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JUNE 2011

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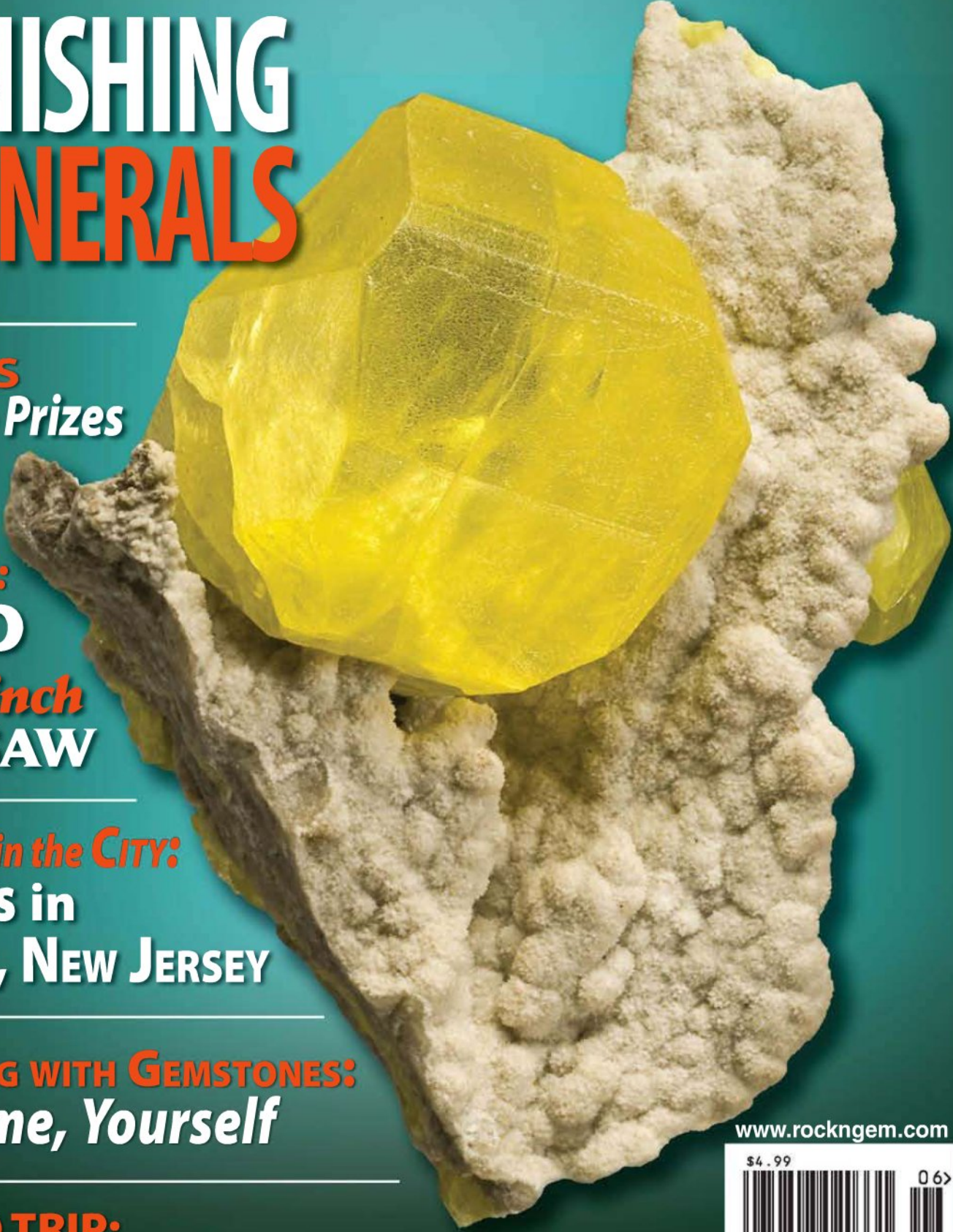
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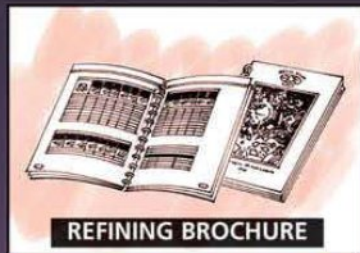
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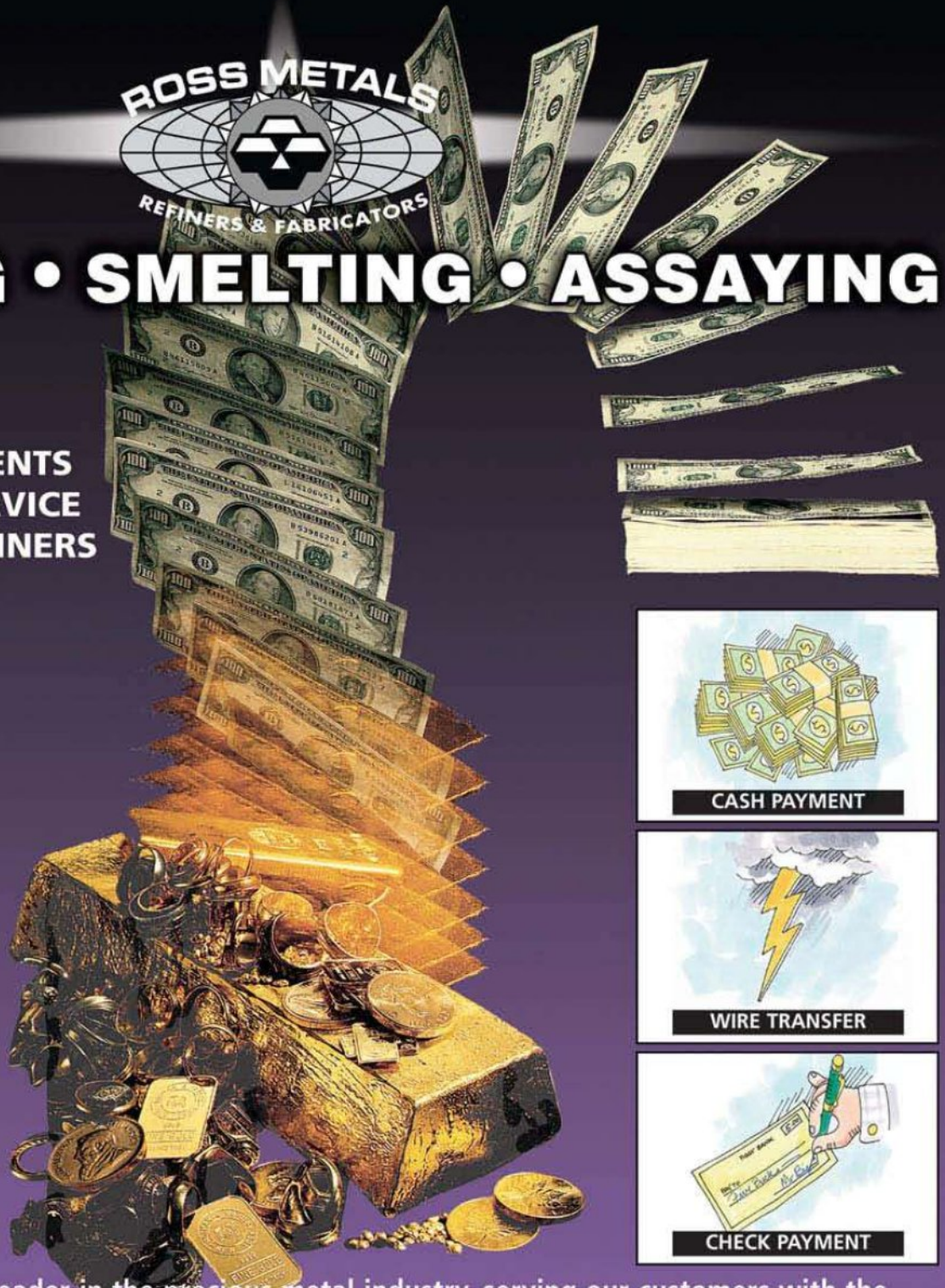
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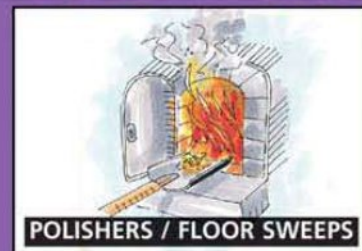
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Specimens of sulfur from the volcanic regions of Sicily, which occurred in superb textbook crystals, were once abundantly available. (Jeff Scovil photo/Scott Rudolph collection)

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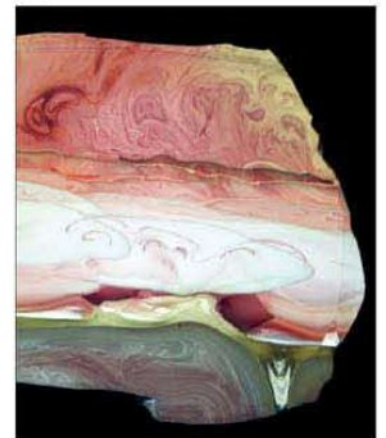
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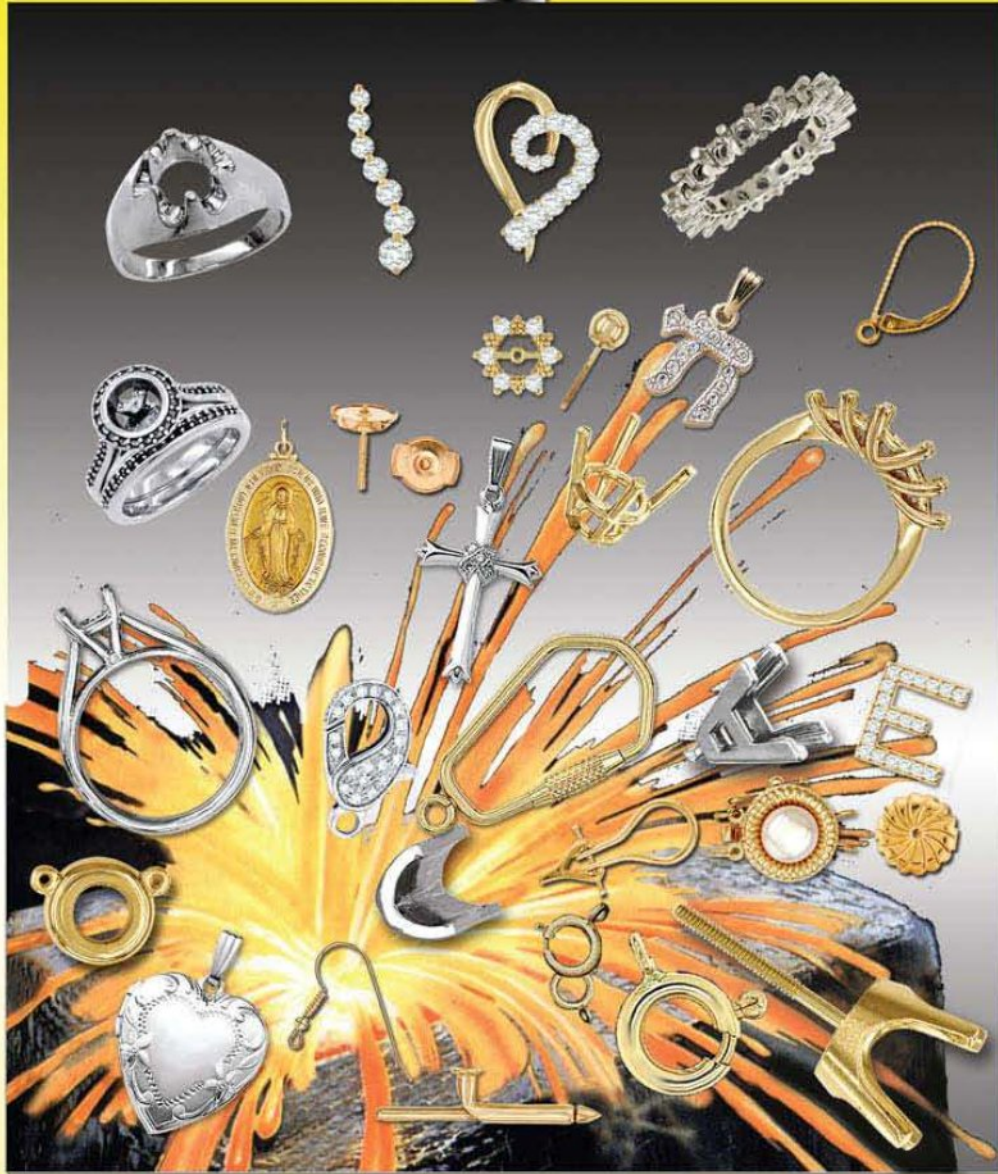
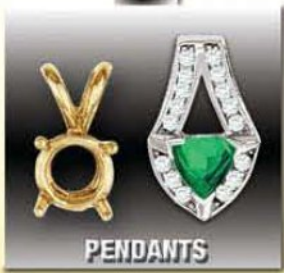
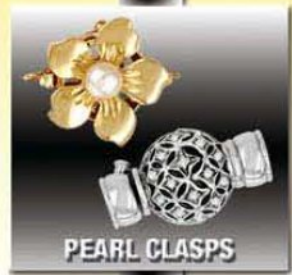
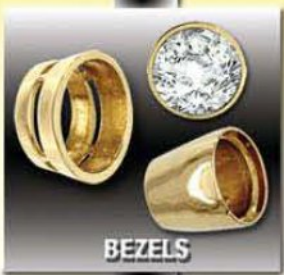
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Petrified Wood in Oklahoma
 by Neil H. Suneson
 Free download, \$4 hardbound

This small, 16-page document gives a good account of the age and geological formations in which petrified wood is found in Oklahoma. The petrified wood of that state is not as colorful as the agatized wood found in Arizona, but iron oxide does give some wood a nice color pattern with contrasting gray to white color sections. The wood is silicified, so it is cuttable and can be polished.

In some cases, the petrified wood is stained by blue azurite or green malachite, making a nice contrast to the otherwise drab colors. For the student of petrified wood, the text has an excellent section on references. Anyone may download the document for free at www.ogs.ou.edu/pubs.php. A hardbound copy may be purchased for \$4, plus shipping. (Oklahoma Geological Survey, 2010)

—Bob Jones



Sunstone Collecting Trip

Thursday, June 23 through Saturday, June 25, the International School of Gemology (ISG) Community will sponsor Rush to Plush, a sunstone-collecting event in southern Oregon. Meet in Plush, Oregon, to tour and visit area sunstone mines. The three-hour caravan tour will be led by ISG president Robert James.

Participants will visit the actual lava flows, drive their own cars through the Oregon High Desert, and visit three of the top Oregon sunstone mines. They will learn about the 11 million-year-old lava flow that created the unique Oregon sunstone, then stay as long as they like and mine their own Plush sunstone. The driving tour is free and open to anyone. For information and to make a reservation, visit www.schoolofgemology.com/RushToPlush.html.

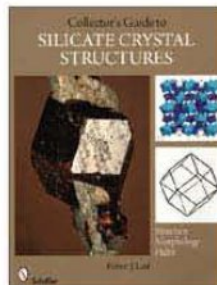


Collector's Guide to Silicate Crystal Structures
 by Robert J. Lauf
 \$19.99

The several chapters of this softbound text groups minerals according to their crystal structure. Basic crystallography is explained in a way that will help collectors understand the crystal structures of the silicate species they enjoy. Beginning with the six crystal systems and using drawings and structure models, the text explains the internal structures of various silicate groups.

For the collector who is interested in learning more about the shapes of the minerals they enjoy, this text delves into the very heart of silicate mineral species. The 96-page volume is illustrated with more than 500 color and black-and-white photos, diagrams, and crystal drawings. (Schiffer Publishing Ltd., 2010)

—Bob Jones



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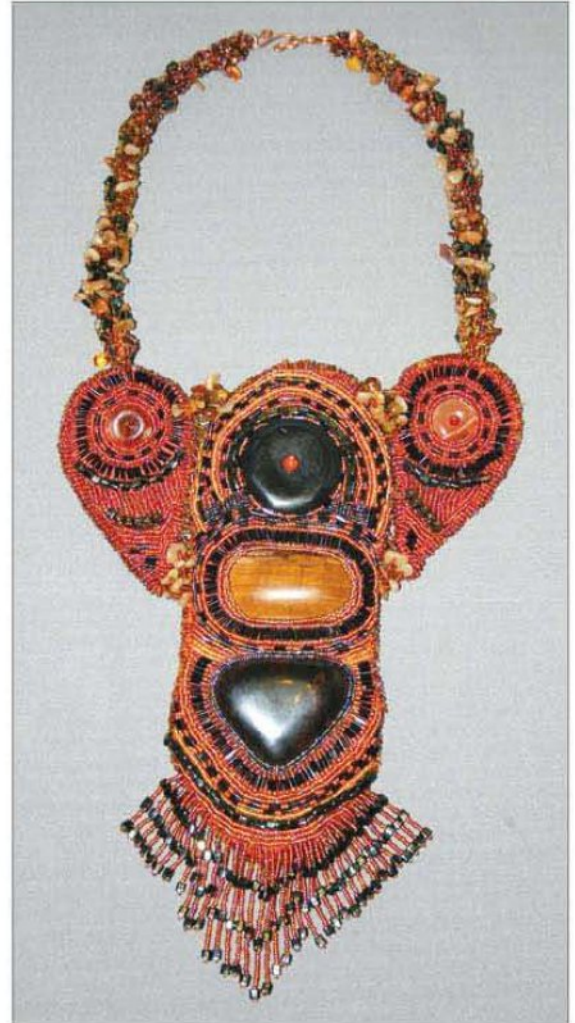
CRAFTSMAN OF THE MONTH

This necklace started with the center jasper cabochon," writes June Craftsman of the Month Sandra Takaro-Miller, of Milton, Florida. "I was teaching a cabbing class at a local rock shop and I used the jasper piece as an example for step-by-step shaping and polishing the stone. When it was completed, I wanted to do something with it. I had created the mahogany obsidian cab previously. I liked the colors together, so I found a black donut piece to tie in both pieces.

"I started beading the necklace with no specific design in mind. Because the shapes of the stones were not symmetrical, I just thought I would design as I went along. When I finished the center section of the necklace, I felt it needed additional elements. I found the two small agate donuts and created the side pieces. Again, there was no planned design; this was a completely organic process.

"When I finished the two side elements, I attached them to the center piece using seed beads and semiprecious bead chips. At that point, the design seemed complete, so it was just a matter of adding the chain. The chain is made up of a center cord with seed beads and semiprecious chips sewn on. At the end of the chain, the cord was looped and sewn down and beaded. Then a jump ring was added to hook on the clasp. The clasp itself is made up of 18 gauge copper wire that was bent with chain-nose pliers. There was no soldering involved. The clasp was then hooked on to the jump rings and the entire necklace was completed.

"Learning how to make cabochons over 20 years ago was the first step on my journey of jewelry making. Since then, I have learned so many other techniques that have allowed me to embellish the gorgeous pieces of stone I collect and shape. It is nice to say that I can make an entire piece of jewelry from center stone to finding." ♦



Would you like to be named Craftsman of the Month?

To enter the contest:

- Write a 500-word step-by-step description of how you crafted your lapidary project from start to finish. Save it as a document file.
- Take at least one sharp, close-up, color photo of the finished project. Photographic prints (no laser prints) or high-resolution (300 dpi at 4 inches by 5 inches) digital photos are acceptable.
- Burn your document file and digital photo (.tif or .jpg) to a CD.
- Mail your CD, photo, and a printed copy of your manuscript, along with your name and street address (required for prize delivery), to Craftsman of the Month, *Rock & Gem* magazine, 290 Maple Ct., Ste.



232, Ventura, CA 93003. Submissions will not be returned, so do not send originals. Only winners will be notified. Contact the editor at (805) 644-3824 ext. 129 or editor@rockngem.com with any questions about these requirements.

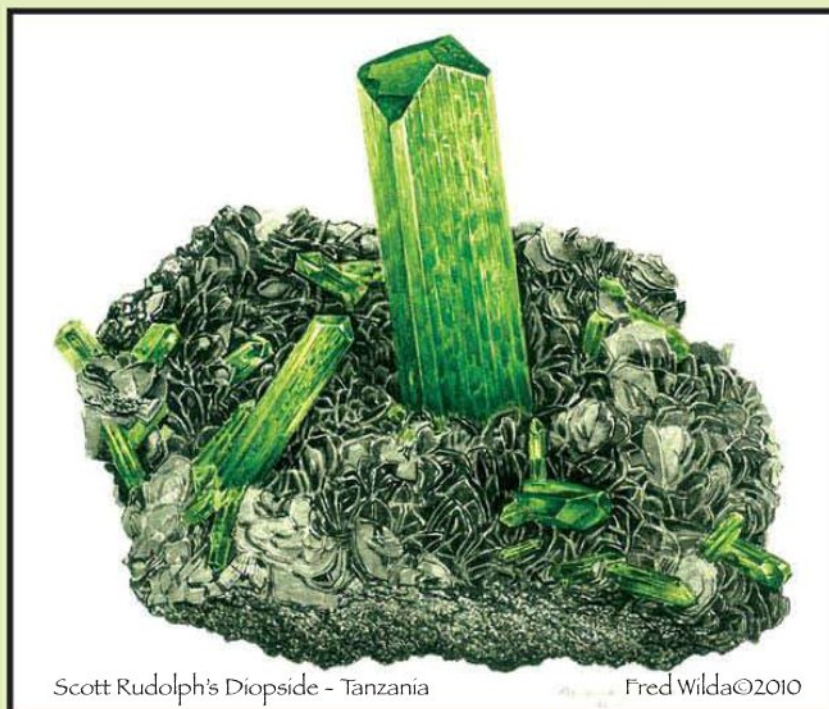
Craftsman of the Month winners receive a two-speed Dremel Model 200 N/40 MultiPro kit and a wall plaque in recognition of their creativity and craftsmanship. Winning projects are also posted on our Web site, www.rockngem.com.

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Send show information at least four months in advance to *Rock & Gem Show Dates*, 290 Maple Ct., Suite 232, Ventura, CA 93003-3517; e-mail: editor@rockngem.com; or use the electronic form at www.rockngem.com.

JUNE 2011

3-4—PRICE, UTAH: 5th annual show "Castle Country Rock, Fossil & Mineral Show"; Patrick Braun; Price ELKS Lodge, 23 East 100 North; Fri. 10-7, Sat. 10-7; free admission; rocks, fossils, minerals, jewelry, metal detectors, books, equipment, flint knapping, door prizes; contact Patrick Braun, (435) 384-2211; e-mail: pbraunrocks@hotmail.com; Web site: www.braunlapidary.com

3-5—PUYALLUP, WASHINGTON: Annual show; Puyallup Valley Gem & Mineral Club; Fruitland Grange, 11102 86th Ave. E; Fri. 12-5, Sat. 10-5, Sun. 11-4; contact Nancy LeMay, (253) 952-6212; e-mail: bees2knees@att.net; Web site: www.puyallupgemclub.org

3-5—TULSA, OKLAHOMA: Show; Gem Faire Inc.; Expo Square/Central Park Hall, 4145 E. 21st St.; Fri. 12-6, Sat. 10-6, Sun. 10-5; \$7 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

3-5—WAUSEON, OHIO: Annual show; State Line Gem & Mineral Society; Fulton County Fair Grounds, Jr. Fair Bldg., 8514 SR 108, north of Ohio Turnpike exit 34; Fri. 12-7, Sat. 10-7, Sun. 11-4; free admission; MSHA Mine Safety Class (\$15), soapstone carving class (\$15), flint knapping, geode cracking, capping demonstrations, Lion grab bag, kids' activities; contact Doris Brzezicki, 419 N. Broad St., Adrian, MI 49221, (517) 263-1669; e-mail: rychard@tc3net.com; Web site: <http://stateinline.freewebspace.com/>

3-5—WOODLAND HILLS, CALIFORNIA: Show; Rockatomics Gem & Mineral Society; Pierce College Farm, 20800 Victory Blvd.; Fri. 9-5, Sat. 9-5, Sun. 9-5; contact Gary Levitt, (818) 993-3802, (818) 321-6290; e-mail: Show@rockatomics.org; Web site: www.Rockatomics.org

4-5—CASTLEGAR, BRITISH COLUMBIA, CANADA: Annual show; Gem & Mineral Federation of Canada, Kokanee Rock Club; Castlegar Sports Complex Arena, 2101 6th Ave.; Sat. 10-5, Sun. 10-4; adults \$4, children \$2; displays, rocks, gems, fossils, crystals, door prizes, silent auction, dealers, handcrafted jewelry, minerals, crystals, gems, crafts, jewelry, lapidary supplies, demonstrators; contact Bob Lerch, S13 C2 RR1, Crescent Valley, BC V0G 1H0 Canada, (250) 226-7556; e-mail: orgmcc@shawbiz.ca

4—DELTA, COLORADO: Show; Delta County Rock Wranglers; Heddles Recreation Center, 530 Gunnison River Dr.; Sat. 9-5; free admission; dealers, exhibits, door prizes, family activities; contact Harry Masinton, (970) 856-3861

4-5—GLENORA, CALIFORNIA: Show; Glendora GEMS; Goddard Middle School, 859 E. Sierra Madre; Sat. 10-5, Sun. 10-4; contact Bonnie Bidwell, (626) 963-4638; e-mail: Ybidwell2@aol.com

4-5—LA HABRA, CALIFORNIA: Show, "Jubilee of Gems"; North Orange County Gem & Mineral Society, City of La Habra; La Habra Community Center, 101 W. La Habra Blvd.; Sat. 10-5, Sun. 10-5; free admission; dealers, demonstrators, exhibits, youth activities, geode cutting, raffle prizes, lapidary equipment and supplies, handcrafted jewelry; contact Dave Swanston, (626) 912-1531; Web site: www.nocgms.com

4-5—MARION, KENTUCKY: Show and sale; Ben E. Clement Mineral Museum; Fohs Hall, North Walker St.; Sat. 9-5, Sun. 10-5; free admission; day and night digs, dealers, free children's activities, speakers, silent auctions, hourly door prizes; contact Tina Walker, P.O. Box 391, 205 North Walker St., Marion, KY 42064, (270) 965-4263; e-mail: beclement@att.net; Web site: clementmineralmuseum.org

4-5—McCALLA, ALABAMA: Annual show; Alabama Mineral & Lapidary Society; Tannehill Ironworks Historical State Park, 12632 Confederate Pkwy.; Sat. 9-5, Sun. 9-5; adults \$3, seniors (62+) \$2, children (6-11) \$1; outdoor show, demonstrations, exhibits, children's activities, door prizes; contact Gene Blackerby, (205) 807-6777; e-mail: gene@lapidaryclub.com; Web site: lapidaryclub.com

4-5—RALEIGH, NORTH CAROLINA: Retail show; Intergalactic Bead & Jewelry Shows; Holiday Inn Brownstone Hotel & Conference Center, Presidential Ballroom, 1707 Hillsborough St.; Sat. 10-5, Sun. 10-5; adults \$5 Sat., \$4 Sun., children under 12 free; dealers, precious and semiprecious gemstone beads, sterling silver, findings, freshwater pearls, hand-blown glass, vintage beads, crystals, delicas; contact Angela Couch, (888) 729-6904; e-mail: angela.couch@beadshows.com; Web site: www.beadshows.com

4-5—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, ages 12 and under free; 30 dealers, minerals, gems, crystals, beads, metaphysical healing tools; contact Jerry Tomlinson, PO Box 1371, Sausalito, CA 94966, (415) 383-7837; e-mail: jerry@crystalfair.com; Web site: www.crystalfair.com

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

10-12—ALBUQUERQUE, NEW MEXICO: Show; Gem Faire Inc.; New Mexico State Fairgrounds, 300 San Pedro NE; Fri. 12-6, Sat. 10-6, Sun. 10-5; \$7 weekend pass; contact Yooy Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

10-12—PARK HILLS, MISSOURI: 14th annual swap, show and sale; Mineral Area Gem & Mineral Society; Missouri Mines State Historic Site at St. Joe State Park, south side of Hwy. 32, 1.5 miles west of US Hwy. 67; Fri. 9-6, Sat. 9-6, Sun. 9-4; free admission; swap, sell, buy, rocks, minerals, fossils, rock jewelry, crafts, visit State Historic Site and Mining-Mineral Museum free, auctions, rocks, minerals, rock jewelry; contact Boneta Hensley, PO Box 492, Park Hills, MO 63601, (573) 760-0488; e-mail: mojellybean63@yahoo.com

10-12—RALEIGH, NORTH CAROLINA: Show; Frank Cox Productions; Lighthouse Convention Center Auditorium, 326 Tryon Rd.; Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

10-12—SAGINAW, MICHIGAN: Faceting seminar; Midwest Faceters Guild; Carrolton Middle School, 3211 Carla Dr.; Fri. 4:30-8:30, Sat. 8-5:30, Sun. 8-5; Introduction to Faceting (\$95), open faceting (\$50), GemCad design (\$95); contact Barb Yost, O-11105 Thomas NW, Grand Rapids, MI 49534, (616) 254-9777; e-mail: barbandben@gmail.com; Web site: www.midwestfacetersguild.org

11—KENT, CONNECTICUT: 9th annual show; Connecticut Antique Machinery Association, Danbury Mineralogical Society; CAMA museum grounds, Rte. 7, 1 mile north of Kent; sale and trade, rocks, minerals, fossils, jewelry, mining museum exhibits; Sat. 9-4; free admission; contact John Pawloski, (860) 927-0050; Web site: www.ctamachinery.com

11—SKOKIE, ILLINOIS: Show, "Geodefest"; Chicago Rocks & Minerals Society; St. Peter's United Church of Christ gymnasium, 8013 Laramie Ave., across from the Skokie Public Library; Sat. 1-5; free admission; geode cracking demonstrations, educational exhibits, free rock and geode identification, geode sales; contact Jeanine Mielecki, (773) 774-2054; e-mail: jaynine9@aol.com; Web site: www.chicagorocks.org

11-12—BARTO, PENNSYLVANIA: Show and swap; Joshua Sloan; Jakes Flea Market, 1380 Rte. 100; Sat. 7-1, Sun. 7-1; free admission; rockhounds from PA, NY, NJ

continued on page 26

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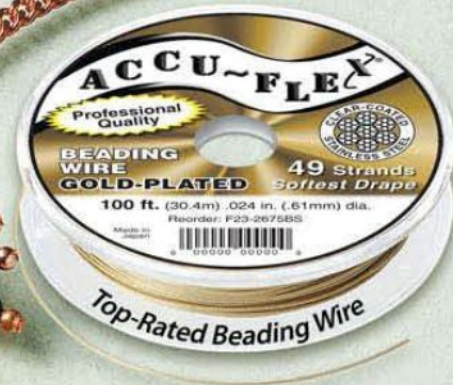
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Vanishing Minerals

Where Have These Once-Plentiful Specimens Gone?

Story and Photos by Bob Jones

Collectors who have been around a while can recall the days of mineral abundance, from the 1960s through the 1980s. In those years, it seemed the supply of amazing minerals would never run out. Think of the crystallized and twinned cerussites from Tsumeb, Namibia. Dozens and dozens of flats of this lead carbonate would show up at major shows and even small local shows. The quantity of this mineral was immense; estimates suggest they numbered in the tens of thousands. If you walk the aisles of a major mineral show today, however, you might see a half-dozen Tsumeb cerussites for sale if you are lucky. What happened to them all? Granted, cerussite can be a fragile mineral, but surely the vast majority of those early specimens have survived somewhere!



The Defiance mine at Gleeson, Arizona, produced quantities of what is called "cockscomb" wulfenite.



Forty years ago, Arizona collectors could dig as many jackstraw cerussite specimens as they could carry from the Flux mine.



The mines of Sicily produced huge quantities of fine yellow sulfur crystals, many of them in textbook crystal form.

Cerussite was not the only abundantly common species from that complex, deep mine in Namibia. Green diopside was also abundant when the mine was operating. Beginning in 1971, fine green diopside specimens flooded out of Namibia and were brought to shows. The flow peaked in 1977, which I called "the Year of Diopside" in my book "A Fifty-Year History of the Tucson Show". At most shows, you can still see one or two nice examples of diopside from Tsumeb. Many are what might be called "recycled" specimens; taken from collections assembled in the halcyon years of Tsumeb, they are now being re-sold.

How about the pink rhodochrosites from the American Tunnel, near Gladstone in the San Juan Mountains of Colorado? When that tunnel was being dug in the 1950s, so many crystallized rhodochrosite specimens came to light that you could buy them in gift shops in that high-altitude mountain town. Usually labeled "Silverton, Colorado", these lovely rhombic rhodochrosites were the best available at the time and everyone wanted to—and could—buy one or more.

The crystals were found with fluorite on white quartz in very attractive specimens. The American Tunnel was being dug through an old gold mine property to reach an even richer gold deposit. Once the tunnel was complete, the rhodochrosite supply dropped to a trickle and finally stopped.

Today, the American Tunnel rhodochrosites are a faint image of past years for two reasons: 1) the supply stopped and 2) in the later part of the 1990s, through the efforts of The Collector's Edge, the Sweet Home mine, in Alma, Colorado, began producing bright-red, gemmy rhodochrosites that totally eclipsed the less vibrant, smaller rhodochrosites from the American Tunnel.



Tsumeb, Namibia, was well known as the most important source of green diopside ever discovered.

Before 1939, adamite was an uncommon mineral, but the Ojuela mine at Mapimi (Durango), Mexico, ended that. The zinc arsenate mineral was encountered at the mine during World War II when the mine was in full production. After the war, the mine shut down, but the miners recognized the value of collector specimens, so they formed a co-operative and began specimen mining. The result was a deluge of adamite and other minerals on the specimen market.

There was a time in the 1970s when you could have your pick of choice green Mapimi adamite specimens for \$2 a pound from Arizona wholesalers. At that time, it was never a matter of obtaining a fine specimen. The problem was deciding which specimen, or specimens, to choose from the hundreds or thousands being offered for sale! Wholesalers from Texas, California, and other areas also made regular trips

into Mapimi to buy the results of this very active mining effort.

Imagine the quantity of fine minerals available at that time. That's not so any more! True, specimens are still trickling out of that vast zinc complex, but only as a mere shadow of what was available 40 years ago.

If you lived or traveled in the Midwest in the '70s, you may have passed through Cave-in-Rock and Rosiclare, Illinois. Remember the fluorites? They were everywhere: on porches, in gas station windows, and in local stores. If you stopped at someone's home with a display of fluorite specimens evident, you might be invited in to see the really good specimens that might be all over the living room or dining room table. There was a seemingly endless supply of really nice fluorite specimens, all simple cubes dominated by the pale to strong violet color so common to fluorites of the region.



The Tri-State area of Oklahoma, Missouri and Kansas produced huge quantities of fine calcites when lead mines were operating there.



These lime-green fans of adamite are typical of the high-quality adamites that came from the Ojuela mine at Mapimi (Durango), Mexico, in the 1970s.

When the mines shut down, former miners and local rockhounds were still able to get underground and collect, but gradually the fluorites were absorbed into collections and dealers slowly sold off what they had. Today, few fine Illinois fluorites are seen for sale at shows.

A similar situation existed in the Tri-State region of Oklahoma, Missouri and Kansas. The area's lead mines, which had been worked since the 1800s, yielded vast quantities of galena cubes, suites of other lead minerals, countless numbers of scalenohedral calcites, ruby jack sphalerite, and cockscomb marcasite. All these species occurred in quantities beyond anything we can even imagine today.

In the 1970s, I walked through the backyards of miners in that area where tables held countless specimens of these minerals. At the time, I wondered whether the mineral market could ever absorb such a plethora of specimens, and the mines were still producing! There were so many specimens available you developed an almost blasé attitude toward galena and calcite. But when the mines shut down, those backyards slowly emptied and the specimens are all gone! Now when I see a fine galena-calcite specimen from the Tri-State region, I actually get excited. It's like seeing an old, familiar friend!

Living in Arizona, I naturally developed a hankering for wulfenite. After all, there are more than 125 deposits of this uncommon lead molybdate within a 100-mile radius of Tucson! In the 1960s and '70s especially, you could look through flats and flats of fine wulfenites from Mapimi and Los Lamentos, Mexico. Lesser, but significant, numbers of wulfenites came from Arizona, especially from the Defiance mine, which was being worked for lead minerals. The operators broke into a cave that extended 90 feet along a fault. It was lined top to bottom with wulfenite! The mine owner notified two collectors they could work over the weekend to clean out that deposit

before mining resumed on Monday. They filled enough boxes with wulfenite to load a station wagon and a U-Haul trailer.

When I would visit a wholesaler in Tucson, I had my pick of specimens from flats of wulfenite. Incidentally, "flats" in those days were not the white boxes dealers use today. The flats were actually automobile seat cover boxes, which held twice the number of specimens as today's flats.

American minerals were not the only species available in abundance in those days. The island of Elba was yielding quantities of wonderful specimens of pyrite with a classic pyritohedral crystal form. These lovely crystals were embedded in and sometimes penetrated by thin hematite blades that served as a very attractive matrix. Such specimens were quite common at shows, and some dealers had hundreds of them in their stock. They were even more common in Europe.

Just as common were hematite crystals from Elba with a disklike form. Most were about an inch across, quite modified, and in clusters of intergrown blades that were very attractive. Many specimens showed a surface iridescence that added to their natural beauty. Clusters of these sharp hematites were usually hand sized and made very attractive display specimens.

One of the more attractive species seen in these early days was sulfur from the volcanic regions of Sicily. The sulfur occurred in superb, textbook crystals along with aragonite, celestine and calcite. Suites of these four minerals were readily available at shows, though never in the quantities of minerals like Mapimi adamite. Still, every collector could acquire examples of these species, either as individual specimens or in combinations of two, three, or all four species.

On one of our trips into Mexico, Bill Panczner and his son Chris, and my son Evan and I made an effort to visit Cerro de Mercado, Durango. This huge iron ore deposit was known the world over for its

gemmy, yellow fluorapatite crystals. These textbook crystals were so common that local dealers could haul out dynamite boxes full of single crystals for collectors to dig through.

The apatite crystals developed in a loose, white, claylike material, so matrix specimens were really uncommon because the bonding was so weak. But single crystals averaging an inch or so long and as thick as a pencil were as common as dirt. Larger crystals reaching 4 inches or more and over an inch wide were not as common.

As we drove into the Cerro de Mercado mine complex, we stopped several times to avoid mine trucks hauling iron ore. At each stop, we would get out of the vehicle and gather dozens of apatite crystals from the dirt on the roadside.

During the 1960s and '70s, one of Arizona's most productive collector mines was the Apache vanadinite mine near Globe. During World War II, this mine produced vanadium ore that consisted almost exclusively of vanadinite crystals—carloads of them. Can you imagine a deposit that was yielding nothing but bright-red crystals in multi-ton amounts? The abundance of vanadinite here was unimaginable. Local collectors could visit the spot and gather a few flats of the specimens.

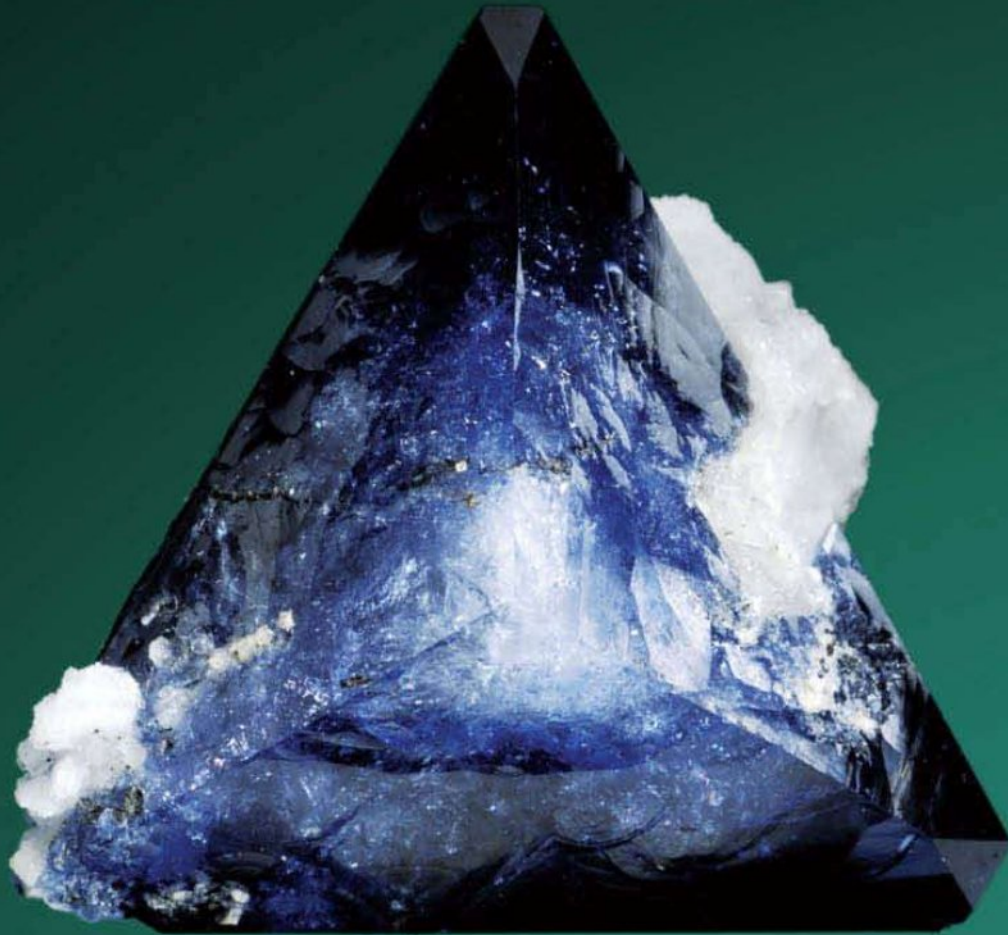
The deposit was a brecciated diabase invaded by vanadium-rich solutions, which deposited crystals on the walls of the broken rock. Once you opened a seam, you could pull out countless floaters, fragments of broken rock suspended in the opening and completely covered with crystals up to 1/2 inch long. Specimens with small crystals under 1/4 inch we jokingly called "floorite", and cast aside.

It was not unusual to spend a weekend underground at the mine and come away with 40 or more soda flats filled with choice specimens. Sometimes, we might break into a seam and, while two people worked the seam, a third person simply sat and wrapped specimens as quickly as they were

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Vanishing Minerals from page 14



EVAN JONES COLLECTION

The Erupcion mine at Los Lamentos, Mexico, produced vast quantities of pseudocubic wulfenite, of which this specimen is considered one of the best.

being removed. Thousands of boxes of fine red vanadinite came from this source.

The Apache mine was finally taken over by specimen dealers who decided to open pit the deposit. This proved marginally successful and, eventually, blasting and surface collapsing pretty much shut the deposit down. The supply dwindled, and once Morocco came online with its 1-inch and larger bright-red, hexagonal crystals in huge clusters, the Apache vanadinites seemed quite inadequate. Still, I have to wonder what ever happened to the millions of specimens collected during the decades the mine was being worked by rockhounds!

Another Arizona mine that offered more specimens than diggers could gather

was the Flux mine in the Patagonia Mountains of Arizona, close to the Mexican border. The Flux was one of the lead-silver mines in the area and was noted for jack-straw cerussite. The material is so named because the lead carbonate crystals form snow-white needles that look like so many bits of straw. The needles can reach 6 inches in length, and clusters of these very brittle crystals could fill a cavity in the heavily weathered gossan of the deposit. Many specimens consisted of nothing but tangled masses of these needles with almost no matrix.

The gossan is comprised of quite rotten iron oxides and other minerals that had been heavily leached by rains. This created



The deep mine at Tsumeb, Namibia, was a major source of fine cerussites, most of them twinned.



The lead mines of Oklahoma, Missouri and Kansas produced tons of simple galena cubes.

cavities in the soft material in which the jackstraw cerussite formed.

A cavity might run several feet in length and be completely lined with snow-white crystals. Sometimes, there was so much cerussite the cavity was packed solid. If the crystals had a chance to develop unimpeded, they formed lovely radiating sprays of crystals sticking up in all directions. Collecting was just a matter of digging into the soft gossan and carefully extracting the hundreds of clusters of crystals, then packing them gently in a box. The number of specimens you collected was governed only by the time you wanted to spend cleaning out cavities!

The fragility of these abundant cerussites led to one funny story. Several fellows were working in the Flux mine gossan and were getting so much cerussite they ran out of packing tissue. One of the fellows drove down to the local general store and bought all the toilet paper rolls on the shelf. A local sheriff happened to be in the store and saw this odd purchase. Since such rolls could be used as filters in a drug-making operation, he thought he had stumbled onto a drug ring. He followed the rockhound to where the guys were digging in the remote mountains near Mexico and busted the group. Eventually, explanations clarified the situation and the rockhounds were released, but their cerussite booty was held because they were on patented land!

The bottom line here is that the minerals collected back in the 20th century did not melt and they were not thrown onto the local dump. They still exist! But where? I believe this gives you a huge clue to the number of mineral collections and collectors out there. They have to number in the hundreds of thousands! So the real question is not, "Where have the minerals gone?," but "Where are all those collectors?"

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SHOP TALK

by William A. Kappelle

Enamel Chips

I have written several times in the past about making beads with a propane torch, using copper tubing as a core and enamel for the beads. Enamel is basically glass chips or powdered glass colored with metallic oxides that is fused to the copper using high heat. After making a bunch of these beads, I started thinking about some other ways in which to use the enamel with the torch on flat copper sheet.

I did a little experimenting with the materials and, after achieving some modest success, I began to think that I had discovered something. Unfortunately, I then found out that about half the people in the civilized world had already been doing exactly the same thing for some time. Funny, the same thing happened when I thought I had invented the wheel. I did come up with a few ideas that might be unique, though, and I thought I would pass them on, even though I haven't tried all of them yet.

Before I get into that, it might be good to run through the steps of torch enameling for those of you who are not familiar with it. Essentially, all that is needed is a simple propane torch that can be found at any hardware store or home center, a tripod stand and wire screen or a piece of fire brick, flux and enamel powder, some copper shapes or sheet copper from which to make your own, and some 0000 steel wool.

Clean the copper shape with some 0000 steel wool, then heat the metal to a bright, uniform orange color with the torch. Sprinkle an even coat of flux onto the heated metal. (An old salt shaker comes in handy for this.) Heat the flux until it flows over the whole piece and add the enamel in whatever pattern you have chosen. Allow the piece to cool, then polish the copper back with 0000 steel wool and spray on a little acrylic or lacquer to prevent corrosion.

I realize that this was a very quick explanation of the process. If you would like a more detailed explanation, a little surfing on the Internet will turn up many sites that will guide you through the process step by step.

Now, here are my ideas on combining torch enameling with lapidary: My first idea was to use the enamel powders without melting them. By the way, I have re-



ferred to these enamels as "powder" when, in fact, the ones I use are actually tiny little flakes or chips. I made a sample using a piece of rosewood and some of the chips in a multicolor mix. I bored a hole about 1/4 inch deep into the rosewood, mixed up a little epoxy, poured it into the hole, and sprinkled in the chips. When the epoxy had hardened, I sanded the chips flush and polished the whole works. I can see a lot of possibilities for this technique.

Another possibility for unheated chips would be to use them with one of the cabochon-shaped resin molds that are available in craft stores. Pour a little casting resin into the mold, sprinkle in some chips, and fill the mold the rest of the way with resin. Voila! instant cab.

Bringing the torch back into play, why not start with a cabochon-shaped copper blank, put your chosen design or color on it, then use a flat lap to flatten the top and cement on a clear quartz or glass cap for a copper enamel triplet?

Enameling supplies, including instructional publications and videos, can be found at www.thompsonenamel.com and other Internet sites, while www.copperenamels.com offers pre-cut copper blanks in a wide variety of shapes. Turn your imagination loose! 💎

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



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THE DUST DEVIL MINE

Dig Your Own Oregon Sunstones

Story by Austin Moore



AUSTIN MOORE PHOTO

These two rings are just a few of the pieces of jewelry I was able to craft from my finds.

Our sunstone mining trip actually began many months before we set off down the road in our trusty pickup. The story begins at the Snyder Ranch Rock Show in Valley Springs, California. My girlfriend, Shasta, and I had journeyed there to visit a friend at his nearby mining claim and to take part in the rock show. Of the many booths, the one that captured our attention was the sunstone booth. Run by Dave Wheatley and Tammy Moreau, who own a claim in Oregon, the booth was filled to the brim with sunstones! This was the first time we had seen these amazing stones. For those who are not familiar with them, sunstones come from three main locations: Tvedstrand in southern Norway, Tanzania, Africa, and Oregon. They are a type of feldspar containing red hematite and copper, which produce schiller! Tanzanian sunstones have what is called “confetti” schiller, which looks exactly the way it sounds. Oregon sunstones have a wispiest, copper-hued schiller that runs in parallel planes, creating a shimmer in the stone, as if it glowed within. These Oregon sunstones had us glued to this booth for the better part of an hour.



AUSTIN MOORE PHOTO

These old belt “picking conveyors”, which will move several tons of rock per hour, are still in use at the Dust Devil mine today.



AUSTIN MOORE PHOTO

Because the location of the open-pit operation is so remote, the owner may not go into town for months at a time.

On the drive back to our home, we talked about the show, our finds, our people watching, and the good deals we had discovered. But the conversation kept veering back to the sunstones and the mines in southern Oregon, not that far from our home in Central California. It wasn't long before Shasta declared that we were going to take a trip up there to see the mines four ourselves—and that was the end of that!

We planned our trip for the July 4th weekend so that it would coincide with the Pow-Wow rock show in Madras and the Sisters Rock show in the town of Sisters. Both are in Central Oregon, about an hour from Bend and only about 45 minutes from each other. They are also about eight hours from the town of Plush, which is the nearest town to the sunstone mines.

The drive was long, and involved several stops on the way for sleeping, eating and refueling. There are any number of scenic locations, rockhounding areas, and other roadside attractions along the way. We spent the first night in Folsom, California, and made out for Plush, Oregon, bright and early the following day. There is a gas station in Plush, but no store, so if you need any supplies, I recommend stopping in Lakeview. You should fill up your vehicle in Plush, though, as it is a long haul out to the next city.

We had decided ahead of time to visit the Dust Devil sunstone mine based on advice from people that we had met at the Valley Springs Rock Pow-Wow. However, there are several commercial digs in the area, so do some research to determine what works best for you.

We followed the directions given on the Dust Devil mine Web site (www.dustdevilmining.com), which gave very precise mileages and turn indications. This is important out there, as there are a lot of back roads and very few street signs. The road is partly paved and then becomes a



AUSTIN MOORE PHOTO

In the right layer of earth, almost every cavity you encounter in the basalt is filled with sunstones.



AUSTIN MOORE PHOTO

Brute force is needed to uncover the sunstone pockets, but finesse is required to get the pieces out intact.



SHASTA PALMER PHOTO



AUSTIN MOORE PHOTO

A jackhammer is a much more efficient tool for breaking up the overburden, but it requires a gasoline-powered generator to run.

By stacking the 1/2-inch screen over a 1/4-inch screen, you will be able to screen the dirt quickly without missing anything.

well-graded dirt road, suitable for cars and trucks. The Dust Devil mine is open year-round, except Dec. 22-28.

We arrived late in the afternoon and the sun was already starting to get low in the sky. Co-owner Don Buford came out to meet us when we arrived. I had talked to him on the phone about a month prior and he remembered me. Don keeps several camping trailers on site for visitors to stay in free of charge during their visit and I had reserved one of them. By that time, the sun was in the perfect position for walking back and forth along the driveway, watching for the flash of rough sunstone. Since the driveway is paved with the crushed tailings of the mine, it is more or less paved in sunstone!

Each digger 12 and older is charged \$50 to dig in the Dust Devil pit and is allowed to keep up to \$50 worth of the stones they find. Additional stones can be purchased for 33% of the wholesale value. It was not long before we were itching to get to digging, so Don showed us the spot to start at and we went to work for the next few hours with picks, small shovels, and rock hammers. Unlike some fee digging places, at this mine you actually get to dig virgin ground and have a chance to really make a big find, not just sift through the leftover tailings or go through buckets brought up from a mine. The Dust Devil is an open-pit mining operation. We were shown a spot where the overburden had been removed by a large excavator and where, hopefully, sunstones lay just under our feet.

Sunstones form in pockets in the basalt rock and are usually concentrated at a certain layer in the ground.

These layers were formed by ancient lava flows, so they are usually not perfectly flat or straight. Extracting the shiny little gems requires a bit of brute strength and some finesse, plus a touch of luck. The most common method is to break up the host rock with hammers and picks, load the resulting gravel and small stones into a large sieve, and start shaking. This worked well for us. While I was busy making a small dent in the earth with my tiny rock hammer, Shasta screened the rocks and picked out

the goodies. Don was even nice enough to loan us 1/4-inch and 1/2-inch screens and a roller. The roller was made of two sawhorses, with rolling wheels mounted between them. The screens could then be set on top and easily shaken back and forth. It sounds simple enough, but it was not long before we were both pooped and it was time for dinner.

We had a full set of camping equipment and cook wear and had brought some food to prepare, but before we had a chance to wash up, Don and his daughter had invited us over to their trailer. Over a hearty meal of potatoes, pasta salad, and carrots we chatted about rocks, and Don told us the history of the mine, some of the local folklore, and a plethora of other rockhounding stories and anecdotes. This turned out for the best, since after the sun goes down there is really nothing to do out here. Another couple arrived that evening. They had been to the mine the day before, but had gone out for the day and were just returning. They had come all the way from Canada and were here for the second time. One of them wore a beautiful peach schiller sunstone pendant made from a single, solid sunstone at least 40 carats in size with a hole drilled through the top for a thin chain to pass through. She related that she had mined the stone herself a few years ago and had it cut and polished. She hoped that it would bring her luck once again.

The next morning, Don took pity on me and my wimpy little rock hammer and loaned us his electric jackhammer for use in the pit to break up the stubborn rocks. I lugged the heavy hammer and the accompanying gasoline-driven

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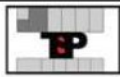
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generator down to where we had been digging the night before. It was not long before the rock was crumbling beneath my powerful new toy and the buckets of screening material were stacking up. Soon we hit pay dirt! When we reached the right level in the earth, the basalt started to yield little pockets of sunstone. It seemed that everywhere you looked you saw a little crystal!

We continued with a new strategy: First we would break up a 2-inch-deep layer of earth, then we would pick over the rocks by hand. Then we would brush the bottom of the hole with a whisk broom. Often times we would stumble upon large pockets of sunstone right there at the bottom. I would then hammer all around the pocket and we would pull out the piece whole. The sunstones would be carefully dislodged with a small hand tool like a screwdriver or small rock pick.

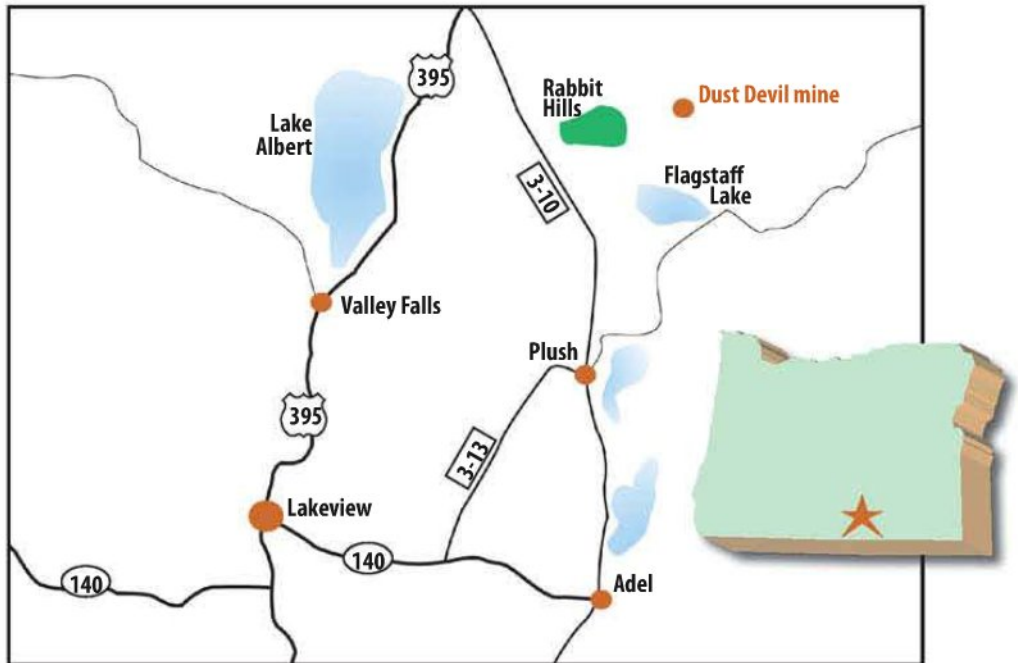
Most of the pieces we found were very small, no larger than a pea, and clear, with little to no schiller or color. But every so often I would hear a little whoop from Shasta as she brushed off a winner and held it up to the light. We'd spend the next few minutes admiring our find and then it was back to digging, hoping for more! This continued on through lunch and into the early afternoon. It would have been much harder to put our shovels down had it not been such backbreaking work. We carried the equipment back up to the office and sat down with Don to go over our finds. We had

*On our trip, we learned that **sunstone** is a type of **feldspar**, which means it is related to **amazonite, andesine, moonstone, labradorite, oligoclase, orthoclase and sanidine.***

done fairly well, finding hundreds of tiny sunstones and a fair number of larger ones with bars of schiller gracing their surfaces.

We paid Don for our stones (you only pay for the finds you want to keep) and packed up the truck. Before leaving, we also took the time to look around the mine's small shop. Inside were various faceted and cabbed sunstones, rough sunstone, and carvings for sale. It was now midafternoon, we were in the middle of nowhere, and we still had a rock-hounding stop on the way to our campsite, several hundred miles away.

On our trip, we learned that sunstone is a type of feldspar, which means it is related to amazonite, andesine, moonstone, labrador-



ite, oligoclase, orthoclase and sanidine. Due to its schiller effect, sunstone is sometimes referred to as aventurine-feldspar. Heliolite is the Greek word for sunstone. This name is often used to describe sunstone, but more often is used to describe feldspar in general, since many types of feldspar, such as labradorite and moonstone, exhibit some type of colorful effect. Clear sunstones are the most common, followed by straw colors, peach, red, green, teal and blue.

The schiller effect in the stone is caused by microscopic inclusions. It is one of only a few instances in the gemstone world in which inclusions are considered to add value to a stone rather than subtract from it. The schiller in sunstones runs along the natural planes in the stone, which means it is often only visible from certain viewpoints. The sunstone claims in Plush, Oregon, were originally owned by Tiffany and Co. and were sold off in the late 1980s. Tiffany and Co. originally marketed the stones as "Plush Diamonds", but they never caught on and the company invested little in pushing the material commercially. Even now, 20 years later, sunstones are still not widely known. After all, we hadn't heard of these stones until we discovered them ourselves just a year ago.

Our trip continued on for another week and included a stop at Glass Butte, Oregon, to hunt for obsidian. There was an afternoon of rock climbing for me at the famous Smith Rock. We went to Richardson's Ranch and dug thunder eggs, even getting a chance to dig in their Friday

Plume agate bed, which is only open during the weekend of the Madras show. We took in the Madras and Sisters rock shows in one weekend! On the way home, we even paused at an abandoned copper mine on the flanks of Mount Shasta. Our copy of *Gem Trails of Northern California*, 2nd edition (Gem Guides Book Co., 2005), said it had malachite and chrysocolla, and we were able to find several good pieces, which I later cut into cabochons. In all, it was a rockhound trip of a lifetime.

To get to the Dust Devil mine from Lakeview, Oregon, head north on U.S. Highway 395 for about 6 miles, then turn right on state Route 140. You'll see signs at this intersection for the Warner Mountain Ski Area and Adel. Continue 16 miles east on state Route 140, then turn left on County Road 3-13 toward Plush. This intersection is also well marked.

Proceed for 18 miles to Plush, which has a gas pump and a small convenience store. Head north on County Road 3-10, also known as Hogback Road. It is the main road running through Plush. From here on your, odometer will come very much in handy. The pavement will end after 5.5 miles. Drive another 5.5 miles to the intersection with County Road 3-11 and turn right (this intersection may not be marked). Go 0.5 mile and turn left onto BLM 6155, which at the time of this writing had an old sign that once read "Sunstone". Drive 7 miles and turn left onto BLM 6115, which is well marked by a sign pointing the way to the sunstone collection area. The Dust Devil mine will be on the left side of the road. If you continue down the road, there are several other fee digging places, as well as a space that was set aside for rockhounds to dig for free. 💎

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11-12—BUTTE, MONTANA: Show; Butte Mineral & Gem Club; Butte Civic Center Annex, 1340 Harrison Ave., exit 127 North; Sat. 10-6, Sun. 10-6; 15 dealers, minerals, gems, fossils, jewelry, silent auction, door prizes, kids' games; contact Pete Knudsen, PO Box 4492, Butte, MT 59702, (406) 496-4395

11-12—CAMPBELL RIVER, BRITISH COLUMBIA, CANADA: Show; Ripple Rock Gem & Mineral Club; Timberline Secondary School Gymnasium, 1681 S. Dogwood St.; Sat. 10-5, Sun. 10-4; adults \$3, children 12 and under free with adult; vendors, rock slabs, jewelry, beads, tools, fossils, club showcases and demonstrators, kids' section; contact Janet Burkholder, 1757 S. Alder St., Campbell River, BC V9W 7J1, (250) 923-1740; e-mail: jangor@telus.net; Web site: www.ripplerockgemandmineralclub.com

11-12—CASPER, WYOMING: 64th annual show; Natrona County Rockhounds Club; Yellowstone Garage, 355 W. Yellowstone Hwy.; Sat. 9-5, Sun. 9-4; adults \$3, children under 12 free; raffle, silent auction, demonstrations, showcases, dealers, fine jewelry, beads, fossils, rocks, Wyoming jade; contact Helen Hoff, 611 Goodstein Dr., Casper, WY 82601, (307) 266-2839; e-mail: hmhoff@bresnan.net

11-12—LIVE OAK, TEXAS: Wholesale and retail show; The Bead Market; Live Oak Civic Center, 8101 Pat Booker Rd.; Sat. 10-5, Sun. 10-4; free admission; dealers, vintage beads and buttons, gemstone beads, glass beads, seed beads, lampwork, PMC, silver, findings, books, tools, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

11-12—MANSFIELD, OHIO: 51st annual show, "Ohio's Fabulous Fossils and Minerals"; Richland Lithic & Lapidary Society; Richland County Fairgrounds, Trimble Rd., north of Rte. 30; Sat. 10-6, Sun. 11-5; admission \$3; exhibits, demonstrations, retail dealers, silent auctions; contact Jay Medici, PO Box 56, Sparta, OH 43350, (419) 768-9128; e-mail: jmedici@bright.net; or Tom Kottyan; e-mail: themineralhouse@netzero.net

11-12—PLYMOUTH MEETING, PENNSYLVANIA: Retail show; Intergalactic Bead & Jewelry Shows; Lulu Shriners, 5140 Butler Pike; Sat. 10-5, Sun. 10-5; adults \$5 Sat., \$4 Sun., children under 12 free; dealers, precious and semiprecious gemstone beads, sterling silver, findings, freshwater pearls, hand-blown glass, vintage beads, crystals, delicias; contact Angela Couch, (888) 729-6904; e-mail: angela.couch@beadshows.com; Web site: www.beadshows.com

14—TAMPA, FLORIDA: Show; Rings & Things; Clarion, 2701 E. Fowler Ave.; Tue. 12-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, PO Box 450, Spokane, WA 99210, (509) 252-2900; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

15—ALTAMONTE SPRINGS, FLORIDA: Show; Rings & Things; Magnuson Grand Hotel, 230 W. SR 436; Wed. 1-5; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, PO Box 450, Spokane, WA 99210, (509) 252-2900; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

16—JACKSONVILLE, FLORIDA: Show; Rings & Things; Clarion Hotel Airport Conference Center, 2101 Dixie Clipper Rd.; Thu. 1-5; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, PO Box 450, Spokane, WA 99210, (509) 252-2900; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

17-18—ONTARIO, OREGON: Annual show; Ontario Rock and Gem Club; Malheur County Fairgrounds, 795 N.W. 9th St.; Fri. 9-6, Sat. 9-6; adults \$1, children under 14 free; contact Dan Jensen, PO Box 961, Ontario, OR 97914, (208) 740-0937; e-mail: rgshowontario@yahoo.com

17-19—ASHEVILLE, NORTH CAROLINA: Retail show; Colburn Earth Science Museum; Pack Place, 2 S. Pack Square; Fri. 10-6, Sat. 10-6, Sun. 12-5; free admission; local and world minerals, gems, jewelry, fossils, kids' activities,

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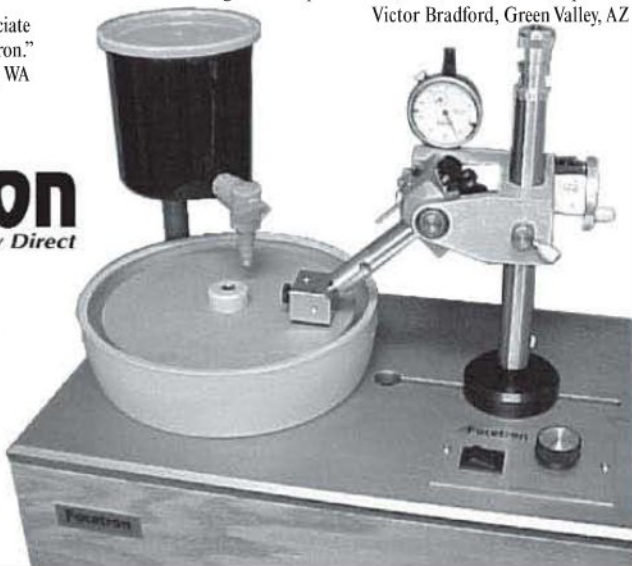
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17-19—SANDY (SALT LAKE CITY), UTAH: Show; Gem Faire Inc.; South Towne Exposition Center/Exhibit Hall 5, 9575 S. State St.; Fri. 10-6, Sat. 10-6, Sun. 10-5; \$7 weekend pass; contact Yooy Nelson, (503) 252-8300 or e-mail: info@gemfaire.com; Web site: www.gemfaire.com

18—NORCROSS, GEORGIA: Show; Rings & Things; Garden Plaza Atlanta Norcross, 6050 Peachtree Industrial Blvd. NW; Sat. 12-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, PO Box 450, Spokane, WA 99210, (509) 252-2900; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

18-19—BEREA, OHIO: Retail show; Intergalactic Bead & Jewelry Shows; Cuyahoga Fairgrounds, Multi Purpose Bldg. (#25), 164 Eastland Rd.; Sat. 10-5, Sun. 10-5; adults \$5 Sat., \$4 Sun., children under 12 free; dealers, precious and semi-precious gemstone beads, sterling silver, findings, freshwater pearls, hand-blown glass, vintage beads, crystals, delicas; contact Angela Couch, (888) 729-6904; e-mail: angela.couch@beadshows.com; Web site: www.beadshows.com

18-19—CAYUCOS, CALIFORNIA: 51st annual show; San Luis Obispo Gem & Mineral Club; Cayucos Vets Hall, 10 Cayucos Dr.; Sat. 9-5, Sun. 9-5; free admission; dealers, rock, gems, minerals, jewelry, gemstones, beads, cabochons, crystals, fossils, jade, rock slabs and rough, custom wire wrapping, lapidary and jewelry-making equipment, prize drawing; contact Mike Lyons, (805) 610-0757; e-mail: jade.star@charter.net; Web site: www.slogem.org

18-19—NEWPORT, OREGON: 48th annual show, "Rock'n the Coast"; Oregon Coast Agate Club; Yaquina View Elementary School multipurpose room, 351 SE Harney St., just off Hwy. 20, turn south at the light; Sat. 10-6, Sun. 10-4:30; dealers, demonstrators, displays, door prizes; contact K. Myers, PO Box 293, Newport, OR 97365

18-19—OZARK, MISSOURI: Annual show and swap; Ozark Mountain Gem & Mineral Society; Finley River Park, 205 N. First St.; Sat. 9:30-6, Sun. 10-5; free admission; dealers, demonstrators, auction; contact Betty Maples, 2621 W. Wild West Rd., Nixa, MO 65714, (417) 725-3001; e-mail: OMGandMS@gmail.com

18-19—RAPID CITY, SOUTH DAKOTA: 31st annual show; Western Dakota Gem & Mineral Society; Central States Fairgrounds Event Center, 800 San Francisco St.; Sat. 9-5, Sun. 9-4; adults \$3, children under 12 free with adult; dealers, Fairburn agates, door prizes, silent auction, demonstrations, tailgate sales, kids' activities; contact Mike, (605) 391-1518; e-mail: mjbhc@hotmail.com; Web site: www.WDGMS.org

19—CHARLOTTE, NORTH CAROLINA: Show; Rings & Things; Renaissance Suites Hotel, 2800 Coliseum Centre Dr.; Sun. 2-6; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, PO Box 450, Spokane, WA 99210, (509) 252-2900; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

23-26—PRINEVILLE, OREGON: Annual show; Prineville RockHound Pow Wow Club; Crook County Fairgrounds, 590 SE Lynn Blvd.; Fri. 9-5, Sat. 9-5, Sun. 9-4; free admission; field trips, auction; contact Rich Knight, (541)447-5298; e-mail: richknightr@gmail.com; Web site: www.prinevillerockhoundpowwow.com

24-25—HAMILTON, ILLINOIS: Show and sale; Woodies Rock Shop; city park, 710-890 Keokuk St.; Fri. 11:30-6, Sat. 11:30-6; free admission; dealers, gems, jewelry, lap. geodes, agates, Keokuk Geode guiding, custom cutting and cracking; contact Stephen Woodruff, 924 Broadway, Hamilton, IL 62341, (217) 847-3881; e-mail: woodiessuites@gmail.com; Web site: www.woodiesrockshop.com

24-26—BLOOMINGTON, INDIANA: 46th annual show and swap; Lawrence County Rock Club; Monroe County 4-H Fairgrounds; Fri. 10-6:30, Sat. 9-6:30, Sun. 10-4; gems, jewelry, minerals, fossils, rocks, lapidary equipment, supplies, rockhound and prospecting supplies, 4-H project material, science project material; contact Dave Treffinger, 13101 E 250 N, Loogootee, IN 47553, (812) 295-3463; Web site: www.lawrencecountyrocksclub.org

24-26—COLORADO SPRINGS, COLORADO: 3rd annual rock fair; Colorado Springs Mineralogical Society, Rocky Mountain Federation of Mineralogical Societies; Western

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ROCK SCIENCE

The Future of Afghan Lapis

Afghanistan's central government is planning to make the controlled mining of lapis lazuli part of its future economic-development program. Lapis lazuli has long been synonymous with Afghanistan, and for good reason: For 6,000 years, the nation has produced the world's finest lapis, all of it from the historic Sar-e-Sang mines in the upper Kokcha Valley in the northeastern province of Badakhshān. Few deposits elsewhere yield commercial quantities of gem-quality lapis, little of which compares with the material coming from Sar-e-Sang.

Lapis lazuli is a metamorphic rock consisting of lazurite, calcite, sodalite, pyrite, augite, nosean, and other minerals. Lazurite, a basic sodium calcium aluminum sulfate chlorosilicate, is the primary mineral in lapis and the cause of its striking blue color. Lazurite makes up 20% to 40% of lapis; the higher the percentage of lazurite, the more intensely colored and valuable the material.

The Sar-e-Sang mines are at an elevation of 10,000 feet in remote and extremely rugged country near the heart of the Hindu Kush massif. The uplifting of this great mountain range some 30 million years ago was actually the geological key to the creation of the Sar-e-Sang lapis deposits. When the original regional basement rock, a chemically complex marine limestone, was fractured and thrust upward, granitic magma intruded the limestone, causing high-grade, contact metamorphism that recrystallized the limestone into marble containing lens-shaped bodies several hundred feet long, some of which contain varying grades of lapis.

The earliest mining at Sar-e-Sang was done on the surface, but miners later went underground to seek out the elusive lenses in the hope that they contained valuable lapis. When Europeans first visited the mines in 1838, they found huge underground chambers, some 200 feet long and 150 feet high, that had been mined by hand over the centuries.

Until the 1970s, lapis was one of the few materials that brought Afghanistan hard currency in international trade. At that time, miners shipped the lapis to the capital city of Kabul to be worked into gems and decorative forms or sold as rough. This traditional trade was disrupted by the Soviet invasion of 1979. But even after the Soviets gained control of Kabul, mujahideen nationalist guerrillas continued to control the mountains, including the Sar-e-Sang lapis mines. The mujahideen then smuggled



the lapis across the Pakistani border to the Peshāwar gem markets.

Ironically, the Soviet occupation of the early 1980s partially modernized Afghan lapis mining. Previously, explosives had been costly and difficult to obtain. Afterward, explosives obtained by retrieving and disassembling the countless unexploded Soviet land mines were used regularly.

After the Taliban took control of Kabul in the 1990s, the mujahideen (now the Northern Alliance) continued to control lapis mining, using the profits to fund its guerrilla activities. Today, while the United States-backed central government controls Afghan cities, the Northern Alliance controls the mines, selling the lapis in Pakistan for a \$5 million annual profit. But the Kabul government is negotiating with foreign mining companies to build access roads and increase lapis production in return for long-term mineral leases. All lapis would then pass through Kabul, boosting the economy and generating substantial profits for the central government. The Northern Alliance, however, will not easily relinquish control of the Sar-e-Sang mines.

Although Sar-e-Sang still has large reserves of lapis, extracting it will require modern mining methods. But if the Kabul government is successful in nationalizing and developing these mines, a new chapter will be written in one of the world's oldest sagas of gemstone mining. ♦

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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BANDED

Ornamental Gemstones

They Decorate Both People and Palaces

Story and Photos by Bob Jones

Go into any castle, palace, or important government building, and you'll see various examples of banded ornamental stone. In Russia, malachite was used to create Malachite Hall in the Winter Palace. Such opulence is common in royal homes and palaces. Windsor Castle boasts at least one huge malachite vase that stands over 6 feet high. At the royal Chapultepec Palace in Mexico City, you can admire huge double doors with a malachite veneer!



This assortment of rhodochrosite objects demonstrates the versatility of the red-, pink- and white-banded gemstone.

LEFT: This fine rhodochrosite bowl with minor siderite is displayed at the Lizzadro Museum of Lapidary Arts.

RIGHT: The Russian mosaic technique was used to make lovely malachite vases like this one.

BOTTOM: Nicolai Medvedev used several different banded ornamental gems to create this colorful box, which is displayed in the Lizzadro Museum of Lapidary Arts.



Times have changed, though. The fanciest banded ornamental gemstones, like malachite, are no longer the exclusive domain of royalty and the rich. Today, this lovely green mineral is so common it is not unusual to see objects, many of them exceptionally artistic, made of banded ornamental malachite in private homes. In jewelry, fine cabochons of banded malachite are now commonly used in pendants and rings.

Malachite isn't the only banded ornamental gem used in homes or jewelry these days. Sometimes, bathroom tiles are made of banded rhodochrosite. Rhodochrosite beads are certainly a hot item these days. Kitchens may even have small tiles of tiger's-eye or malachite along countertop borders.

Another trend in kitchens these days is the use of granite or other hardstone countertops. Granite is not banded, but it is often somewhat zoned and makes for very beautiful décor.

More obvious in home décor are carvings and objets d'art made from malachite, rhodochrosite, tiger's-eye, and even rainbow obsidian. Table tops made from malachite or the marvelous colorful banded ironstone from the iron mines of Australia and Minnesota are in vogue. And one very popular item these days is petrified wood logs sliced lengthwise, mounted on iron supports, and used as very colorful coffee tables.

We don't normally think of petrified wood as being banded, but if you cut a petrified log lengthwise it shows definite zoning or banding of multicolored agate. Slices of petrified wood, especially the very colorful agatized petrified wood from Arizona, make wonderful decorative tables.

When lovely, banded ornamental gemstones were the province of wealth and royalty, in many countries the gem material was owned, or at least controlled by, the



ruler or government. At the very least, political position, wealth and power determined who got what! Not anymore, though. Several factors have brought such ornamental beauty into the hands of everyone.

The amazing growth of the lapidary industry after World War II created an entire cadre of lapidary artists who were not only skilled, but adventurous enough to go into the hills and find hardstone materials suited to their purposes. Not only did this put the means for making ornamental works into the hands of common folk, but inexpensive cutting and polishing equipment became available. Together, accessible gemstones and good equipment in the hands of a virtual army of lapidary artists with natural skills put fine gemstones in everyone's hands.

Another contributing factor was worldwide commerce. It made the treasures of the earth accessible to everyone. For example, when banded ironstone, often called "tiger iron", was mined in Australia, it didn't go to the smelter. Its value as an ornamental stone was recognized, so it was recovered and put in the hands of skilled artisans who turned the lovely material into works of art! Its vibrant colors came from several types of iron oxide, including hematite and goethite. This colorful iron hardstone is now available in huge, polished slabs with alternating bands of black, red, orange, yellow and rust that can be turned into stunning interior décor and objets d'art. Not as readily available is similar material from Namibia and the exhausted iron mines of the United States.

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BANDED *Ornamental Gemstones* from page 31

With a huge army of amateur lapidaries constantly seeking something new to work with, any colorful stone was looked at in a different, artistic light that enlarged the decorative stone market. The value of such naturally colored gem material was recognized and taken to heart.

There is no doubt in my mind that the beauty of rare hardstone can now find a place in many a home, whether it be a stately mansion or modest dwelling. In fact, the use of colorful hardstone has extended itself into the world of business. Many foyers and offices these days are enhanced by crystal specimen groups, huge amethyst geodes, colorful slabs of agate, petrified wood, or other kinds of colorful and patterned stone. Such interior décor not only triggers casual conversation, but suggests the owner is a supporter of the natural or "green" movement, which is so popular today.

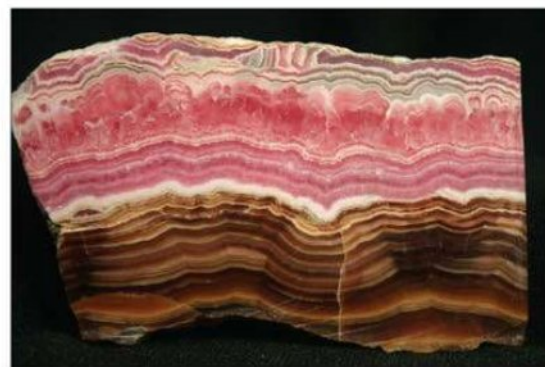
There really is nothing new about this move toward using natural stone for office and home décor. Many archeological digs have unearthed ancient buildings in which banded ornamental stone and other hardstones were in frequent use because of their colors and patterns. In effect, we are simply reviving a tradition that dates back thousands of years!

The Russian czars certainly realized the beauty of banded ornamental gemstones early on. In 1835, a 480-ton malachite mass measuring 76 meters by 85 meters was found underground in the Nadezhnaya shaft of the Mednorudnyanskoe mine in the Urals. Another mass weighing 40 tons was also found. The larger piece had to be cut up to be hoisted out, and the pieces were then hauled to the royal lapidary works in Ekaterinburg to be turned into things of banded beauty.

What makes malachite so beautiful is its alternating bands of varying green shades; right next to a lighter green band is a dark green band. This variation in color is caused by the different thicknesses of the malachite needles that make up the concentrically layered mineral. The smaller the needles, the lighter the green color.

The problem the craftsmen ran into at Ekaterinburg was that these huge masses were not completely solid. They were shot through with myriad small vugs, which prevented them from obtaining large, solid slices of the banded mineral.

The artists solved that problem by cutting the malachite into fairly small, thin pieces. To create a column such as you can see today in St. Isaac's Cathedral in St. Petersburg, they first made a column of limestone, basalt, or another inexpensive rock, then they shaped the thin slabs of malachite to fit the curved surface of the column and attached them with glue. By carefully matching the light- and dark-green banding of each piece



This nice example of Argentinian rhodochrosite flowstone has equally pretty brown siderite flowstone.

to its neighbors, they created the impression that the column was solid malachite.

This technique, now referred to as Russian mosaic, did two things: eliminate the vugs in the original rock and reduce the amount of malachite needed to make a "solid" malachite column. This extended the usefulness of the original multiton malachite masses. The Russian artisans made hundreds of malachite objects this way, including tables, fireplace facings, mantle pieces, vases, and wall plaques. When a czar visited foreign royalty or was visited by royalty, they would exchange gifts that included something made of malachite. This accounts for the almost countless malachite objets d'art that are seen in stately homes and mansions today.

The malachite specimens you see for sale today are not from Russia, but from the Central African Copper Belt. This belt is huge and stretches across the Democratic Republic of Congo (Zaire) into Zambia. The Zambian malachite is usually labeled as being from Bwana Mkubwa, and the Zaire malachite is from the Kolwezi-Lubumbashi district in Shaba Province.

The quality of African malachite is exceptional, as vugs are not a problem. The banding is a wonderful alternating light to dark green, and there are solid chunks that are suitable for carving and lapidary work. The quantity seems almost limitless. The deposits have been producing for a couple of decades and there seems to be no letup in cutting-grade malachite production.

When asked to list banded ornamental gemstones, we probably would think of malachite first. We most likely would not list travertine onyx. Yet, huge tonnages of banded travertine onyx are available and can be seen at every major show. It usually occurs as massive material with bands of white, cream, tan and brown. It is nowhere near as costly as the more colorful minerals like malachite, rhodochrosite or tiger's-eye.

The early source of this lovely banded rock was El Marmal, Mexico, where hot springs had deposited layer upon layer of calcite onyx colored by the metal salts in the hot water. Today, the major source of lovely calcite onyx is Pakistan. This material differs slightly from the Mexican material,

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This slice of Russian malachite-azurite shows the vuggy nature of material from the Ural Mountains.

as it often has narrow reddish bands and even shades of green along with the usual tan and yellow material.

The Mexican onyx was usually dyed, and much of it was made into gift shop objects such as eggs, clocks, ash trays, and chess and checker sets. Much of the Pakistan material has been left natural in color. It occurs in large enough masses that vases and larger objects can be offered. The beauty of this onyx is that it is inexpensive.

In recent years, lovely banded rhodochrosite from Argentina has taken the jewelry and decorator market by storm. This may seem odd because the deposit was first worked for native silver by the indigenous people long before the Europeans invaded South America. Some 700 years passed between the time the locals last mined silver and the time the mine was reopened. What was special about this hiatus? It was during those few hundred years that rhodochrosite stalactites and banded pink flowstone developed.

Post-mining mineral formations are not unusual. After all, surface water continues to drain through the overlying rocks and drip into the open tunnels and stopes left by earlier mining. Old copper mines are rich in iron and copper minerals, which become deposited on the walls and ceilings of old tunnels. In some copper mines, blue chalcantite coats the walls not too many years after mining stops.

It seems to me that 50 or more years ago, the banded rhodochrosite from the Capillitas mine at San Luis (Catamarca province), Argentina, was treated mainly as a novelty—pretty, but not exciting. Some of the older post-mining material is an intense red, but most of what we see today is a lovely pink. When organized specimen mining began, collectors and lapidaries accepted the material with gusto!

Today, you see all sorts of rhodochrosite objects like carved animals, tiles, beads, and art objects. Among mineral collectors, one of the "hot" items is slices of banded rhodochrosite stalactites. These are particularly attractive because they have a crystal pattern that radiates from the center of the disk outward to the rough rim of the stalactite. Most attractive are the pieces in which

three, four or more stalactites coalesce, forming a disk with multiple center points, each with its own radiating crystal pattern that intersects with the others.

Tiger's-eye has long been mined in Griqualand West, South Africa. This chatoyant stone has lovely bands of gold, yellow and brown. The material formed first as an asbestiform mineral, but was later replaced by iron-rich quartz solutions, which formed solid, cutting-grade tiger's-eye. The proper term for this is the silicification of asbestiform material. If the original asbestiform material was mainly the mineral riebeckite, the resulting blue cutting material is called hawk's-eye. Other names have been applied, mostly determined by variations in the color of the material.

When tiger's-eye, which looks not unlike a tiger's pelt, is cut en cabochon parallel to the fibrous structure of the original asbestiform and finished in dome form, a lovely eye will develop. This shimmering straight-line eye gives the material its name!

You may have seen some quite intriguing pieces of glassy obsidian for sale these days that are cut in a heart shape and slightly domed. The dome shape is the key to something unusual. Along the top of the dome is a lovely image of the heart shape in a rainbow of colors.

Obsidian forms from high-silica lava that cools very quickly. The resulting lack of crystal growth gives it a consistency like glass. In some cases, as the lava flows, it cools in thin layers that are evenly spaced and, if viewed from the side, virtually parallel to each other. When the material is properly cut, these layers can act like a diffraction grating in the same way tiny droplets of water in the sky do. Light entering the surface of the obsidian refracts into its component colors, creating a rainbow effect.

The Aztecs and other early cultures took advantage of obsidian's conchoidal fracture to make sharp cutting edges. It doesn't have many decorative uses except in novelty objects or glimmering spheres.

A type of obsidian called "mountain mahogany" can consist of alternating layers or bands of black and brown. It consists of alternating layers of lava that formed at different times. Some layers are rich in iron compounds, which give them the brown mahogany color, while neighboring layers are a normal glassy black or dark gray.

There are other minerals that are found in banded masses, such as sphalerite and colloform apatite, but these have not entered the lapidary market. Malachite, rhodochrosite and tiger's-eye are the most popular massive, banded gem materials, while banded agates are in a class of their own. Fortunately, the supply seems abundant enough that we can enjoy these minerals for some years to come. 💎

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JULY 2011

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

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

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

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

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

9-10—BETHEL, MAINE: 50th annual show; Oxford County Mineral & Gem Association; Telstar High School; Sat. 9-5, Sun. 10-4; adults \$2, children under 12 free; dealers, specimens, jewelry, gem rough, museum-quality displays, fluorescent mineral booth, demonstrations, gold panning, capping, door prizes, grand prize; contact Randy Withee, 34 Morse Rd., Norway, ME 04268, (207) 595-8346; (207) 595-8346; e-mail: oxfordcountymineralandgemassoc@gmail.com; Web site: www.oxfordcountymineralandgemassocia-tion.blogspot.com

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

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

9-10—ROSEVILLE, MINNESOTA: Show; Anoka County Gem & Mineral Club; Har Mar Mall, 2100 Snelling Ave.; Sat. 10-6, Sun. 12-5; free admission; gems, minerals, jewelry, fossils, agates, collectibles; contact Martha Miss, 8445 Grange Blvd., Cottage Grove, MN 55016; e-mail: rockbiz@cs.com

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

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

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

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

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

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

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

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

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

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

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

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

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

23-24—KALISPELL, MONTANA: Annual show; Northwest Montana Rock Chucks; Flathead County Fair Grounds, Grandstand Bldg., 265 N. Meridian Rd.; Sat. 10-6, Sun. 10-4; adults \$1; demonstrations, silent auction, door prizes, minerals, jewelry, kids' activities; contact Milah Gano, P.O. Box 433, Lakeside, MT 59922, (406) 844-3560; e-mail: mallards_g@hotmail.com

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

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

30-31—OKLAHOMA CITY, OKLAHOMA: Wholesale and retail show; The Bead Market; Oklahoma State Fairgrounds

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Show Dates from page 35

Expo Hall 3, 3212 Wichita Walk; Sat. 10-5, Sun. 10-4; free admission; pearls, gemstones, vintage beads and buttons, seed beads, findings, silver, books, tools, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

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

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

AUGUST 2011

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

5-7—NORTH BEND, OREGON: Annual show; Far West Lapidary & Gem Club; North Bend Community Center, 2222 N. Broadway; Fri. 10-5, Sat. 10-5, Sun. 10-4; adults \$1, children under 14 free; demonstrations, wheel of fortune, silent auctions, kids' treasure pool, dealers, rough rock, findings, beads, lapidary equipment, finished jewelry, slabs, carvings, gemstones, mineral specimens; contact Don Innes, 54416 Arago-Fishtrap Rd., Myrtle Point, OR 97458, (541) 396-5722; e-mail: donin11@hughes.net

5-7—MELBOURNE, FLORIDA: Show; Frank Cox Productions; Melbourne Auditorium, 625 E. Hibiscus Blvd.; Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

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

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

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

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

12-14—DALTON, GEORGIA: 20th annual show, "North Georgia Gem, Mineral & Jewelry Show"; Treasures Of The Earth Gem & Jewelry Shows; Northwest Georgia Trade & Convention Center, 2211 Dug Gap Battle Rd., I-75 Exit 333; Fri. 2-7, Sat. 10-6, Sun. 11-5; adults \$3 (3-day ticket), children under age 16 free; jewelry makers, goldsmiths and silversmiths, jewelry repair and design, wire wrap, wire

sculpture, stone beads, pearls, stone setting, dealers, amber, opal, fossils, minerals, door prizes, grand prize; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: vawimmer@verizon.net; Web site: www.toteshows.com

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

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

13-14—AUSTIN, TEXAS: Annual show; Austin Bead Society; Palmer Events Center, 900 Barton Springs Rd.; Sat. 10-6, Sun. 11-5; adults \$5; handcrafted jewelry, supplies, raffles, \$1 off admission with donation of two cans of food; Sat. 10-6, Sun. 11-5; contact Austin Bead Society Bazaar, 900 Barton Springs Rd., Austin, TX 78704, (512) 773-8323; e-mail: austinbeadsociety@yahoo.com; Web site: austinbeadsociety.org

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

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

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

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

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

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

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

19-21—SARASOTA, FLORIDA: Show; Frank Cox Productions; Municipal Auditorium, 801 N. Tamiami Tr. (Hwy. 41); Fri. 10-5, Sat. 10-5, Sun. 10-5; gems, jewelry, beads; contact Frank Cox Productions, 755 S. Palm Ave. #203, Sarasota, FL 34236, (941) 954-0202; e-mail: frankcox@comcast.net; Web site: www.frankcoxproductions.com

20—SHELTON, WASHINGTON: Tailgate rock sale and swap; Shelton Rock & Mineral Society; Shelton Soccer Park, 2202 E. Johns Prairie Rd.; Sat. 9-5; free admission; tailgaters

\$15 pre-registration, \$20 on-site registration; contact Richard Buchholz, (360) 427-2497; e-mail: giggpig@aol.com

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

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

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

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

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

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

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

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

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

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

SEPTEMBER 2011

2-5—CRAWFORD, NEBRASKA: 25th annual show; Northwest Nebraska Rock Club; Crawford City Park, Main St.; Fri. 8-6, Sat. 8-6, Sun. 8-6, Mon. 8-6; free admission; agate bed field trips, 13th annual Agate Collectors presentations, buy, sell, trade, rocks, fossils, artifacts, jewelry; contact Wade Beins, PO Box 569, 120 Gordon Ave., Chadron, NE 69337, (308) 430-1399; e-mail: agates@bbc.net

3-4—ARLINGTON, TEXAS: Annual show; Arlington Gem & Mineral Club; Arlington Convention Center, 1200 Ballpark
continued on page 40

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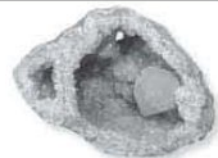
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ROCK & GEMKIDS

Benitoite

$BaTiSi_3O_9$

What's rare, blue, and unusual in many ways? Benitoite, the California state gem. You may never have heard of this barium titanium silicate. In fact, it's so rare, even many Californians don't know about it! Although small grains have been found in Arkansas, Japan, and Australia, benitoite (pronounced ben ē' tō it) has been found in significant quantity in just a single region along the San Benito River in San Benito County, California. Even there, it's not easy to find.

The best benitoite is glassy blue, and it's sometimes called "California blue diamond". In fact, when he stumbled across benitoite in 1907, prospector J.M. Couch thought he had discovered blue diamonds or sapphires. Often, the crystals are "zoned", with an intense blue shade at the edges and a pale or white center. Some crystals exhibit dichroism, or change of color; a crystal that appears blue when viewed from above appears colorless when viewed from the side. Crystals fluoresce sky-blue under short-wave ultraviolet light, and their tips sometimes fluoresce pink under long-wave ultraviolet light.

Benitoite has a unique form. In the 1800s, mineralogists made a table of all possible crystal shapes, but one spot was vacant: that of a ditrigonal-dipyramidal form, which looks like two low, three-faced pyramids stuck together at the base, with all the tips flattened. Nothing to match it had been found—until benitoite!



Benitoite

Exceptional rarity makes benitoite crystals primarily high-priced collectibles, but broken crystals are faceted for jewelry. Even though it's at the soft end of the hardness scale for gemstones (Mohs 6-6.5), it cuts into stunning stones that are more refractive, or sparkly—and far rarer—than diamonds.

—Jim Brace-Thompson

OOPS!

The fossil rubber stamps awarded to the winners of the April 2011 Quiz were actually donated by Scott Stepanski at www.ButterSideDownStamps.com.

Phantoms

We're all familiar with quartz crystals that are clear through and through, like clean window glass. But sometimes when you look into a quartz crystal, you might see the clear or fuzzy outline of another quartz crystal! This crystal within a crystal is referred to as a "phantom".

Phantoms are created when a crystal's growth is interrupted and later resumes. It's similar to looking at the rings of a tree trunk, which record periods of active growth and dormancy. Essentially, when looking at a phantom, you're seeing a smaller, younger version of the bigger crystal you're holding.

Phantoms can be seen in almost any type of mineral that produces a transparent or translucent crystal, such as quartz, calcite, fluorite and tourmaline. But the phantoms you most commonly see for sale at rock shows are quartz.

Within quartz, you may see nearly clear, almost indistinguishable phantoms that indicate a number of different growth phases. But many times, in between growth phases, the crystal termination faces may be lightly etched



Quartz and chlorite phantom

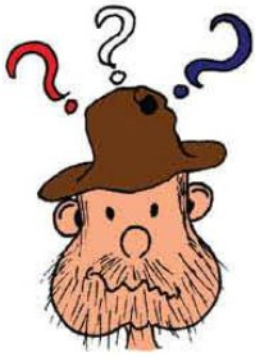
or may collect gas or liquid bubbles. When that happens, the phantoms appear to be a ghostly white.

Other times, the termination faces may be lightly dusted by a coating of a different mineral, creating phantoms of different colors. Green phantoms are result from thin layers of chlorite, reddish-brown phantoms from iron minerals like hematite, and blue phantoms from the mineral riebeckite.

Phantoms are found in most major quartz crystal deposits. The gemstone districts of Brazil are especially famous for phantoms. Here in the U.S., Arkansas has yielded its fair share of white phantoms, and Peterson Peak (or Hallelujah Junction), on the border between California and Nevada, is famous for its smoky quartz phantoms.

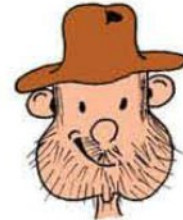
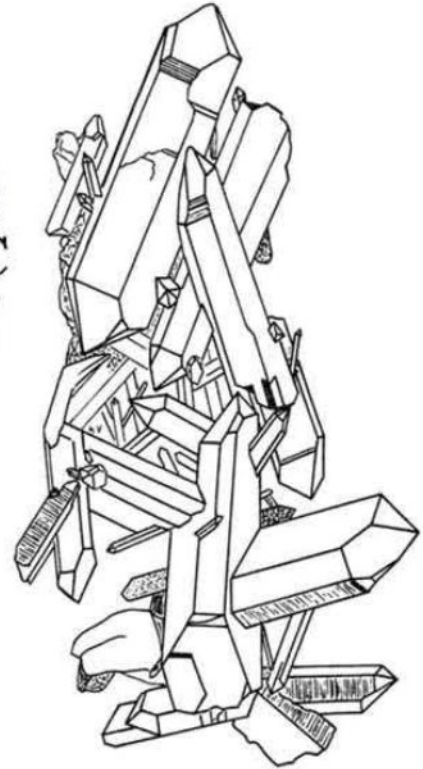
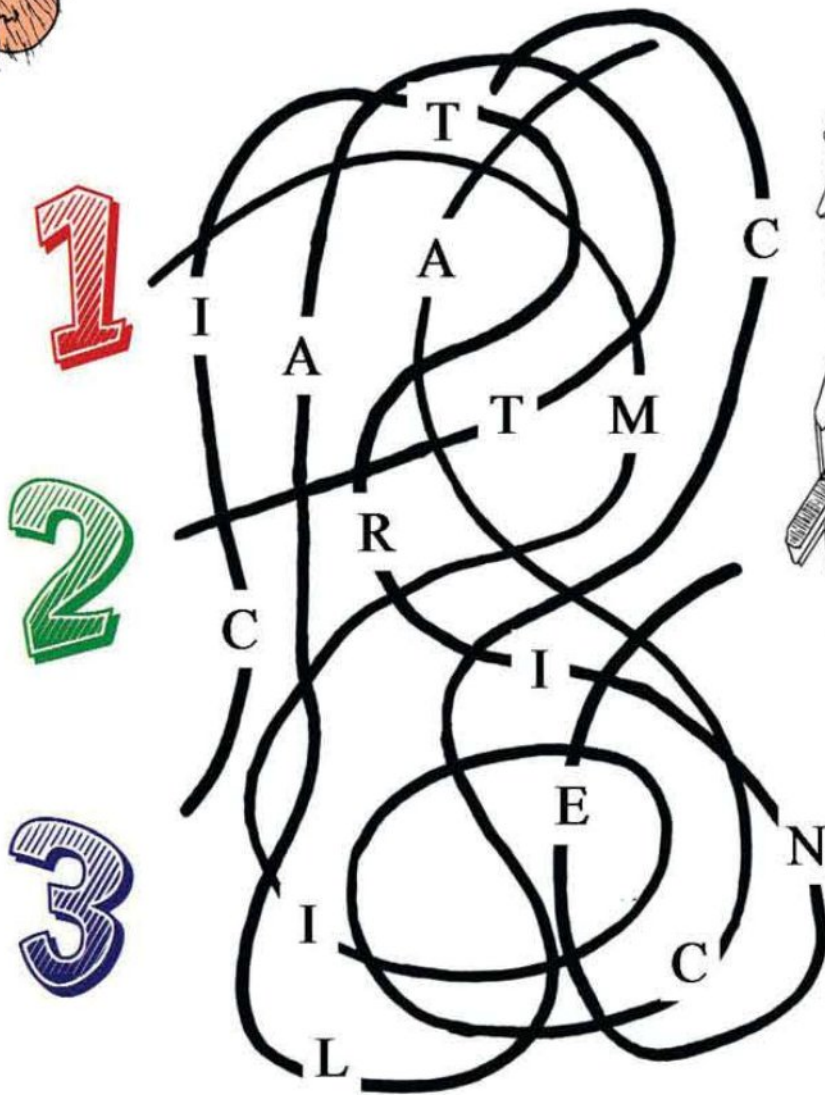
Crystals containing phantoms are also called "shadow crystals", "ghost crystals", or "specter crystals". The names may sound like something from a spooky nightmare, but the effects are like a beautiful dream!

—Jim Brace-Thompson



Mineral Mystery Trail

Diamond Dan wants to find his missing quartz crystals. Which path—1, 2 or 3—will lead him to his long-lost crystal cluster? You will discover what kind of quartz it is because the letters along the correct path will spell out its name. When you have found it, color in the crystals appropriately.



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The Quiz

1. _____ is when a crystal changes color when viewed from different sides.
2. Benitoite fluoresces sky-blue under _____ ultraviolet light.
3. Almost any type of mineral that produces a _____ or _____ crystal can show a phantom.
4. Blue phantoms result from a dusting of the mineral _____ .
5. A famous source of smoky quartz phantoms is _____ .

The Quiz is open to U.S. residents 17 and younger. Mail your answers to **June Quiz, Rock & Gem magazine, P.O. Box 6925, Ventura, CA 93006-9899**. Five winners will be drawn from the valid entries received by **June 30, 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 **benitoite specimen**, generously donated by the Mariposa Gem & Mineral Society.

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

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Show Dates from page 37

SEPTEMBER 2011

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

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

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

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

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

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

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

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

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

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

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

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

continued on page 48

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101 W. La Habra Blvd., La Habra, CA 90631; Saturday & Sunday 10am - 5pm

June 4 & 5 Glendora, CA: The Glendora Gems, Glendora Invitational Gem and Mineral Show; Goddard Middle School
Gymnasium, 859 E. Sierra Madre, Glendora, CA 91741; Saturday 10am - 5pm, Sunday 10am - 4pm

July 15 & 16 Minocqua, WI: Annual show; Lakeland Gem Club; Lakeland Union High School, 9573 State Hwy. 70;
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HOBOKEN Serpentine

Urban Outcrops along the Hudson River

Story and Photos by Robert Beard

Scenic views are one of the best aspects of rock and mineral collecting. Most of the vistas that many of us associate with mineral collecting are from mountaintops and forested areas, and rarely are there opportunities to look at both minerals and a classic urban landscape at the same time.

A mineral locality with an unusual view that is often overlooked, but still easily accessible, is the extensive outcrop of serpentine along Frank Sinatra Drive on the Hoboken, New Jersey, waterfront. Located just north of Frank Sinatra Park, the outcrops are along cliffs that face Manhattan. While looking at the serpentine you can also look at the Empire State Building and the New York City waterfront.

I say “look at” the serpentine, as with nearly all urban localities, collecting rocks is likely not allowed, as the outcrops are located along the roadside and are either in the right-of-way of the street or on the property of the Stevens Institute of Technology. However, there are no restrictions on looking at the rocks, and numerous loose pieces are along the cliff faces. If you do decide to collect any pieces of the serpentine, it is recommended that you do not remove pieces from the cliffs, but limit any collecting to small pieces that are already on the ground, and this is at your own risk. I did not see any signs indicating that the ground is posted or that rock or mineral collecting is not allowed, but that does not give anyone license to start hammering at outcrops.



Slickensides and vein structures can be easily seen in the outcrops along Frank Sinatra Drive.



The Empire State Building is a key part of the Manhattan skyline that can be seen along Frank Sinatra Drive.

Removing rocks may have been *fine in 1882*, but may result in getting you *arrested in 2011*, so **do not** take this as permission to collect.



Some of the serpentine from the outcrops on Frank Sinatra Drive has a light blue color.



At the Hoboken serpentine location, most of the serpentine is a distinct yellow-green with a rough texture.

I first learned of the area while researching potential mineral sites in northern New Jersey. I spend a lot of time in the area for work, and my family often visits museums and other sites in New York City in the summer. I have always been intrigued by the igneous and metamorphic rocks in northern New Jersey and New York City, and often do Internet searches for collecting sites.

Some of my searches pointed to the area of Castle Point in Hoboken, which I had not yet visited. At www.mindat.org, I found a link to an article entitled "The Minerals of Castle Point, Hoboken, NJ", which described the site as a "classic serpentine outcrop" that was accessible along the river walk. The information was taken from "The Mineralogical Localities In And Around New York City, And The Minerals Occurring Therein", by Nelson Horatio Darton (Scientific American Supplement Vol. XIV No. 344, 1882).

The minerals reported at Castle Point included magnesite, dolomite, aragonite, brucite, serpentine, and "chromic iron", which was likely chromite. Darton referred to the serpentine as having a "dark oil green color" and noted that it was "well worth removing". Of course, removing rocks may have been fine in 1882, but may result in getting you arrested in 2011, so do not take this as permission to collect.

I also came across several links referencing asbestos at the site and the dangers it presented when a nearby area of serpentine rocks was partially excavated for construction. As a geologist, I do not fear rocks with asbestos, but see them as an opportunity to see some interesting mineralogy. This information, combined with the Darton article, made the location sound worth a trip.

I first visited the area in February 2009. I was able to find a parking space near Frank Sinatra Drive and walked along the sidewalk. I was immediately impressed with the size of the outcrop and the serpentine minerals and structures that I could see in the cliffs. The view toward Manhattan was also impressive. I could easily see the Empire State Building and the waterfront on the west side of Manhattan, and I could not recall when I had been able to see such a large city when looking at outcrops.

At the time of my visit, it was cold, but there was no snow on the ground, so I was

able to see the outcrops. Most of the grass and brush was brown and still in its dormant stage, so exposures were maximized. The rocks at the site are nearly all serpentine. According to the US Geological Survey, the serpentine in the Hoboken area is Cambrian and Late Proterozoic in age. The serpentine formed from the metamorphism of bodies of peridotite, which are rocks that originally consisted of part of the earth's mantle.

Approximately 470 million years ago, the continent of Laurentia, which later became part of North America, was pushed ever closer to the Taconic Arc, which was a long chain of volcanic islands. As the Taconic Arc moved towards Laurentia, it subducted sections of crust, and at the same time some sections of the oceanic crust obducted the continental crust and were brought near the surface. The oceanic crust, which consisted largely of peridotite, was metamorphosed into serpentine minerals. In the New York City area, the largest mass of this serpentine forms some of the bedrock of Staten Island and smaller bodies of serpentine are present in western Manhattan (now beneath buildings), New Rochelle (in Westchester County, New York), and the outcrops along the Hoboken waterfront.

Serpentine outcrops often have a variety of colors and textures. Although the dominant color is usually green, serpentine masses often have white, yellow, or nearly black sections, and the surfaces can vary from very rough to highly polished, with a waxy or resinous appearance. Often, the soil surrounding serpentines, especially in tropical climates, weathers to a dark orange or red, and the orange-red of the soils contrasts sharply with the dark and light green of the serpentine outcrops. I have collected serpentine rocks throughout the United States and the Caribbean and in Europe, and every outcrop has been different. Some of the serpentine rocks I have seen in southwestern Puerto Rico even had light blue and purple on their surfaces, as well as green.

At the Hoboken serpentine location, the serpentine is nearly all green and varies from light yellow-green to dark green. The soil around the serpentine appeared to be mainly brown, so I suspect that the rocks and soils have not been leached as much as in other areas. This may be due to the fact that the area is urban and the rocks have only recently been exposed by excavation and construction along the road. In addition, northern New Jersey can hardly be considered a tropical environment, so the rocks would not have been subjected to the leaching that is common in serpentine rocks in the tropics.



The entrance to Sybil's Cave is below the Stevens Institute of Technology and is located along Frank Sinatra Drive.



Close inspection of the outcrops reveals that some zones of elongated minerals are present in the serpentine.

The wide variety of colors and textures in serpentines is due to their parent rock chemistry and metamorphic history. Serpentines form from the metamorphism of ultramafic igneous rocks, which are rich in iron and magnesium and low in silica. The earth's mantle consists of ultramafic rocks, and ultramafics are generally found at the surface of the earth, where oceanic crust and mantle materials have been pushed against and upward into the continental crust along tectonic plate margins. The intense pressure and hot fluids along these collision zones provided the necessary conditions to metamorphose the iron and magnesium minerals, which include magnetite and olivine, into serpentine minerals, which include lizardite, antigorite and chrysotile.

Serpentine bodies and ultramafic rocks contained some of the most important mineral deposits in the world. Unfortunately, one of the best known mineral products from serpentine bodies is asbestos. Asbestos is not really a mineral, but a name given to a group of minerals that are used for a variety of products. These minerals include chrysotile, amosite, crocidolite, tremolite, anthopholite and actinolite. Of these minerals, only chrysotile is a serpentine-group mineral. The other minerals are from the amphibole group and are not generally found in serpentinite rocks.

Most of the asbestos that was formerly used in industrial and commercial products consisted almost entirely of chrysotile. Asbestos functioned great as fireproofing and undoubtedly saved a lot of lives. In

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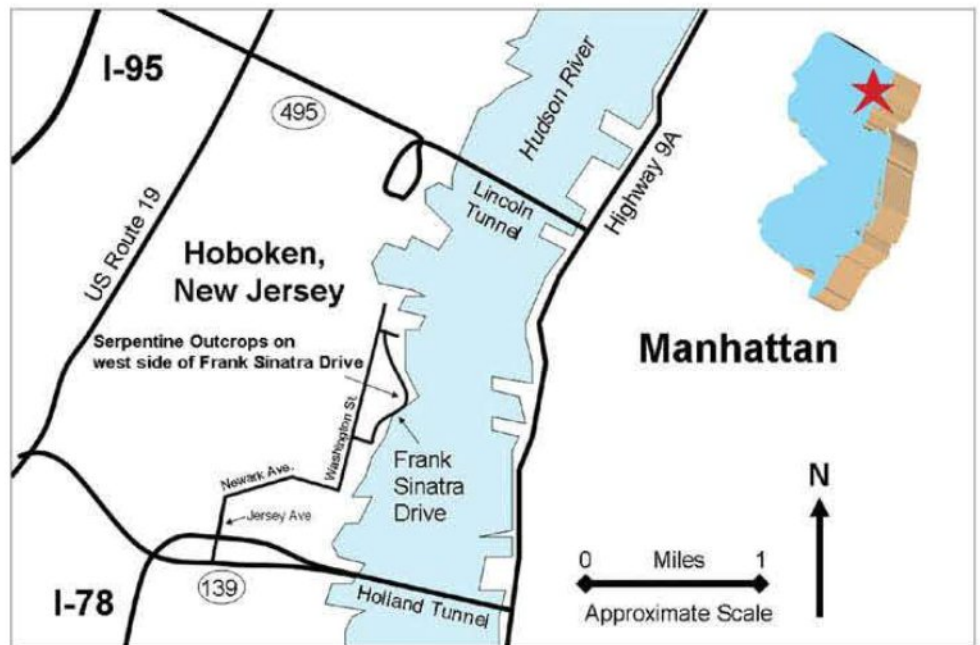
the great fires of the 19th and early 20th centuries, entire cities and neighborhoods were burned to the ground, since many of the buildings were constructed entirely of wood and other flammable materials. The use of asbestos kept many buildings from burning and fires from spreading, and I am sure that the same can be said for many of the ships, factories, and other places that were protected by asbestos fireproofing.

A key problem with asbestos pipe insulation and some building materials was that it was often a “friable” material, meaning it is easily crumbled and can release fibers into the air. The needlelike shape of these microscopic fibers can cause respiratory damage when inhaled. Mesothelioma, which you will often see referenced in advertisements by personal injury lawyers, is a rare form of lung cancer that is caused by the inhalation of asbestos. In addition, many of the same workers who were exposed to asbestos in ships, factories, mines and buildings were often heavy smokers, and asbestos exposure, combined with smoking, can lead to lung cancer.

The ultramafic parent rocks of serpentine often host other important minerals and metals, such as chromite and platinum. These minerals are often found in areas in which the rocks have been subjected to extensive leaching, such as in tropical laterites, or in layered ultramafic intrusions where chrome and platinum minerals have settled in distinct layers within the rock. However, while these minerals are associated with serpentines and ultramafic rocks elsewhere in the world, and while chromite reportedly occurs in the Hoboken serpentine, it is not present in the New Jersey serpentines in concentrations that would make extraction by mining economic, at least not along Frank Sinatra Drive.

Although some of the Hoboken serpentines likely contain some chrysotile asbestos, I would not consider walking and inspecting these outcrops to pose a risk from asbestos exposure. The area is wide open, and the fibers are still well bound within the rocks. Hundreds of people walk by these outcrops daily, and I seriously doubt anyone is in danger from the asbestos in this serpentine. There are many more significant threats to your well-being in northern New Jersey and New York City that you really must pay attention to, such as traffic and crime.

After I had walked the length of the exposure on Frank Sinatra Drive, I walked up the hill to Washington Street in Hoboken for lunch. This is only a few blocks west, and there is an abundance of restaurants



in the area. This is a fine way to end your Hoboken mineral trip, and if you are with your kids or a group, you will easily find a good place to eat or grab some coffee. If you have time, you can head into Manhattan for some additional sightseeing.

I have been back to the area several times, as it is an excellent walking tour to see both the serpentine and the west side of Manhattan. I have been to the area during spring, summer, and late fall, and as long as the area is not covered by snow, the rocks are much better exposed when the vegetation is dormant. However, since the rocks are exposed on the steep hillsides, you can still easily see the rocks when the growth is thickest in summer. I have always been impressed by the variety of serpentine structures and textures, especially in some of the zones in which the serpentine becomes waxy and very smooth.

Getting to Hoboken poses some interesting challenges. Your best bet is to have an updated GPS or a new map, as many of the highways have been rebuilt and relabeled. I recommend taking Interstate 78 east into northern New Jersey, heading toward Manhattan. At the time of this writing, Exit 58B takes you to U.S. Highway 1-9 North. This road then becomes state Route 139 East. Turn left on Jersey Avenue and bear right as the road turns into Newark Avenue. Newark Avenue becomes Observer Highway, and then you turn left onto Washington Street. Four blocks down Washington, turn right on Third Street. Head east toward the Hudson River and turn left onto Frank Sinatra Drive. Continue to Stevens Park and follow Frank Sinatra Drive to the right along the waterfront.

You can sometimes park on Frank Sinatra Drive, but if parking is not available on the street, you can also park in a nearby parking garage. The south end of

the serpentine outcrops begins where the cliffs start, just north of Frank Sinatra Park, and continue north until the cliffs stop just south of Elysian Park. Frank Sinatra Drive wraps around the eastern side of the Stevens Institute of Technology, and a small pier on the waterfront provides good public access for a view of the outcrops, as well as Manhattan. This pier is just east of Sybil’s Cave, which is a small cave that had a water spring, and lots of yellow to green serpentine is exposed in the outcrops surrounding this cave.

For reference, the Google Earth coordinates of the pier along Frank Sinatra Drive are 40° 44’ 43.83”N, 74° 01’ 21.16”W. Since the outcrops occur all along Frank Sinatra drive, it is better to have a single starting point, and then you can decide where you want to explore. Google Earth can be downloaded through www.google.com. The coordinates are referenced using the North American 83 and World Geodetic System 84 (NAD83/WGS84) datum, and are in the degree-minutes-seconds format.

If you are traveling to northern New Jersey and want to take a mineral locality side trip, this is an excellent place to do so. Access is easy and safe, and you can easily combine this with a trip into New York City.

When I checked the site with Google Earth, I noticed there are many photos that you can click on to see the area from the perspective of people who have visited it. All the waterfront photos I saw did not look toward Hoboken, but toward the Manhattan skyline. I was probably one of few people who came here to see the Hoboken serpentine. While I am big fan of Manhattan and visiting New York, people who just look at the Empire State Building and not back at the Hoboken serpentine have no idea what they are missing. 💎

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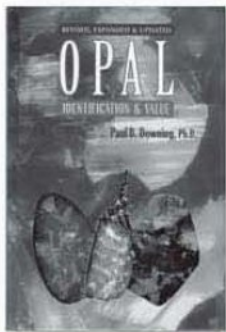
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Show Dates from page 40

SEPTEMBER 2011

10-11—WALLA WALLA, WASHINGTON: 42nd annual show; Marcus Whitman Gem & Mineral Society; Walla Walla County Fairgrounds Community Center, 9th St. and Orchard; Sat. 10-5, Sun. 10-5; adults \$2, kids under 12 free; dealers, rough, slabs, gems, minerals, beads, fossils, jewelry, equipment, silent auction, door prizes, raffle, demonstrations, knapping, gold panning, wire wrapping, rock cutting, interactive kids' section; contact Warren Rood, (509) 522-2330; e-mail: warrenrood@yahoo.com

10-18—DENVER, COLORADO: Wholesale and retail show; Eons Expos RLLLP; Denver Coliseum, 4600 Humboldt St.; Sat. 9-6, Sun. 9-6, Mon. 9-6, Tue. 9-6, Wed. 9-6, Thu. 9-6, Fri. 9-6, Sat. 9-6, Sun. 9-4; free admission; minerals, fossils, dinosaurs, crystals, gems, jewelry, meteorites, children's activities, contact Christine Coyle, 38 Fox Ridge Rd., Sparta, NJ 07871, (516) 818-1228; e-mail: lowellcarhart@yahoo.com; Web site: www.coliseumshow.com

11—BLOOMINGTON, MINNESOTA: Show; Rings & Things; Ramada Mall of America, 2300 E American Blvd.; Sun. 12-5; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

13—GREEN BAY, WISCONSIN: Show; Rings & Things; Suamico Banquet Center, 2310 Lineville Rd.; Tue. 12-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

14—MILWAUKEE, WISCONSIN: Show; Rings & Things; Clarion Hotel Airport, 5311 S. Howell Ave.; Wed. 1-5; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

14-18—DENVER, COLORADO: Show, "Denver Coliseum Show"; Eons Expositions LLC; Denver Coliseum, 1900 44th St.; Wed. 9-6, Thu. 9-6, Fri. 9-6, Sat. 9-6, Sun. 9-4; free admission; minerals, fossils, rough, gems, jewelry, amber, meteorites; contact Lowell Carhart, 7514 Antelope Meadows Circle, Peyton, CO 80831, (516) 818-1228; e-mail: lowellcarhart@yahoo.com; Web site: www.DenverColiseumShow.com

14-18—DENVER, COLORADO: Fall wholesale/retail show, "Colorado Mineral & Fossil Show"; Martin Zinn Expositions; Holiday Inn - Denver Central, 4849 Bannock St.; Wed. 10-6, Thu. 10-6, Fri. 10-6, Sat. 10-6, Sun. 10-5; free admission; 200 wholesale and retail dealers, free shuttle to Merchandise Mart; contact Martin Zinn Expositions, PO Box 665, Bernalillo, NM 87004-0665; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

15—SCHILLER PARK, ILLINOIS: Show; Rings & Things; Comfort Suites O'Hare Airport, 4200 N. River Rd.; Thu. 12-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

16-18—BEREA, OHIO: Show and sale; GemStreet USA; The Cuyahoga County Fairgrounds, 164 Eastland 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

16-18—DENVER, COLORADO: Show, "Colorado Fossil Expo"; Martin Zinn Expositions; Denver Merchandise Mart Plaza Annex, 451 E. 58th Ave.; adults \$6, seniors and teens \$4; Fri. 9-6, Sat. 10-6, Sun. 10-5; 50 dealers, fossils, meteorites, petrified wood, amber, paleontological exhibits, part of the Denver Gem & Mineral Show; contact Martin Zinn Expositions, PO Box 665, Bernalillo, NM 87004-0665; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

16-18—DENVER, COLORADO: Annual show, "Minerals of Russia"; Greater Denver Area Gem & Mineral Council; Denver Merchandise Mart, 451 E. 58th Ave. (I-25 Exit 215); Fri. 9-6, Sat. 10-6, Sun. 10-5; adults \$6, seniors and students \$4, children under 13 free with adult; dealers, demonstrations, speakers, exhibits, free gem and mineral identification, kids' activities, free gold panning, Colorado Fossil Expo; contact Larry Havens, Greater Denver Area Gem & Mineral Council, c/o Denver Museum of Nature & Science, 2001

Colorado Blvd., Box 4, Denver, CO 80205, (303) 233-2516; e-mail: info@denvermineralshow.com; Web site: www.denvermineralshow.com

16-18—ENID, OKLAHOMA: Annual show and sale; Enid Gem & Mineral Society; Oak Wood Mall, 4125 W. Owen K. Garriot Rd. (Hwy. 412W); Fri. 10-9, Sat. 10-9, Sun. 12-6; free admission; rocks, gems, minerals, jewelry, beads, fossils, rock food table, junior activities, grab bags, demonstration, door prizes; contact Billy Wood, (580) 234-5344 or (580) 402-5568; e-mail: baronladislaus@att.net

17—GRAND RAPIDS, MICHIGAN: Show; Rings & Things; Prince Conference Center, 1800 E. Bellline SE; Sat. 12-4; free admission; gemstones not available in our catalog or online store, bead strands, 15% off many gemstone and bead strands, findings and stringing supplies; contact Dave Robertson, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

17-18—CASTLE ROCK, WASHINGTON: 46th annual show; Southern Washington Mineralogical Society; Castle Rock Fairgrounds, A St. and Cowlitz River; Sat. 10-6, Sun. 10-4; contact Dave Furuli, (360) 430-4092, or Jackie Furuli, (360) 431-0059; e-mail: jfuruli@yahoo.com

17-18—CLARKSVILLE, INDIANA: Annual show; Falls of the Ohio Foundation; Falls of the Ohio State Park, 201 W. Riverside Dr.; Sat. 9-6, Sun. 10-5; free admission, museum admission separate; tours of fossil beds, fossil and mineral collecting, guest speakers, resource tent, children's geo-craft area; contact Alan Goldstein, Falls of the Ohio State Park, 201 W. Riverside Dr., Clarksville, IN 47129, (812) 280-9970; e-mail: park@fallssoftheohio.org; Web site: www.fallssoftheohio.org

17-18—HARRISBURG, PENNSYLVANIA: 46th annual show; Central Pennsylvania Rock & Mineral Club; Zombi Shrine Center, 2801 N. Third St.; Sat. 10-6, Sun. 10-5; contact Betsy Oberheim, 7953 Appalachian Trail E., Harrisburg, PA 17112-9409, (717) 469-2243; Web site: webmaster@rockandmineral.org

17-18—RHINEBECK, NEW YORK: 42nd annual show, "The Fossils of New York"; Mid-Hudson Valley Gem & Mineral Society; Dutchess County Fairgrounds, Rte. 9; Sat. 10-5, Sun. 10-4; adults \$5, seniors \$4, students \$2, children under 12 free; special exhibits by New York State Museum and Vassar College, more than 30 dealers, free rocks for kids, fossils, minerals, gems, jewelry, beads, books, lapidary demonstrations, fossil and fluorescent exhibits; contact Carolyn Reynard, (845) 471-1224; e-mail: sunstone33@verizon.net; Web site: www.mhvgms.org

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

24-25—COLUMBUS, NEBRASKA: Annual show; Loup Valley Gem & Mineral Club; Knights of Columbus Hall, 3115 6th St.; Sat. 9-6, Sun. 10-5; adults \$1, children under 10 free with adult; contact Ben Vrana, 3576 Linden Dr., Columbus, NE 68601, (402) 563-3265; e-mail: miempke68601@yahoo.com

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

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

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

24-25—RICHARDSON, TEXAS: Wholesale and retail show; The Bead Market; Richardson Civic Center, 411 W. Arapahoe; Sat. 10-5, Sun. 10-4; free admission; gemstones, glass beads, lampwork, vintage beads and buttons, Swarovski

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

24-25—SOUTH SIOUX, NEBRASKA: 46th annual show; Siouxlend Gem & Mineral Society; South Sioux City Senior Center, 1501 W. 29th St.; Sat. 9-6, Sun. 10-4; adults \$1.50, students 12 and older 50 cents, children under 12 free; exhibits, four dealers, agates, rough and polished specimens, gems, beads, geodes, minerals, faceted jewelry, fossils, door prizes, spin the wheel, silent auction, displays, Siouxlend dinosaur hunters exhibits; contact Bob Powell, (712) 378-2775

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

SEPTEMBER-OCTOBER 2011

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

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

OCTOBER 2011

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

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

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

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

1-2—ROSEVILLE, MINNESOTA: Show; Anoka County Gem & Mineral Club; Har Mar Mall, 2100 Snelling Ave.; Sat. 10-6, Sun. 12-5; free admission; gems, minerals, jewelry, fossils, agates, collectibles, contact Martha Miss, 8445 Grange Blvd., Cottage Grove, MN 55016; e-mail: rockbiz@cs.com

1-2—STAFFORD, TEXAS: Wholesale and retail show; The Bead Market; Stafford Centre, 10505 Cash Rd.; Sat. 10-5, Sun. 10-4; free admission; dealers, glass beads, seed beads, gemstones, pearls, lampwork, PMC, Swarovski Elements, crystals, jewelry, vintage beads and buttons, books, tools;

continued on page 66

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WILLOW CREEK JASPER

It's the Noble Gemstone of Idaho

Story and Photos by Lauritz A. Jensen

Imagine a semiprecious gemstone that is ablaze with bold, pervading colors or muted with subtle pastels and then highlighted with abstract displays of repeating orbs or impressionistic dreamscapes of peaceful rolling hills, a fine porcelain jasper that, without fail, polishes to a luster of excellence unrivaled even by the most elegant banded agate. Perhaps this portrayal of Willow Creek jasper is a little over the top and erroneously suggests that every slab is



Swarovski and Preciosa bicone-shaped crystals can be used to accent a Willow Creek jasper pendant.

perfect lapidary material that will routinely result in a classic work of art. Such is not the case, but this thunder egg-associated jasper has commanded the respect of lapidaries for almost 70 years, to the point that it has been christened one of the "Big Five" fine porcelain jaspers, a guild that includes Bruneau, Blue Mountain, Morrisonite, Imperial, and Royal Imperial.

While Morrisonite is called the "King of Jaspers", Willow Creek is often referred to, and even marketed as, the "Queen of Jaspers". Although there currently seems to be a plentiful supply, it is perhaps the least celebrated member of the Big Five. The younger members of my lapidary club, for instance, are completely unfamiliar with the rock, and thus do not understand or enjoy its true worth. Most certainly, the gem embodies all the attributes essential for creating astonishing designer cabochons and, ultimately, dazzling jewelry.

Many years ago, during one of my first visits to Quartzsite, Arizona, I was intro-

duced to this gemstone. Unfortunately, because of my weakness for impulse buying, I had already spent most of my allowance on other rocks by the time I arrived at the Willow Creek booth. I elected not to purchase a single slab even though I was attracted to several with dramatic orbicular patterns. Without hesitation, the affable proprietor, Larry Ridley, handed me a premium slab and suggested I try it out.

"Why are you giving me this?" I asked. "You don't know if I will ever come back."

"Oh, you'll be back" was his only response. I eagerly took the bait and was permanently hooked. I did return that very

year and every year afterward to purchase bountiful supplies of porcelain rough, slabs, and even a few beads. Eventually, I visited Ridley's shop in Garden City, Idaho, immediately adjacent to Boise.

Ridley controls the only known deposit of Willow Creek jasper in the world. The mining site falls within the jurisdiction of the Bureau of Land Management (BLM). It is located near the South Fork of Willow Creek, approximately 18 miles north of Ridley's home in Garden City. The mine actually straddles the border of Gem and Ada counties. The road leading to the site is rough and, at times, more like a trail. The last few miles are espe-



One-of-a-kind scenes found in jasper slabs, like this meteor piercing the earth's atmosphere, should not be cut up into cabs.



Yellow is an uncommon color and is not induced by uranium. The gray region is highly stippled, which improves the attractiveness of this piece.

cially difficult, but passable with a four-wheel-drive vehicle. During the harsher seasons of the year, the road can be extremely hazardous. In part because of trespassing issues (the road passes through a private ranch), I would not encourage rockhounding in the area and certainly do not recommend visiting the mine unannounced. It is officially closed to the public.

BLM records indicate that the mine was in operation as early as 1943. In those early days, the jasper was referred to as "wilkite". This somewhat unromantic word was apparently coined to reference the geographic location. In 1983, Ridley was recovering from back surgery and decided to heed a neighbor's advice to exercise more. He took up rockhounding and soon visited the then-abandoned wilkite mine. He staked, filed, and assumed ownership of a lode claim, essentially a small hole of questionable economic potential. But it quickly proved its worth to the point that he eagerly acquired the rights to several adjacent claims. The main pit has now been excavated to a depth of 65 feet, and apparently its jasper bounty is still pretty enormous. For this reason, only two of Ridley's eight claims are presently developed.

It is noteworthy to point out that southwestern Idaho is famous for the primeval volcanic activity that produced immense flows of rhyolite. Undoubtedly, there is a direct association between the sticky rhyolitic magma and the genesis of quality jasper-encased nodules. Outcrops of jagged rhyolitic rock, rolling hills and buttes, shallow gulches, and deep gorges are some of the more obvious landforms around the mine. The locale is basically arid and sparsely vegetated with sagebrush, bitterbrush, and an assortment of grasses. Game animals like mule deer, pronghorns, and populations of upland birds seem to flourish, apparently undisturbed by the intense mining activities. Diamondback rattlesnakes that wander into the mine are, of course, troubling.

A cursory inspection of the soil at the site reveals that it is primarily a volcanic as-



Thunder eggs embedded in the rhyolitic matrix of the pit wall are plainly discernable.

semblage, mostly rhyolite, ash, low-grade or hydrated obsidian (e.g., pitchstone and perlite), and very coarse grains of quartz-based sand. Much of the obsidian appears to be in the process of devitrification, undergoing the customary alteration to clay. But the immense rhyolitic layers are the formidable hurdle and unquestionably complicate the collecting of the jasper-rich thunder eggs. Nonetheless, working the mine is a one-man operation, principally for safety reasons, but also to avoid being regulated by the Mine Safety and Health Administration (MSHA) and Occupational Safety and Health Administration (OSHA).

Freeing large thunder eggs from the rhyolite overlay and interburden is nothing less than backbreaking and requires the use of a track excavator and loader backhoe. It is routine to unearth watermelon-size eggs; larger—even gigantic—specimens are possible. In fact, a few years ago, a behemoth boulder measuring 10 feet by 15 feet produced more

than 1,000 pounds of viable jasper. Regardless, the mine has never produced more than 2,000 pounds in a single year. The process of feather wedging allows for the efficient splitting of the surrounding rhyolite to expose the main body of jasper. At present, the high-end rough sells for about \$20 per pound.

Alas, most of the eggs prove to be duds, rhyolite boulders that are utterly destitute of profitable jasper. Eventually, they find their way to the so-called tailings dump, mixed piles of gangue and small chunks of jasper-embedded rock that are suitable for nothing more than tumbling. The prized eggs are the ones loaded with quality jasper. In cross section, a starlike design is easy to make out in the jasper core; this is considered a reliable and classic identifier of a thunder egg. Between the rind and core, there is typically a well-defined, circumscribing quartz layer that is specifically composed of chalcedony and larger quartz crystals. As might be expected, the layer



Freeing large thunder eggs from the rhyolite overlay and interburden is nothing less than backbreaking and requires the use of a track excavator and loader backhoe.

To reveal the thunder eggs, the surrounding rhyolite is split open with shims (feathers) and wedges in a process known as "feather wedging".

exhibits a bright green fluorescence under a 254 nm or shortwave lamp. I have even observed specimens with impressive zones of stalactites that appeared to be composed of chalcedony, hexagonal quartz crystals, and calcite. Infrequently, chalcedony forms veins and pockets within the jasper core. Another regular denizen of these thunder eggs is opal, which is sometimes joined or fused almost seamlessly to the main body of jasper. Although the opal sports an agreeable light shade of green, pink, brown or white, it is otherwise plain and has marginal appeal to lapidaries. Uncommon finds of fire opal are obviously highly prized.

Ridley's mine is the lone source for Willow Creek jasper, but it would be unreasonable to conclude that the hills and gulches in the immediate vicinity are barren and devoid of jasper. Indeed, at least one account suggests that another deposit is nearby. In 1915, during the construction of a tunnel as part of an aqueduct project, reddish jasperlike material was uncovered. This is anecdotal evidence at best, but it makes sense. The point is moot, however, because the BLM has closed the district to all additional mining activities, and I seriously doubt that rockhounds would be capable of harvesting first-rate material even if they were allowed to scour the territory in the usual unrestricted fashion. Besides, Ridley always seems to maintain a sizable stash of slabs and rough in his shop in Garden City, and many other dealers sell the material online.

Willow Creek jasper is famous for its subtle pastel shading; subdued pinks and soft sage greens are among the more common shades in the marketplace. However, I have collected an assortment of slabs with both muted and vibrant hues. Burgundy, burnt plum, violet, salmon, peach, sunflower yellow, chocolate brown, pale blue-gray, jet black, parchment white, and army, forest and avocado green are some of the more familiar descriptors. Often, a specimen is embellished with multiple swatches of colors that gradually or abruptly change from one into another. Willow Creek jasper



Interestingly, most of the thunder eggs harvested from Ridley's mine are devoid of jasper, and consequently lack value in the marketplace.

more than likely owes its earthy and celadon colors to different iron oxide pigments, but are there other activators or color enhancing substances?

In an effort to partially answer this question and identify trace elements as agents linked to color, I employed a handheld Niton XRF Analyzer (www.niton.com). The unit was equipped to identify some of the more familiar heavy metals. All analyses were performed at the Arizona Mining & Mineral Museum in Phoenix under the direction of Nyal J. Niemuth, a Chief Mining Engineer and Registered Geologist with the Arizona Department of Mines and Mineral Resources.

Although this assessment was limited in scope, a variety of color regions were spot tested. As was expected, iron was the principal trace element identified. It was especially prominent in zones that were colored purple, burgundy, yellow, green, brown and gray. The more saturated the hue, the higher the level of iron detected. Moreover, forest-green rocks had the added ingredient of manganese, more than likely taking on the role of a color activator. Manganese was not present in the lighter green rocks (see "The Colors of Manganese," by Bob Jones, October 2008 *Rock & Gem*, p. 12). Interestingly, white and light beige speci-

mens were iron poor. Tin, antimony, cadmium, silver, rubidium, and strontium were recorded, as well.

Lead and mercury were identified in a few of the specimens, but only in trivial amounts. Just for the record, elemental uranium was not present in the yellow specimens nor in any of the others. Although a Niton unit is considered a reliable device for elemental analysis, a more scientifically based investigation using traditional laboratory techniques and employing rigid controls would certainly shed more light on the overall composition of the rock and details concerning the array of secondary minerals that may be involved with color determination.

High-grade Willow Creek jasper is one of the hardest silicates the majority of lapidaries will ever experience. It is comparable to the toughest of Brazilian or Uruguayan agate from geodes. Although not particularly quantitative, a scratch test with commercial hardness picks consistently gives the material a Mohs value of greater than 7, but less than 8. Additionally, thin sections that are viewed at 100x magnification reveal extremely fine-grain quartz, and the rough material is often naturally burnished, giving the impression that a vitreous shine is easily within the reach of most amateur lapidaries.

Like many of the picture jaspers from Idaho and Oregon (e.g., Bruneau and Blue Mountain), Willow Creek is famous for orbicular overlapping patterns, and sometimes these orbs can be interpreted as forming a scenic vista of placid hills and cloudy or undulating firmament. Compared to the other possibilities, however, quaint images of nature are few and far between. Splendid designs of graceful flowing lines, swirls, or fluid mixtures of color, brecciations or healed shrinkage cracks, and floating free-form shapes are far more likely.

I consider red or blue-gray stippling in a slab a positive attribute that consistently gives the finished piece a new dimension. On the other hand, the more common brown iron oxide or rust spots can be quite



Willow Creek jasper is famous for its subtle pastel shading; subdued pinks and soft sage greens are among the more common shades.

This grapefruit-size thunder egg was cut in half to expose its characteristic angular and almost star-shaped jasper center.

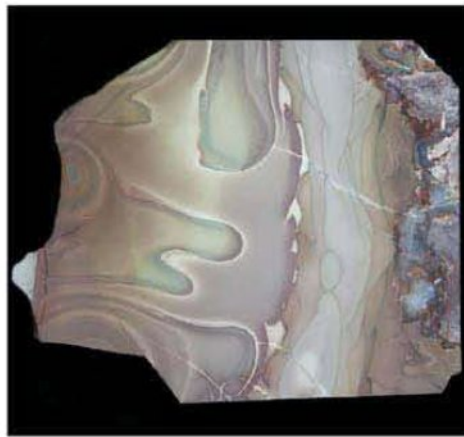
distracting, especially in the lighter-colored slabs. Ultimately, which features are most pleasing will be decided by each individual. For more information on the origin of thunder eggs and plausible explanations for the diverse internal architecture of the nodular jaspers and agates, see *The Origin of Agates, Thundereggs, Bruneau Jasper, Septaria and Butterfly Agates*, by Benjamin Martin Shaub (The Agate Publishing Co., 1989) and "What's That in Your Agate?", by Bob Jones (November 2009 *Rock & Gem*, p. 20).

As previously indicated, the superior toughness of Willow Creek jasper will become immediately apparent and may be a little surprising to the person who is attempting to cab it for the first time. Because of this hardness, one should expect to spend up to three hours contouring and polishing both sides of a 30mm by 40mm cab. If good grinding and sanding wheels are used during the cabling process, the gem will behave well and exhibit few vices. The potential for chipping is minimal with a 100-grit grinding wheel and virtually nonexistent with the sanding belts. Undercutting is not a factor, and a porcelaneous finish is easily attainable, often even before the final polishing with oxide paste. Although methods for cabling are as diverse as lapidaries, below are a few suggestions I regularly pass on to colleagues who are interested in working the jasper.

1) Avoid areas of the slab that are most prone to hairline fractures and pinpoint pits. Geologic stress cracks and other flaws are often outlined with iron oxide rust. They are more likely to be located near the edges. I recommend carefully studying the slab for vertical and longitudinal fractures and then stenciling or outlining the desired shape for the cab.

2) Use an optical binocular magnifying unit to get a more perfect contour during the grinding and sanding steps.

3) A 20° girdle angle is appropriate for most off-the-shelf and custom silver mountings. Use a cab rest to ensure the correct angle. Perpendicular edges are preferred for cinch mounts and wire wrapping projects.



The amoeboid figures in this slab are apparently caused by iron pigments that did not mix into the prehistoric molten silicate material.

4) As a point of pride, polish the back of the cab, particularly when the setting is open on the reverse side.

5) Shape and grind the cab on a 100-grit wheel. Afterward, sand with diamond belts exclusively or use a combination of silicon carbide or carborundum (e.g., 100, 220 and 400) and diamond belts (e.g., 600, 1200, 3,000 and 8,000). Take up to 10 minutes for each step. Over sanding is nearly impossible with the finer grits, so the more sanding the better.

6) A brilliant shine can be achieved with additional diamond grits up to 100,000 or with a leather disk and a good all-around polish like tin oxide or submicron-sized aluminum oxide. To be honest, however, I cannot discern any material improvement in the shine beyond the 8,000 sanding belt stage.

Don't just squirrel away the cabochons in a coffee can or shoebox when you've finished them. Use them to make something that will be personally gratifying or enjoyed by another person. Idyllic images of rolling hills and puffy clouds are great for scenic rock art displays, but because panoramas are outsized as a rule, they may not be suitable for the smaller cabochons. Fortunately, there is a lot of diversity within the Willow Creek jasper group, and its superb

artistic depth means that this rock will provide loads of options for creating impressive jewelry. Belt buckles are a favorite use for this naturally durable material with its out-of-the-ordinary images.

Experience dictates that the stones with darker and bolder colors are preferred by men; however, for women's accessories, the delicate and festive colors that are common to Willow Creek jasper will definitely be appreciated. Any hobbyist can use this material to create pendants that are unforgettably stylish; their only serious hindrance might be the high cost of silver. Bracelet components and pendant mountings that are manufactured from less expensive alloys (e.g., brass and bronze) are reasonable alternatives.

To further complement the piece, consider using beads made from other gemstones like Imperial jasper or Russian amazonite, as their hues are similar to those found in Willow Creek jasper. When "bling" is preferred, bicone-shaped crystal beads of Vintage Rose (Swarovski) and Virdia (Preciosa) are nice accents and will only slightly increase the cost of the necklace. Miyuki glass gold or silver seed beads and twisted bugle beads, Czech pearls and fire-polished beads, lead-safe antiqued brass pewter spacers, and electroplated silver extension chains will precipitously drop the overall cost of any necklace. Many other options obviously exist.

Hardrock mining in the United States is a difficult business, and there is little hope for genuine financial gain. Even though Ridley recognizes that the gemstone will not make him rich, he genuinely believes that his mining of Willow Creek jasper will make a lot of other people happy. It certainly makes me happy, and I cannot imagine the avid or serious-minded lapidary finding better-quality rock.

For additional articles on jasper, specifically Willow Creek jasper, see "Jasper: A Universal Gem", by Bob Jones (September 2008 *Rock & Gem*, p. 12) or "Willow Creek Jasper", by Earl Spendlove (January 1991 *Rock & Gem*, p. 10). ♦




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OFF THE DOP

by Jim Perkins

Better Angles, Better Performance

Early in the summer, I cut a couple pieces of citrine with identical pavilion angles and different crown angles. I was looking for a way of finding good angle choices in order to achieve better performance. I started out working with one idea of how to accomplish this, but after a discussion with a few of my faceting friends, I decided to do further research. I spent most of my spare time this past summer reading articles and papers on how earlier faceters and even modern faceters, diamond cutters, and mathematicians arrived at faceting angle recommendations.

I started with the work of Marcel Towkolsky and his study on better diamond cuts in 1919, which was probably one of the first published studies on gemstone performance and angle recommendations. Few know that Towkowsky made some errors in his calculations; some believe that they were intentional, to support his preconceived hypothesis. It is a problem if a researcher has a preconceived idea he wants to promote.

After a little over 80 years of some misdirection from Towkowsky—which some argue was not significant, as it accounted for only about a 5% error—diamond cutters have moved beyond Towkowsky's math and many have struggled to find better angle choices for better optical performance. Since the concept of beauty is somewhat subjective, there is no definitive answer and there may never be, as perceptions of beauty change throughout the ages. Considering the software we have today and the extensive research on gem performance that has been done around the world, some of the early methods almost seem comical. In those days, however, analysis took a lot of time and hard work, as it all had to be worked out on slide rules and with hand-drafting instruments. Then, stones had to be cut in order to be analyzed, as there were no calculators, computers, or virtual-image analysis software. The scary part of this is that I can remember the days when slide rules were used and still have a couple lying around in my memory drawer.

Over the years, through trial and error, many faceters found angles they believed performed best for one reason or another and they recorded their findings in charts that were sometimes published. Like my slide rules, some of the antiquated charts



are still around. I don't use the slide rules anymore, but some people still try to use the old faceting charts. Trial and error works until a better solution can be found, and in the fall of 1975, the article "Faceting Limits", by Bruce Harding, was published in *Gems & Gemology*. Bruce is a mathematician, engineer and faceter who is known around the world for his study of diamonds and colored stones. I had the privilege of meeting him a few years ago at the Springfield, Massachusetts, gem and mineral show, where he showed me a notebook of graphs, charts, photos, and so forth. His work is rather deep for people who are not familiar with algebra and trigonometry, but to anyone who takes their time in understanding what Bruce has written, it provides a wealth of information. His work has been checked by faceters and diamond cutters from all over the world and may represent the best two-dimensional study ever published.

Bruce's article can be found at www.gia.edu/research-resources/gems-gemology/issues/issues_1934-80/fall_1975.pdf. Bruce and I recently collaborated on the paper "Tilt Limits for Windowing", which I have posted at <http://groups.yahoo.com/group/NORTHCOASTFACETING/>. I will also hand out copies in limited quantities when I visit clubs and gem shows. I would encourage faceters to read and understand "Faceting Limits", as I feel all faceters can benefit from this information. ♥

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



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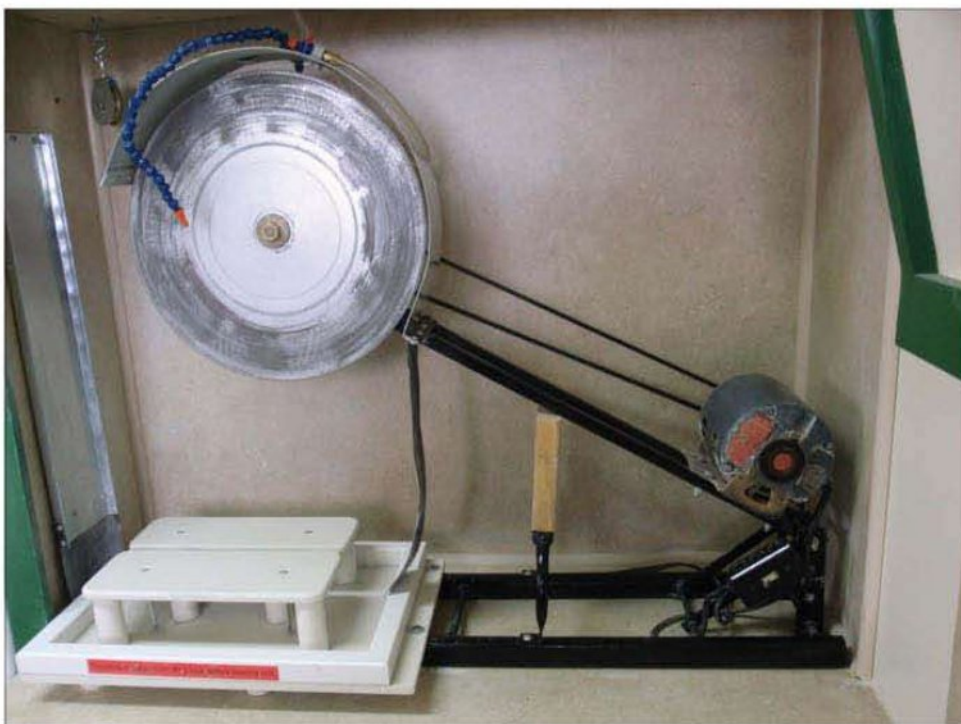
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STEP BY STEP

BUILD an 18-inch Lapidary Drop Saw

Cutting Large Rocks Has Never Been So Easy

Story and Photos by Dale Blankenship



The lapidary drop saw has a cut capacity of 11 inches between the bottom of the 18-inch blade and the cutting stage, but 2 or 3 inches may be gained by the positioning of the stone being cut.

Necessity is the mother of invention, as we have been told. Perhaps an appropriate variation of that maxim would be, Cheapness is the mother of do-it-yourself. Then again, maybe necessity and cheapness make efficacious partners.

This DIY project does not require particularly developed skills to accomplish. Even if you do not own a machine shop, if you are reasonably handy with tools and have the necessary desire, you can follow these steps to create a saw that complements slab saws.

As a gemstone carver, I more often than not find myself in situations where I must whittle, so to speak, large pieces of rough down to sizes that conform to my carving subjects. Whenever possible, I rely on the 18-inch slab saw in my shop. As useful as the machine is, there are several drawbacks to a manufactured slab saw's cutting ability.

Firstly, an 18-inch slab saw will not even cut halfway through an 18-inch piece of rough. Only the radius dimension of the blade is presented to the material being cut. If you subtract the radius of the flanges securing the blade to the shaft, an 18-inch slab saw only can make 7½-inch cuts.

Yet another drawback to slab saws is that the rough material often will not fit into the capacity of the saw's vise. Even though the material to be cut might be accommodated by the blade, it cannot be secured appropri-

ately into the vise. Sometimes, this problem can be overcome by removing the saw's vise and using blocks and adjustable clamps to secure the rough to the moving platform. Then there are times where the rough material will not physically fit into the saw compartment. One could leave the cover open, but then oil coolant would liberally decorate the walls, floor and ceiling in the vicinity of the slab saw.

I don't recall having ever seen a factory marketed lapidary drop saw. There is a 10-inch drop saw that is labeled a "preform drop saw", but from the especially short pivot radius, I should think "chop saw" would be a more apt label. That is not to say that lapidary drop saws are not manufactured, but I suspect that most, if not all, are custom built to ordered specifications. Lapidary drop saws with 24-, 36- and even 48-inch-diameter blades are regularly used by jade miners in their mining operations. Recently, I observed a 60-inch hydraulically operated drop saw in use. One does not find behemoths like those in the lapidary supply catalogs.

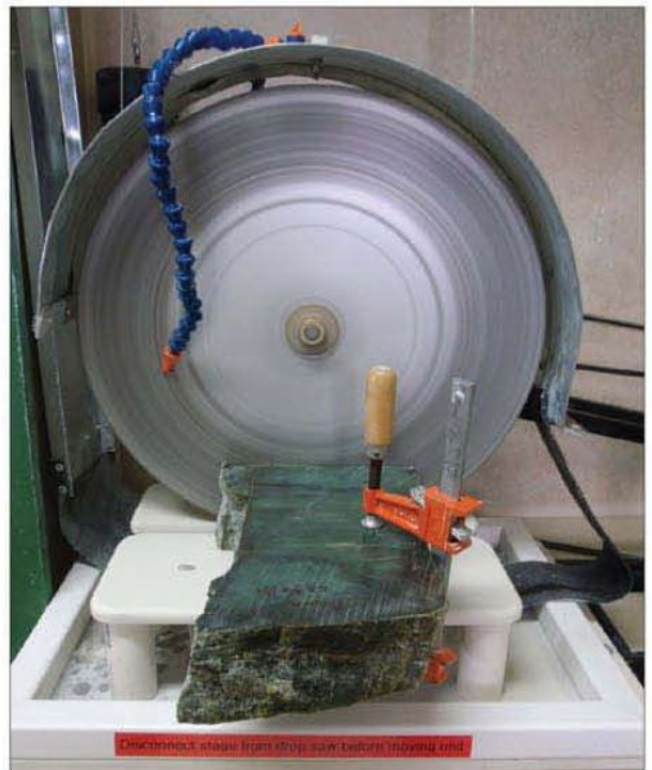
This project is about meeting a necessity cheaply. The very first time I was unable to fit a piece of rough into my 18-inch slab saw, I became motivated to resolve the matter within the scope of my particular skills and my family man's wages. The functional, but rather crude, apparatus I built sufficed for my lapidary needs for some 25 years. Only recently did I rebuild it for a couple of reasons, but mainly because age and use had made it rather dilapidated.

The following paragraphs describe how I constructed and use my 18-inch lapidary drop saw. However, I have seen similar saws built by other DIYers that use 24- and 36-inch diamond saw blades. Drop saws larger than 18 inches would require a bit more of engineering than will be described here.

At the time I first constructed my drop saw, I already had an extra 18-inch diamond saw blade. It was rather well used, but still had some cutting life. I had to procure a sealed ball-bearing mandrel and an electric motor. Perhaps pillow block bearings would work, as well, but I chose a unitized housed mandrel that already incorporated a standard 5/8-inch-diameter shaft. Although the mandrel I chose has right-hand threads, in retrospect, left-hand threads would have been more appropriate due to the clockwise rotation of the blade. The most expensive purchase was the electric motor. I was able to find a used 3/4 horsepower, 1725 rpm, single-phase electric motor.

The first version of the lapidary drop saw performed adequately, but it was a bit of a Rube Goldberg construction of cast iron pipes, Unistrut® channel, threaded rods, scrap metal, and an oak stage. This article explains how to build version two of the drop saw. This description will be based on left-handed operation. That is, the saw stage is constructed so that the blade drops down on the left-hand side, with the motor and pivot point on the right side. There is no reason this could not be reversed.

When building a drop saw, there are several points to consider. It is particularly important for the saw to have a raised platform stage. Obviously, the bottom edge of the rotating blade requires clearance as it passes through the bottom of the material being cut. But secondarily, the platform provides a clamping base for securing the rock to be cut. Failure to clamp the rock will likely result in the stone shifting and, consequently, the very



This piece of British Columbia jade was too large to fit into an 18-inch slab saw. The elevated cutting stage provides a secure platform to which to clamp the stone.



This saw uses a 3/4 horsepower, 1725 rpm, single-phase 60 hz, 115vac motor rather than a 1/2 horsepower motor.



The boom rest prevents the saw blade from penetrating the water collection pan. It was formed from 1/2-inch electrical mechanical tubing (EMT).



This view rear of the motor shows the necessary bolted cross strap between the boom arms. The nylon washers on the axis bolt ensure smooth pivoting.



The 45° braces help prevent the vertical displacement of the boom support uprights.



The right side of the fender-style splash shield is attached to the boom arms by means of a stiffening bar.

TOOLS:

- Table saw
- Hack saw or electric reciprocating saw
- Mill file
- Drill press
- 3/8" or 1/2" portable drill
- 3/16", 1/4", 3/8", 1/2" twist drills
- 1/2" pipe bender
- Rivet tool
- Sheet metal bending brake
- 8" adjustable wrench
- Phillips head screwdriver
- Straight slot screwdriver
- 1/4" 20 thr./in. tap

MATERIALS:

- 2 1 3/4" x 31" Unistrut channels
- 2 1/2" x 9" threaded rods
- 4 1/2" Unistrut nuts
- 3 1/2" I.D. x 1 1/2" O.D. flat washers
- 6 1/2" hex nuts
- 2 1/4" x 1 1/2" bar stock
- 2 1/2" x 3/4" x 10" bar stock
- 3/8" x 9" threaded rod
- 2 3/8" Unistrut nuts
- 4 3/8" hex nuts
- 3/8" x 6" hex head bolt with 4" unthreaded shank
- 3/8" self-locking hex nut
- 3/8" flat washer
- 2 nylon washers, 3/8" I.D. x 1 1/2" O.D.
- 2 3/4" square steel tube, 42" long
- 1/8" x 1" x 1 3/4" bar stock
- 2 1/4" x 20 x 1 1/2" hex head bolts
- 2 1/4" x 20 hex nuts
- 2 1/4" split ring lock washers
- 1 3/16" x 4 1/2" x 7" metal plate
- boom arms
- 4 Phillips head screws, 1/4" x 20 x 1 3/4"

abrupt jamming of the blade. Another point to consider is the pivot radius. Ideally, the pivot point would be displaced some 12 feet from the mandrel shaft. This would enable the blade to make near-vertical passes through the stone. Practicality dictates that the pivot radius is more like 36 inches, which does result in a bit of an arced cutting pass.

A third necessary point to keep in mind is the weight force of the blade applied to the stone. Too little weight and the cut will take forever. Too much weight and the blade will bog down. The motivation to finally rebuild my aged drop saw largely had to do with making the saw conform to a confined dedicated space in my lapidary workshop. I had to shorten the width of the saw from version one. I placed the motor forward of the pivot axis, that is, on the same side as the blade. Actually, this is not the preferred design. I found it necessary to construct a cable-and-pulley system with a counter balance to offset the inordinate amount of weight forward of the pivot axis. The better option, which I used in version one, is to place the electric motor immediately back from the pivot axis. I found that with a 36-inch pivot radius and the motor back of the pivot, the weight balance was nearly ideal for applied cutting force.

Two other points to consider are irrigation and irrigation containment. Because the drop saw is an open system, the use of oil-based lubricants would be both messy and expensive. Plain old water should be used. During the operation of a drop saw, uncontained water spray will result, even with a splash shield over the blade, and the surrounding area will get wet. A fender-type splash shield is a must, unless the saw is to be operated only outside and 20 feet away from anything one does not want a debris stripe across. A water delivery system must be provided for the cutting operation and, if the saw is operated indoors, a water collection reservoir and/or drain is necessary.

Aside from the necessary electric motor, mandrel, and diamond saw blade most of the remaining parts can be obtained from a well-equipped hardware store, as well as from surplus stores. You might even find some of the parts lying around in your garage or shed.

INSTRUCTIONS

The support base legs are nothing more than pieces of 1 1/2-inch Unistrut channel that are 35 inches long. Two 1/2-inch threaded rods secured to the channels with Unistrut nuts, hex nuts, and washers hold the legs 8 inches apart. All these parts can be procured from a hardware store. The two

- 4 ¼" x 20 hex nuts
- 4 ¼" split ring lock washers
- 1 sealed bearing ⅝" shaft mandrel
- 1 3" pulley wheel
- 4 ⅜" x 2" hex head bolts
- 4 ⅜" hex nuts
- 4 ⅜" split ring washers
- ⅛"-thick sheet aluminum
- 1 ⅛" x 1" x 8" bar stock
- 1 ⅛" x ½" x 18" bar stock
- 2 ¼" x 20 x ¾" hex head bolts
- 2 ⅜" x 1" screws w/nuts
- 6 ⅜" x ½" aluminum rivets
- 2 6" x 12" pieces of truck tire inner tube
- 2 ¼" x 18" LocLine articulated nylon tube irrigation delivery
- 1 ¼" LocLine control valve
- 1 ¼" LocLine Wye splitter
- 2 ¼" LocLine nozzles
- 1 ¾ HP 115 VAC 1725 RPM electric motor
- 1 115 VAC light switch
- 1 metal electrical box (single)
- 1 metal switch plate (single)
- 1 60" outlet cord w/ground
- 4 ¼" dia. x 1½" carriage bolts
- 4 ¼" x 20 hex nuts
- 4 ¼" split ring lock washers
- 1 1" pulley
- 1 V belt
- 1 ½" x 16" x 24" piece of Dupont Corian (or equivalent)
- 2 ¼" x 20 x ¾" hex head bolts
- 2 ¼" x 1" flat washers
- 2 ¼" external tooth lock washers
- 37" of 1¼" PVC pipe
- 88" of 1½" square nylon tube
- 1 can clear PVC cement
- 2 ½" x 6" x 15" pieces of Dupont Corian (or equivalent)
- 4 ⅜" x 5" carriage bolts
- 4 ⅜" flat washers
- 4 ⅜" hex nuts
- 1 ½" x 18" electrical mechanical tube drop saw stop-support
- 2 ¼" x 20 x ¾" pan head slotted screws
- 1 18"-diameter diamond-rimmed lapidary saw blade

threaded rods, which some know as "all-thread", are positioned at the left and right ends of the Unistrut channels. The two boom support uprights at the right end of the machine are ¼-inch by 1¾-inch bar steel, 7½ inches tall. They are attached at the bottom support base legs onto the right-end channel all-thread cross member.

The rear upright is secured against the rear support base leg channel with a nut. The front upright is distanced from the rear upright the dimension demanded by the width of the motor mounting holes. This front upright is secured to the base unit all-thread with nuts on either side. A ⅜-inch shanked hex-head bolt provides a cross member at the top of the uprights. This upper cross member serves two functions: it fixes the uprights securely, preventing lateral movement, and the bolt serves as the pivot axis. The unthreaded shank of the bolt must span the distance of the boom arms.

Two 45° braces prevent the vertical displacement of the uprights. The braces are 10-inch-long pieces of ¼-inch by ¾-inch bar steel and the upper and lower ends were drilled with ⅜-inch holes for attachment. The upper ends attach to the ⅜-inch bolt and against the insides of the uprights. The lower ends are nutted onto a ⅜-inch all-thread, which is secured to each base support leg channel.

The boom arms are 35-inch lengths of ¾-inch square tube steel. Making them about 8 inches longer on the right end would allow the motor to be mounted to the right of the axis for weight balance. The extreme right ends of the boom arms are cross connected with a ⅛-inch by 1-inch strap steel brace which is bolted to the square tube steel with one ⅜-inch hex head thru-bolt and nut on each arm. This cross brace, along with the plate on the left end of the boom arms, enables the two boom arms to behave as a single-pieced unit. The distance between the boom arms is dictated by the width of the motor mounting holes. Spacing washers are inserted on the axis bolt between the boom arms and the uprights as necessary to eliminate play. A nylon washer against each boom arm provides for smooth pivot operation.

The left end of the boom has a ⅛-inch-thick steel plate attached to it that serves to brace the boom arms and provide a mounting base for the mandrel. The plate is attached with ¼ by 20 Phillips head screws with lock washers and nuts. Two screws must be used on each boom arm to prevent parallel shifting of the arms. The mandrel is attached to the base plate with ⅜-inch bolts, lock washers, and nuts. The pulley wheel end (rear) must be positioned to align with the pulley wheel of the motor.



An attachment bar extends from the boom to the bottom end of the light-gauge sheet aluminum splash shield, which is doubled over for strength.



Because the standard ⅝-inch-diameter mandrel mounting holes differed from those on the motor, a steel plate was needed to attach it to the boom arms.



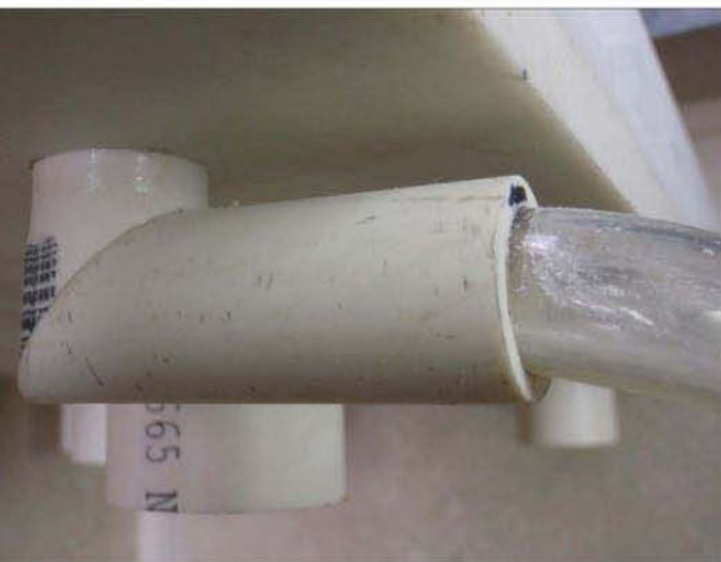
A discarded truck tire inner tube was used to form a flexible spray shield below the rigid metal one.



The clear vinyl irrigation supply line connects to a LoLine valve mounted on top of the spray shield, while a Y connector distributes irrigation to both sides of the blade via the adjustable segmented tube.



The water collection pan and the stage platforms are made from ½-inch synthetic countertop sheet. The stages are elevated on ½-inch schedule 40 PVC pipe.



The collection pan drain outlet was made by mitering and gluing together two pieces of ½-inch PVC pipe.

The electric motor has a clockwise rotation as viewed from the shaft (pulley) end. It is mounted to the boom arms with four 3/8-inch carriage bolts. It would be best to gauge the intended mount location and then procure a V belt. A cord loop can be formed around the motor pulley wheel and mandrel pulley wheel to determine the length of belt needed. The cord can be taken to any auto parts dealer, which can supply an accurate belt size.

With the belt on the pulley wheels, a more precise mounting location for the motor can be determined. Electric motors are provided with mounting slots rather than circular holes, which allows for belt tension adjustment. Although I have a three-step pulley on my drop saw, I never use anything but the larger 2½-inch-diameter pulley. The smaller diameters run the blade much too fast.

The motor can be supplied with electricity by a simple plug-ended electrical cord. However, since cutting anomalies can occur, a readily accessible on-off switch is advisable. On this unit, an electrical utility box is attached to a side brace on the right end of the machine. An ordinary light switch provides electrical control to the motor. The electrical supply cord is a three-conductor, 18 gauge, stranded wire cord. The ground wire is bonded to both the motor and the machine. Because water spray is prevalent, the grounding of the machine is most important. The rule of thumb when performing electrical wiring is, if you are in doubt, find someone to assist you who is not. As near as I can tell, electrocution tends to be permanent.

The cutting platform stage on the first version of my drop saw was made of oak. Over time, the wood repetitively swelled from use, then shrunk from disuse, resulting in screwed joints that barely did the job. On version two, I resorted to man-made materials. The lower water collection pan is sheet counter-top material such as DuPont™ Corian® or a similar product. The two elevated platform stages are also made of synthetic materials. On occasion, I have found scrap pieces of such materials at retail shops that sell recycled materials, and other times I have approached contractors for scrap pieces. It's a great benefit to the drop saw project that these materials are waterproof, solid and durable. The bonus is that they can be cut, drilled and routed with wood working tools.

It was necessary to raise the water collection pan to the height of the base leg channels. This was done by cutting 1¼-inch schedule 40 PVC pipe into four 1¾-inch riser legs and gluing them to the bottom of the pan with clear PVC cement. The reservoir walls around the perimeter of the pan are nothing more than 1½ square polyvinyl tube left over from a fence gate project. I mitered the corners and glued the tubes to the pan with clear PVC cement. I then caulked a bead around the inside to prevent leakage. Had I not had the square polyvinyl tubes on hand, I would have substituted something similar. I left a ¾-inch lip on the right outside of the pan, which provided a space for attaching the pan to the base leg channels. I drilled and tapped the channels for ¼-inch by 20 hex head bolts. These two bolts are the only things that attach the stage assembly to the drop saw.

The water collection pan drains into a clear vinyl tube, which passes through the countertop to a collection bucket below the counter. The ½-inch vinyl tube is friction fit to a ½-inch schedule 40 PVC pipe elbow that I made. I mitered two pieces of PVC at 45° and glued them together to form a 90° elbow. I drilled out the pan to the same outer dimension as the ½-inch PVC and glued the elbow in place to project out the bottom side of the pan.

The raised platform stages are elevated similarly to the pan. Identical lengths of 1¼-inch schedule 40 PVC pipe (elevating tubes) were glued to the bottoms of the stage platforms with PVC cement. Initially, the elevating tubes were also glued to the pan, but that proved to be a poor mechanical connection and it failed. The solution was to countersink two carriage bolts through each stage platform and through the lower pan, where the bolts are nuted and washered. It was necessary to caulk the bolts where they pass through the water collection pan. The positioning of the elevating tubes was planned to allow for optimum clamping areas to secure the work piece. It is necessary to have separate stages on either side of the blade because sometimes you'll want to cut large pieces from the mother rock.



A portable support stand like this one may be used to hold an irrigation supply reservoir.

The fender-style splash shield was interesting to make. On version one, it was nothing more than sheet aluminum bent to form around the blade. It was flimsy and tended to flop around a bit. On version two, I decided to double over the aluminum to provide strength. This is a rather easy task to accomplish with a device called a sheet metal bending brake. Lacking such a tool, however, I managed to compensate. Using sturdy boards, I clamped the sheet aluminum to the edge of a work table. Using a wood slat the same length as the aluminum, I relied on brute strength to bend the metal to 90°. Then, after removing the clamps and bracing the unbent side against a solid surface, I used more brute strength and a bit of hammering on the wood slat to effect a complete fold on one side. I repeated the process to form the other fold so that the two meet as a seam in the middle. Using a large bucket as a forming tool, I then formed the metal into a semicircle with the seam inside. The doubled aluminum sheet makes for a very sturdy splash shield.

The right side end of the splash shield is bent outward at a 90° angle to form a lip for attaching to the boom arms. However, the aluminum by itself is not quite solid enough for rigid attachment. It was necessary to add a stiffening bar of 1/8-inch by 1-inch bar steel. The stiffening bar is attached with 1/4-inch by 20 hex head bolts to the boom arms that were drilled and tapped. The outward end of the splash shield lip is secured to the stiffening bar with rivets.

The left side of the splash shield is attached to the mandrel mount plate by means of a 1/8-inch by 1/2-inch bar steel. The bar extends out from its attachment to the plate where it is twisted 90°. The twist both

turns the bar to the correct orientation for attaching to the splash shield and stiffens the extended bar.

Obviously, the formed splash shield can only partially encircle the blade. To contain water spray when the lower end of the saw blade is exposed, it is necessary to add flexible extensions to the ends of the rigid shield. This can be accomplished by riveting lengths of sheet rubber to the splash shield ends. A good source for sheet rubber is truck tire inner tubes. Almost any truck tire store will allow a bit of dumpster diving for retrieving discarded inner tubes.

Irrigation water is provided by a gravity feed from a 3-gallon bucket on a shelf above the drop saw. The shelf is an intentional design aspect of the dedicated enclosure for my drop saw. You may need to fabricate some sort of tower to support the irrigation reservoir. In version one of this drop saw, a couple of 1-gallon jugs were hung from anything handy to support them above the saw blade. Valves were fitted on the vinyl tubing that projected from the bottoms.

To maintain the flow of irrigation water against the rotating saw blade in version one, it was necessary to form a securing coil around the ends of the vinyl water tubes using 14 gauge insulated electrical wire. The remaining 15 inches of the wire were attached by clamps to the mandrel mount plate so that the irrigation tubes would move in unison with the blade as it lowered into the cut. The wire stiffened the vinyl tubing to hold the tube ends against the blade. Although it was a system I used for many years, it was very difficult to maintain appropriate water delivery and it required constant attention and intervention. I decided version two would not be this way.

On this rebuilt drop saw, a vinyl water delivery tube from the irrigation water reservoir terminates on a control valve attached to the top of the splash shield. A Y connection after the valve distributes water to both sides of the saw blade by means of flexible segmented vinyl pipe. I purchased this setup from LocLine®, but at least one other company makes a similar product. The beauty of this product is that, when the nozzle tips are appropriately positioned against the sides of the saw blade, they stay in position. No more fussing.

If you have the know-how, you can use this example as a guideline for building a saw of different dimensions. Unlike an 18-inch slab saw, which can only make 7 1/2-inch cuts, the 18-inch drop saw can make partial cuts through rather large stones. After repositioning the stone so that the blade aligns with and partly enters the previously made kerf, the cut can be continued. Theoretically, one could cut completely through a 15-inch-thick stone with an 18-inch drop saw. ♦

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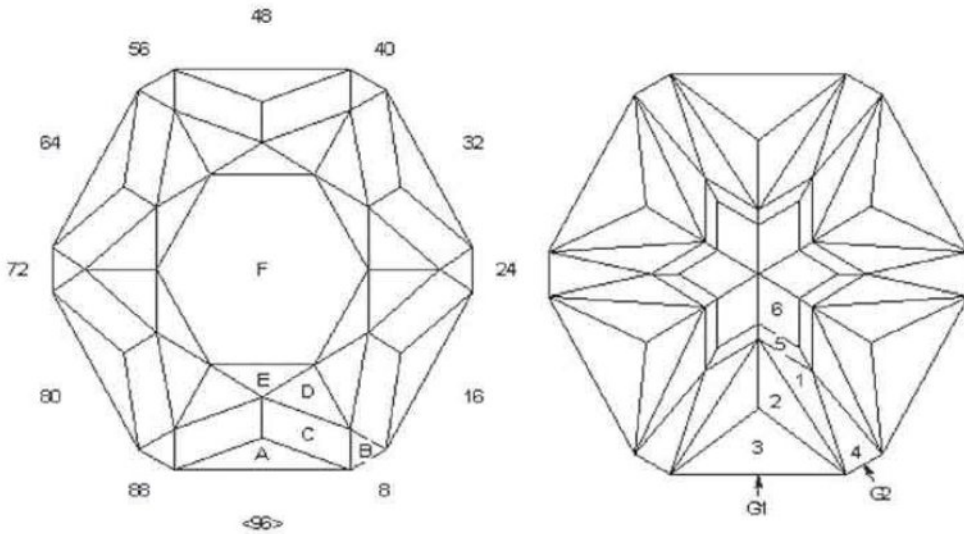
I have not cut many hexagons; it just isn't one of my preferred shapes. But after proof cutting this design, I am so pleased with the results that I will likely do more designing and cutting in this shape.

Topaz is my favorite material to use with frosted facets, and this one did not disappoint. What is fascinating is how the single frosted tier of the pavilion is seen reflected throughout the entire stone.

There is a bit of setup work to do in order to establish the correct girdle dimensions in this design. A pre-form is included that will allow you to cut the two girdle tiers to the sizes needed for the rest of the design to fit together properly.

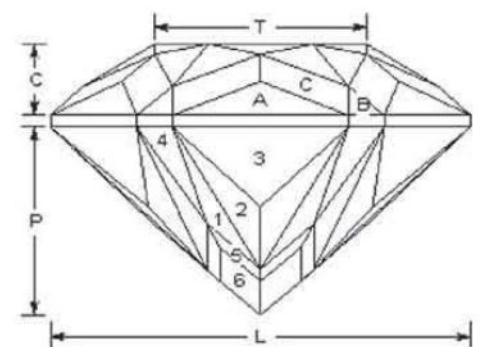
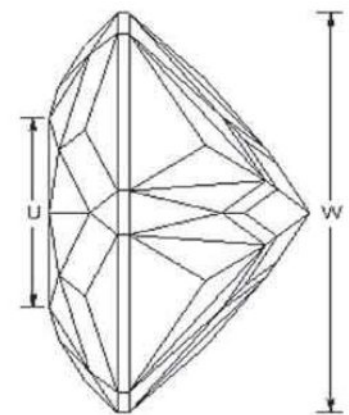
For cutting the frosted facets, I use a well-worn cutting lap and keep the motor off. Using light, quick strokes, I scratch the stone back and forth across the lap. Just go slowly, as cutting this way can go quickly! The crown is easy and I find the table serves to frame the frosted "star" well. I hope you enjoy this design and I would love to hear from you if you try it. Happy faceting!

—David Groncki
djgroncki@comcast.net



DJG Frosted Hex

©David Groncki 2010
Preform version
Angles for R.I. = 1.610
97 + 12 girdles = 109 facets
6-fold, mirror-image symmetry
96 index
L/W = 1.092 T/W = 0.547 U/W = 0.474
P/W = 0.469 C/W = 0.176
Vol./W³ = 0.267



PREFORM

PF1	32.25°	96-16-32-48-64-80	Make CP
PF2	30.00°	08-24-40-56-72-88	Cut to CP
G1	90.00°	96-16-32-48-64-80	Cut to width
G2	90.00°	08-24-40-56-72-88	MP @ PF2, G1

PAVILION

1	41.50°	06-10-22-26-38-42-54-58-70-74-86-90	Cut to CP
2	42.50°	04-12-20-28-36-44-52-60-68-76-84-92	MP @ 1, girdle
3	50.40°	96-16-32-48-64-80	Level girdle
4	42.00°	08-24-40-56-72-88	Level girdle
5	40.17°	07-09-23-25-39-41-55-57-71-73-87-89	MP @ 4 (leave frosted)
6	39.00°	08-24-40-56-72-88	Float to size

CROWN

A	44.00°	96-16-32-48-64-80	Set girdle height
B	39.90°	08-24-40-56-72-88	Level girdle
C	35.70°	02-14-18-30-34-46-50-62-66-78-82-94	GMP
D	30.00°	04-12-20-28-36-44-52-60-68-76-84-92	MP @ B
E	16.65°	96-16-32-48-64-80	MP @ C,C
F	0.00°	Table	MP @ E,E,D,D

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Show Dates from page 49

OCTOBER 2011

contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

1-2—WALNUT CREEK, CALIFORNIA: Show, "Contra Costa Crystal Fair"; Pacific Crystal Guild; Civic Park Community Center, 1375 Civic Dr.; Sat. 10-6, Sun. 10-4; adults \$6, ages 12 and under free; 30 dealers, minerals, gems, crystals, beads, metaphysical healing tools; contact Jerry Tomlinson, PO Box 1371, Sausalito, CA 94966, (415) 383-7837; e-mail: jerry@crystalfair.com; Web site: www.crystalfair.com

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

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

7-9—INDIANAPOLIS, INDIANA: 13th annual show, "Fall Indianapolis Gem, Mineral & Jewelry Show"; Treasures Of The Earth Gem & Jewelry Shows; Indiana State Fairgrounds, Ag/Horticulture Bldg., 1202 E. 38th St.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$5 (3-day ticket), children under 16 free; jewelry makers, goldsmiths and silversmiths size, reconstruct, repair, design or make original jewelry from customer-selected gems, stones, opals and crystals, wire wrap, wire sculpture, stone beads, pearls, stone setting, dealers, amber, opal, fossils, minerals, door prizes, grand prize, 500 Earth Science Club display, silversmithing demonstrations and classes, lampwork bead demonstrations, wire wrapping classes; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

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

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

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

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

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

8-9—TEMPLE, TEXAS: Annual show; Tri-City Gem & Mineral Society; Mayborn Convention Center, 3303 N. 3rd St.; Sat. 9-6, Sun. 10-5; adults \$2; silent auctions, raffles, door prizes, grand prize, demonstrations, dealers, rough, slabs, cabs, faceted gems, equipment, finished jewelry; contact Chip Burnette, 2630 Polk St., Killeen, TX 76543, (254) 630-3573; e-mail: burnette@acweb.com

8-9—TOPEKA, KANSAS: Annual show; Topeka Gem & Mineral Society; Kansas Expo Centre AG Hall, 17th and Topeka Blvd.; Sat. 10-6, Sun. 10-5; adults \$4, ages 13-17 \$1, under 13 free with adult; demonstrators, displays, dealers, lapidary supplies, rough rock, beads, jewelry; contact M.

Mowry, 1934 SW 30th St., Topeka, KS 66611, (785) 267-2849; e-mail: rock2plate@aol.com

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

8-10—ORLANDO, FLORIDA: Retail show; Florida Fossil Hunters; Central Florida Fairgrounds, 4603 W. Colonial Dr.; Sat. 9-5, Sun. 10-4; adults \$4, children \$1; fossils, rocks, minerals, gems, artifacts, supplies, books, children's dig pit, silent auctions, educational material; contact Valerie First, 223 Ringwood Dr., Winter Springs, Florida 32708, (407) 699-9274; e-mail: vf1rst@aol.com; Web site: <http://Floridafossilhunters.com>

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

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

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

14-16—MOUNT IDA, ARKANSAS: Show, "Quartz, Quiltz and Craftz Festival"; Mount Ida Area Chamber of Commerce; Montgomery County Fairgrounds, Fairgrounds Rd.; Thu. 9-6, Fri. 9-6, Sat. 9-6, Sun. 10-4; free admission; dealers, minerals, jewelry, quartz crystals, quilts, crafts, children's digging contest Sat.; contact Maureen Walther, Mount Ida Area Chamber of Commerce, Mount Ida, AR 71957, (870) 867-2723; e-mail: director@mountidachamber.com; Web site: www.mountidachamber.com

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

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

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

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

15-16—JOHNSTOWN, NEW YORK: Annual show; Fulton County Mineral Club; Johnstown Moose Lodge, Rte. 30A; Sat. 10-5, Sun. 10-5; adults \$3; contact Bob Hartig, (518) 842-5948; e-mail: rockbob@nycap.rr.com

15-16—LAKESIDE, CALIFORNIA: Annual show, "Rock and Gem Roundup"; El Cajon Valley Gem & Mineral Society;

Lakeside Rodeo Grounds, 12584 Mapleview; Sat. 10-5, Sun. 10-5; free admission; rocks, minerals, gemstones, jewelry, fossils, beads, handcrafted items, demonstrators, displays, kids' activity area; contact Patrick Smock, 10852 S. Samuel Rd., Hereford, AZ 85615, (619) 719-3444; e-mail: cprpsm@yahoo.com; Web site: www.ecvgms.com

15-16—LEWISTON, IDAHO: Annual show; Hells Canyon Gem Club; Nez Perce County fair Bldg., 1229 Burrell Ave.; Sat. 10-6, Sun. 10-5; adults \$2, students free with ID, children under 12 free; contact Rick Westerholm, (208) 746-2101; Web site: hellscanyongemclub.com

15-16—PLACERVILLE, CALIFORNIA: Annual show; El Dorado County Mineral & Gem Society; El Dorado County Fairgrounds, 100 Placerville Dr.; Sat. 10-5, Sun. 10-5; adults \$4, children 12 and under free; dealers, displays, minerals, gems, jewelry, beads, fossils, petrified wood, amber, opals, meteorites, geodes, carvings, tools, books, lapidary and jewelry-making demonstrations, amber exhibit and presentations, free rocks and activities for kids; contact Karen Newlin, (530) 676-2472; e-mail: info@rockandgemshow.org; Web site: www.rockandgemshow.org

15-16—SOUTH CHARLESTON, WEST VIRGINIA: Annual show; Kanawha Rock & Gem Club, South Charleston Lions Club; South Charleston Community Center, 601 Jefferson Rd.; Sat. 9-6, Sun. 10-5; adults \$3.50, children 12 and under free with parent; dealers, gems, minerals, fossils, rocks, beads, jewelry, demonstrations, kids' corner, displays; contact Kanawha Rock & Gem Club, PO Box 252, Farmington, WV 26571, (304) 657-7089; e-mail: frankoz@juno.com

15-16—WHITTIER, CALIFORNIA: Annual show; Whittier Gem & Mineral Society; Whittier Community Center, 7630 Washington Blvd.; Sat. 10-5, Sun. 10-5; free admission; dealers, minerals, jewelry, gems, collectibles, lapidary demonstrations; contact Marcia Goetz, 755 W. Dike St., Glendora, CA 91740, (626) 260-7239; e-mail: joenmarl@verizon.net

21-23—FORT WAYNE, INDIANA: Annual show; Three Rivers Gem & Mineral Society; Allen County Fairgrounds in 4-H & Home Loan Bank Bldgs., 2726 Carroll Rd.; Fri. 10-7, Sat. 10-7, Sun. 11-5; adults \$3, seniors \$2, students \$1, children free; Golden Show anniversary, dealers, demonstrators, kids' games, silent auction, touch 'n' feel table, door prizes, fluorescence room, speakers, displays; contact Michele Yamanaka, 4336 Charter Lane, Fort Wayne, IN 46815

21-23—HARRISONBURG, VIRGINIA: 9th annual show, "Harrisonburg Bead, Gem, Mineral & Jewelry Show"; Treasures Of The Earth Gem & Jewelry Shows; Rockingham County Fairgrounds, Commercial Exhibits Bldg., 4808 S. Valley Pike (between I-81 exits 240 and 243); Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$3 (3-day ticket), children under 16 free; jewelry makers, goldsmiths and silversmiths, repairs while you wait, gem trees, wire wrap, wire sculpture, pearls, stone beads, stone setting, amber, opal, mineral and fossil dealers, door prizes, grand prize; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

21-23—INDIANAPOLIS, INDIANA: Show; Indiana State Museum, 650 W. Washington St.; Fri. 9-5, Sat. 9-5, Sun. 11-4; adults \$7, seniors \$6.50, children \$4; dealers, regional clubs, adult and kids' activities; contact Peggy Fisherkeller, Indiana State Museum, 650 W. Washington St., Indianapolis, IN 46204, (317) 232-7172; e-mail: pfisherkeller@dnr.in.gov; Web site: www.indianamuseum.org

22-23—BELLEVUE, WASHINGTON: Show; Bellevue Rock Club; Vasa Park, 3560 W. Lake Sammamish Blvd. SE, 190 Exit 13, 1 mile north; Sat. 10-5, Sun. 10-5; contact Bruce Himko, PO Box 1851, Bellevue, WA 98009-1851; e-mail: Bellevuerockclub@comcast.net; Web site: www.bellevuerockclub.org

22-23—CANBY, OREGON: Show, "Rock & Gem Heaven in 2011"; Clackamette Mineral & Gem Club; Clackamas County Fairgrounds, 694 NE 4th Ave.; Sat. 9-6, Sun. 10-5; free admission; dealers, demonstrations, raffle, silent auction, Kids' Korner, door prizes, fluorescent show, displays, slabs; contact Rick Mauer, (503) 691-6395; e-mail: tallerricardo@juno.com; or Bea Settle, (503) 631-3128; e-mail: rockhound@clackamettegem.org

22-23—GURNEE, ILLINOIS: Annual show; Wrap-N-Rock Gems; Key Lime Cove, 1700 Nations Dr.; Sat. 10-6, Sun. 10-4; free admission; door prizes, dealers, jewelry, opals, gemstones, wire-wrapped jewelry demonstrations, geode cutting, amber, fossils, minerals, quartz crystals, faceted stones, custom jewelry and cabochons; contact Gere

continued on page 71

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N.), 42 N. Huron St., Ypsilanti, MI 48197. (734) 481-9981. BG11

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Ellenwood (Atlanta), Georgia. Great South Gems & Minerals, Inc. Minerals, fossils, eggs, spheres, cutting material, tumblers & grits. Books. 38 Bond Drive, Ellenwood, GA 30294 (770) 507-7113 www.greatsouth.net XX11

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Ely, MN: Beads, Findings, Wire Wrapping, Cabs, Jewelry, Gifts, Equipment, Tools, Supplies, Books, Rough, Slabs, Fossils, Crystals, Specimens; May'ish thru Sept'ish; Loony's, 16

Reno, NV area: 60 year Old Rock Shop! Huge Inventory! See website lists, Pictures! BEADS, Findings, Jewelry Supplies, Gift items, specimens, minerals, fossils, jewelry, crystals, books, equipment, tools, supplies, tons!!! of rough rock; Hwy 50-95 Rock Shop, 4261 Reno Hwy, Fallon, NV 89406; (775) 867-2144; www.fallonrockshop.com C12

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WANTED

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AGATES, JASPER, WOODS. Specimens and Fossils for wholesale business, also Rock Shop and Estate Collections. JAYHAWK ROCK SHOP, PO Box 296, Hill City, KS 67642, E-mail peggysue@ruraltel.net, ph. 785-421-2333 LK11

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<input type="checkbox"/> Books & Videos	<input type="checkbox"/> Lapidary Equipment	<input type="checkbox"/> Rough For Cabbing
<input type="checkbox"/> Business Opportunities	<input type="checkbox"/> Lapidary Supplies	<input type="checkbox"/> Rough For Faceting
<input type="checkbox"/> Cabochons	<input type="checkbox"/> Minerals	<input type="checkbox"/> Rough For Tumbling
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<input type="checkbox"/> Collections	<input type="checkbox"/> Nuggets	<input type="checkbox"/> Wanted to Buy
<input type="checkbox"/> Fossils	<input type="checkbox"/> Opals	<input type="checkbox"/> Other
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September	July 15
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Rock & Gem Classifieds
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Phone _____ E-mail _____

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(last 3 digits of code on back of card)

Signature _____

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OCTOBER 2011

Bunnell, PO Box 7584, Gurnee, IL 60031; (847) 336-1270; e-mail: gerewb@gmail.com; Web site: www.lakecountygemshow.com

22-23—JACKSONVILLE, TEXAS: Wholesale and retail show; The Bead Market; Jacksonville Community Center, 5 Municipal Dr.; Sat. 10-5, Sun. 10-4; free admission; Swarovski Elements, crystals, silver, glass beads, bone beads, seed beads, lampwork, pearls, gemstones, jewelry, PMC, books, tools; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

22-23—WARWICK, RHODE ISLAND: Show and sale; Rhode Island Mineral Hunters; CCRI Knight Campus, 400 East Ave. Rte. 113; Sat. 10-5, Sun. 10-5; adults \$56, seniors and children under 10 \$5; contact Robert Sproule, 40 Paulette Terrace, Plymouth, MA 02360; e-mail: jsroule@comcast.net

29-30—EVANSVILLE, INDIANA: 45th annual show; Evansville Lapidary Society; Washington Square Mall, Green River Rd. and Washington Ave.; Sat. 10-9, Sun. 12-5; free admission; gems, jewelry, minerals, fossils, geodes, silent auction; contact Ruth Reisinger, (812) 424-7618

29-30—STUART, FLORIDA: Annual show; St. Lucie County Rock & Gem Club; Martin County Fairgrounds, 2616 SE Dixie Hwy. (A1A); Sat. 10-5, Sun. 10-5; adults \$3, children under 12 free with adult, coupon on Web site; demonstrations, displays, silent auction, raffle, about 24 dealers; contact Norman Holbert, 455 SW Balfour Ave., Port St. Lucie, FL 34953 (772) 873-0787; e-mail: normholbert@bellsouth.net; Web site: slrockandgem.org

NOVEMBER 2011

5-6—BREWER, MAINE: Annual show; Penobscot Mineral & Lapidary Club; Brewer Auditorium, Wilson St.; Sat. 10-5, Sun. 10-4; adults \$1, children under 12 free; silent auctions, door prizes, demonstrations, children's activities; contact Lance Shope, 38 Sunset Strip, Brewer, ME 04412, (207) 989-3342; e-mail: lshope67@yahoo.com; Web site: penobscotmineralapilaryclub.com

5-6—LANCASTER, CALIFORNIA: 10th annual show; Palmdale Gem & Mineral Club; Antelope Valley Fairgrounds, Van Dam Pavilion, 2551 W. Ave. H; Sat. 9-5, Sun. 9-5; free admission; gemstones, minerals, beads, lapidary, jewelry, display supplies, dinosaur program with Richard Wade, petrified wood programs with Walton Wright, kids' scavenger hunt, silent auction, demonstrations, raffle; contact Cheri George, 2255 W. Avenue O, Palmdale, CA 93551, (562) 243-8470; e-mail: lizardwoman3@yahoo.com; Web site: www.palmdalegemandmineral.com

5-6—SAN DIEGO, CALIFORNIA: Annual show; San Diego Mineral & Gem Society; Al Bahr Shrine, 5440 Kearny Mesa Rd.; Sat. 9:30-5, Sun. 10-4; free admission; free gem I.D., more than 12 dealers, more than 40 exhibits, club sales, slabs, books, magazines, junior booth, door prizes, demonstrators, faceting, lost wax casting, silver chain making, sphere making, wire wrapping; contact Bob Hancock, (619) 889-6886; e-mail: RHBOBHANCOCK@cs.com; Web site: www.SDMG.org

5-6—STURTEVANT, WISCONSIN: Annual show; Racine Geological Society; Fountain Banquet Hall, 8505 Durand Ave.; Sat. 10-5, Sun. 10-5; free admission; club displays, silent auction, rock identification, door prizes; contact John Lowman, 3223 Spruce St., Racine, WI 53403, (262) 554-5370; Web site: rgs-wi.tripod.com

11-13—HAMBURG, NEW YORK: Show and sale; GemStreet USA; Erie County Fairgrounds, The Grange Bldg., 5600 McKinley Pkwy.; Fri. 10-6, Sat. 10-6, Sun. 11-5; adults \$7, seniors (60+) and students (12-17) \$5, children under 12 free; gems, jewelry, beads, fossils, minerals; contact Jane Strieter Smith, (216) 521-4367; Web site: www.gemstreetusa.com

11-13—PASCAGOULA, MISSISSIPPI: Annual show; Mississippi Gulf Coast Gem & Mineral Society, Magnolia State Gem, Mineral & Jewelry Show; Jackson County Fairgrounds, 2902 Short Cut Rd.; Fri. 10-6, Sat. 9-6, Sun. 10-5; adults \$3, children 12 and under free; door prizes, raffle, 20 dealers, gold panning and sluicing; contact James Darnell, 7121 Oakhurst Dr., Ocean Springs, MS 39564, (228) 875-2310

For more Show Dates, go to
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ON THE ROCKS

National Show in Syracuse

It's time to offer readers more details on the forthcoming combined American Federation and Eastern Federation Show, to be held in Syracuse, New York, July 7-10. Syracuse actually straddles the famous Erie Canal, and therein lies a clue to the show's theme!

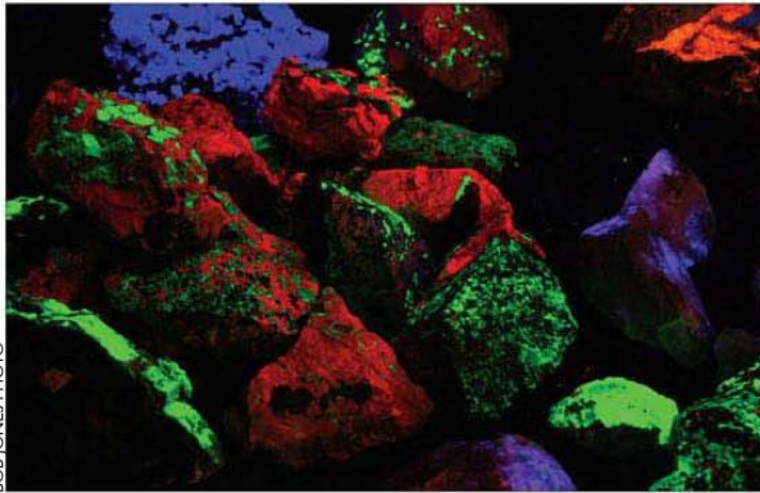
The public aspect of the show will be Saturday and Sunday, July 9-10, with doors opening at 10 a.m. The preceding days are set aside for meetings and federation activities, which are necessary for the conduct of the hobby's business.

It is national shows like this one that give our rockhounding organizers a chance to gather from all over the country to take care of the necessary functions of our hobby: protecting open lands, developing exhibit guidelines, raising money for our education fund, and promoting the hobby among government agents and the general public.

What a wonderful time of year to visit Upstate New York! There is so much to do while you are visiting this special show. You are in for a real treat! Read on and find out all about your choices while visiting this great show and state.

The show will be held in the Aircraft Building on the New York State Fairgrounds. Take Exit 7 off Interstate 690. The host club, the Gem & Mineral Society of Syracuse (www.gmss.us), has planned a significant event with a variety of activities.

Every show has to have a theme, and the theme of this show, "Gems Along the Erie Canal", highlights the history and mineralogy of that stretch of Upstate New York. As America was developing in the early 1800s, transportation west was really a test of wills. There were few roads and no easy way to move freight, so the idea of the Erie Canal was proposed and voted on in 1817. The state coughed up \$7,000,000 to make the 250-mile-long canal, stretching from Albany to Buffalo, a reality. It was finally finished in 1825 and it became the first major waterway route to the west. With the completion of the Erie Canal, Westward Expansion became a reality and America



Fluorescent minerals will be just one of the special displays at the July AFMS national show in Syracuse, New York.

never looked back! One of the unique features of this year's national show will be the opportunity for you to actually take a narrated boat ride on the historically famous Erie Canal. When was the last time you did something like that?

During the digging of this important waterway, frequent mineral discoveries proved the region was rich in a variety of species. They included crystals of fluorite, galena, sphalerite, gypsum, dolomite, celestine, anhydrite, chalcopyrite, and most important to modern rockhounds, quartz! If you know anything about mineral environments, you will realize that these minerals are most commonly found in limestone and related deposits. Even today, quarries in the region produce fine examples of these same species.

New York's state mineral, garnet, will probably be represented at this show, but the sparkling, gemlike quartz crystals from the region will receive emphasis. These small, doubly terminated crystals, which we now call "Herkimer diamonds", are mined just north of the canal route. If you attend this year's national show, it will be an ideal opportunity for you to dig these little quartz gems! After all, Herkimer and nearby Middleville, New York, have at least four good fee-collecting quarries where you can dig to the extent of your endurance. Digging is no picnic, but the reward can be thrilling. Finding a pocket of these quartz beauties would be a real kick!

If you prefer to dig something a bit closer to Syracuse, the local club is organizing field trips to nearby locations and will

provide you with collecting information at the show.

Some shows I've attended in recent years are a little short on special displays. Not so for the Syracuse show. You'll see choice displays from the Smithsonian Institution and the New York State Mineral Museum, as well as displays from really special private collections. Because of the close proximity of Syracuse to Canada, you'll see a really special private collection of minerals from Dundas and other Canadian sites.

Lovers of Herkimer diamonds and readers who enjoyed my August 2009 article "Herkimer, New York, Quartz" will get a chance to see the superb collection of Herkimer quartzes dug by Joe Kapelewski and his father, Tom, over a period of 40 years. In his own article, "The Forgotten Collectors", Joe described his family's adventures of digging quartz at Herkimer. Many of the quartzes that were pictured in these articles will be on display at the Syracuse show as part of the Kapelewskis' award-winning exhibit!

One of the benefits of visiting a major show like this one in Syracuse is that you will have a chance to learn some new lapidary techniques from the several demonstrators who, in time-honored federation tradition, will be exhibiting their skills for visitors. You'll have a chance to watch faceters, wire wrappers, flint knappers, cabochon cutters, and beadwork, and learn something about silversmithing and jewelry creation. This is how our hobby grows!

An exhibit that I always enjoy and study is a display of minerals that respond to ultraviolet excitation. Since I was a kid in the fifth grade, I have marveled at this phenomenon. Take an ordinary rock that has little to commend it and put it under a long-wave or short-wave ultraviolet lamp, and the drab rock leaps into color. I'm looking forward to seeing the fluorescent mineral display that will be open to visitors at the Syracuse national show.

The show committee is making a special effort to cultivate the natural interest kids have in the earth. Kids will be thrilled to

watch geodes being split, revealing for the first time the mineral interior of these remarkable volcanic products. Maybe they will hear the tales told by Indians of how the gods would throw chunks of volcanic rock when angry!

Another exciting event for kids will be mineral sluicing. Rooted in methods of searching for gold, mineral sluicing gives kids a chance to try their hand at dipping a pan and finding a small treasure in the wet gravels. Kids' busy hands will also have a chance to do some stone carving. The easiest stone to carve is soapstone, so named because, when you rub your hands on it, they feel as slick as they do when being rubbed with wet soap. Soapstone carving gives kids a chance to create something using an interesting mineral.

One thing I get a kick out of is watching boys string beads. You'd think this activity would attract only girls, but far from it. The boys get into it as energetically as the young ladies.

The federations are always doing something to promote the hobby and science with youngsters. To that end, scholarships are awarded to students who plan to study earth science-related subjects. The funds for these awards are raised by auctions that are held at the major shows. The items auctioned are donated by club members, artists and rockhounds who are anxious for young people to pursue the greatest science in the world. On Saturday afternoon during the show, there will be an auction in which you can pick up a fine piece of jewelry, a good mineral specimen, or a related item. The money is for a very worthy cause that deserves your support. Even if you can't make it to the show, you can make a donation of a worthy item to the auction through your local club.

Another part of a good show is the lectures. Some folks go to them just to rest their feet. Can't blame them for that. But many of us go to learn, as the guest lecturers are experts in their field and have much to share. After cruising the wholesale section and checking out all the minerals that the nearly 60 dealers have to offer, you might enjoy sitting and being educated at a lecture.

I'll be directly involved in one lecture for sure, the evening banquet lecture. That's



At the national show, kids will have the opportunity to crack open a geode and be the first to see the mineral treasures inside.

because I'm giving it. I'm not yet sure of my topic, but I have some ideas. After eating a fine meal, most folks are not really ready to concentrate and learn, so I won't really give an educational lecture as such. Instead, I'll give a fun chat about some of my adventures around the world, adventures that were exciting, maybe dangerous, and certainly rewarding.

enjoy nature's power and beauty.

For baseball lovers, there's the Baseball Hall of Fame in Cooperstown, a couple hours southwest of Syracuse. You can study the history of our national sport and the people who gained fame as players and officials.

I have not seen Letchworth State Park, located near Castile, New York, a couple hours west of Syracuse. A canyon in the park is called "the Grand Canyon of the East", so it must be some sight. As an Arizonan, I have to go see our Eastern rival ditch!

One other note worth mentioning about the national show in Syracuse has to do with my recently published book, *The Frugal Collector, Volume I*. We had hoped it would be available by the Tucson Show in February, but I took a two-month hiatus, which really slowed down the entire process. Now we're really getting close, and if all goes well, I'll have a few copies with me at the show. If you already have your copy of *The Frugal Collector*, bring it along. I'd be flattered to sign it for you. If all goes well and I don't take another travel hiatus, I may also have an idea of when *The Frugal Collector, Volume II* will be available.

I'm looking forward to doing some Herkimer diamond digging while in New York enjoying another great national show. See you in Syracuse in July! 💎



New York's official state mineral, garnet, will probably be represented at this show.

Earlier, I mentioned that Upstate New York was a great place to visit in summer. Along with this really special show there's a host of other activities you can try. I'll be curious to compare the wines of the Finger Lakes region to Arizona's grape products. I've been told that a popular national publication on wines identified the 2008 Dry Riesling Reserve from New York's Dundee Vintners as one of the top 100 wines in the world. Surely that deserves some investigation! And New York is famous for its cheese making. A good chunk of cheddar is a great way to top off a nice glass of New York wine!

I've already visited the Corning Museum of Glass in Corning, two hours southwest of Syracuse. If you have any interest in the history of minerals as related to glass mak-

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, 290 Maple Ct., Ste. 232, Ventura, CA 93003.

Trey Woodward

I just wanted to let the readership know of the passing of a great rockhound in Texas. Mr. Trey Woodward of Woodward Ranch, home of the famous red and black plume agate, passed away on Mar. 5, 2011, from a battle with cancer. I'm sure many readers know this kind, gentle man, as people from all over have traveled to the ranch outside Alpine, Texas, to hunt for the beautiful agate. It is a sad day for rockhounds all around. We will miss him and will keep Jan and the rest of his family in our hearts and prayers. Hopefully, one day we'll all be able to meet him in rockhound heaven. There is a video memorial to Trey on the ranch's Web site, www.woodwardranch.com.

—Bobbie Foegelle
via e-mail

Denver Dealer

Does anyone remember seeing a dealer (2010 Denver Show) that was in the tents at Quality Inn and sold onyx sinks? There was only one and I can't find anyone to help me. I have exhausted all options. The show promoters had no information regarding their vendors; they don't request information on products to register. You're my last hope!

—Debbie Wilkinson
83 Carol Place
New Cumberland, PA 17070
(717) 774-1186
dmwilk1@verizon.net

Sand Man

The number of letters and sand samples received in response to my article, "What is a Psamophile?", which appeared in the January 2011 issue of *Rock & Gem*, has been astounding! Readers have sent me over 100 sand samples from all over the world. I wish to thank the readers of *Rock & Gem* for their response. If anyone has some sand from a stream, beach or dune near your home or from a vacation trip, please send me a small bottle or baggie full at 16243 Fullerton Meadows Dr., Wildwood, MO 63011. Be sure to mark the location where the sample was found.

—Rich Huck
via e-mail

Faceting for the Mac

I am new to faceting and own a Mac computer. Is there a program for the Mac that will convert R.I. angles for the different materials? I have heard there is a formula that can also be used, but I cannot find it.

—George Franzen
via e-mail

Almost all gem graphics and design software is written for IBM-compatible PC computers. Fred VanSant (now deceased) wrote his own software called MacGem. In spite of his efforts to promote it, he was the only person I knew of who ever used it. I have no idea what became of it after his death.

I am not very familiar with Mac computers, so you will have to research most of this on your own. I have heard that software is available from Mac dealers that will allow you to set up part of your hard drive as a PC drive; then you could purchase GemCad and accomplish what you want. Other people I've heard of have

purchased an inexpensive new or used PC and set it up as a dedicated GemCad machine.

A formula for tangent ratio scaling that you can use with a scientific calculator is found in Long and Steele's *Facet Design* volumes 1 and 6. I recommend buying the entire set of books, as they contain everything one could want to know about basic design and the mathematics associated with design conversions. Some books describe linear translation, which is limited and won't work for all gem designs, particularly Barions.

—Jim Perkins
Off the Dop columnist

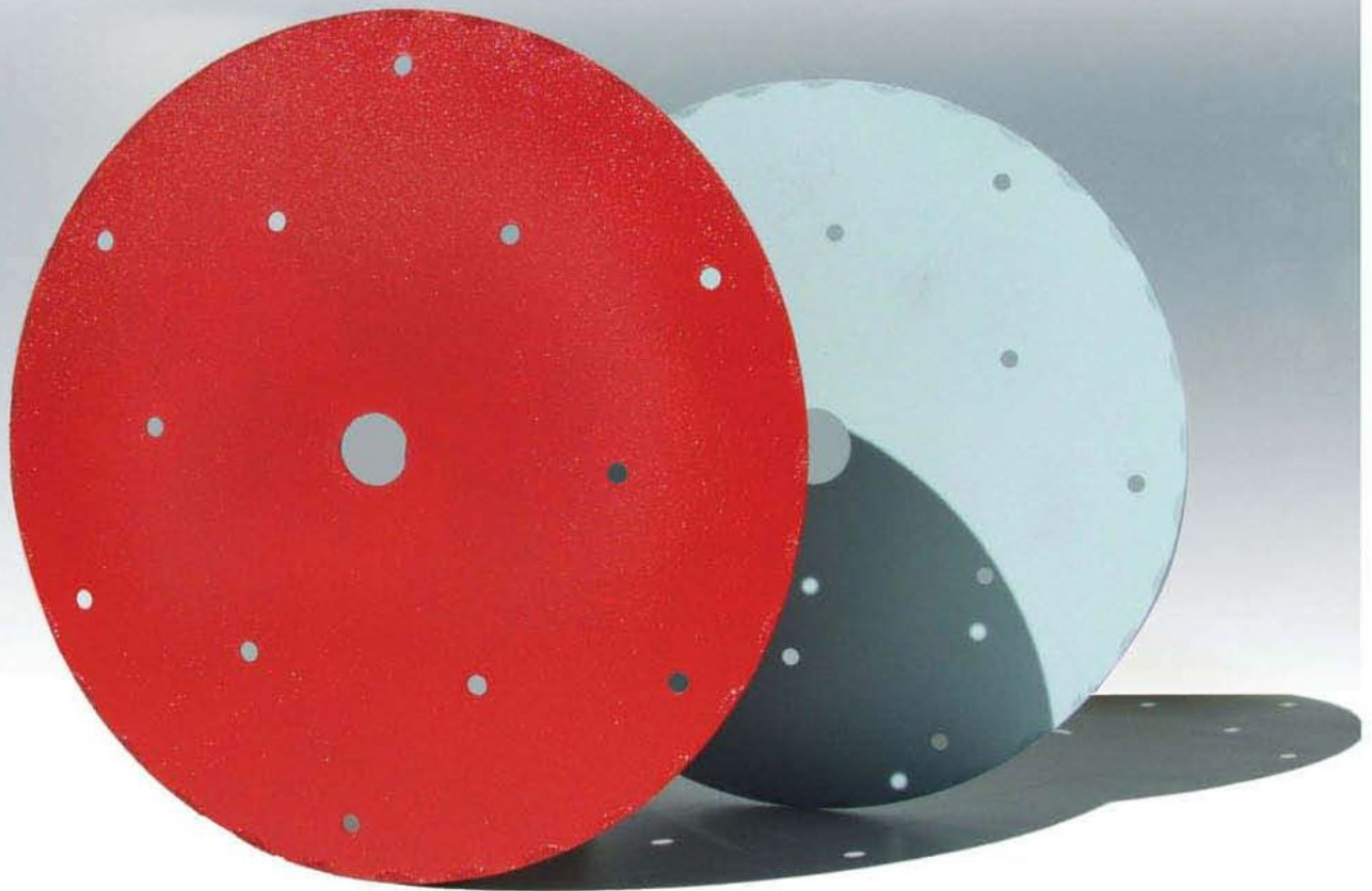
For further discussion, visit <http://gemologyonline.com/Forum/phpBB2/viewtopic.php?f=8&t=10756>

Found At A Rock Show

I went to see a mineral show,
What that entailed I did not know.
I hoped it would not be a bore,
As I walked in there through the door.
I found it was a lot of fun,
Of their minerals, I did buy some.
I found this new big mineral world,
Unknown to me, it just unfurled.
There were a lot of long tables,
Each covered with gems of fables.
The crystal's beauty captured me.
I'm now a Rockhound, as you see.
I studied there with great intent,
And tried to find what each piece meant.
I learned some names and walked along,
It helped me feel I could belong.
To learn a lot it won't take long.
The cost of beauty won't seem wrong.
You'll gladly buy some rocks for cash,
And to the next show you will dash.
Each dealer has a lot of stock.
All mineral's secrets have a lock,
The key to which is found in books,
For anyone who cares and looks.
There was so much to interest me,
That now I have a library.
Some rocks and minerals that I own,
Have gem crystals within the stone..
These minerals enlarged life for me.
I see now to eternity,
And back to when it all began.
There's order in this larger plan.
We tend in life to fly from love,
And then return through God above.
To love our neighbor we must strive,
Plus, Rockhounds love what's not alive.
What can be found at a Rock Show,
Is sparkle, shine and subtle glow.
Buy it and find it on your shelf,
But look to find it in yourself.

—Ronald J. Yadusky, BS, MD, FACS

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