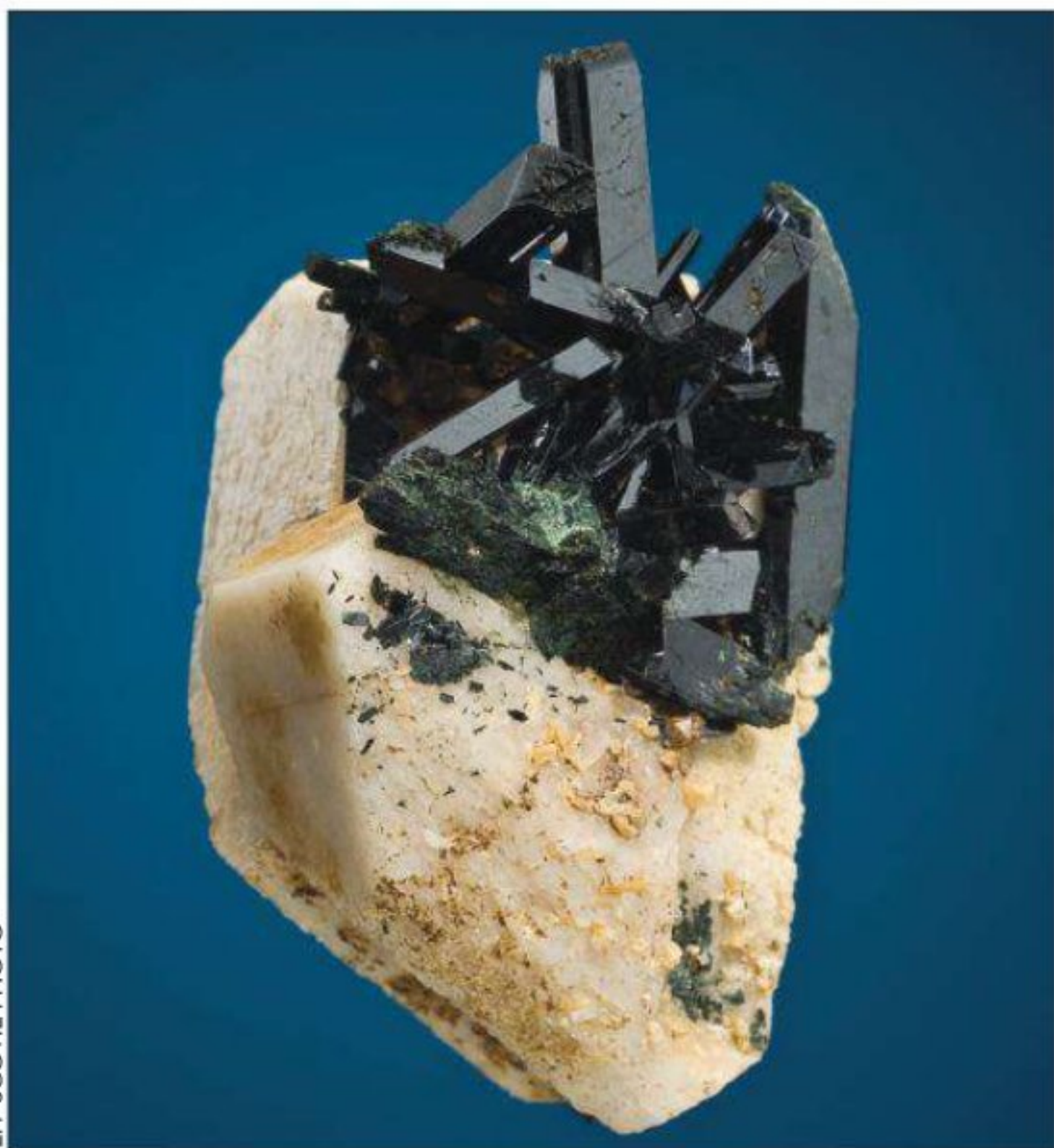
STEVE VOYNICK PHOTO

Each Mineral of the Month specimen is accompanied by a detailed write-up that explains every aspect of that particular mineral.



STEVE VOYNICK PHOTO

The Mineral of the Month Club offers Silver, Gold and Platinum memberships to fit the varying budgets of mineral collectors.



JEFF SCOVIL PHOTO

In June 2011, club members received specimens of aegirine from the classic locality at Zomba Mountain, Malawi.



JEFF SCOVIL PHOTO

The featured mineral for November 2009 was wulfenite from another classic locality, the historic Ojuela mine at Mapimí, Mexico.

Over its 410-year operating life, Ojuela has produced 7 million tons of remarkably rich ore with an average grade of 15 troy ounces of silver, 15% lead, 12% zinc, and smaller amounts of gold and copper. Although many of the mine's 200 miles of underground workings are now flooded or abandoned, several mine levels are still worked exclusively for mineral specimens.

"We always try to geographically pinpoint our mineral localities, but occasionally it can't be done," Richard explains. "When we featured brookite, we could only say that our specimens came from somewhere in the Kharan District of western Pakistan."

The write-up suggested why this locality was shrouded in secrecy. Kharan is one of Pakistan's most dangerous and least-developed districts, where ethnic separatist groups and tribal chieftains regularly foment violence, Taliban military units from Afghanistan take refuge, and smugglers and refugees roam freely across the Afghan and Iranian borders. Kharan also has closely guarded and highly sensitive Pakistani military and nuclear-weapons test sites.

Some dealers believed that the miners who collected the brookite specimens kept the location of the source secret to protect it from rival mining groups in their absence. But others suspected that the brookite was collected illegally from a restricted area, and that revealing its location would be a de facto admission of criminal trespassing, which could have dire consequences in Pakistan.

Club members learned of more intrigue when they received lazurite from the clas-

sic locality in the Kokcha Valley (Badakhshan Province) of Afghanistan in December 2009. Lazurite is the key mineral constituent of lapis lazuli, and the Kokcha Valley, located in a remote, rugged section of the lofty Hindu Kush range, has some of the world's oldest gemstone mines.

The lazurite write-up recounted how the 1979 Soviet invasion had disrupted the traditional Afghan export trade in lapis. Despite the Soviet military presence, mujahideen nationalist guerrillas maintained control of rural areas, including the Kokcha Valley. Ironically, the Soviet invasion partly modernized Afghan lapis mining. Previously, explosives for mining use were costly and difficult to obtain. But disassembling countless Soviet land mines provided an inexhaustible supply that enabled Afghan miners to increase lapis production. This politically unstable region is now controlled by Northern Alliance guerrillas, who use mine production to fund their military activities. Today, the Northern Alliance mines and sells about \$5 million worth of lapis each year.

In the June 2011 write-up for aegirine, members learned how commercial specimen collecting can sometimes be quite dangerous. The club's specimens were collected at Zomba Mountain, a classic source in the southeastern African nation of Malawi, where aegirine occurs in pegmatite dikes on the faces of sheer, 2,000-foot-high cliffs. Although collecting poses extreme physical risk, the government has licensed some 50 Malawian miners to collect at this site. Richard and Cheryl acquired the club's aegirine specimens from a South African

mineral dealer who, in 1997, was among the first foreigners to ever visit the Zomba Mountain locality.

The special section of the aegirine write-up explained that the Zomba Mountain cliffs are scarp features of the East African Rift System, a series of long, narrow, north-south-oriented depressions that are Africa's most prominent geological feature. The 2,500-mile-long East African Rift System is part of the 4,200-mile-long Great Rift Valley, the longest rift on earth. The rift began forming 65 million years ago and is still separating today at the relatively rapid rate of about 1/2 inch per year. Within 10 million years—a blink of an eye in geological time—much of east-central Africa, including the Zomba Mountain locality, will break away from the rest of the African continent.

Collecting the featured mineral for July 2011, the aquamarine gem variety of beryl, from Erongo Mountain in Namibia was also dangerous. Erongo Mountain formed when an intrusion of granitic magma solidified slowly to create pegmatite pockets filled with large, well-developed, intensely colored aquamarine crystals. Club members learned that Erongo Mountain gained recognition as a classic locality in 1999, shortly after native diggers discovered aquamarine-containing pegmatite pockets, or "nests", exposed on the nearly sheer faces of 200-foot-high cliffs. Erongo Mountain has already claimed several lives, most recently that of a digger who fell to his death in February 2011, shortly after the club's specimens had been collected.

"Commercial mineral collecting can also be financially risky," Richard points out.



In December 2009, members received lazurite (lapis lazuli) from Afghanistan's Kokcha Valley.

"And we reported that in our topaz write-up in April 2010."

That month's specimens were sherry-colored topaz prisms on rhyolite from the classic locality at Topaz Mountain in Juab County, Utah. Despite collecting several thousand topaz crystals, the commercial specimen-collecting company that mined the specimens eventually wrote this venture off as an economic failure. The special write-up section, titled "Commercial Mineral Collecting: A Risky Business", addressed the many reasons commercial specimen-mining ventures are often unprofitable.

"Considering the physical and financial risks that are part of commercial collecting," says Richard, "it's a wonder that we have many mineral specimens at all."

In September 2011, members received specimens of anhydrite from another classic locality, the Naica lead-zinc-silver mine in Chihuahua, which is Mexico's oldest producing mine. The write-up told how Spanish prospectors had discovered the Naica deposit in 1794 and first mined it for silver. Over more than 200 years, Naica has yielded 40 million tons of ore and still produces lead, zinc, and smaller amounts of silver, copper and gold.

Members learned that anhydrite, which rarely forms well-developed crystals, had little collector demand until 1981, when Naica miners discovered thousands of beautifully formed, square-terminated, pale blue-gray anhydrite crystals. The write-up also explained how Naica has since gained worldwide fame for another reason. In 2000, miners discovered a natural geodic (geodelike) cave now known as the Cave of

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The **MINERAL** of the **MONTH CLUB** from [page 29](#)



Feedback from Mineral of the Month Club members indicates that the biggest reason for the company's success is the quality of both its specimens and its write-ups.

the Giant Crystals. This horseshoe-shaped cave is 100 feet long and 35 feet wide, and is filled with huge crystals of gypsum (variety selenite). Some of these crystals are 36 feet long and 4 feet thick, weigh 55 tons, and are recognized as the largest freestanding crystals ever found. The write-up recounted the exciting discovery of the cave, the work done to protect and preserve the huge crystals, and the international scientific research efforts that were conducted to understand their origin.

"An unexpected benefit that longtime club members have received is specimens from classic localities that are now closed," Richard explains. "As an example, in 1997, we featured rhodochrosite from Colorado's Sweet Home mine, the source of the world's finest rhodochrosite specimens. The mine closed not long afterwards and the supply of those beautiful specimens has stopped. Our members have also received marcasite on calcite from Brushy Creek, Missouri, fluorite and sphalerite from Tennessee's Elmwood mine, and vesuvianite from Canada's Jeffrey mine, all of which have since closed. It's remarkable how many minerals that we featured just a decade ago are no longer available and have increased greatly in value."

To help make members aware of the remarkable variety of minerals, in April 2004 the club featured specimens that literally came from another world: meteorites. These specimens consisted of kamacite, a natural, iron-nickel alloy that exists almost exclusively in meteorites, and were fragments of the famed meteorite that fell in the Sikhote-Alin Mountains in eastern Siberia on Feb. 12, 1947. The Sikhote-Alin event was the largest iron-nickel meteorite fall ever observed, and hundreds witnessed its spectacular fireball. Their dramatic accounts and the search for the impact point, figured in the accompanying write-up.

Sometimes, the mineral of the month is actually a mineraloid, a naturally occurring substance with distinctive properties that does not fully qualify for classification as a mineral. An example is obsidian in the form of Apache tears from Picketpost Mountain in Pinal County, Arizona. The write-up explained why properly flaked obsidian can actually be sharper than surgical-steel scalpels and recounted the story of Ishi, the last of the California Yahi Indians, who passed on his traditional obsidian-flaking techniques to University of California scholars in 1911.

Opal, also classified as a mineraloid, has been featured twice. The first specimens were from Opal Butte in Morrow County, Oregon. Four years later, the club featured opal from Woodstock Down Station in Queensland, Australia.

"It didn't seem repetitive to feature opal twice," Richard explains. "Opal from Oregon and Australia is radically different in origin, formation, appearance, and how it is mined. Sending opal twice gave our members a chance to see how specimens of the same species—but from different localities—can differ widely in physical properties."

Club members have also received quartz specimens several times, always in different forms and from different localities. Featured quartz varieties have included colorful Mookaite jasper and gem-grade green chrysoprase, both from Australia; quartz-filled geodes from Western Sahara, Africa; Soledade agate from Rio Grande do Sul, Brazil; Japan-law twinned quartz crystals from Huancavelica, Peru; and scepter quartz from Chihuahua, Mexico.

Members have also received several forms of pyrite, including pyrite concretions from Hunan, China; iridescent septarian nodules of "rainbow" pyrite from Russia; cubes and dodecahedrons from Huanzála, Peru; and cubic crystals from Navajún (La Rioja), Spain.



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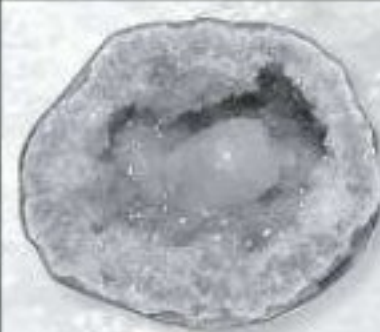
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"Navajún pyrite is one of the very few minerals in the same form and from the same locality that we have featured twice," Richard notes. "It was our first mineral back in March 1996, and we featured it again 10 years later. We only had seven members for that first mailing, and we felt that the exquisite cubic development and brilliance of Navajún pyrite warranted a second presentation at a time when we had several hundred members."

The Mineral of the Month Club has also featured such pseudomorphic minerals as hematite-after-magnetite from Volcán Payun Matra and quartz-after-aragonite from Patagonia, both in Argentina, as well as such native elements as copper from the historic mines of Upper Michigan and wire silver from Anhui, China.

Each write-up has a section titled "Technological Uses" that can be quite lengthy, especially with such minerals as sphalerite, galena, hübnerite and molybdenite, which are major ores of zinc, lead, tungsten and molybdenum respectively. The "Technological Uses" section details the uses, extraction methods, world production figures, and prices of the metals derived from these ores in order to point out the importance of minerals to modern society.

Write-ups also suggest how to examine specimens, noting carefully such features as color, luster, striations, crystal form, and mineralogical associations.

"It's one thing to examine specimens and another to read about minerals," says Richard. "But it means much more to read an in-depth report specifically about the specimen that you're holding in your hand."

Richard and Cheryl attend about a dozen gem and mineral shows each year to promote the Mineral of the Month Club, recruit club members, confer with dealers about new mineral finds and the availability of specimens, and generally keep up with the world of mineral collecting. They purchase most of their specimens from dealers at Tucson and Denver, often acquiring enough specimens at these two shows for an entire year of monthly mailings.

Richard and Cheryl have found great satisfaction in their sixteen years of running the club. Earning a living in a field they both love is not the only reward.

"Between the dealers we work with and our club members, we've met hundreds of great people," Richard says. "Getting to know our club members has been the most rewarding part, and we're pleased that we have been able to send them so many wonderful mineral specimens. I also believe that we've furthered the collecting hobby by introducing hundreds of people to minerals and educating them and others about minerals. And we're having fun doing it."

For further information, visit www.mineralofthemonthclub.org, call (800) 941-5594, or e-mail richard@mineralofthemonthclub.org.

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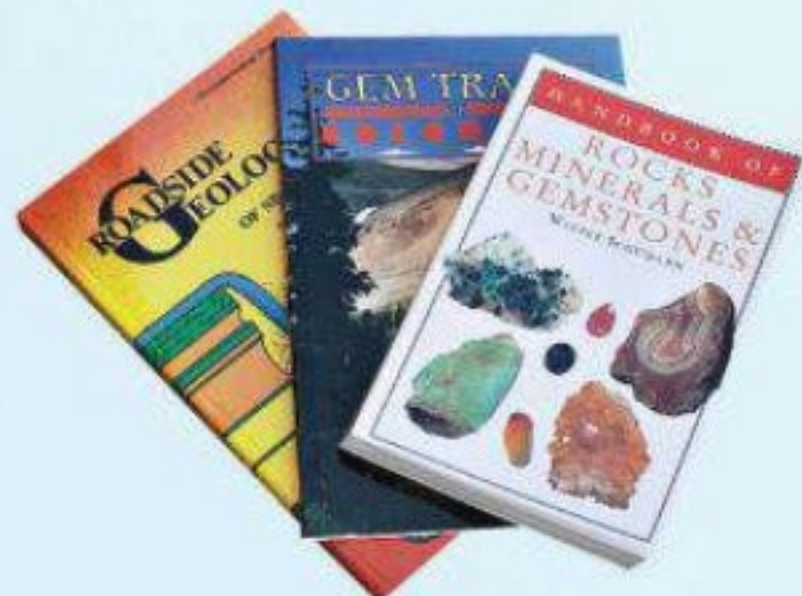
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Show Dates from page 10

21-22—FREDERICKSBURG, TEXAS: 43rd Annual Hill Country Gem & Mineral Show; Fredericksburg Rockhounds; Pioneer Pavilion, Lady Bird Johnson Municipal Park, state Hwy. 16, 2 miles south of downtown; Sat. 9-6, Sun. 10-5; free admission; hourly door prizes, raffle, fossils, minerals, geodes, crystals, petrified wood, gems, jewelry, jewelry-making and lapidary supplies, exhibits, demonstrations, wire wrapping; contact Jeff Smith, 208 Castle Pines Dr., Kerrville, TX 78028; e-mail: jeffbrenda@windstream.net; Web site: www.fredericksburgrockhounds.org

27-29—REDLANDS, CALIFORNIA: Annual symposium; MSSC Micro Mounters; San Bernardino County Museum, 2024 Orange Tree Dr.; mineral giveaway tables, sales tables, silent and verbal auctions, speakers, field trip; contact Dr. Robert Housley, (626) 449-6454; e-mail: rhousley@its.caltech.edu; or Gene Reynolds; e-mail: quartzhunter1@hotmail.com

27-29—TYLER, TEXAS: Annual show, "Gem and Jewelry Showcase"; East Texas Gem & Mineral Society; Tyler Rose Garden Center, 420 Rose Park Dr.; Fri. 9-5, Sat. 10-6, Sun. 10-5; adults \$3, students \$1, Scouts in uniform free; Grand Prize drawings, silent auction, Wheel of Fortune, show cases, 11 dealers, gemstones, jewelry, fossils, minerals, geodes, lapidary demonstrations; contact Keith Harmon, (903) 581-4068; e-mail: keithharmon19@yahoo.com

28-29—PANAMA CITY, FLORIDA: 21st annual show; Panama City Gem & Mineral Society; Bay County Fairgrounds, 2230 E. 15th St.; Sat. 9-5, Sun. 9-4; free admission; exhibits, door prizes, gems, minerals, fossils, jewelry, beads, lapidary art, wire wrapping, silversmithing; contact Joseph Schings, 224 Collinfurst Square, Panama City, FL 32404-8530, (850) 871-1846; e-mail: mojo3002@comcast.net

JANUARY-FEBRUARY 2012

26-12—TUCSON, ARIZONA: Wholesale and retail show; Eons Expos RLLLP; 22nd St. at I10; 9-6 daily; free admission; minerals, fossils, dinosaurs, crystals, gems, jewelry, meteorites; contact Christine Coyle, 38 Fox Ridge Rd., Sparta, NJ 07871, (516) 818-1228; e-mail: lowellcarhart@yahoo.com; Web site: www.22ndstreetshow.com

28-11—TUCSON, ARIZONA: Arizona Mineral & Fossil Show; Martin Zinn Expositions; Ramada Ltd., 665 N. Freeway; Thu. 10-6 daily; free admission; more than 400 dealers, free shuttle among locations, Artists' Gallery at the Hotel Tucson City Center; contact Martin Zinn Expositions, PO Box 665, Bernalillo, NM 87004-0665; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

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28-11—TUCSON, ARIZONA: Arizona Mineral & Fossil Show; Martin Zinn Expositions; The Mineral & Fossil Marketplace, 1333 N. Oracle Rd.; Thu. 10-6 daily; free admission; more than 400 dealers, free shuttle among locations, Artists' Gallery at the Hotel Tucson City Center; contact Martin Zinn Expositions, PO Box 665, Bernalillo, NM 87004-0665; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

FEBRUARY 2012

1-29—QUARTZSITE, ARIZONA: Wholesale and retail show; Desert Gardens RV Park; 1064 Kuehn St. (I-10 Exit 17); 9-6 daily; free admission; crystals, minerals, rough, polished, jewelry, lapidary equipment; contact Sharon or Sandy, 1064 Kuehn St., Quartzsite, AZ 85346, (928) 927-6361; e-mail: info@desertgardensrvpark.net; Web site: www.desertgardensrvpark.net

9-12—TUCSON, ARIZONA: Annual show; Tucson Gem & Mineral Society; Tucson Convention Center, 260 S. Church Ave.; Thu. 10-6, Fri. 10-6, Sat. 10-6, Sun. 10-6; adults \$10, seniors and active military \$8 on Fri., children (14 and under)

continued on page 36

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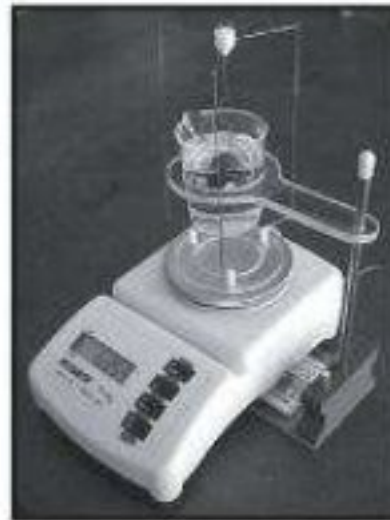
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Show Dates from page 34

free with adult; 2-day tickets \$17; contact Show Chairman, PO Box 42588, Tucson, AZ 85733, (520) 322-5773; e-mail: tgms@tgms.org; Web site: www.tgms.org

11-12—MERRITT ISLAND, FLORIDA: Annual show; Central Brevard Rock & Gem Club; Kiwanis Island Park, 950 Kiwanis Park Rd.; Sat. 10-5, Sun. 10-5; adults \$3, children 12 and under free with adult; rough and cut gems, minerals, fine jewelry, equipment, lapidary supplies, books, beads, exhibits, demonstrations; contact Erleen Estes, (321) 632-3201

11-12—OAK HARBOR, WASHINGTON: 47th annual show, "Sweetheart of Gems"; Whidbey Island Gem Club; Oak Harbor Senior Center, 51 SE Jerome St.; Sat. 9-5, Sun. 9-4; free admission; member exhibits, demonstrations, dealers, rough and finished rock and gems, slabs, silent auction, door prizes, raffle, spinning wheel; contact Keith Ludemann, (360) 675-1837; e-mail: rock9@whidbey.net

17-26—INDIO, CALIFORNIA: Annual show; San Geronio Mineral & Gem Society; Riverside County Fair & National Date Festival, Gem & Mineral Bldg, Bldg. #1, 46-350 Arabia St.; Fri. 10-10, Sat. 10-10, Sun. 10-10, Mon. 10-10; adults \$8, seniors \$7, students \$6, children (under 5) free; contact Bert Grisham, 1029 N. 8th St., Banning, CA 92220, (951) 849-1674; e-mail: bert67@verizon.net

18—UPPER MARLBORO, MARYLAND: Annual show; Southern Maryland Rock & Mineral Club; The Show Place Arena, 14900 Pennsylvania Ave.; Sat. 10-5; adults and students \$3, children (7 and under) free; contact Michael Patterson, 11000 Thrift Rd., Clinton, MD 20735, (301) 297-4575; e-mail: michael.patterson@pgparks.com; Web site: www.smrnc.org/

18-19—MESA, ARIZONA: 46th annual show; Apache Junction Rock & Gem Club; Skyline High School, 845 South Crismon Rd.; Sat. 9-5, Sun. 10-4; adults \$3, students (with ID) \$1, children under 12 free; dealers, jewelry, gems, cabochons, beads, rock, specimens, slabs, fossils, lapidary equipment and supplies, silent auction, door prizes, grand raffle, gem tree-making activity, Wheel of Rocks; contact Kelly Iverson, (480) 325-2705; Web site: www.ajrockclub.com

25-26—BOISE, IDAHO: Annual show; Idaho Gem & Mineral Club; Expo Idaho, 5610 Glenwood, corner of Glenwood and Hwy. 20; Sat. 10-6, Sun. 10-5; adults \$3, children (under 12) \$1.50; contact Charlie Smith, PO Box 1264, Riggins, ID 83549, (208) 628-4002; e-mail: tetongems@frontier.com

25-26—JACKSON, MISSISSIPPI: Annual show; Mississippi Gem & Mineral Society; Trade Mart, High St.; Sat. 9-6, Sun. 10-5; adults \$5, students \$3; contact Janie Hand, (601) 706-4629; e-mail: rockNGranny49@aol.com; Web site: Missgem.org

25-26—SAN FRANCISCO, CALIFORNIA: Show, "San Francisco Crystal Fair"; Pacific Crystal Guild; Fort Mason Center, 99 Marina Blvd.; Sat. 10-6, Sun. 10-4; adults \$6, children (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

MARCH 2012

2-4—NEWARK, CALIFORNIA: Annual show; Mineral & Gem Society of Castro Valley; Newark Pavilion, 6430 Thornton Ave.; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$6 (3-day pass), children (under 12) free with adult; fluorescent rock display and sale, more than 35 dealers, live demonstrations, display cases, jewelry, gemstones, beads, fossils, equipment, supplies, auction, door prizes, kids' Spinning Wheel; contact Cathy Miller, PO Box 2145, Castro Valley, CA 94546, (510) 887-9007; e-mail: info@mgscv.org; Web site: www.mgscv.org

2-4—RICHMOND INDIANA: 39th annual show; Eastern Indiana Gem & Geological Society; Wayne County Fairgrounds, 861 N. Salisbury Rd.; adults \$5 (3-day pass), seniors \$3, ages 18 and under 7 free; Fri. 10-6, Sat. 10-6, Sun. 11-4; jewelry, minerals, crystals, fossils, displays, dealer demonstrations, silent auctions; contact John LaMont, (765) 647-4894

3-4—ARCADIA, CALIFORNIA: Annual show; Monrovia Rockhounds; County Arboretum and Botanic Garden, Ayres Hall, 301 S. Baldwin Ave.; Sat. 9-4:30, Sun. 9-4:30; free admission; more than 15 vendors, gems, jewelry, minerals, fossils, beads, findings, geode cracking, Grab Bags, Treasure Wheel, Dino Dig, Fossil Find, Grand Prize raffle, hourly drawings; contact Jo Anna Ritchey, 224 Oaks Ave.,

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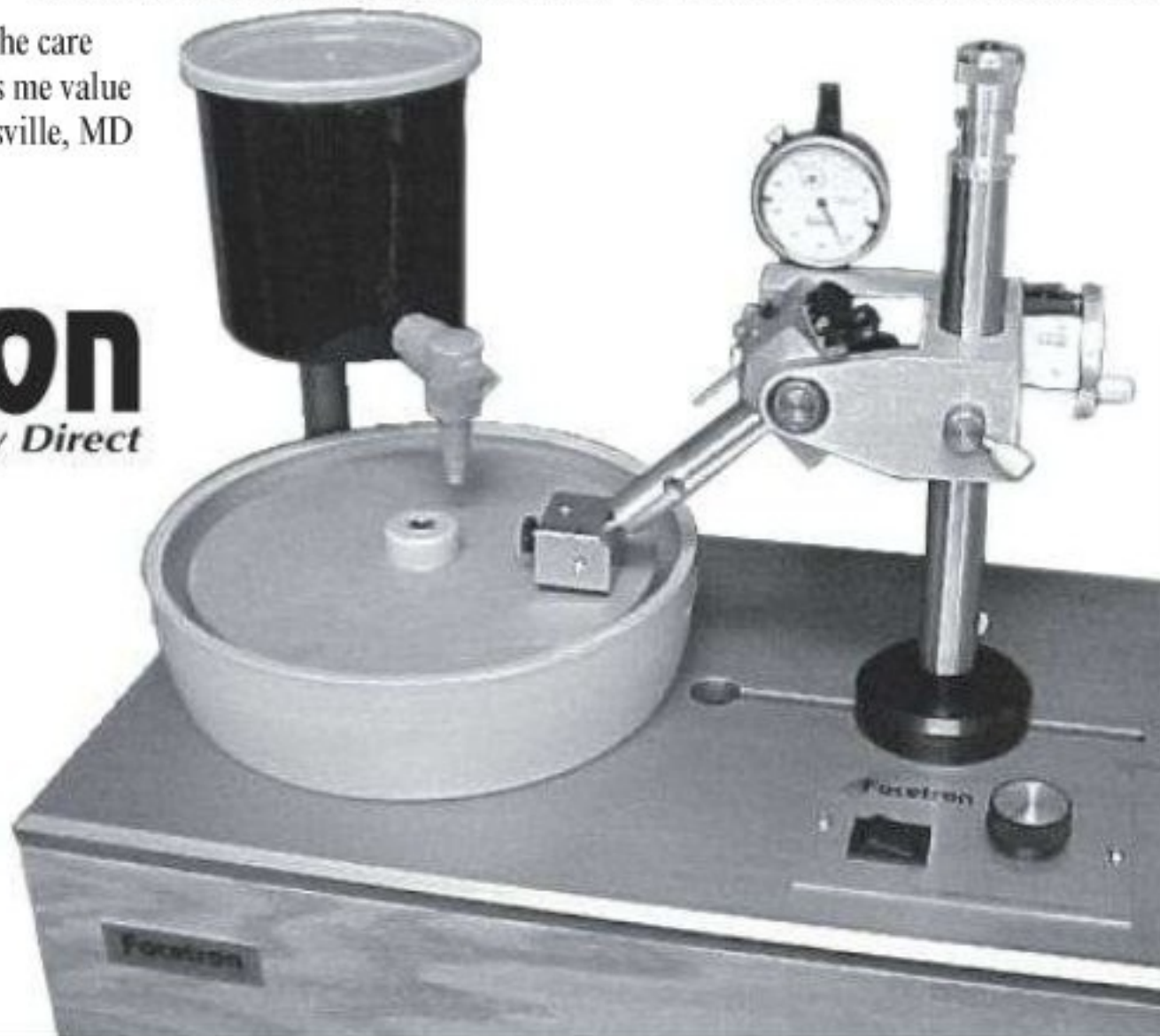
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Rutile

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Rutile is one neat mineral! Chemically, it's simply titanium and oxygen (titanium dioxide) that crystallizes in the four-sided tetragonal system, forming striated prisms that may be acicular (needlelike) or stubby with pyramidal ends. Its colors include red, brown, golden-yellow, and black, with metallic to adamantine (diamondlike) luster.

Although it usually occurs in small amounts, rutile is widespread in plutonic igneous rocks (those formed by magma cooling deep within the earth) and metamorphic rocks that formed at high pressure and temperature.

Rutile is often associated with quartz. When needlelike "Venus hair" crystals of rutile become encased in other minerals,

such as clear quartz, the resulting crystals make stunning display specimens and can be cut into attractive gemstones. The rutile needles look like floating tufts of red or golden hair in the clear quartz. Even neater, when bundles of rutile fibers are oriented just right in minerals like corundum, they create the optical effect known as asterism. The result is star rubies and star sapphires!

Brazil and Switzerland are famous for rutilated quartz and for sprays of rutile sprouting from hematite platelets. In the United States, Vermont and North Carolina have produced attractive specimens of rutilated quartz, large black crystals can be found at Graves Mountain, Georgia, and varied forms of the mineral can be collected at Magnet Cove, Arkansas.

When powdered, rutile is brilliant white, so it's mined for use as pigment in paper, plastics and paints. It's also mined to produce titanium. When titanium is alloyed with other metals, the resulting material can be as strong as, but 45% lighter than, steel. These properties are especially good for jet engines and spacecraft.

—Jim Brace-Thompson



Rutile



Rutilated quartz

www.kidsloverocks.com

Adam Marchacos started collecting rocks in the 4th grade. When he grew up, he started a business based on the hobby he loved. The Cold River Mining Co. (www.coldrivermining.com) sets up gemstone sluices in amusement parks, campgrounds, and other kid-friendly locations to introduce kids to the excitement of mineral and gem collecting. The company also sells bags of mining rough on a wholesale basis to replenish the sluices.

Now, Adam has branched out by starting a Web site to educate young and old people about rocks, fossils, minerals, and everything else that relates to our earth. The site includes educational information about the types of rocks there are, where to find rocks, and how to make new friends with others who are interested in rock and mineral collecting. There is also a map that shows the locations across the United States that feature his gemstone sluices.

Some of the resources at www.kidsloverocks.com, like the Kids Fun Club and the Dig In! activity series, must be purchased, but there are many free projects, mineral activities, coloring pages, and collecting information. New items are added every week. Get your parents' permission before going online or making any purchases.

—Lynn Varon

Rock & Gem



LYNN VARON PHOTO



Dominic Triano (left) enjoys digging Herkimer diamonds in New York with his family and taking field trips with his mineral club.



Dominic and his friend found rocks covered with tiny crystals, like this one, on a field trip to Anthony's Nose, New York.

Junior Rockhound Spotlight:
Dominic Triano

I'm Dominic V. Triano. I'm 13 years old and in the 8th grade. I guess you could say I've been a part-time rock collector all my life. I have lots of rocks in my room: crystals, fossils, Zuni fetish carvings. Most of them are wrapped up and in boxes, but some are kinda loose.

I really like hunting for "Herkimer diamonds" (a special kind of quartz crystals), and my family used to do that every year as part of a camping trip, but we hadn't done it recently, so I was so happy when our mineral club got a claim up that way this year! My mom and I stopped there on the way back from a rock show this summer and I found some really nice little crystals just from digging in the loose dirt! I want to go back and break some rocks to find a pocket.

A couple of years ago, when I was 11, I took a soapstone carving class at The Institute for American Indian Studies, a sort of small indoor/outdoor museum in Connecticut, and I made a big cat. Maybe it's a mountain lion. The teacher's name was Jeff Kalin, and he's part Cherokee. He also teaches things like flint knapping and making stone knives. My older brother took the soapstone class, too, and made a bowl. My mom didn't finish her project because she kept talking to everyone and taking pictures.

I like going on field trips a lot more than studying about rocks in books. Several years ago, my family went to a quarry in Hudson, New York, where we looked for fossils. My mom found half a trilobite, and we brought home lots of rocks with less exciting things like small plants and shells. I have a couple of really nice trilobite fossils, but we bought them. One of my cousins reads a *lot*, but she's never heard of trilobites, so maybe reading is overrated.

Last year, we went to Anthony's Nose, near the Hudson River in New York, and dug around on some old "dumps" from really old mines. There were a lot of iron mines in this area in the 1700s and 1800s, I guess, including a famous one called Tilly Foster (which is now just a big lake). My friend Mason and I were the best diggers. We found all these rocks with lots of tiny crystals on them. They were really fragile, though, and didn't survive the trip home very well. Some of the grownups said that the crystals grew on the rocks after everything was piled up there, like mold.

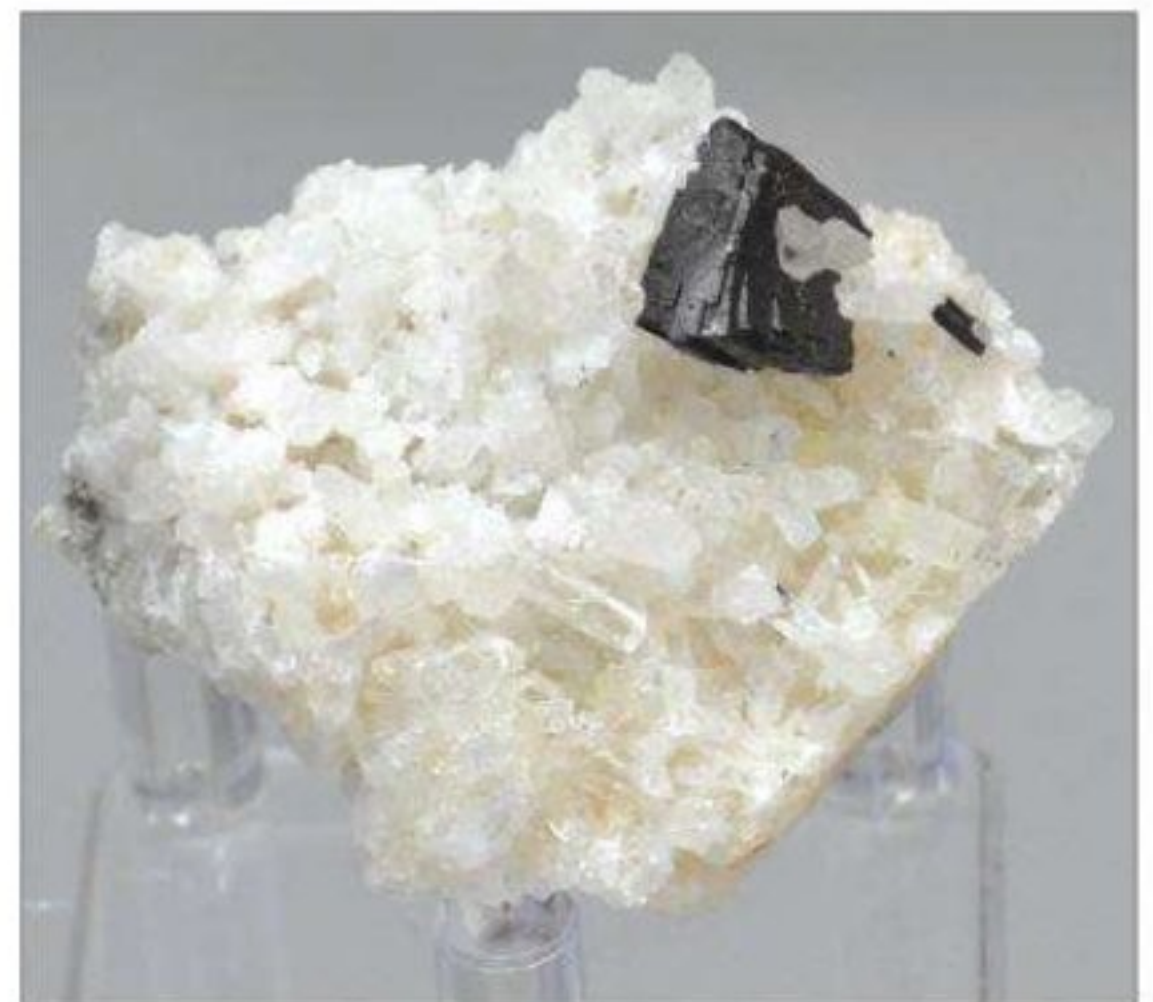
Sometimes, I go to the club meetings, and of course I work at our annual show. Some years, my brother and I have display cases at the show, too. One time, we had someone teaching us about carving minerals. It's important to wear the right safety equipment indoors as well as outdoors.

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The Quiz is open to U.S. residents 17 and younger. Mail your answers to **December Quiz, Rock & Gem magazine, P.O. Box 6925, Ventura, CA 93006-9899**. Five winners will be drawn from the valid entries received by **Dec. 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 specimen of hubnerite with needle quartz generously donated by the Mineral of the Month Club (www.mineralofthemonthclub.org). (See ad on [page 41](#).)

The Quiz

1. Needlelike rutiles are called " _____ " crystals.
2. Bundles of rutile fibers in minerals like corundum create the optical effect known as _____ .
3. Brilliant white powdered rutile is used as pigment in _____ , _____ and _____ .
4. _____ is soft enough to be carved into animals and bowls.
5. "Herkimer diamonds" are a kind of _____ crystal.



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



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January 28 - February 11(2012) Tucson, AZ; Martin Zinn Expositions Arizona Mineral & Fossil Show; The Hotel Tucson City Center "Formerly The Inn Suites" 475 N. Granada, Tucson AZ Room #235; 10am - 6pm Daily, Sat. Feb 11th 10am - 5pm

February 18 - February 19 Antioch, CA 94509; 2012 Jewelry, Gem & Mineral Show, 1201 West 10th Street, Antioch, CA 94509; Sat. & Sun, 10am - 5pm

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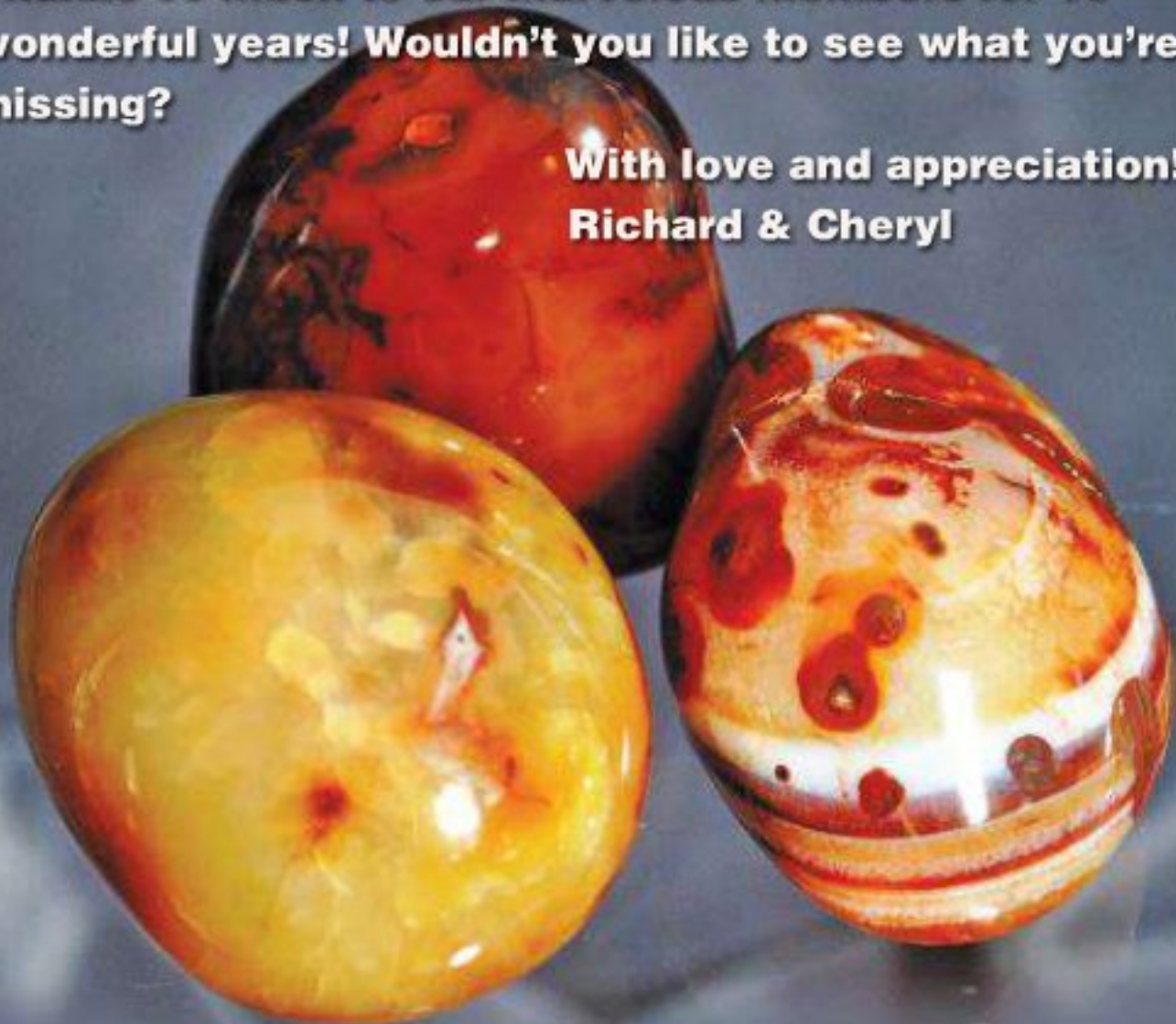
This magnificent Jadeite carving is 22" wide by 13" tall by 6" deep. This Jadeite carving weighs over 66 pounds. The unusual shape of the stone was used to create a double "Hillock" scene. Please contact me for more photos. The price is \$20,000.

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509RG Brentwood Road
Marshalltown, IA 50158
Tel: 800 798-4579
www.bill@billegleston.com

December 2011
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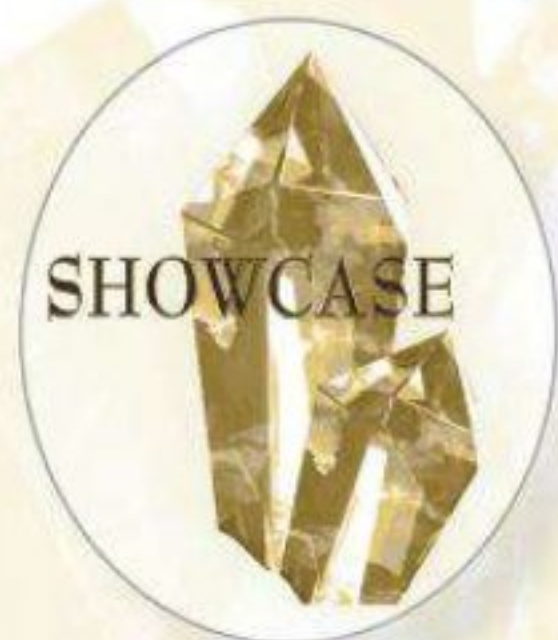
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FINDING New Customers THROUGH LECTURES

20 Guidelines for an Inspirational Presentation

Story by Helen Serras-Herman

Communicating with your existing customers and seeking out new ones are vital to the health of your business. Options include direct mailing invitation letters and postcards, print ads in magazines or catalogs, telemarketing, e-mail, a Web site, Internet search engines, and social media. The message that I brought to the 2011 Gemological Institute of America (GIA) Symposium via a poster presentation, however, was that lecture presentations are also a very successful approach.

These are events at which you can showcase and describe your artwork, while demonstrating your expertise. I have found over the years that giving a well-organized presentation that features distinctive photos, along with exhibiting some characteristic pieces of your work for participants to examine, is an engaging form of communication. Whether it is a highly specialized trade audience at a national event or your local gem and mineral society, arts center, or civic club, you have an audience that came to listen to you. Face-to-face personal interaction is one of the best ways to find new customers. They don't necessarily have to purchase something



M.J. COLELLA PHOTO

Explaining the limited availability of a gem like Ocean Jasper® helps listeners understand the reason behind what may seem like high prices.

on the spot, although you should be prepared for that possibility by carrying boxes, bags, and a receipt book or your credit card processing machine.

Potential customers become engaged when they hear the artist articulate about her work. They want to hear your personal story. They want to know when and how you got started, who influenced you, the sources of your inspiration, and the process of creation. These are the main questions that are asked time and time again.

NATASSA LITSARDOPOULOU PHOTO



HELEN SERRAS-HERMAN PHOTO



Tailor your talk to a general audience by sharing more of the stories behind the creation of each piece.

The message I brought to the 2011 GIA Symposium was that lecture presentations allow artists to successfully showcase and describe your artwork, while demonstrating your expertise.

Your audience is looking for an understanding of the value of your work, an inspiration to start creating their own jewelry and cut stones, a motivation to return to projects that they have procrastinated over, a reason to own one of your pieces, or maybe all of the above. They are looking for encouragement and knowledge. You are the best person to shed light on all the aspects of your work by giving an eloquent and expressive portrayal of your creations.

Questions from the audience may also make you aware of what is on people's minds and, even if you get caught off guard on an inquiry, it will help you prepare a better answer for your next talk. Don't be embarrassed to admit that you don't have an answer, but perhaps offer to get back to the questioner with your response.

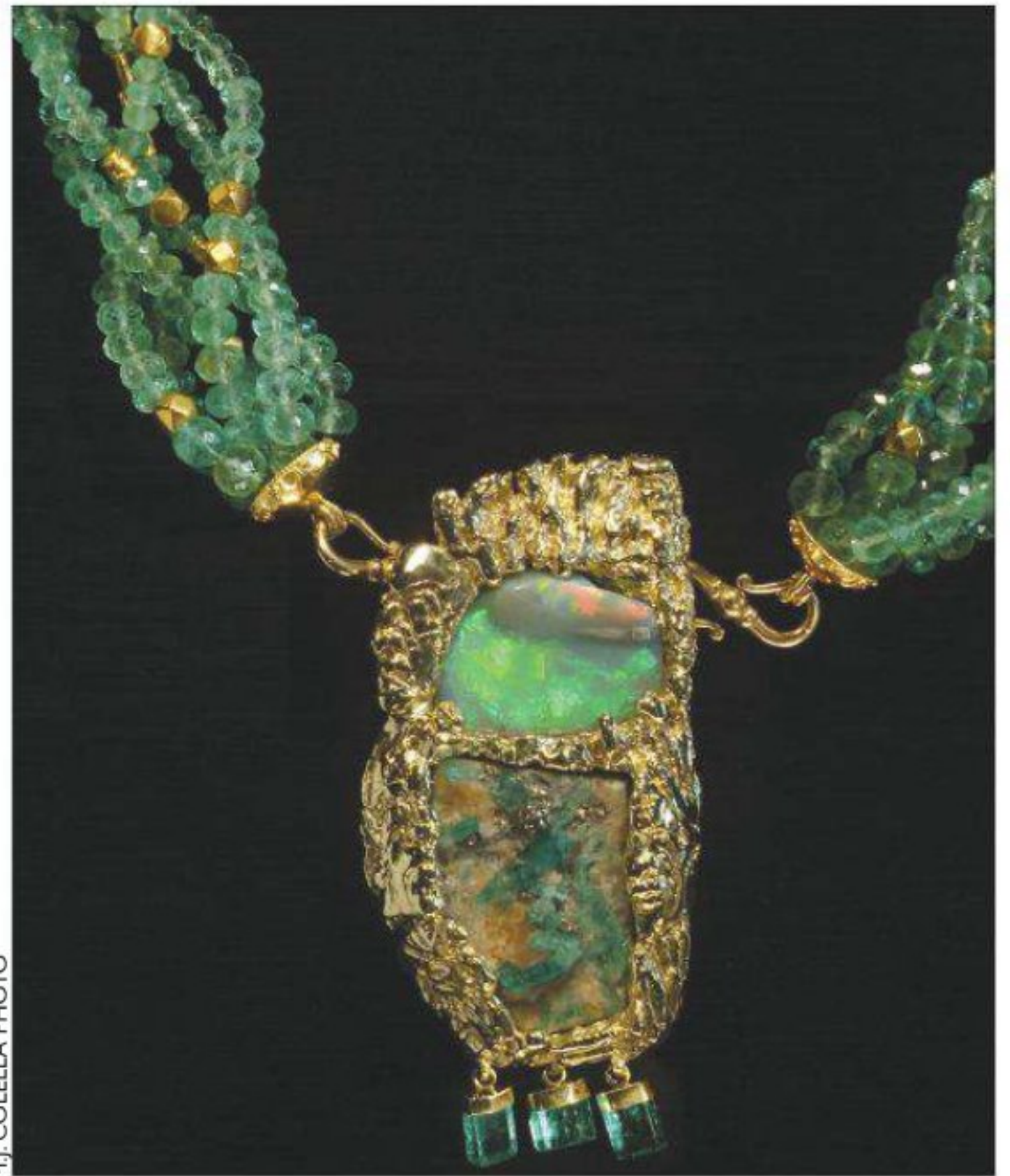
It is of utmost importance that all your photos are sharp. Nobody wants to look at blurry images, even if they are of very significant pieces, and nobody wants to hear you apologize for the bad photos. Spend some time understanding digital presentations, like Powerpoint, as you can add a lot of information about the materials or dimensions of the pieces on each slide. This will mitigate the need to read from your written notes.

In preparing and giving your talk, you may want to follow some of these guidelines:

1. Share your journey. Potential clients get interested when they hear your personal story. When possible and appropriate, share your life's highlights with them: the important steps in your career, your apprenticeships, your awards, and your major exhibitions, but also some of your hardships. I describe my life as a gem artist as "being similar to the ups and downs—the pitching of a ship in rough seas". The highs—the awards, the big sales, the important exhibitions, and the publications—are exhilarating and invigorating, while the lows—no replies, rejections and refusals—are devastating to your soul.

2. Describe to your audience your daily work routine. They often want to know the best time of the day to create art, even though that differs from one artist to another, or whether you stick to a rigid schedule.

3. Elaborate on your artwork. Share with your audience your experiences and your sources of inspiration. I let them know how inspiration can be found in nature, in books, in other art forms such as movies or dance, in ancient legends or current news, close to home or in faraway places. Somehow, all these stimulants mount up inside us and, when channeled through our creativity, they emerge victorious in unique artworks. Your presentation may make your listeners' senses more perceptive, receptive and sensitive to the significance of each of these life experiences.



M.J. COLELLA PHOTO

Since the price of gold today is over seven times what it was 10 years ago, it would be challenging to create jewelry like my 2002 Echoes necklace, which included over 60.0 grams of 18k yellow-green gold.

4. Reveal the process of creation, your unique style, and the evolution of your artwork. I usually describe how, during the concept procedures, the design took shape from the original idea; how the aesthetic composition is built; how decisions on the type of carving, material, size and style are made; how the internal and external features of the gemstone are evaluated and possibly incorporated into the design; and how you highlighted nature's hallmarks and made them center stage of your creation.

5. Show your drawings. Whether they are quick scribbles or elaborate designs for jewelry, they are the perfect inside look at your creations. Drawing is an art form by itself, an artistic creation,

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LECTURES from page 43



M.J. COLELLA PHOTO

In my Victory Laments gem sculpture, which is a tribute to a "sea" of fallen heroes, Victory mourns their loss with her closed wings.

the beginning of an inspiration. It is an exercise to be able to see and compare. It is the result of a study and may reflect a series of changes.

6. Talk about the particular subjects or themes you have chosen and the messages you want to convey. Discuss how the symbolism, metaphor or "story" matured as you advanced in your design, or when you found the perfect harmony with your choice of materials.

7. If you hold a patent or trademark for some part of your work, share that fact, but otherwise, don't be afraid to disclose techniques. My gem carving teacher, Nik Kiely-Lambrinides, used to tell me, "don't be afraid to divulge your techniques. You are always going to remain the master".

8. Tailor your talk to your audience. Be technical and scientific when addressing your peers, but don't go into deep details for broader audiences. My lecture at the Asiatic Museum of Art on the Greek island of Corfu in 2008 had to appeal to the general public, so I shared more stories about the creation of each piece, whereas my lectures at the 2006 American Gem Trade Association seminars in Las Vegas and the 2010 National Association of Jewelry Appraisers conference in Tucson offered in-depth evaluation information that trade attendees can use.

9. If you are repeating a lecture subject, keep your talk fresh by adding updates and new photos, as there may be people in the audience who have heard your lecture before.

10. Help your audience understand the costs behind the artwork: the basic material costs, your workshop upkeep expenses, your show and travel expenditures, your Web site costs, and so on.

11. Give a virtual tour of your workshop. Show your equipment, machinery, and

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Jan. 18 - 22nd, 2012: Q.I.A. Pow-Wow, Quartzsite, AZ; Jan. 26 - Feb. 12, 22nd Street Show, Tucson, AZ

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M.J. COLELLA PHOTO



The value of your artwork will be better understood if you illuminate the intricate labor and cost of the materials involved.

hand tools. Very few people outside our trade know about the equipment we use, and how expensive the replenishment of wheels and burrs is.

12. Describe labor-intensive lapidary and jewelry procedures. Convey a sense of how time-consuming gem art is. Talk about the repetitive steps of sanding and polishing gems. Explain why sculptural pieces take a lot of time in planning and the execution of the physical stability, and about the complexity of jewelry pieces that include design, fabrication, precious metals, casting, and stone-setting.

13. If you are using precious metals, such as gold and silver, give examples of the cost five or 10 years ago compared to today's prices. Even though consumers hear about the rise of gold prices, giving them some actual numbers will help them understand the degree of inflation. When I mention that gold today is over seven times what it was 10 years ago, I can hear sounds of exasperation from the audience! It would be challenging for me today to create jewelry like my 2002 Echoes necklace, which included 60.0 grams of 18k yellow-green gold for the "faces" that surround a black opal and emerald in matrix, in addition to the 18k gold for the beads and clasps.

14. Know the origin and properties of your gem materials. As we exercise the ability to create sculptures and jewelry that blend the mineral and art worlds, clients are fascinated to learn more about the materials we use. Share with them any tips on how to take care of various gemstones and pearls, and reassure them about the gems' toughness and ability to be worn as adornment. Let them know about fragile materials and how to protect them.

15. Stay informed about new gems and mining locations. Share any recently pub-



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Finding **New Customers** through **LECTURES** from page 45

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HELEN SERRAS-HERMAN PHOTO

Invite your clientele to your next open studio, show or exhibit and let them know about gallery opening receptions, Meet the Artist events, or artist's demonstrations.

lished articles on the gem materials you are using or the status of mining and availability. As an example, I often talk about the emergence of Ocean Jasper® in the market, the rise of its wide-spread popularity, and the current price explosion due to limited mining.

16. Feature new or rare gemstones in your collection, and reveal stories about their discovery, especially your personal mining adventures. Audiences love to hear your rockhounding stories and details of any hardships you endured. I am only occasionally on the trails to look for rocks and gems, and when I describe the mines that we have visited and the conditions—the absence of running water and how I washed my hair with a pot full of water, the open-air outhouse, the dust, and so on—the audience begins to appreciate how hard it is to go rock collecting.

17. Have a handout prepared that includes some important points from your talk and your contact information.

18. At the end of your presentation, remember to invite audience members to visit your Web site to look at your artwork and calendar of upcoming shows and lectures.

19. Invite attendees to your next open studio, show or exhibit. That will probably be the best place to sell your merchandise. Let them know if the art gallery that represents you has a special promotion about your work, and when you will be present. Events such as gallery opening receptions, artist meet and greets, or artist's demonstrations during gallery art walks are especially enjoyed by the public. Let them know if you are holding a special preview for a particular group. For example, when I hold my Open Studio Tour once a year, I offer a special preview day for the local gem and mineral club members.

20. Do your best to make time to personally greet and chat with everyone in the room, whether it is at the beginning of your presentation or after a question-and-answer period.

LECTURE BENEFITS

Taking the time to address audiences about the intricacies of your gem artwork will have several benefits:

1. The value of your artwork will be better understood by potential buyers. By illuminating your intricate labor and the costs behind your materials and equipment, the price of your artwork—even if it is beyond some people's reach—will no longer be as shocking.

2. Those who were previously unfamiliar with your work may be drawn to your designs and become your new customers, while your existing clientele may see a new piece they would like to have. As wonderful as all the verbal praise is, the most rewarding feeling for artists is selling their artwork. Finding a "good home", where your labor-of-love creation will be appreciated and cherished, is so important. These customers will also be your "bragging ambassadors" in their own circle of friends. They will spread the word about you and your work, and may bring friends along to your next event.

3. By showing articles about your artwork and photos of the creations you sold to private collections or museums, you demonstrate that you are a regionally, nationally or internationally recognized artist.

4. There may be people in the audience from another group or organization who may, in turn, invite you to make a presentation or participate in their show. Follow up on any requests.

5. The host group, the local paper, or a national magazine may write a nice article about the event and your work, which you can then, with permission, post on your Web site and share with other customers via e-mail or social media.

Give an inspirational talk and your artwork will become memorable. Connect with your lecture audiences and you will find loyal new customers. 💎

Helen Serras-Herman is a 2003 National Lapidary Hall of Fame inductee and a gem sculptor with over 28 years of experience. Her Web site is www.gemartcenter.com.

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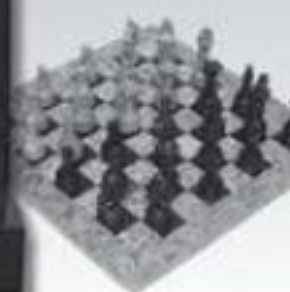
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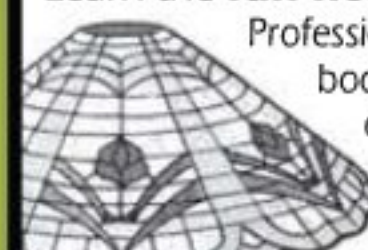
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Mineral Collecting in ARIZONA

PART I: A Look at the State's Most Prolific Sources

Story and Photos by Bob Jones



This remarkable orange-brown cockscomb wulfenite was one of many that were dug from a 90-foot-long water-course that was uncovered by blasting at the Defiance mine in the 1950s.

I grew up and got my college degrees in Connecticut, and I wrote my master's thesis on Luminescent Minerals of Connecticut. However, I've spent most of my collecting life in Arizona, one of the great mineral provinces of America. In the early days of my Arizona collecting, things were pretty easy. There were plenty of old mines to explore and plenty of good minerals to dig, and local clubs could usually get permission to conduct field trips in restricted areas. Some 60 years ago, the number of collecting sites seemed endless. It was never a matter of finding a place to collect. It was more a case of deciding which sites you hadn't visited lately.

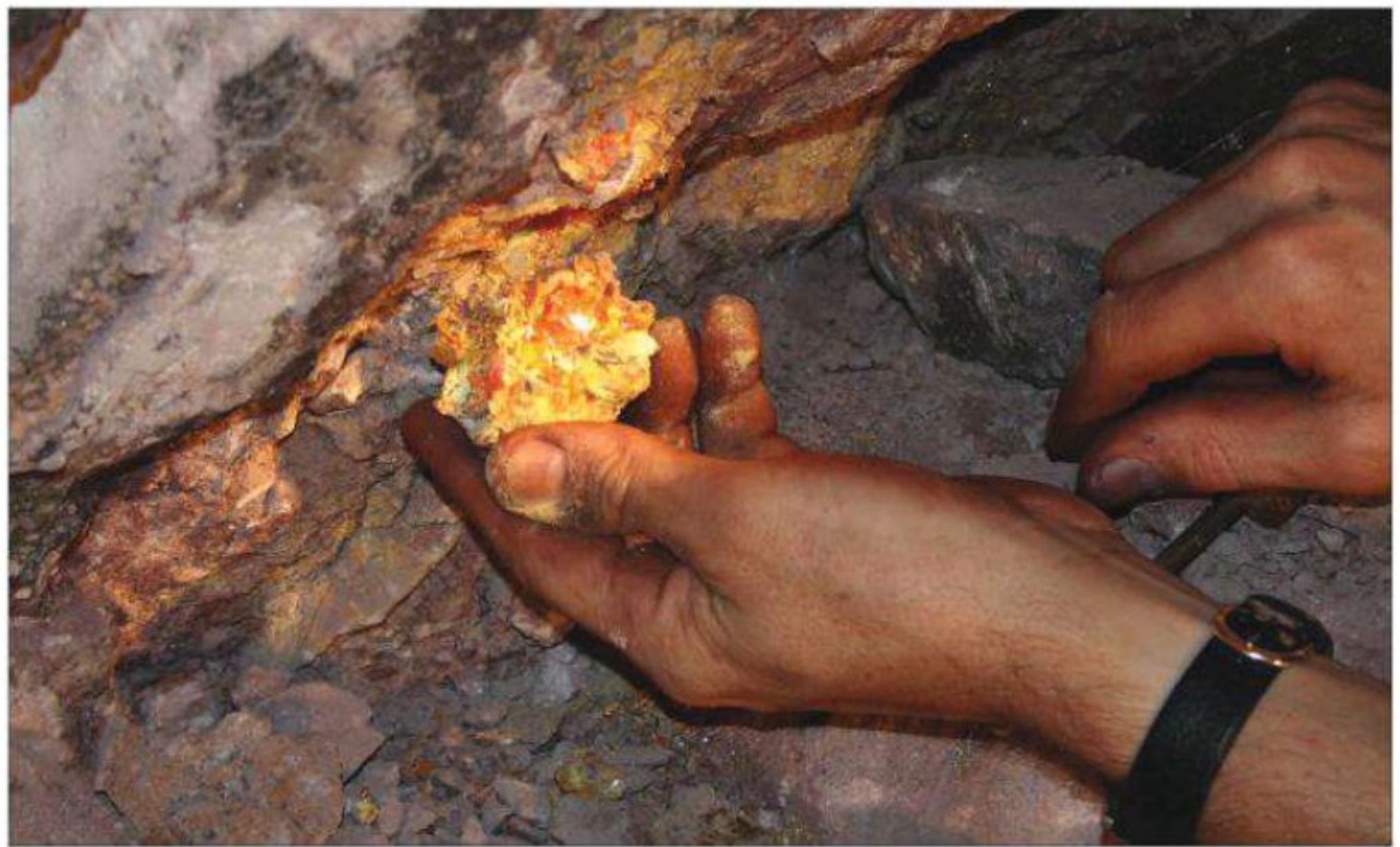
Today, collecting in Arizona is no picnic. Most productive sites with anything worth collecting have been claimed or closed to collectors. Operating mines, which are well aware of insurance risks and potential lawsuits, are hesitant to accommodate amateur collectors.

Arizona is world-renowned for the copper and copper species found there, but getting into copper mines is not easy. As much as I enjoy copper species, however, my favorite Arizona mineral is wulfenite. Found in an amazing number of old lead/silver mines, wulfenite from Arizona is ranked by scientists, museum curators, and collectors as the finest in the world. The state's most famous sources for wulfenite—

TOP: After a little work underground in the Rowley mine, a nice orange wulfenite with yellow mimetite is finally in hand.

CENTER: Evan Jones contemplates the best way to attack the wall rock in the Rowley mine to dig out another choice wulfenite.

BOTTOM: This display of Arizona wulfenite by Evan Jones gives you some idea of the number of sources and variety of specimens found in Arizona.



the Red Cloud, Old Yuma, Rowley and Glove mines—were all accessible and productive during most of the last 40 years of the 20th century.

Of these mines, the most productive for collectors was the Rowley, located near Gila Bend. Being close to a major highway and easy to access, the Rowley was always a ready site for a successful collecting weekend. In it, mineralized veins cut into a huge deposit of solid white barite, which is heavily faulted and jointed. In those joints, some of them measuring inches wide, one could look 2 or 3 feet into an open seam and be dazzled by countless bright-orange, transparent wulfenite blades. Unlike the Glove, Red Cloud, and Old Yuma specimens, the Rowley mine wulfenites were never large, but they were profuse, often completely covering the barite matrix.

Rowley barite was not easy to work, but a day's effort would produce one or more boxes of specimens of barite matrix coated with nice 1/4-inch to 1/2-inch orange blades. The Rowley was also an uncommon, but exciting, source of rare lead species. While collecting, if you happened to run into a galena pod that had been weathered, you might find microcrystals of leadhillite, caldonite, and other such rarities!

The Red Cloud mine is Arizona's most notorious wulfenite deposit—notorious because of two major collecting events. Back in the 1930s, Ed Over struck a seam that produced the most amazing bright-red wulfenite blades, the likes of which had only been found at the mine once before, when the Red Cloud was being operated in the 1880s.

Ed's wulfenites are bright red thanks to a trace of chromium. The larger loose crystals approached 2 inches on an edge. As Ed worked in the mine, these beauties had trickled out of an open seam, where they had been lying loose in sandy rubble. Such a find had all the collectors in Arizona seeking their fortune in the Red Cloud.

On one trip underground at the Red Cloud, mineral collector and dealer Bill Panczner and I managed to open a small seam with small dark-red blades under an inch on an edge—nothing to compete with Ed's find. On another trip, we tried our luck at going deeper, well over 500 feet down a ladder, in hopes of finding the "mother





EVAN JONES SPECIMEN

Miner/collector/dealer Ed McDole dug this fine yellow wulfenite on calcite at the Hilltop mine, near Cochise Stronghold, before the pocket was sealed off forever by a tunnel collapse.

lode". What we did find were small black to dark-brown blades of wulfenite, which were hardly world beaters!

It remained for others to realize the best way to attack the Red Cloud, which was by developing an open pit. The result was a huge find of many dozens of superb bright-red wulfenites completely covering matrix. Some specimens were a foot or more across, with myriad crystals. Many crystals were well over an inch on an edge. This was certainly the most significant find ever made at the Red Cloud simply because of the huge quantity of fine collector specimens mined during this 1990s operation.

The Glove mine, near Amado, south of Tucson, is another wulfenite source that has produced spectacular specimens. The finer crystals from here are the color of butterscotch and can be up to 3 inches on an edge. In large majority, the crystals are an inch on an edge and occur in intergrown clusters of fine hue. Several hundred specimens of this type were mined from one cavelike vug!

In the 1950s, miners at the Glove mine opened a huge pocket lined with wulfenites, the best ever found there. Two collectors, Richard "Dick" Bideaux and Bob Hagg, were allowed to mine out the specimens to sell. Fellow collectors and I made several trips into the Glove mine, but did not find any crystals like those from the big find of the '50s. We did find a small supply of dark-brown blades under 1/2 inch in length on matrix, and there were plenty of nicely crystallized calcites. On one of our trips, we could not resist crawling into the small cavity from which the 1950s wulfenites had been mined. The cavity was large enough that, after crawling through the opening, which was accessible off the ladder in the main incline shaft, you could rise up into a kneeling position. The cavity extended about 10 feet in all directions. We could only imagine what this large cavity must have looked like when it was replete with choice butterscotch-colored blades. We ex-

amined the walls of this now-empty cavity and did find small crystal fragments of nice color, but no complete crystals.

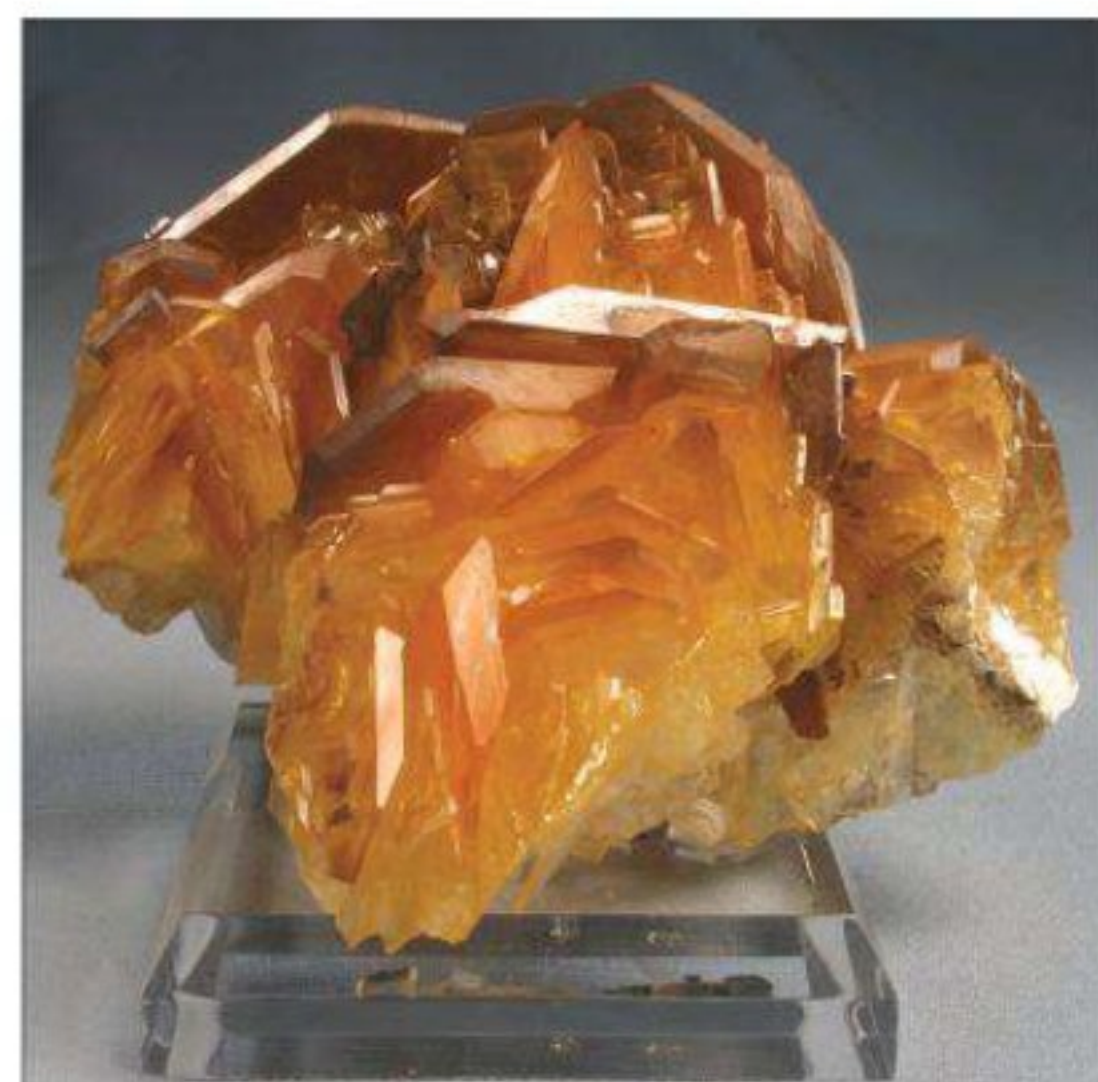
As a note of interest, when the big find of Glove mine wulfenite—which we all recognize as being among Arizona's finest—was made, the collectors had so many choice specimens in hand they had to devise a selling method. To make selling easier, they sold the wulfenites by the "unit". A unit was identified as any 4-inch by 5-inch specimen. What did they charge for a Glove wulfenite unit? Five bucks! Gone are the good old days.

Another interesting mine we enjoyed was the 79 mine. This old hole in the ground produced some delightful things: bright blue aurichalcite, Arizona's best; fine green botryoidal smithsonite; and glass-clear orange wulfenites, some with a red dot in the center, often on black mottramite matrix that was in stark contrast to the rich orange wulfenites. This old mine had been visited by so many collectors that the main shaft was in danger of being plugged by the rubble they had tossed aside.

Certain areas of the mine became known by the minerals they yielded. There was the "aurichalcite room" and the "wulfenite room", each a source of nice collector specimens. Digging was not easy, but it never is. Yet, a small seam might produce one or two nice specimens of aurichalcite. If you were really lucky, you might break into a small pocket rich in gorgeous, orange blades of wulfenite. The crystals were so transparent you could read through them.

The 79 mine was never a prolific producer of specimens. Granted, there were some good finds of aurichalcite and wulfenite, and lately smithsonite has been found in quantity. You never came out of the mine with flats of specimens, but you often came out with fine, colorful, well-formed specimens suitable for any collection shelf.

Today, the 79 mine is still producing, but under the hand of a specimen miner. The



This gorgeous butterscotch wulfenite is from the big crystal pocket at the Glove mine, south of Tucson.

most recent find from this fascinating source is fine, green, botryoidal smithsonite specimens that are well received by collectors.

The Old Yuma mine is close to Tucson. You can even see Interstate 10 from the hill on which this old gold mine is perched. Collecting here is no longer allowed. Dick, who was the last owner, finally sold the property to the National Park Service, and the mine and its surrounding slopes are now incorporated into Saguaro National Monument, West. The negotiations between Dick and the NPS were nothing short of adversarial. During the negotiations, Dick threatened to build a house on the property. In another move, he announced he would begin planning to leach the dumps with cyanide to recover the remaining gold. His threats finally convinced the NPS to meet his price demand, and the deal was consummated!

When the Old Yuma was accessible, it yielded amazing orange wulfenites and superb red vanadinites. Even the open-cut entrance to the inclined shaft produced fine specimens. At the base of the incline, a rich vein of crystallized vanadinite produced choice specimens in quantity.

The funniest story I've ever heard—and I'm sorry I was not there to witness this—was about the time itinerate collector/dealer Dick Jones was collecting at the Old Yuma. He took a break for lunch and was sitting in the open pit when he noticed a spot of yellow color on the opposite wall. Just for fun, he pulled his gun and shot at that spot. When struck by his bullet, the rocks collapsed, revealing a pocket of bright-orange wulfenite crystals. Collecting was really good that day.

My collecting in the Old Yuma open cut was never that good, but I worked small calcite veins to get excellent red vanadinites. If I was lucky, a small wulfenite would appear. By the time I was able to go underground there, Dick was exploring the site with an eye toward starting ore mining again. He kindly invited several collectors under-



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1/4" Peridot	Spessartine	Petrified Wood	Barite - "Rose" Form	1/4" Moonstone	Variscite
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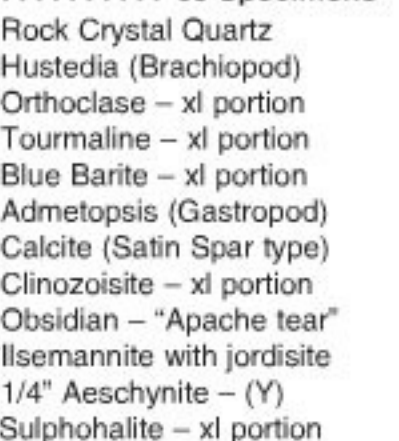
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Barite - nodule portion	*Dune Sand	Coquina	Chalcedony	Tourmaline - xl portion
*Hexahydrite (Epsomite)	Heulandite	*Sylvite	Topaz - xl	Blue Barite - xl portion
Gryphaea (Pelecypod)	Shark Tooth	Chlorite	Garnet - xl	Admetopsis (Gastropod)
Danburite - xl portion	Hemimorphite	Phyllite	Chondrodite	Calcite (Satin Spar type)
Mucrospirifer (Brachiopod)	Crinoid Stem	Liparite	Stilpnomelane	Clinzoisite - xl portion
Glabrocingulum (Gastropod)	Conglomerate	Peperino	Ostrea (Pelecypod)	Obsidian - "Apache tear"
Rhynchonella (Brachiopod)	Star Crinoid	Stilbite	Fossilized Coral	*Ilsemanite with jordsite
Fossilized Dinosaur Bone	Oil Sandstone	Natrolite	Gedrite	1/4" Aeschynite - (Y)
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Mineral Collecting from page 52

ground to try our luck. We dug and hammered and finally managed a small pocket of orange crystals. It was nothing spectacular, but a nice find for a day's effort.

A very productive wulfenite source was the Defiance mine. In the 1950s, when the mine was being worked for lead ore, miners set off a blast on Friday to allow dust to settle and gases to dissipate before work continued on Monday. After the blast, the miners realized they had exposed a watercourse that stretched for 90 feet. It was completely lined with wulfenite crystals: rich orange-brown cockscomb crystal groups just waiting to be plucked from the walls and floor.

The mine owner knew that Dick's father, George Bideaux, was interested in minerals, so he contacted him and gave him permission to collect that watercourse wulfenite—provided the collecting stopped when mining resumed on Monday. George passed the permission on to his son, who enlisted Jones to help with the collecting. All weekend, the two guys dug and collected, packed and hauled to the surface box after box of specimens. When they finally finished their collecting and packed up, Dick drove his truck and trailer out, while Jones followed close behind in his vehicle. When Dick came to a deep, dry wash that he had to cross, he hit the brakes so that he would not jar his precious load. Jones, however, was not so alert and ran into the back of the trailer. Luckily, the fragile cargo was not damaged, and even today you can find an occasional group of orange-brown cockscomb wulfenites from the Defiance mine for sale!

Another Arizona mine that produced fine wulfenite that is now eagerly sought by collectors is the Hilltop mine. From what I can gather, the Hilltop only produced one large lot of fine, yellow wulfenite specimens, and it happened well over 50 years ago when well-known miner/collector/dealer Ed McDole investigated the mine. During a lengthy stay, he broke into a seam full of choice yellow, opaque wulfenite blades. Being a professional miner, McDole did a good job of collecting a large quantity of specimens over a couple of days. One morning, he headed back into the mine to collect the remaining pocket of crystals. While he had been asleep in his camp, the tunnel access to the wulfenite source had collapsed, sealing off the pocket forever. Several other tunnels in the mine have since collapsed and there is no indication which collapsed area is guarding the wulfenite source. Not knowing which rubble pile to tackle, collectors simply have no chance of ever repeating McDole's lucky find.

These are only the most prolific wulfenite sources; there are more than 100 known sources in Arizona. Who knows when some rockhound will unearth a rich pocket with a little luck and perseverance! 💎

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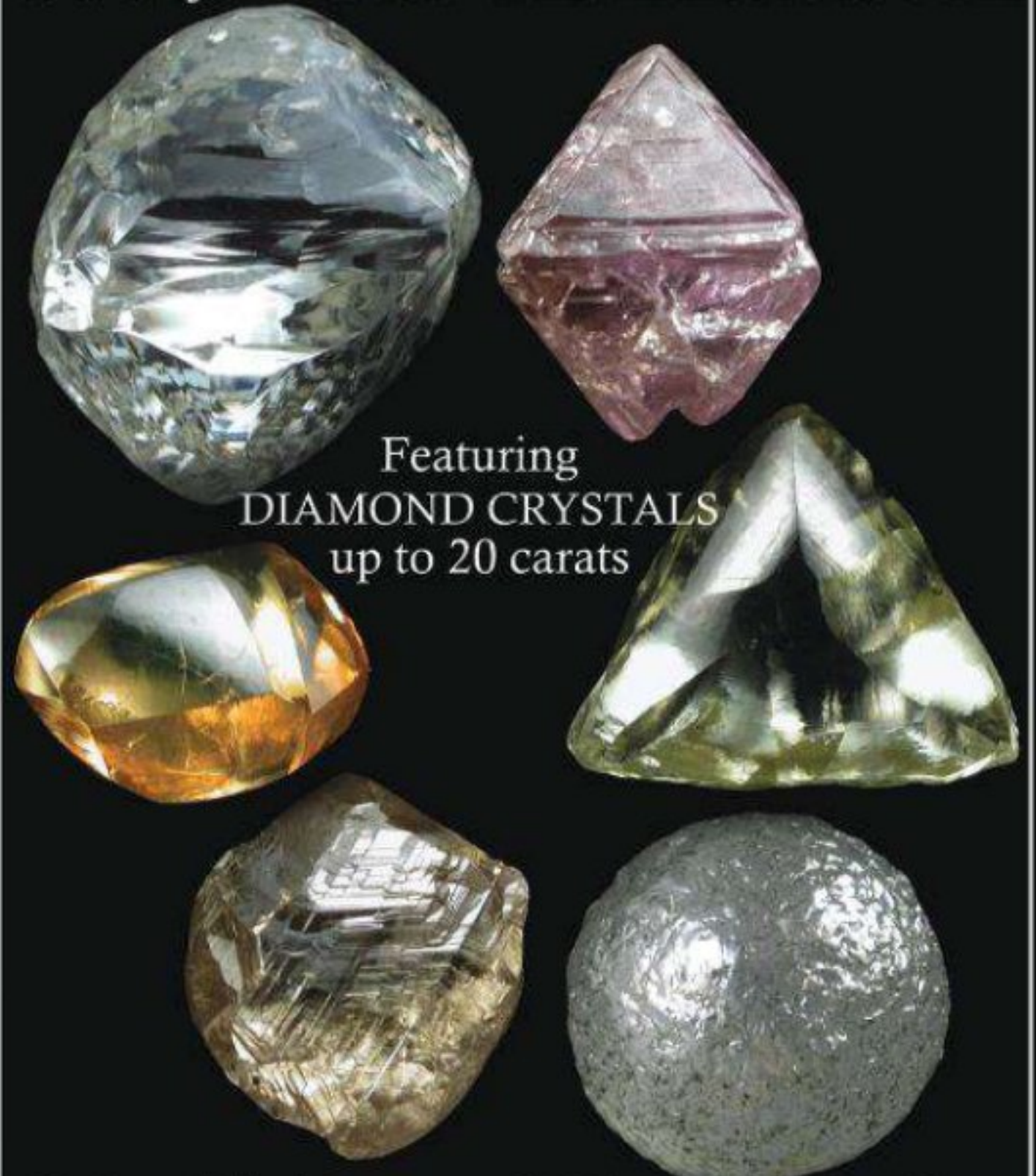
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OFF THE DOP

Faceting Rhodolite Garnets

Rhodolite is the most valuable of the red garnets and is often found in high-end jewelry pieces. It is composed of a combination of middle-market pyrope and almandite. While it is considered the most valuable of red garnets, it is not that expensive; rough sells for \$2.50 per carat and higher, depending on the size of the piece. The name "rhodolite" was first applied to the rhododendron-colored garnets that were discovered in North Carolina in the 1800s.

According to the Gemological Institute of America, rhodolite ranges in color from dark purple to raspberry red to light reddish purple. In the best gems, the tone is medium to medium dark. Rhodolite has numerous qualities that make it a highly desirable gem: it is plentiful; it is never artificially treated; cut stones will often look like fine rubies or red tourmaline; it has good durability; and it is often free of inclusions that might reduce clarity and brilliance. The prices of large (10 carats or more), fine-colored cut rhodolites rise steeply. Because rough is plentiful, rhodolite is often cut by lapidary artists into buff tops and free-form cuts with concave facets or traditional flat facets.

The first discovery of rhodolite in the United States was made in North Carolina. Commercial deposits were worked during the 1880s and '90s and became depleted by the early 1900s, although small deposits of small rhodolites are still found in North Carolina road cuts. East Africa has been the most important source in recent decades. Rhodolite occurs widely in ancient metamorphic rocks and in the gravels of the Umba River in Tanzania. Other important sources of rhodolite today are Sri Lanka, India's Orissa state, and Madagascar.

From a faceting perspective, rhodolite is a good candidate for jewelry, with a Mohs hardness of 7.25 and a specific gravity of 3.74 to 3.94. It has a refractive index of 1.75 to 1.77, and a critical angle of 34.5°. I find that rhodolite gems that are cut into smaller sizes, from 6mm to 8mm, are often the most beautiful. The natural shape of alluvial gems is well suited for ovals, cushions, octagons, and other rounded shapes.

I have found that small stones are best cut with 600 and 1200 diamond laps and



polished on a BATT™ lap with 100,000 diamond or a Darkside™ lap with Micro-Alumina slurry.

When cutting very small stones, I prefer to use an initial wax dop and transfer with two-part epoxy. For 8mm or larger stones, I use wax dopping exclusively. I find no need for any special orientation of the stone. I look for the side of the stone that will work best for the culet, then grind a flat spot on the opposite side, where the table will be. I try to let the natural shape of the stone dictate the shape I cut, but I will force a shape if it is close, even though my recovery is less because of the low price of the rough.

Rhodolite garnet in larger sizes is perfect for concave and fantasy cuts. The best angles for cutting rhodolite, in my opinion, are 38° to 39° for pavilion mains and 30° to 36° crown mains, depending on the faceting design geometry. The best designs, in my opinion, are modern computer-generated designs that have been ray trace analyzed for optical performance.

Garnets, which are the birthstone for January, have enjoyed popularity throughout history. They are great stones for practice cutting small gems before taking on more expensive small sapphire rough. They look nice in either silver or gold settings and are a terrific next step for the beginner who wants a break from cutting quartz or synthetics. ♦

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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Following the GOATS

Story and Photos by Bob Farrar

An Agate- and Geode-Collecting Adventure in Morocco



The agates found at Asni, Morocco, were mostly small, up to a couple of inches, and were usually red on the outside and bluish on the inside.

I've been collecting rocks and minerals for most of my life. Over the years, I have taken advantage of many opportunities to further this pursuit by traveling to some great mineral localities. Among the places I have been fortunate to visit are some of the mining areas of Morocco. One trip to Morocco in 2010, during which I was able to gather agates and geodes, was particularly fun and memorable.

All my trips to Morocco have been arranged by tour leader Sara Mount, of Silver Spring, Maryland. In Morocco, she works with brothers Adam and Aissa Aaronson. In addition to serving as tour guides, the Aaronsons are in the fossil business and

have developed connections with fossil and mineral dealers all over the country. Traveling to Morocco is not difficult for Americans. The people are always friendly, and we have never felt threatened in any way. Despite a few isolated incidents

of violence, Morocco is generally not dangerous for Westerners.

On this trip, we visited a location near the town of Asni, which is about 25 miles south of Marrakech, the country's second largest city. Asni lies in the High Atlas Mountains, Morocco's highest and most spectacular mountain range. This mountain range bisects Morocco, extending from near the Atlantic coast northeastward to near the Algerian border. Its highest point, Jbel Toubkal, is 13,671 feet high. The higher elevations get a lot of snow during the winter, and it persists well into spring.

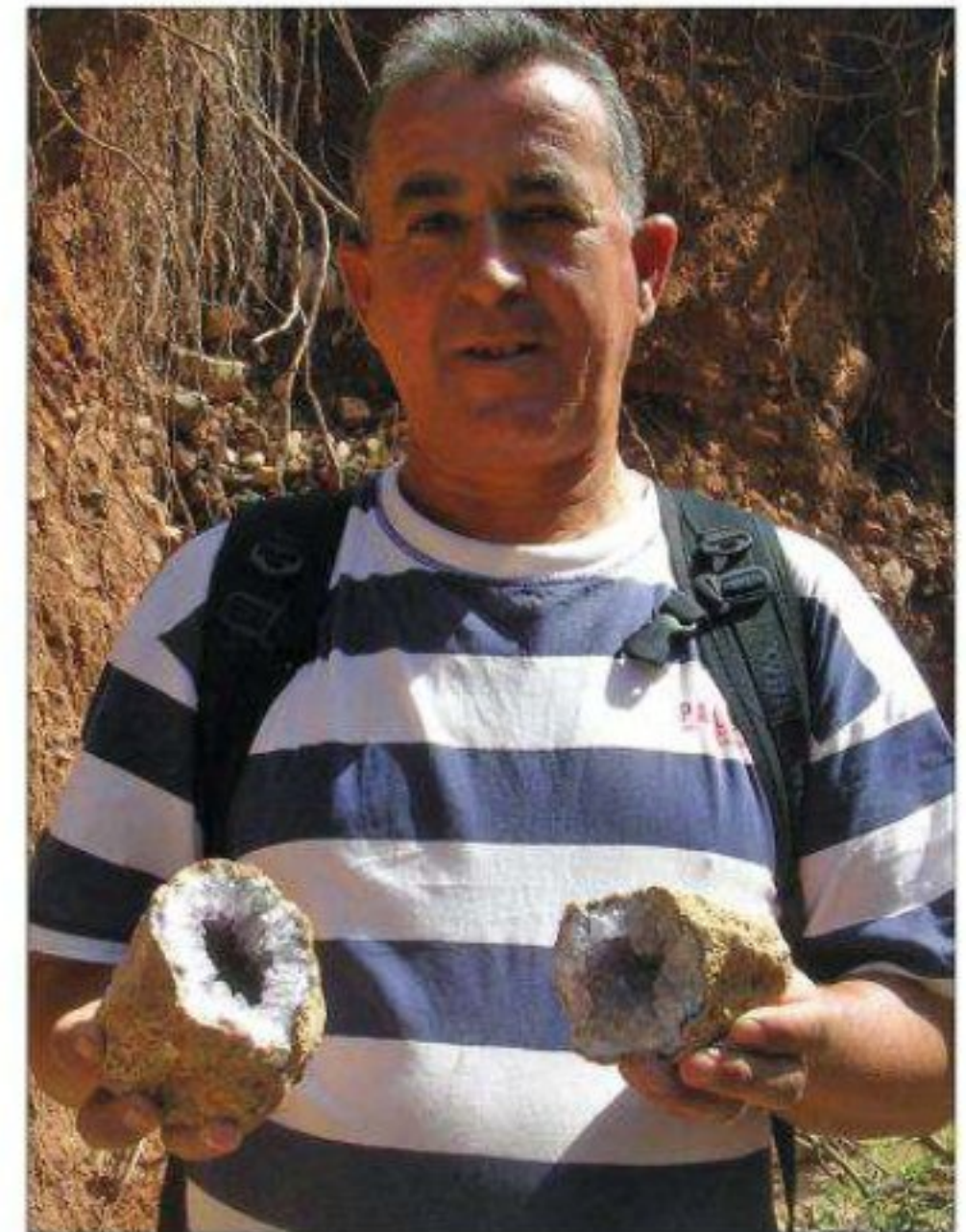
The rock formations of the High Atlas Mountains consist mostly of marine sedimentary rocks of Mesozoic age, including limestones, mudstones and sandstones. These formations contain some marine



The creek bed leading to the geode mine in the mountains above Asni was full of interesting and collectible rocks.



In several places along the creek bed, veins of amethyst or white quartz, jasper, agate, or some combination thereof could be clearly seen cutting through the basalt.



Our guide, Mohammed, found this geode lying free of the matrix in the creek bed.

invertebrate fossils, but are not among the major fossil localities for which Morocco is so famous. Interspersed with the sedimentary formations, though, are igneous basalt formations of Jurassic age. It is in these formations that most of the interesting minerals of the area are found. The Mesozoic sedimentary and igneous formations are thought to have been thrust up to form the mountains when Africa collided with Europe during the Cenozoic Age, though the process is not completely understood.

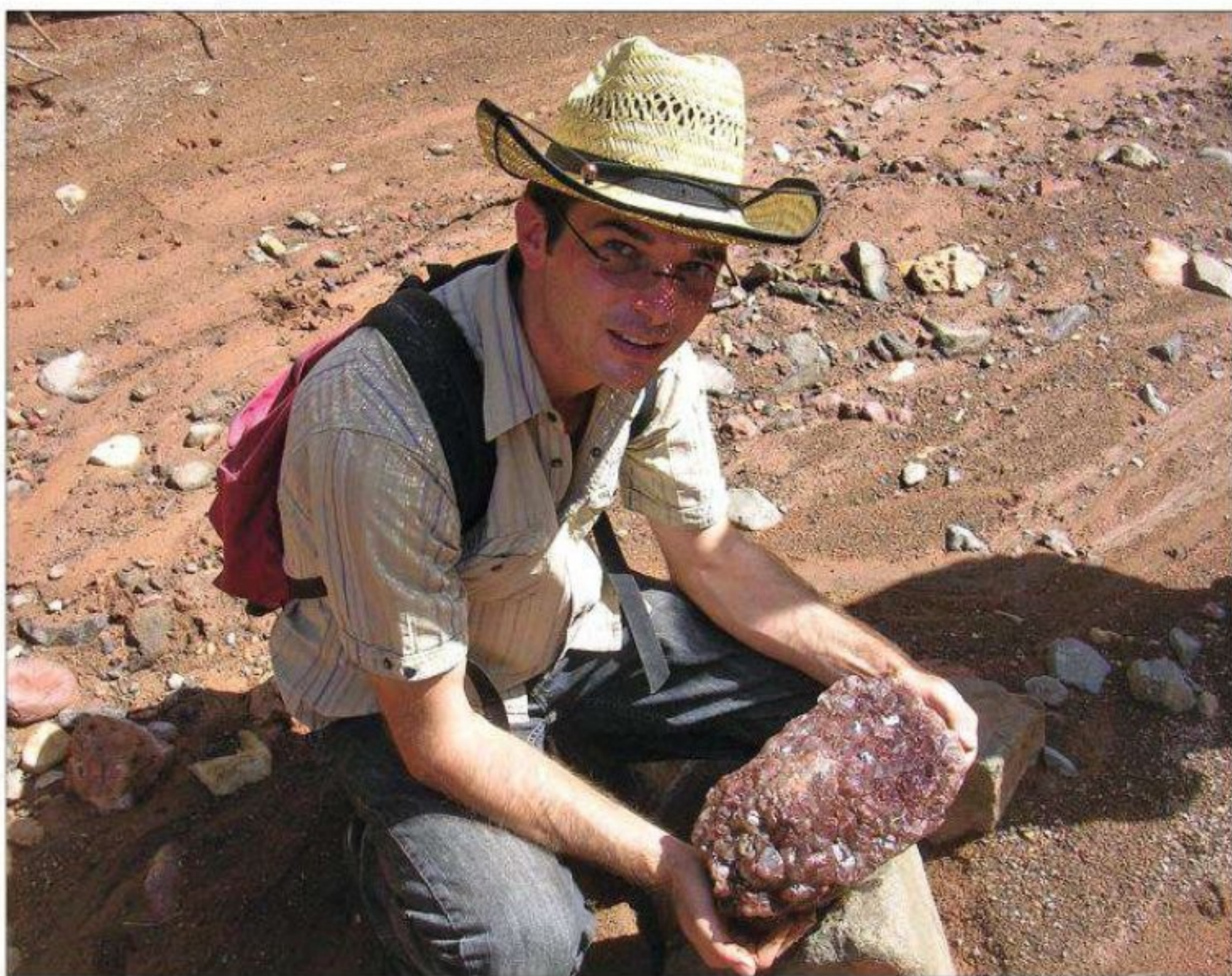
The basalt formations near Asni are famous for quartz geodes that contain acicular (needlelike) crystals of goethite. Amethyst geodes and agates are also found in this area. As in other basalt formations in Morocco, the geodes and agates typically formed by the filling of vesicles (amyg-

dules or gas bubbles), as well as cracks or seams. Agates and geodes occur in great abundance at many Moroccan localities. In some places, the nodules have weathered out of the host rock and can be found lying loose on the surface. At other localities, they are mined from solid basalt. These formations are typical of many agate-bearing formations around the world, such as those in Rio Grande do Sul, Brazil, and Idar-Oberstein, Germany. I have not, however, seen any zeolites, which are found in similar formations at many localities. (For more on Moroccan agates, see "Berber Country Agates", August 2007 *Rock & Gem*.)

At an elevation of about 4,000 feet, Asni is a place of beautiful scenery. Large numbers of tourists go there on day excursions from Marrakech for the views. To

reach Asni, one drives up a good two-lane paved road that runs alongside a river in a steep-sided valley. Several years earlier, I had attempted to visit Asni with one of Sara's tour groups, but as we approached the mountains, we could see clouds gathering. About the time we reached Asni, the heavens opened. This is a semiarid area, so it doesn't rain a lot, but when it does, it can really rain. As we were obviously not going to see much in a rainstorm, we turned around and beat a hasty retreat. It's a good thing we did; water was starting to come over the road as we left the valley. Had we left any later, we could have been stuck there. Asni would have to wait for another day, which came in 2010.

On this particular outing, the group consisted of Aissa, Peter and Denise Whitehead,



Aissa holds a large quartz specimen we found in the creek bed, but were unable to carry back to the car.

of Australia, and me. Our group had split that day, with Sara and Adam taking some first-timers sight seeing in Marrakech. Peter and Denise are great agate enthusiasts and, like me, have been to Morocco several times, so we chose the new experience of Asni over Marrakech. The weather that day was beautiful, with no sign of rain. It was early October, which in Morocco usually means mild temperatures and a chance of rain. Marrakech, however, was unseasonably hot, with temperatures around 100°F. Fortunately, Asni was a bit cooler. The weather in Morocco can change quickly that time of year, though; a week later in Midelt, we en-

countered temperatures in the 40s with rain, and the higher mountains got snow.

Our first stop in Asni was to pick up some bottled drinking water. (Good bottled water is available just about everywhere in Morocco.) As in many parts of Morocco, we had to fend off aggressive peddlers selling cheap jewelry and other trinkets to the tourists who come from Marrakech. Then it was on to a rock shop, where we met Mohammed, our guide for the day. The rock shop caters mostly to tourists, but when they saw that we were serious rockhounds, they pulled out some very nice minerals from the local area, as well as other parts



Tour member Peter Whitehead, who stayed with the car, found this beautiful amethyst specimen right by the road.

of Morocco. They also had a few fossils from the surrounding area, including nautilus and brachiopod shells, but they did not have much information about them. A fair bit of business was done.

Our goal was a geode mine up on the flank of one of the mountains surrounding Asni. This would entail a considerable amount of hiking up a mostly dry creek bed. Peter, however, was having problems with his hip, and chose to remain with the car. The creek bed ran right along the road for a stretch, so he would still have plenty of rocks to look at.

No sooner had we stepped out of the car than I bent down and picked up a chunk of basalt with a vein of amethyst running through it. As Denise, Aissa, Mohammed and I picked our way up the creek, more interesting rocks turned up: pieces of basalt with small amethyst crystals, chunks of amethyst, quartz crystals with goethite inclusions, agate nodules, and small geodes. The agates were mostly small, up to a couple of inches, and were usually red on the outside and bluish on the inside. There was also reddish and yellow-brown jasper, which should take a good polish. I had a couple of canvas bags with me, and they soon began to fill up. I knew that I had better be selective about what I picked up, or I wouldn't get very far. Mohammed made an excellent find, a geode about 4 inches in diameter and 8 inches tall, just lying in the creek bed. He cracked it open on the spot and found beautiful pale amethyst crystals.

One find might well be labeled "the one that got away". This was a chunk of quartz about a foot long by 8 inches wide, weighing perhaps 20 pounds. The upper surface of it had a layer of crystals up to an inch across, colored reddish-brown by mineral inclusions, probably hematite. Under the surface was a layer colored greenish, possibly by celadonite. Having been deposited in the creek, the crystals were not pristine, but they were still nice. I was wishing I could bring it home, but at that point we were quite a distance from the road, and none of us had a good way to carry it out. We left it hidden under a bush, so that Mohammed could go back later and retrieve it. If I ever go back there, I'm taking a backpack to bring things like that out. I would worry about how to get it back to the United States later.

The geological formations were clearly visible alongside the creek. In several places, veins could be seen cutting through the basalt. These veins consisted mostly of quartz, either amethyst, white quartz, jas-

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Following the **GOATS** from page 60



Amethyst occurs at Asni as veins cutting through basalt, as well as in geodes.

per, agate, or some combination thereof. In other places, small nodules could be seen. The basalt was somewhat weathered, so it wasn't hard to extract pieces of quartz.

Also along the creek, we encountered one of the native wildlife species, a chameleon about 6 inches long. From the way he hissed, he was none too happy about being disturbed. We would later encounter another reptile, a cute little baby tortoise, but no snakes.

After a couple of hours, we were still quite a distance from the geode mine. Though not as hot as it had been in Marrakech, it was still a warm day, and we were beginning to run low on drinking water. We found it hard to believe when Mohammed told us that the geode miners make this same hike, plus an equal hike up the opposite side of the valley to their homes, on a daily basis. Of course, they don't stop and look at every rock in the creek bed like we were doing. Reluctantly, we came to the conclusion that we would have to give up on the geode mine and content ourselves with the creek bed. Besides, we were sure that Peter, back at the car, would be wondering if something had happened to us.

Instead of going back down the same creek bed and looking at the same rocks again, we decided to cut across the mountainside for a ways and come down another tributary. After a while, we found ourselves on a point between the two creeks. There was a steep drop-off on either side covered with loose dirt, which would offer little footing, and I was starting to wonder if coming back that way had been a mistake. About then, we noticed a goat path leading down from the point toward the second creek. We decided to go the way the goats go;

they were smarter than we were. Following the goat path, we soon reached the second creek bed. This one was narrower than the first, with some thick bushes and trees to negotiate. Nevertheless, going down was much faster than coming up. Our bags were full by this point, so we didn't slow down to pick up much else.

Peter was relieved when we got back to the car; he had started to worry. It turned out that he had had his own adventures. Several more peddlers had tried to sell him jewelry, and one very frustrated forest ranger was upset over Peter's activities in the creek. The ranger soon moved on, and Peter went right back to the creek. Of course, while the rest of us were sweating our way up the mountain, Peter found the best specimen of the day right by the road. This was a hand-size chunk of basalt with a beautiful vug of amethyst crystals in it. He also had a bigger pile of agates and other rocks than I did, as he did not have to carry them very far. The lesson here is that, just because a site is farther away, it is not necessarily better.

It was getting late in the afternoon, and we were all tired and hungry. We thanked Mohammed, bade him farewell back at the shop, and headed back to Marrakech, with the car riding just a little lower from all the rocks we had picked up. By the end of our trip several days later, we would add considerably more weight to the cars. We would spend the better part of a day in Rabat sorting our finds and arranging to get them home. I'm happy to report that everything made it back to my house in Maryland intact. The rocks are now ensconced in my basement, waiting for the day when I get to cutting them, which I suspect will be another day of pleasant surprises. ♦

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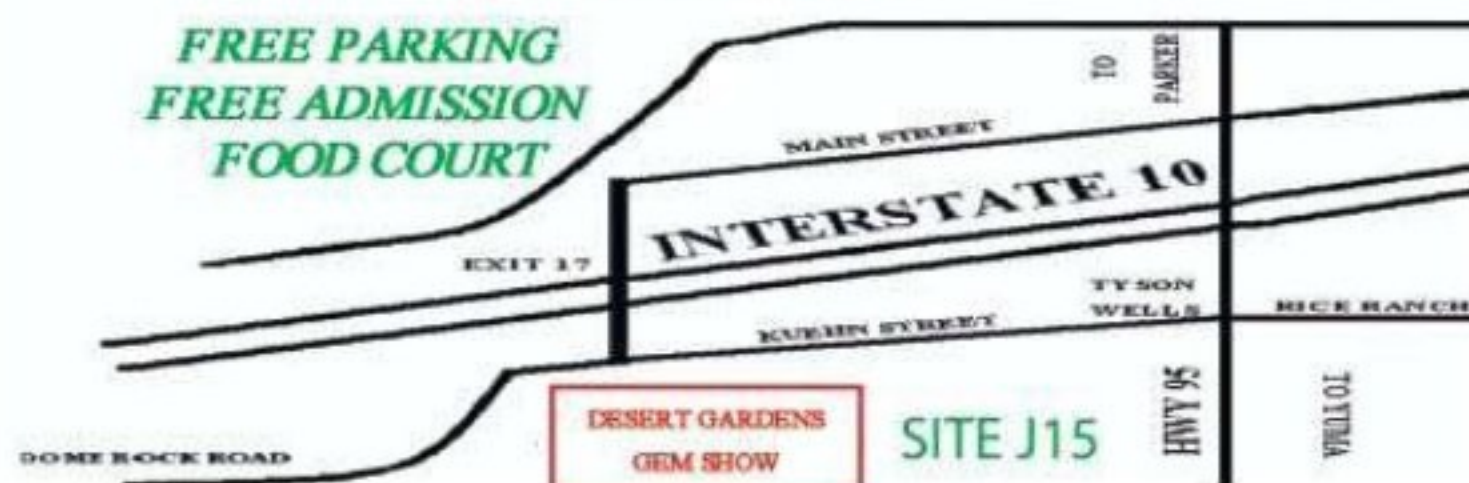
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Show Dates from [page 36](#)

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3-4—CALDWELL, IDAHO: 58th annual show; Owyhee Gem & Mineral Society; O'Conner Field House, 2200 Blaine; Sat. 9-6, Sun. 9-5; adults \$3, children (11 and under) free with adult; contact Carolyn Roberts, (208) 466-6191; e-mail: ncrobertsrp@msn.com; Web site: www.owyheerocks.com

3-4—ISSAQUAH, WASHINGTON: Annual show; East KingCo Rock Club; Pickering Barn, 1730 10th Ave. NW, across from Costco; Sat. 10-6, Sun. 10-5; free admission; dealers, gems, jewelry, minerals, silent auctions, raffles, door prizes, hands-on activities, crafts, games, member display cases; contact Norma McDonald, c/o EKRC, PO Box 2203, Redmond, WA 98073-2203, (206) 612-3113; e-mail: eastkingco@gmail.com; Web site: www.eastkingco.org

3-4—NEWARK (STANTON), DELAWARE: 49th annual show; Delaware Mineralogical Society; Delaware Technical and Community College, I-95 Exit 4B, Churchmans Rd. (Rte. 58); Sat. 10-6, Sun. 11-5; adults \$6, seniors \$5, ages 12-16 \$4, children (under 12) free with adult; educational exhibits, minerals, lapidary, fossils, museum displays, dealers, minerals, fossils, gems, jewelry, lapidary supplies, door prizes, demonstrations, gem cutting and polishing, children's table; contact Wayne Urion, (302) 998-0686; e-mail: gene@fossilnut.com; Web site: www.delminsociety.net

3-4—ROBSTOWN, TEXAS: 50th annual show; Gulf Coast Gem & Mineral Society; Richard Borchard Regional Fairgrounds, 1213 Terry Shamsie Blvd., US 77 and Hwy. 44; Sat. 10-6, Sun. 10-5; adults \$5 (2-day pass), children (12 and under) free, Scouts in uniform free; kids' wheel, silent auction, beads, findings, jewelry, minerals, fossils, meteorites, displays, Rock Food Table, hourly door prizes, grand prize; contact Jerrold Simpson, P.O. Box 7786, Corpus Christi, TX 78467-7786, (361) 877-3073; e-mail: jsimpson1@stx.rr.com; Web site: www.gcgms.org

3-4—VENTURA, CALIFORNIA: 50th Anniversary Show; Ventura Gem & Mineral Society; Ventura County Fairgrounds, 10 W. Harbor Blvd.; Sat. 10-5, Sun. 10-4; free admission; club member and other exhibits, more than 15 dealers, demonstrators, raffles, hourly silent auctions, Country Store, kids' activities; contact Rob Sankovich, 1961 Havenwood Dr., Thousand Oaks, CA 91362, (805) 494-7734; e-mail: rmsorca@adelphia.net; Web site: www.vgms.org

8-11—VICTORVILLE, CALIFORNIA: 35th annual tailgate; Victorville Gem & Mineral Club; Stoddard Wells, Stoddard Wells Rd., 7 miles east of I-15; Thu. 8-dusk, Fri. 8-dusk, Sat. 8-dusk, Sun. 9-4; free admission; more than 60 dealers, crystals, rocks, minerals, fossils, gems, silent auctions; contact Brett Ward, 15056 - B, 7th St., Victorville, CA 92395, (760) 243-2330; e-mail: info@vvgmc.org; Web site: www.vvgnc.org

10—SKOKIE, ILLINOIS: Silent auction; Chicago Rocks & Minerals Society; St. Peter's United Church of Christ Gymnasium, 8013 Laramie Ave.; Sat. 6-9; free admission; rocks, crystals, handmade jewelry, lapidary treasures, books, equipment, bargain table, rock and mineral identification, children must be accompanied by an adult; contact Jeanine N. Mielecki, (773) 774-2054; e-mail: jaynine9@aol.com; Web site: www.chicagorocks.org

10-11—FILER, IDAHO: 61st annual show; Magic Valley Gem Club; Twin Falls County Fairgrounds, 215 Fair Ave.; Sat. 9-6, Sun. 10-5; adults \$2, children (under 12) free with adult; contact Shirley Metts, (208) 423-4827; e-mail: rmetts@cablone.net

10-11—SPRECKELS, CALIFORNIA: Annual show; Salinas Valley Rock & Gem Club; Vet's Memorial Hall, 5th St. and Llano St.; Sat. 10-5, Sun. 10-5; free admission; beads, minerals, rocks, silent auction, free drawings, member donated raffle prizes, display cases, demonstrators; contact Karin Salomon, (831) 375-5233; e-mail: kcbakes27@yahoo.com; Web site: salinasrockandgem.com

16-18—ALBUQUERQUE, NEW MEXICO: Annual show; Albuquerque Gem & Mineral Club; New Mexico State Fairgrounds, CAC Bldg., San Pedro Ave. entrance; Fri. 10-6, Sat. 10-6, Sun. 10-5; adults \$3; more than 40 dealers, crystals, jewelry, fossils, rocks, minerals, decorator items, jewelry, books, supplies, beads, mineral ID booth, visits by a well-behaved and socialized wolf, NM Bureau of Geology and Mineral Resources educational booth, kids' grab bags, silent auctions, about 20 displays; contact Paul Hlava, PO Box 13718, Albuquerque, NM 87192, (505) 255-5478; e-mail: paulhlava@q.com; Web site: www.agmc.info

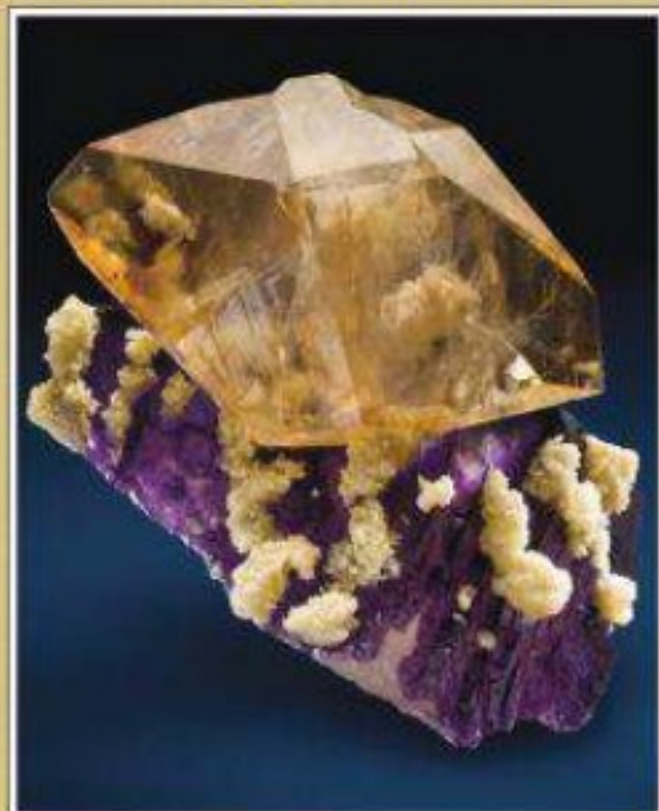
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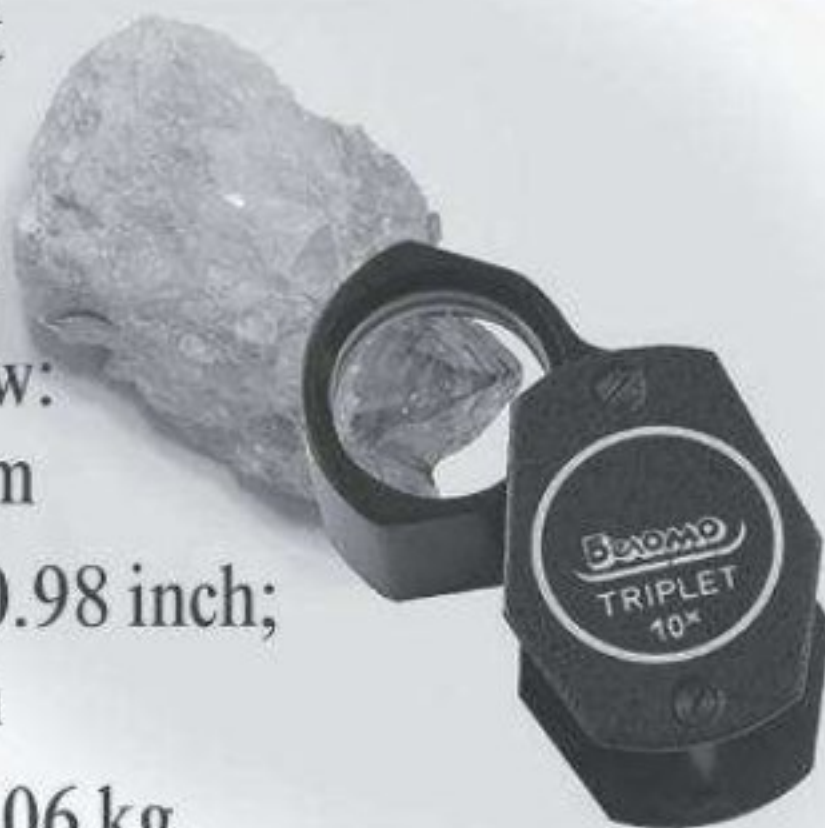
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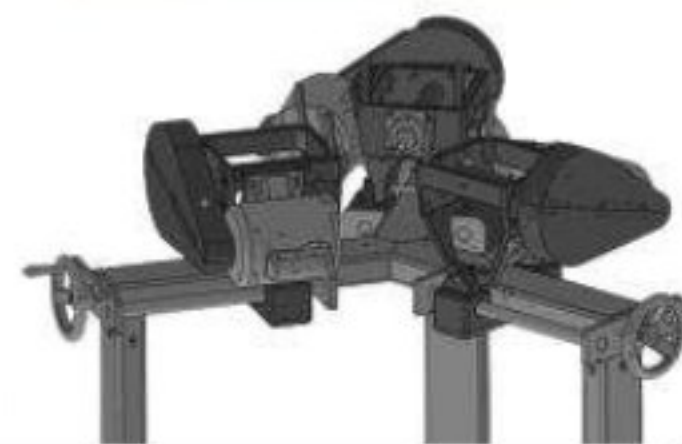


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MANY FACETS

by Guest Faceters

Faceters are welcome to submit their original designs for publication. Mail materials to Many Facets Submissions, *Rock & Gem* magazine, 3585 Maple St., Ste. 232, Ventura, CA 93003.

The 21st Century series of emerald cuts are designs I've created for various materials and in different length-to-width ratios. This is the first one I've done for a 9mm by 7mm emerald cut. I chose this size after perusing the latest catalog from Tripp's, a jewelry manufacturing company in New Mexico, and finding that the man's ring I liked was made for a 9mm by 7mm stone. I used the Zone B faceting angles referred to in Bruce Harding's article "Faceting Limits" (*Gems & Gemology*, Fall 1975), as they have historically produced the most popular and, I think, the best performing angles for stones with color.

This emerald cut should work well for any topaz or tourmaline with no angle changes, and many findings are available from Tripp's, Stuller, and other sources for this size gem. Like any other emerald design, this is mostly a step-cut stone, but I've made it as much of a meet point design as I could and adjusted the angles to achieve better proportions than most emerald cuts. Cut P1 to a centered edge using a 260 or 360 wheel. Size the stone P2 and P3 also using the 260 or 360 wheel. Then switch to a worn 600 wheel and step cut P4 through P11 because of the slight angular changes. Use a Sharpie® to paint the stone to aid you in aligning the steps in 1/3 increments, which I think is aesthetically pleasing.

Blue topaz is often substituted for blue zircon, the traditional birthstone for December, because blue zircon is hard to obtain in large enough sizes for shapes like an emerald cut. Current sources for Imperial and/or London blue topaz are www.prettyrock.com and www.gemcutter.com/rough.htm.

—Jim Perkins

jimperkins@zoominternet.net



21st Century Emerald Cut for 9X7 Topaz

CAD by Jim Perkins

©August 2011

designed for Tripp's #143-320-0907-0

Angles for R.I. = 1.610

41 + 8 girdles = 49 facets

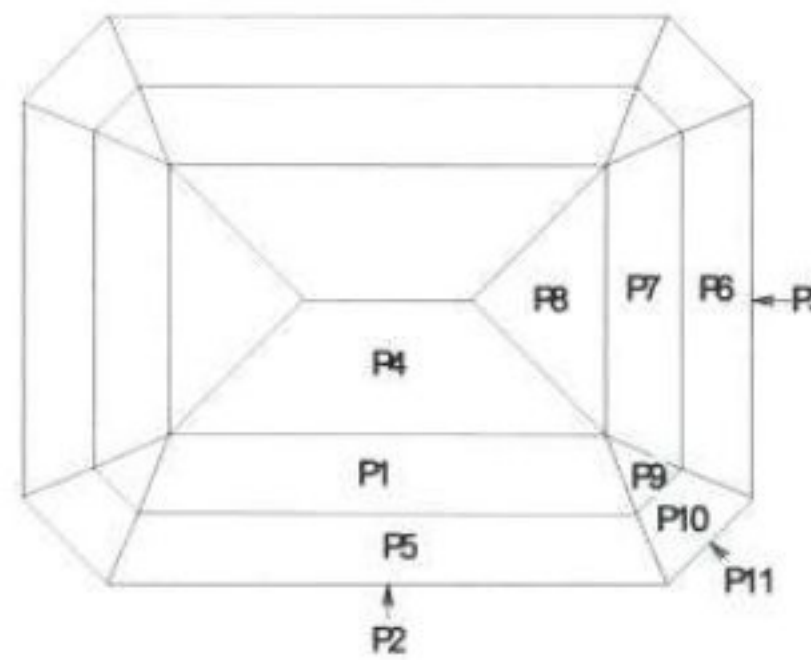
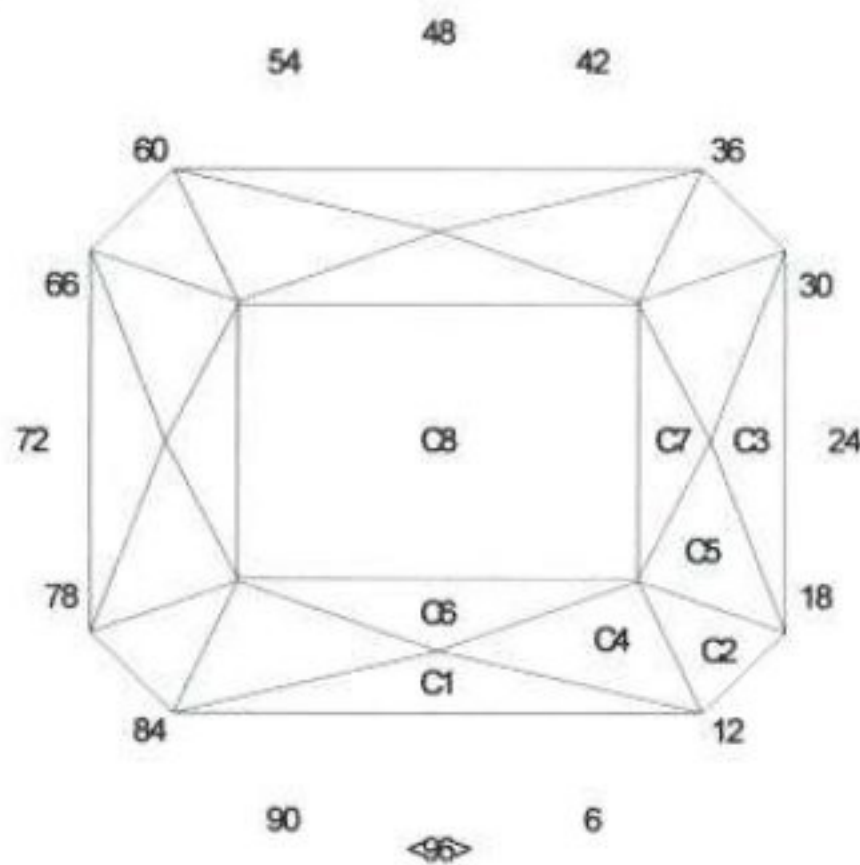
2-fold, mirror-image symmetry

96 index

L/W = 1.285 T/W = 0.743 U/W = 0.509

P/W = 0.469 C/W = 0.163

Vol./W³ = 0.429

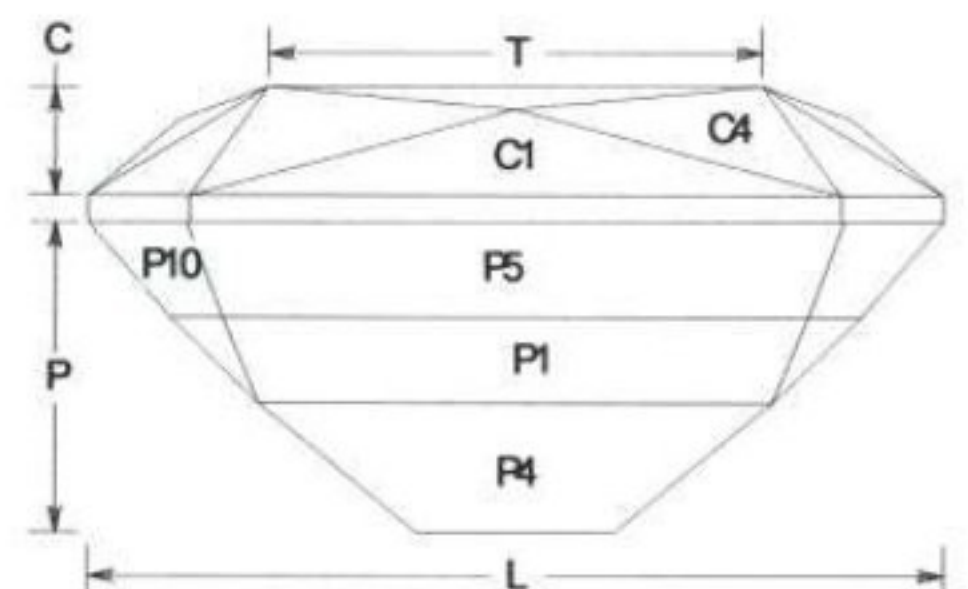
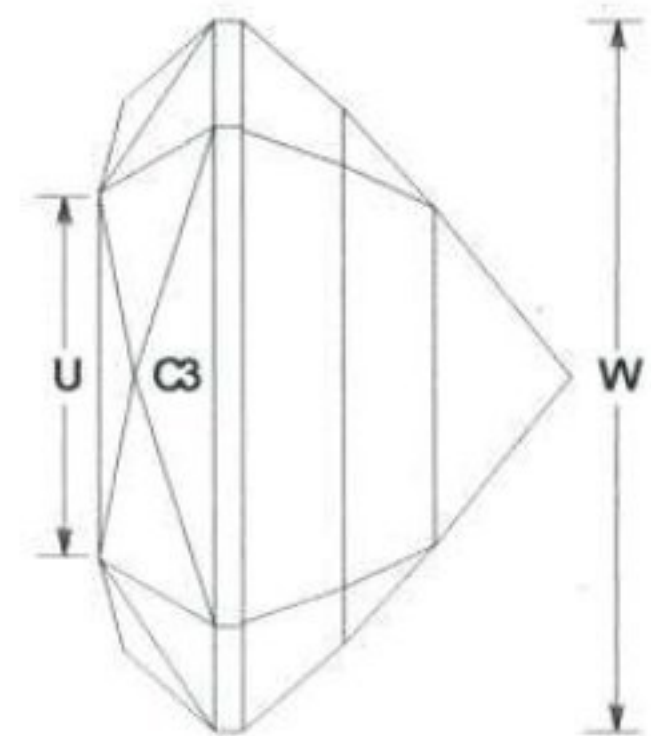


PAVILION

P1	44.00°	96-48	Create a keel
P2	90.00°	96-48	Set width
P3	90.00°	24-72	Set length
P4	39.00°	96-48	Step cut
P5	49.00°	96-48	Step cut
P6	49.00°	24-72	MP @ P1 - P5
P7	44.00°	24-72	MP @ P1 - P5
P8	39.00°	24-72	MP @ P1 - P4
P9	44.00°	12-36-60-84	MP @ P4 - P8
P10	49.00°	12-36-60-84	MP @ P1 - P5 & P6 - P7
P11	90.00°	12-36-60-84	MP @ P1 - P5

CROWN

C1	49.00°	96-48	Set girdle height
C2	32.30°	12-36-60-84	Set girdle height
C3	40.40°	24-72	Set girdle height
C4	31.90°	03-45-51-93	Girdle Meet Point (GMP)
C5	29.80°	21-27-69-75	GMP
C6	14.70°	96-48	MP @ C1
C7	19.40°	24-72	MP @ apex of C2
C8	0.00°	Table	MP @ C2, C6 & C7





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16-18—HICKORY, NORTH CAROLINA: Annual show; Catawba Valley Gem & Mineral Club; Hickory Metro Convention Center, I-40 Exit 125; Fri. 9-6, Sat. 9-6, Sun. 10-5; adults \$4, students free with school groups, children free; dealers, club demonstrations, capping and tumbling, exhibits; contact Baxter Leonard, 2510 Rolling Ridge Dr., Hickory, NC 28602, (828) 320-4028; e-mail: gailandbaxter@aol.com; Web site: www.cvgmc.org

16-18—JACKSON, MICHIGAN: 50th annual show; Michigan Gem & Mineral Society; Jackson County Fair Grounds, American 1 Event Center, 200 W. Ganson; Fri. 10-7, Sat. 10-7, Sun. 10-5; adults \$3, seniors \$2, students 50 cents, children under 5 free; free admission for military, public service, and Scouts; more than 20 dealers and demonstrators, displays, silent auction, raffle, rocks, minerals, fossils, jewelry, carvings, findings, beads, tools; contact Sally Hoskin, 10990 Phal Rd., Grass Lake, MI 49240, (517) 522-3396; e-mail: saltoosal2@yahoo.com; Web site: www.mgmsrockclub.com

16-18—ROME, GEORGIA: Annual show; Rome Georgia Mineral Society; The Forum Civic Center, 2 Government Plaza; Fri. 10-6, Sat. 10-6, Sun. 11-5; free admission; minerals, gems, fossils, jewelry, crystals, demonstrations, door prizes, exhibits; contact Jose Santamaria, (770) 606-5700 ext. 401; e-mail: rogams.show@gmail.com; Web site: http://rogams.wordpress.com/gem-and-mineral-show/

16-18—SPANISH FORK, UTAH: Show and sale; Timpanogos Gem & Mineral Society; Spanish Fork Fair Grounds, 475 S. Main St.; Fri. 10-7, Sat. 10-7, Sun. 10-5; free admission; Wheel of Fortune, rock Grab Bags, rock display table, auction, Dinosaur Man; contact Vickie Hathaway, 693 E 1 South, Spanishfork, UT 84660, (435) 820-2672; e-mail: jamnjelleze@gmail.com

23-25—INDIANAPOLIS, INDIANA: 14th Annual Indianapolis Spring Gem, Mineral & Jewelry Show; Treasures of the Earth Gem & Jewelry Shows, Indiana State Fairgrounds - Agriculture/Horticulture Bldg., 1202 E. 38th St.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$3 (3-day ticket), children (under 16) free; beads, pearls, gemstones, wire wrapping, wire sculpture, silver- and goldsmiths, custom work and repairs while you wait; contact Van Wimmer, 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

24-25—ANGELS CAMP, CALIFORNIA: Show and sale; Calaveras Gem & Mineral Society; Calaveras County Fairground, 101 Frogtown Rd.; Sat. 10-5, Sun. 10-4; adults \$4, children (12 and under) free with adult; exhibits, demonstrations, kids' activities, silent auction, sales, raffle, door prizes, dealers, fossils, jewelry, meteorites, books, lapidary supplies, slabs, gems, beads; contact Tak Iwata, 18310 Coyote Meadow Rd., Sonora, CA 95370, (209) 928-5579; e-mail: tak2me@msn.com; Web site: www.calaverasgemandmineral.org

24-25—HOLYOKE, MASSACHUSETTS: Western Mass Mineral, Jewelry & Fossil Show; Connecticut Valley Mineral Club; Holyoke Hotel & Conference Center, I-91 Exit 15; Sat. 9:30-5, Sun. 10-4; adults \$4, children (12 and under) and Scouts in uniform free with adult; minerals, gemstones, jewelry, crystals, beads, fossils, lapidary and mineral art, demonstrations, exhibits; contact Helen Rodak, (413) 586-6691; e-mail: info@naturesfinestcreations.com

24-25—SAYRE, PENNSYLVANIA: 43rd annual show; Che-Hanna Rock & Mineral Club; Athens Township Volunteer Fire Hall, 211 Herrick Ave.; Sat. 9-5, Sun. 10-5; adults \$3, students \$1, children (under 8) free; special 50th anniversary events, club member demonstrations and displays, junior activities, mini-mine, geode cutting, Carnegie Museum and Paleontological Research Institute displays, dealers, minerals, fossils, gems, jewelry; contact Bob McGuire, PO Box 224, Lopez, PA 18628, (570) 928-9238; e-mail: uvbob@epix.net; Web site: www.chehannarocks.com

24-25—YUMA, ARIZONA: Annual show; Sharon Szymanski and Val Latham; Yuma Civic Center, 1440 Desert Hills Dr.; Sat. 10-5, Sun. 10-4; adults \$3, children under 12 free with paying adult; out-of-state dealers, jewelry (fine and costume), gems, beads, slabs, fossils, cabochons, lapidary supplies, machinery, wire wrapping demonstration; contact Sharon Szymanski, 1792 E. Laddos Ave., San Tan Valley, AZ 85140, (480) 215-9101; e-mail: goldcanyon2@yahoo.com

MARCH-APRIL 2012

29-1—ADA, OKLAHOMA: Annual show; Ada Gem, Mineral & Fossil Club; Pontotoc County Agri-Plex, Main Bldg. #1, northeast corner of state Rte. 99 (U.S. 377) and the Richardson Bypass (state Rte. 1 & 3); Fri. 8-5, Sat. 9-5, Sun.

10-4; free admission; demonstrations, displays of fluorescent rocks, minerals, fossils, lapidary, jewelry, silent auctions, raffle, kids' Fossil Dig, Petting Zoo, fluorescent demonstration; contact Ed Vermillion, PO Box 782, Purcell, OK 73080, (405) 527-6431; e-mail: okieed42@windstream.net; Web site: www.freewebs.com/agmfc

31-1—BELLINGHAM, WASHINGTON: Annual show; Mount Baker Rock & Gem Club; Bloedel-Donovan Park, 2214 Electric Ave.; Sat. 10-6, Sun. 10-5; free admission; rocks, fossils, gems, jewelry, dealers, door prizes, club sales, ongoing silent auction, scholarship raffle, demonstrations (lapidary, gold panning), kids' activities; contact Daniel Hayes, (360) 312-8380; e-mail: hayes0406@gmail.com; Web site: www.mtbakerrockclub.org

31-1—LEMOORE, CALIFORNIA: Annual show; Lemoore Gem & Mineral Club; Trinity Hall, 470 Champion St.; Sat. 10-6, Sun. 10-6; free admission; featuring California jade; contact John Pereira, 335 W. D St., Lemoore, CA 93245, (559) 924-4052

31-1—POCATELLO, IDAHO: Annual show; Southeast Idaho Gem & Mineral Society; Bannock County Fair Grounds, 10588 11th Rd.; Sat. 10-6, Sun. 10-5; adults \$2, children (under 12) free; contact Kevin Taylor, PO Box 3089, West Neeley Loop, American Falls, ID 83211, (208) 232-4269

APRIL 2012

13-15—ABBOTSFORD, BRITISH COLUMBIA: Annual show, "From Mining To Gems"; BC Lapidary Society, Ag-Rec Bldg., CFV Fairgrounds, 32470 Haida Dr., Canada; Fri. 10-8, Sat. 10-6, Sun. 10-5; adults \$6, students \$2, children (under 16) free; displays (B.C. copper and gold mines), more than 40 dealers, games, demonstrators; contact Jennifer Moore, 318-10272 127A St., Surrey, BC, Canada V3V 5L4, (604) 328-9766; e-mail: jenmac02@telus.net; Web site: www.lapidary.bc.ca

14-15—ABILENE, TEXAS: Show; Central Texas Gem & Mineral Society; Abilene Civic Center, N. 6th and Pine St.; Sat. 10-6, Sun. 10-5; adults \$3, children (6-12) \$1.50, children under 6 free with adult; gems, jewels, slabs, rough, lapidary tools and supplies, demonstrations, fluorescent display, silent auction, Wheel of Fortune, sand art, hourly door prizes, grand prize drawing; contact Linda Hollowell, (325) 721-4477, or Kay McDaniel, (325) 698-3596; Web site: www.txol.net/rockclub

20-22—ALPINE, TEXAS: Annual show, "Alpine Agate Festival"; Chihuahuan Desert Gem & Mineral Club; Alpine Civic Center, Hwy. 90 West; Fri. 9-6, Sat. 9-6, Sun. 10-5; free admission; agates from the Big Bend, dealers, demonstrations, grand prize, silent auction, door prizes, Kids' Corner, special exhibits, Kids' Day Fri.; contact Mary Brogan, PO Box 1111, Alpine, TX 79831, (432) 386-2340; e-mail: marybrogan@rocketmail.com

20-22—DENVER, COLORADO: Spring show, "Colorado Mineral & Fossil Show"; Martin Zinn Expositions; Holiday Inn - Denver Central, 4849 Bannock St.; free admission; Fri. 10-6, Sat. 10-6, Sun. 10-5; 80 wholesale and retail dealers, minerals, fossils, gems, jewelry; contact Martin Zinn Expositions, PO Box 665, Bernalillo, NM 87004-0665, fax: (303) 223-3478; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

20-22—RICKREALL, OREGON: 57th annual show; Willamette Agate & Mineral Society; Polk County Fairgrounds, 520 S. Pacific Hwy. W; Fri. 9-6, Sat. 10-6, Sun. 10-4:30; adults \$2, children (under 12) free; contact Etheleen Flippo, (503) 623-4247; e-mail: reflippoo@hotmail.com

20-22—SAN JOSE, CALIFORNIA: Annual show; Santa Clara Valley Gem & Mineral Society; Santa Clara County Fairgrounds, 344 Tully Rd.; Fri. 9-5, Sat. 10-5, Sun. 10-5; adults \$6, children (under 12) free; 50 dealers, displays, educational kids' area, geode cutting, lapidary demonstrations, gold panning, USGS display, \$1 off coupon on Web site; contact Frank Mullaney, (408) 265-1422; e-mail: info@scvgms.org; Web site: www.scvgms.org

21-22—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, children (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

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O N THE ROCKS

Tragedy at Sterling Hill

With the price of gold hitting closer to \$2,000 an ounce, it is not surprising when gold specimens on exhibit in museums and schools become a target. Such was the case at the Sterling Hill Mining Museum in Ogdensburg, New Jersey, last July! A thief, a rascal, a miserable creature, jumped the fence outside the museum, sneaked through the back door in broad daylight, and used an ax to chop his way through the Plexiglas® front of a safe holding 15 marvelous gold specimens.

It is not unusual when gold is stolen from museum. It has occurred any number of times throughout the years. After all, gold has [an aura of value that rivals] any other substance. The Sterling Hill gold was undoubtedly the most popular exhibit for folks touring the museum. The loss is real and a disaster to museum visitors. The fear is that, because the price of gold these days is high, these specimens, which are far more valuable in their crystal form, will be crushed, melted down, and sold for a fraction of their real worth. What a pity! What a loss!

Some of the specimens were from remote sources and impossible to replace, adding to the tragic loss. But the real theft was the joy stolen from the 25,000 school kids who visit the museum each year. Every kid dreams of a golden treasure and this thief took away the opportunity for all those kids to dream large! Seeing the real thing at Sterling Hill had to have had a stimulating effect on children's imaginations. That is now gone, ripped from the minds of thousands of youngsters!

These kids need your help. If you know anything about the theft, contact someone: the Sterling Hill Mining Museum, the local police, the FBI, or even me so we can save those precious examples of nature's creativity and the dreams of thousands of kids! The Sterling Hill Mining Museum is a National Historic Site, so the FBI is now involved in the case. There is a \$25,000 reward for information leading to the capture and conviction of the thief. The missing gold, among other stolen specimens, is pictured on the *Mineralogical Record* Web site, www.minrec.org/stolen.asp.



The reward for recovery of the gold specimens stolen from the Sterling Hill Mining Museum, including this one, is \$25,000.

DR. PETER EMBREY

The loss of the Sterling Hill gold was very distressing. It is a material loss we all regret. Yet, a human loss is an even greater tragedy and deeply distressing to people in the mineral world. In December 2010, the mineral world suffered a great loss with the death of Dr. Peter Embrey, retired Head of the Department of Minerals at the Museum of Natural History, London, for whom embreyite is named.

Peter was a dear friend of mine and an exceptionally influential, highly regarded mineralogist who made profound contributions to the science. His writings, editing skills, review of scientific materials, vast knowledge, and overall contributions to the science were immense!

I was fortunate to spend many an enlightening hour with Peter. He was a dedicated teacher to everyone interested in minerals. The man's knowledge of minerals was a font anyone could tap with great results. His skills with a computer were far beyond anything I could hope to achieve. He was writing computer programs about crystals long before most of us even owned a computer!

My introduction to Peter came when he was invited to be the first international lecturer at the Tucson Gem & Mineral Society Show™ in 1970. I met him there and, shortly after, my family and I visited Peter at the museum in London. My son Evan, age 10 at the time, was interested in dinosaurs, but the rest of the family preferred sightseeing, so Evan and I spent the day with Peter. He was most congenial, giving us personal tours of the museum and the mineral collection. Evan spent time with the

museum's dinosaurs while Peter and I talked minerals. At lunchtime, we were joined by Dr. Max Hey, noted British mineralogist and author of *The Chemical Index of Minerals*. It was a delight being with these two leaders of the science.

On a later visit, I stayed with Peter and went to work with him at the museum each day. I was researching copper minerals and Peter gave me free access to the collection and reference materials. He even made it possible for me to photograph specimens in the Arthur Russell collection that were stored in a private room

and not on display. Russell was the most successful mineral collector in the realm. The Russell Society is named for him.

It was on this visit that Peter introduced me to Courtenay Smale, a member of the Board of the Royal Cornwall Museum, which houses the Rashleigh mineral collection. Courtenay and I became fast friends through the years. He was of immense help each time I visited Cornwall and he helped me organize my 2009 tour of English museums and mines, an unrivaled experience. Peter also gave me insights into the Daphne DuMaurier-Philip Rashleigh connection and DuMaurier's book, *Rebecca!*

Peter's knowledge was unlimited. His contributions to mineralogical literature are immense. Peter reviewed manuscripts, translated books into English—Ivan Kostsov's *Mineralogy*, for example—and co-wrote *The Minerals of Cornwall and Devon*, a remarkable treatise on this classic region. He also served on the Commission of New Minerals and headed the Mineralogy and Crystallography section at the Museum of Natural History, London.

To give you an idea of the diligence Peter practiced in reviewing new books, he went through the excellent reference *Mineral Reference Manual*, by Ernest H. Nickel and Monte C. Nichols, line by line and wrote a 44-page, single-spaced document of additions, corrections and observations. For example, Peter observed some locality differences for the mineral allanite. He ends his comment by saying, "Yours looks like a hybrid. Have a nice day!" That's Peter: exact and delightfully friendly. His contributions are legion and he will be sorely

missed by those of us who enjoy his work and who grew in his rich and fruitful friendship.

FEDERATION FUNDRAISER

Readers are well aware of my enthusiastic support of the activities of the American and Regional federations of mineralogical societies. As their International Ambassador of Friendship, I work closely with leaders in promoting the mineral hobby. Their many programs are designed to support our hobby, encourage new members, protect our collecting sites, and promote mineral education among youngsters. Scholarships are financed by the AFMS' Endowment Fund, which raises funds to be distributed to students of the earth science, particularly geology, mineralogy, paleontology and lapidary.

The funds are raised through an annual drawing that offers choice donated minerals, games, books, and other items. This fundraising event is open to everyone; tickets cost \$5. The next drawings for donated prizes will be held at the American/Midwest National Show to be held July 26-29, 2012 in Wayzata, Minnesota. You don't have to attend the show to participate. Just check the Web site www.amfed.org/endow2012.htm for information about tickets.

The 2012 endowment drawing will be extra special, thanks to a remarkable donation that was recently made by Neel Patel, President of Hi-Tech Diamond. This company, located near Chicago, makes a wonderful line of lapidary equipment.

Recognizing the importance of providing quality equipment to the lapidary field, Hi-Tech Diamond has contributed three remarkable lapidary machines to be entered as items 1 through 4 in the drawing. The funds acquired—and they should be considerable—by their sale will help support worthy students striving to achieve success in the fields of geology and mineralogy.

The endowment drawing would be exciting even if Hi-Tech had donated just one fine piece of equipment. The company, however, outdid itself by sending *four* different machines to the endowment committee, chaired by Pam Hecht. The company donated its 6-inch trim saw, which will be No. 4 in the drawing. You can see a photo of that saw and the other donated machines in Hi-Tech's catalog, which you can acquire by visiting www.hitechdiamond.com.

To go with the trim saw, Hi Tech donated its 6-inch "All-u-Need" machine, designed for the lapidary who likes to do a variety of things. This machine will be No. 3 in the drawing.



Bryan Swoboda films while Dave Wilber interviews a miner who brought new minerals to the shows in Tucson.

Two different capping machines were also donated. The 8-inch slant cabber is a really fine machine for the amateur lapidary who wants to get into that aspect of our hobby. It'll be No. 2 in the drawing. For the advanced lapidary who really gets into capping, Hi-Tech donated its CabKing-6V3, the best of the capping series and No. 1 in



The versatile All-U-Need machine, donated by Hi-Tech Diamond, could be yours for the price of a \$5 ticket for the Endowment Fund drawing.

the drawing. The retail value of these wonderful machines comes to nearly \$3,000, a really generous donation!

Imagine winning a fine piece of lapidary equipment for a \$5 donation! Just write the number of the piece of equipment you'd like to win on the back of your our ticket before it goes into the drawing. The kind of support Hi-Tech has expressed with this donation of four machines is much appreciated. And if you don't win one of these great lapidary machines but have a hankering to replace your old machine, check out their Web site.

TUCSON DVD

Something else you can check out is the 2011 "What's Hot in Tucson", DVD. Each year, BlueCap Productions spends weeks in Tucson visiting dealers and shows and recording the latest finds of minerals that

inevitably appear for sale at this great event. Mineral expert Dave Wilber hosts the video, and he and filmmaker Bryan Swoboda visit just about every major dealer and event at the important mineral shows. Bryan films not only new minerals, but the old classics that occasionally surface from old collections. Wilber is knowledgeable about just about everything that comes out of the ground and his commentary, probing questions, and insights make the narrative on "What's Hot in Tucson" fascinating to listen to. You can learn a lot from Dave while enjoying the world's great mineral assemblage.

For those of you who can't make it to Tucson, the "What's Hot in Tucson" DVD is your doorway into this fascinating world of Tucson's mineral event. You will actually see more by watching the DVD than many people will who actually attend the shows. No one can spend three weeks searching out the minerals, visiting all the dealers, and seeing all the displays. Swoboda picks out the best of the best and gives you an insider's look at what's there! I'm lucky to be Dave's backup or co-host on parts of the DVD and come away from our video shoots knowing more about the minerals we film than I would on my own!

The "What's Hot in Tucson" DVD contains an amazing four hours of minerals, gems, exhibits and commentary that is informative, enlightening and entertaining. It's like visiting the shows in Tucson with your own personal guide. Even if you attended the show, you probably missed what Bryan captured on film. Get a copy of the superb DVD and watch it again and again as you relive the world's greatest mineral and gem event. By collecting this DVD each year, you will have in hand an evolving history of

the Tucson Show event, which everyone agrees is so wonderful.

You can obtain a copy of "What's Hot in Tucson: 2011" from the Web site www.whatshotintucson.com. Don't forget, Blue-Cap Productions also films the spectacular European gem and mineral show in Munich each October, so be sure to order the "What's Hot in Munich" DVD at www.bluecapproductions.com! ♦

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



Field Notes submissions are subject to editing. Address questions to "Editor" for a private response or to "Readers" and provide the contact information you'd like published. Send to Field Notes, *Rock & Gem* magazine, 3585 Maple St., Ste. 232, Ventura, CA 93003.

A Gem of a Museum

What a surprise to see a place featured in your September issue that we visited this year (Colorado School of Mines Geology Museum, Golden). We stopped at the Coors Brewery, and when done we found the Geology Museum. By far, it has to be one of the finest gems out there. We would recommend it to anyone who is into rock-hounding. To view it properly, about three-plus hours might not be enough.

—Wes Jennings
Tupper Lake, NY

Alternative Lubricants

On a recent mining trip I met a fellow faceter who informed me he uses RV antifreeze as a lap lubricant. Can you tell me if this is safe product to use for this purpose. He stated that it is safe due to the lack of corrosion inhibitors that auto antifreeze contains. My thought was that it might not be good for the diamond bonding agent of the laps. I have used jet dry as a surfactant, but this antifreeze thing is new to me.

—Russ Baluk
via e-mail

I have heard of RV antifreeze being used in trim saws rather than oil. Automotive antifreeze is dangerous to small children and pets. However, RV antifreeze is not supposed to present any danger I am aware of. It seems like an expensive solution, though, as water with a few drops of surfactant to break water tension is sufficient. Particle contaminants in your tap water can be a problem because particulates can cause scratches on facets. When you're polishing to correct that problem, you can filter your water or use distilled water. That seems like an adequate solution and will cost a lot less money.

If you decide to use antifreeze of any kind, make sure you read the labels carefully for any type of danger to people, pets, or the environment, but I don't believe it would have any effect on the diamond wheels or the bonding agents on vitreous wheels. It could possibly cause an issue with resin-type wheels.

—Jim Perkins
Off the Dop columnist

Mandrel Source

I am building the 18-inch lapidary drop saw that was featured in the June 2011 *Rock & Gem*. I have collected all the parts, but cannot find a source of the 5/8-inch mandrel/spindle. Can you find me a source for that part?

—Kern Schwartz
via e-mail

You are not the first to want to know where to procure a mandrel. I was as surprised as anyone to learn that they are not readily available as they once were in just about any lapidary supply catalog. I can only suggest this Web site, as I have suggested to others: www.hardwareandtools.com/Chicago-Die-Casting-1560-Ball-Bearing-Mandrel-6116669.html. Good luck building the saw.

—Dale Blankenship
Rock & Gem contributor

Article Request

I have collected rocks since I got my first pockets. I have watched for years to find a demantoid that was a nice example that I could afford. I recently lowered my size standards and bought a .50 carat round brilliant cut; the stone was said to be from Madagascar. I checked out the stone under a gem lamp with a 10X loupe and, to my surprise, found a beautiful horsetail feather just outside the table. Otherwise, it was very clean, with great color and lots of fire. Could you do a short article on demantoid and the horsetails found in them and include stones from places other than Russia that commonly exhibit them?

—George Dooley
via e-mail

Rock & Gem relies on freelance contributors for the bulk of its editorial. Writers who are interested in pursuing this topic should call (805) 644-3824 ext. 129 or e-mail editor@rockngem.com for a Contributor Agreement and W9 form. Our writers' guidelines are posted on our Web site, www.rockngem.com. Follow them closely when preparing a submission.

—Editor

Green Gems

The Green Gem Foundation (www.green-gemfoundation.com) is a new nonprofit organization established to promote the development of ethical gemstones. We promote community and economic development projects in gem-producing regions with the primary goal of keeping as much wealth as possible in the source country.

The foundation is attempting to establish a supply line for colored stones that circumvents the commercial cutting houses in China, Thailand, and Sri Lanka, and make direct connections from the purchaser and retailer to the miners and gem brokers in the countries of origin. We are currently concentrating on Kenya and Tanzania.

To raise funds, we are accepting donations of cut stones and jewelry. Faceters can get involved by donating a cut stone or by faceting one of our pieces of rough, increasing the value for one of our funded projects. The stone is sold with full disclosure of the faceter. Our first Premiere Event at 111 Minna Gallery in San Francisco on Nov. 18, 2011 was a boutique-type jewelry show in a very hot-spot art gallery. The next is scheduled for mid-March in Beverly Hills, California.

My immediate goal is to raise enough money to fund one \$500 project. My secondary goal is to raise enough to fund six projects through sales and donations.

—Jeffrey Hunt
jeffreyhunt@greengemfoundation.com

Obviously, the world is a smaller place today than it was in the past and our neighborhoods have expanded from our block to all parts of the world. Problems that face people in Tanzania or Pakistan are our problems and their successes are our successes. We can no longer isolate ourselves in our homes. We have to care about our neighbors next door or in Africa or Asia.

This being said there is a huge problem with corrupt governments in many foreign countries. Getting the funds from the U.S.A. to the people and not into the hands of a dictator has been and will be a problem. That is probably the only concern I have about projects like these. However, you may already be ahead of me on this issue.

—Jim Perkins
Off the Dop columnist



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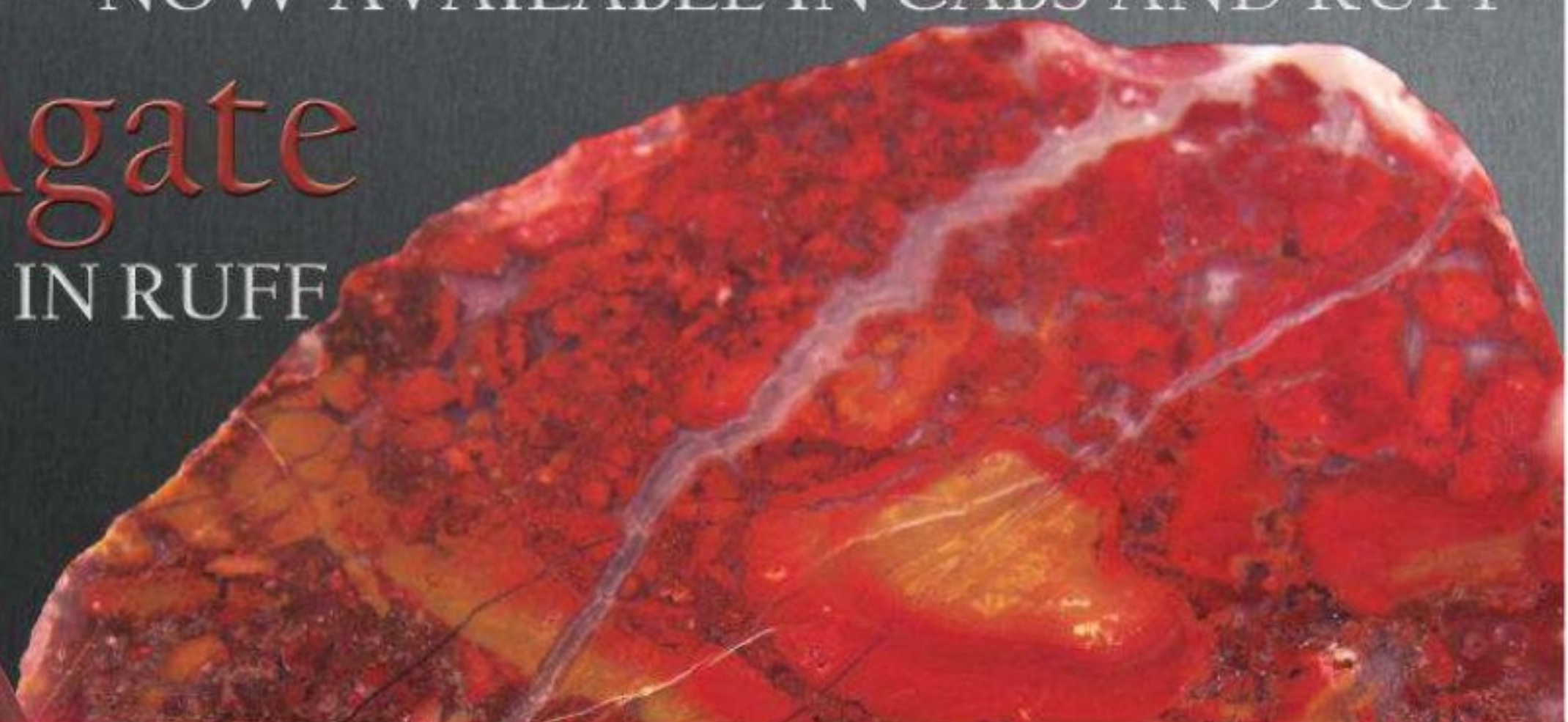


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