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MAY 2011

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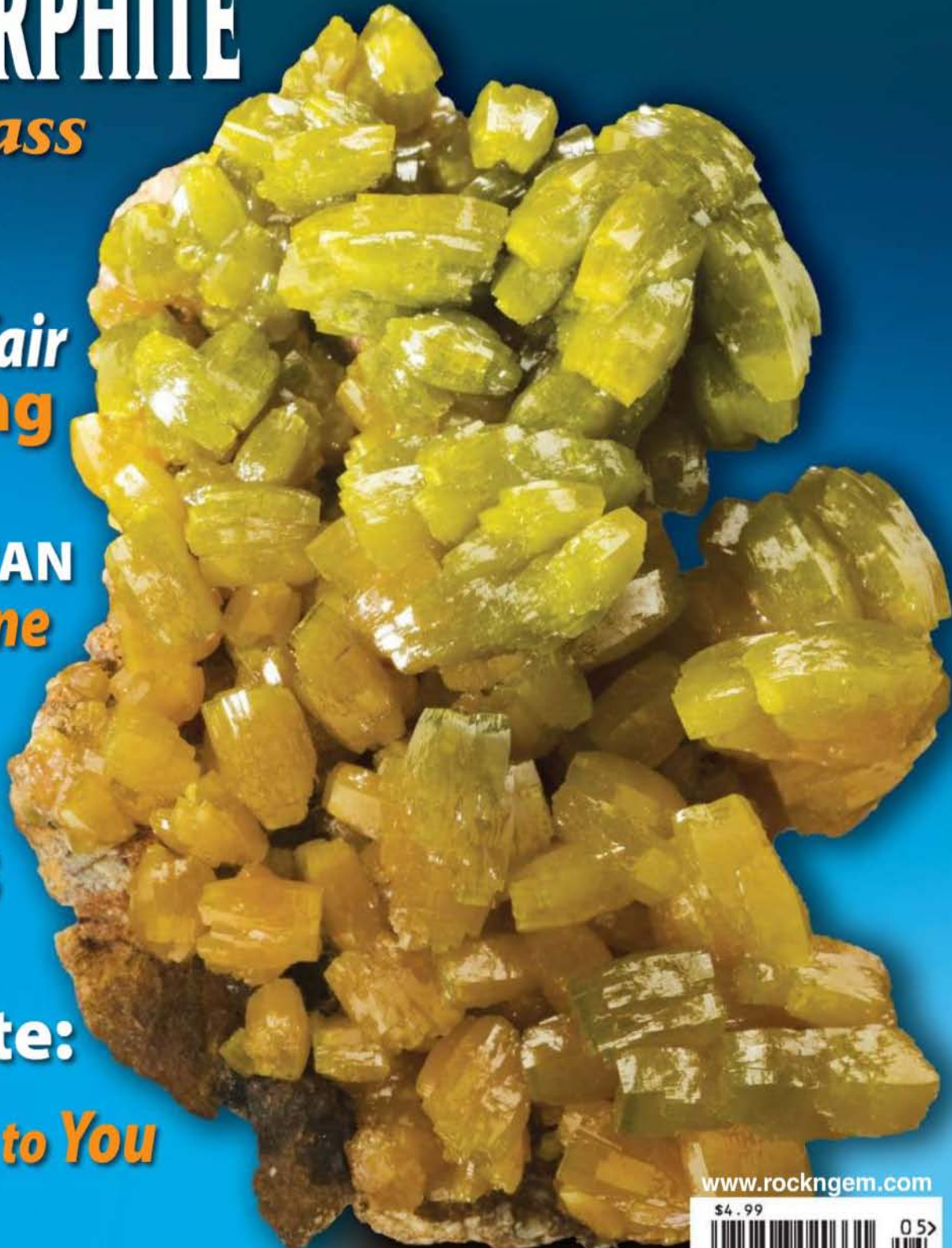
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Pyromorphites from the Bunker Hill mine at Kellogg (Shoshone County), Idaho, are considered among the world's best specimens for the species. (Jeff Scovil photo/Keith and Mauna Proctor specimen)

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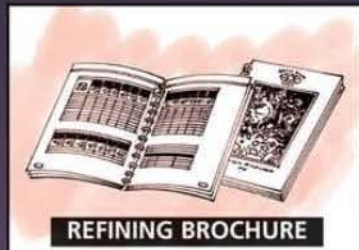
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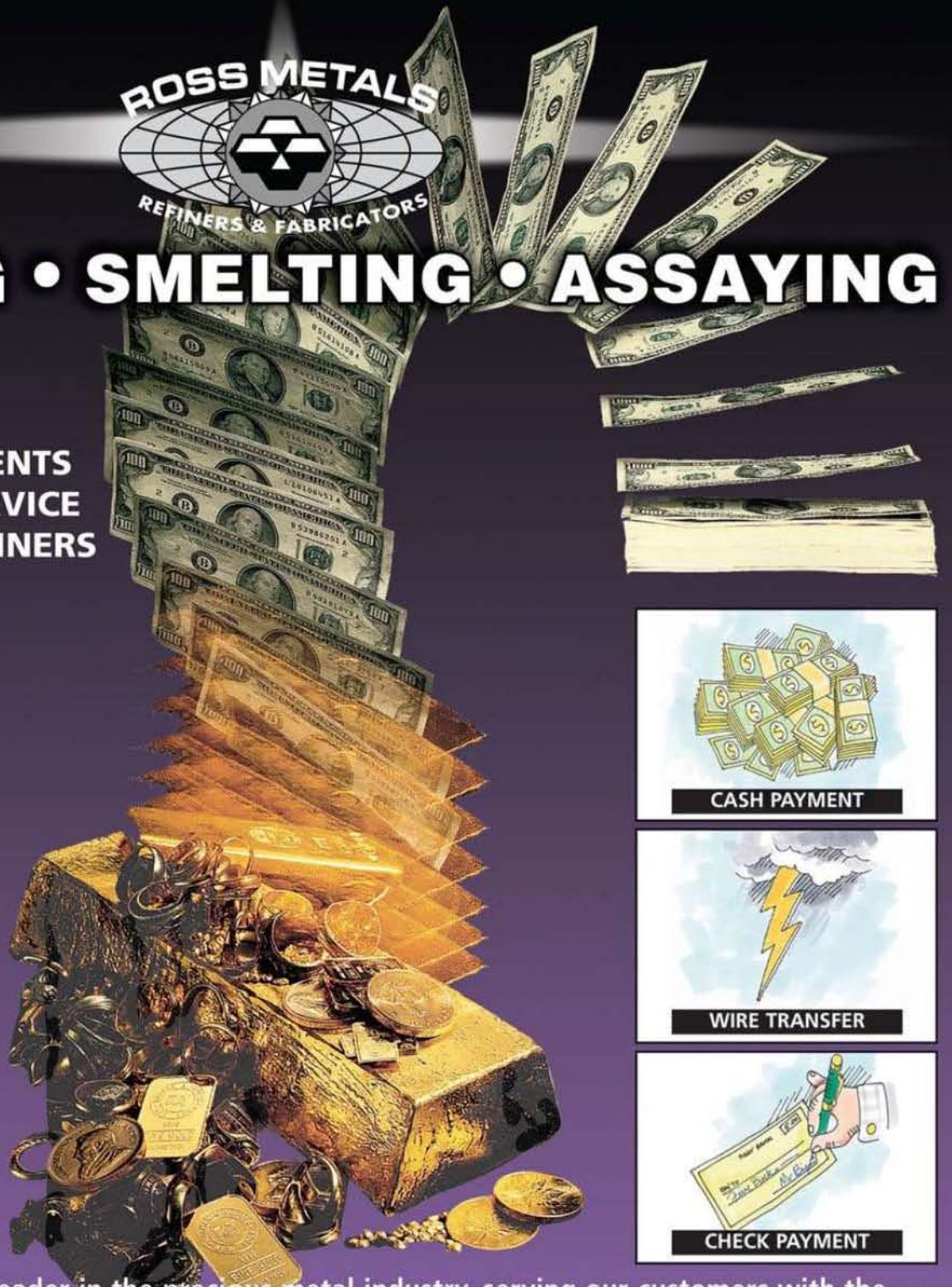
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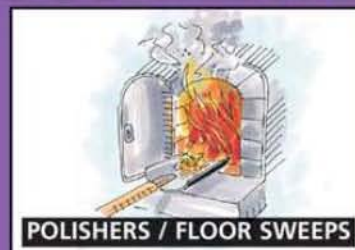
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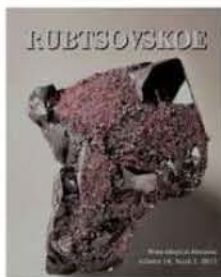
**Rubtsovskoe
Mineralogical Almanac, Vol. 16, Issue 1
by Igor V. Pekov and Inna S. Lykova**

The Famous Mineral Localities series does an excellent job of reviewing mineral localities throughout Europe and Russia. The locations discussed are sources of fine minerals that are offered for sale, but information about them is not readily available in this country. For the advanced collector, the detailed discussion of localities is of particular interest, as the articles are written by leading European scientists and students of mineralogy.

Vol. 16, Issue 1 is titled "Rubtsovskoe", and is written by Ivor V. Pekov and Inna S. Lykova. Rubtsovskoe is a deposit in Northwest Altai, Russia, that produces wonderful silvers, cuprites, and native coppers. The excellent cuprite specimens that have been recently offered for sale at Tucson and Denver are from this noted locality, so this particular issue will be of interest to all collectors.

Well illustrated in color and black-and-white, this volume is offered for sale at major mineral shows, including Tucson and Denver. Information on the cost of this series and back issues of this excellent series can be obtained by e-mailing minbooks@online.ru. (**Mineralogical Almanac Ltd., 2011**)

—Bob Jones



Look for publisher contact information in the Articles section of our
Web site, www.rockngem.com.

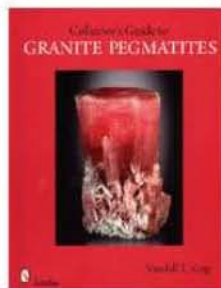
**Collector's Guide to Granite Pegmatites
by Vandall T. King
\$19.99**

Van King is a prolific writer whose name has been associated with minerals for decades. His knowledge of pegmatites is infinite, since he has spent years studying and collecting in the pegmatite areas of Maine and visiting a number of pegmatites that are located throughout the United States.

This 94-page softcover text does an excellent job of revealing the zone sequence of pegmatites and describing which minerals occur in each zone. The size and shape of the pegmatites is also described, as well as the process that creates these rich mineral sources. Particular emphasis is placed on the minerals that are found in the pocket zone. These are the finest collector species and gem minerals, and they are often accompanied by rare species.

King attempts to describe these mineral occurrences in "uncomplicated terms" for collectors of all levels of experience. Those who enjoy the variety of minerals found in pegmatites and those who have an opportunity to collect at a pegmatite deposit will also enjoy this text, which is well illustrated with nearly 200 color photos of minerals, charts and diagrams. For a greater understanding of specimen-rich pegmatite sources, collectors would do well to obtain this well-written text. (**Schiffer Publishing Co., 2010**)

—Bob Jones



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CRAFTSMAN OF THE MONTH

Ever since I was young, I've enjoyed using welding techniques to make a variety of sculptures from odds and ends in my garage," says May Craftsman of the Month Daryl Devey, "but it wasn't until my daughter and I began rock hunting that I realized I could take my artwork to a new level.

"After acquiring a rock saw and gathering stones, fossils and gems throughout the Western United States, I began cutting and polishing the rocks that would serve as bases for my sculptures of mountain bikes, golfers, motorcycles, and other items requested by family and friends.

"One such request resonated with me. My rockhound daughter suggested I make a sculpture about fishing. Using the scraps of rock I had cut for other pieces, I created "Fishing in Alaska", which represents Mount McKinley.

"I wanted to use a tall piece of slate and honeycomb calcite as my centerpiece, so it was necessary that I start by making a solid concrete base. To do this, I created a square frame out of two-by-fours that I placed on a plastic garbage bag. To keep the slate piece vertical during the construction process, I built a wood brace to surround and give support to the rock. This I attached to the outside of the original square frame.

"With the slate piece securely in place, I began to create the petrified wood detailing for the concrete base. I gave each of the pieces a test run by placing them on the outside of the form to see how they fit. Once satisfied, I pressed the petrified wood against the inside of the wood frame and, using rubber gloves, placed wet concrete on the stones to secure them.



"Once the sides were complete, I finished filling the frame with concrete. About halfway through the process, I also placed a sheet of welded wire fabric inside the frame to give the concrete strength.

"While the concrete was still wet, I created the water surface and river bank by embedding pieces of blue malachite and petrified wood on top of the concrete. Once satisfied with the placement, I tapped the two-by-four base with a hammer to consolidate the concrete and help it adhere to the rocks.

"After the concrete began to harden, I placed a towel over the entire base and poured about two quarts of water over the base twice a day for a week. I then removed the screws from the form and wiped the excess concrete residue from the polished rocks.

"Once I finished the base, I began gluing on the artistic elements: petrified wood from Virgin, Utah, for the logs and tree stump; crystals from Utah's Provo Canyon to represent the icicles melting from the glacier; and topaz for the splashing water underneath the jumping fish.

"I created the fisherman, fish, Piper Super Cub airplane, and eagle by using an acetylene torch to weld an assortment of welding wires, bolts, and round rods. These pieces were heated, pounded and welded into the figures.

"Much of the sculpture, which represents an outdoorsman who is living his dream of fly fishing in remote Alaska, was created from rock ends remaining from other projects. As a rockhound, I've found I can make artistic scenes out of odds and ends that I don't have the heart to throw away." ♦



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 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



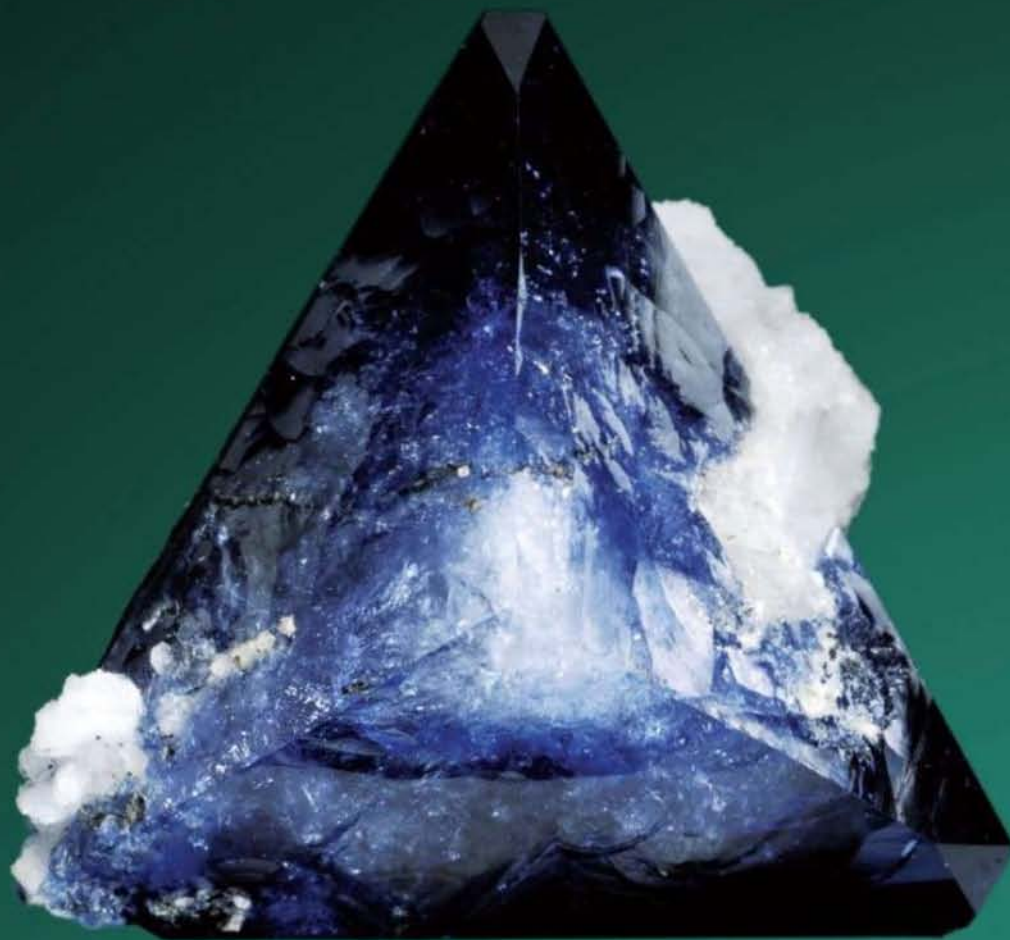
Ct., Ste. 232, Ventura, CA 93003. Submissions will not be returned, so do not send originals. Only winners will be notified. Contact the editor at (805) 644-3824 ext. 129 or editor@rockngem.com with any questions about these requirements.

Craftsman of the Month winners receive a two-speed Dremel Model 200-a/21 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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February 3 - February 11

Grant Inn on Grant Road
January 29 - February 11

Minneapolis, MN.....April 3-4

Detroit, MI.....April 8-9-10

West Springfield, MA....April 15-16

Orlando, FL.....April 29-30-May 1

Franklin, NC.....May 6-7-8

Las Vegas, NV.....June 3-4-5

Detroit, MI.....July 15-16-17

Franklin, NC.....July 28-29-30-31

Spruce Pine, NC.....August 4-5-6-7

Tucson, AZ.....September 8-9-10-11

Minneapolis, MN....September 25-26

Detroit, MI.....Sept. 30-Oct. 1-2

West Springfield, MA.....October 7-8

Asheville, NC.....October 25-26

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SHOW DATES

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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/showdates.asp.

MAY 2011

1—BLOOMINGTON, MINNESOTA: Show; Rings & Things; Hilton Minneapolis/St. Paul Airport, 3800 American Blvd E.; Sun. 2-7; 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, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

3—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, PO Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

4—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, PO Box 450, Spokane, WA 99210, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

5—SCHILLER PARK, ILLINOIS: Show; Rings & Things; Comfort Suites O'Hare Airport; Wed. 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, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

5-8—FRANKLIN, NORTH CAROLINA: Retail 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. 10-4; 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

6-8—BISHOP, CALIFORNIA: 10th annual show, "Eastern Sierra Gem & Mineral Show"; Lone Pine Gem & Mineral Society; Tri-County Fairgrounds, Robinson Bldg., Sierra St. and Fair Dr.; Fri. 6-9, Sat. 9:30-5, Sun. 10-3; free admission; field trips, lapidary demonstrations, lampwork beads, flint knapping, sphere making, displays, world's largest fulgurite, local minerals and fossils, spinning wheel, geodes, vendors, door prizes, children's activities; contact Francee Graham, PO Box 667, Lone Pine, CA 93545, (760) 876-4319; e-mail: franceem@qunet.com

6-8—COLUMBIA, MISSOURI: Annual show; Central Missouri Rock & Lapidary Club; Boone County Fairgrounds, 5212 N. Oakland Gravel Rd.; Fri. 1-5, Sat. 10-5, Sun. 10-3; adults \$5, seniors and students \$3, children under 11 free; admission good 3 days, Kidz Mine, demonstrations, mineral exhibits, Midwest dealers; contact Robert McConnell, 1601 N. Earthland Rd., Columbia, MO 65202, (573) 445-5415; e-mail: bobmc@socket.net

6-8—COSTA MESA, CALIFORNIA: Show; Gem Faire Inc.; COC Fair & Event Center/Bldg. 10, 88 Fair Dr.; 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

6-8—FRANKLIN, NORTH CAROLINA: Retail show; Franklin Area Chamber of Commerce; Macon County Community Bldg., 1288 Georgia Rd.; Fri. 10-6, Sat. 10-6, Sun. 11-4; adults \$2, under age 16 free; contact Linda Harbuck, 425 Porter St., Franklin, NC 28734, (828) 524-3161; e-mail: lindah@franklin-chamber.com; Web site: www.visitfranklinnc.com

6-8—MARIETTA, GEORGIA: 43rd annual retail show; Georgia Mineral Society; Cobb County Civic Center, 548 Marietta Pkwy.; Fri. 10-6, Sat. 10-6, Sun. 12-5; free admission; more than 30 dealers, door prize for students, auction Sat., demonstrations; contact Tom Batcha, PO Box 15011, Atlanta, GA 30333-5011; e-mail: mayshow@gaminer.org; Web site: www.gaminer.org

6-8—McPHERSON, KANSAS: 19th annual sale and swap; McPherson Gem & Mineral Club; McPherson 4-H Bldg., 710 W. Woodside; Fri. 9-7, Sat. 9-6, Sun. 10:30-3; free admission; buy or swap, rocks, gems, minerals, fossils, jewelry, door prizes, displays, collections, free rock identification, fluorescent mineral exhibit, kid's spin-and-win; contact Jim Nutter, 1611 Jody Ln., McPherson, KS 67460, (620) 241-2433; e-mail: mcphersongemmineral@hotmail.com

7—LANSING, MICHIGAN: Show; Rings & Things; Ramada Lansing Hotel & Conference Center, 7501 W. Saginaw Hwy.; Wed. 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, (800) 366-2156; e-mail: drobertson@rings-things.com; Web site: www.rings-things.com/Show/index.html

7-8—AITKIN, MINNESOTA: Show and sale, "Cuyuna Agate & Mineral Show"; Cuyuna Rock Club; Aitkin High School, 306 2nd St. NW, three blocks west of stoplight at Hwy. 169 and Hwy. 210; Sat. 9-5, Sun. 10-4; free admission; agates, minerals, jewelry, specimens, mineral art, fossils, fluorescents, lapidary equipment, indoor and outdoor vendors, Ask-the-Wizard-of-Rocks, special Kids' Korner with free prizes, displays, demonstrations, Wheel-of-Rock-Fortune, door prizes; contact Kat Thomas, 45962 Tame Fish Lake Rd., Aitkin, MN 56431, (218) 678-3298; e-mail: katmoose@wildblue.net; Web site: www.cuyunarockclub.org

7-8—BOZEMAN, MONTANA: Show; Bozeman Gem & Mineral Club; Gallatin County Fairgrounds, 901 N. Black; Sat. 10-6, Sun. 10-4; contact Sally Griffin, (406) 451-4362; e-mail: griffin830@yahoo.com; or Dan Carter, (406) 586-4552

7-8—CINCINNATI, OHIO: 46th annual show and sale, "Geofair 2011"; Cincinnati Mineral Society, Cincinnati Dry Dredgers; Cincinnati Gardens, 2250 E. Seymour Ave.; gems, minerals, fossils, jewelry; contact Terry Huizing, 5341 Thrasher Dr., Cincinnati, OH 45247; (513) 574-7142; e-mail: tehuizing@fuse.net; Web site: www.geofair.com

7-8—RENO, NEVADA: Annual show; Reno Gem & Mineral Society; Reno Livestock Events Center Exhibit Hall, 1350 N. Wells; Sat. 10-5, Sun. 10-4; adults \$5, seniors \$4, children \$3; more than 20 dealers, gems, minerals, fossils, beads, lapidary and silversmithing equipment, more than 60 exhibit cases, demonstrations, flint knapping, gold panning booth, silent auction, door prizes, field trip, raffle; contact John Petersen, 480 S. Rock Blvd., Sparks, NV 89431, (775) 849-1522; Web site: www.renorockhounds.com

7-8—WASHINGTON, PENNSYLVANIA: Show, "Greater Pittsburgh Area Jewelry, Gem, Mineral, Bead & Gift Show; FM Minerals; Washington County Fairgrounds, 2151 N. Main St.; Sat. 10-6, Sun. 10-5; adults \$4, children 12 and under free with an adult; invited dealers, beads, minerals, fossils, metaphysical items, jewelry, gemstones, hand-made jewelry, wire wrapping; contact FM Minerals, PO Box 252, Farmington, WV 26571, (304) 825-6845; e-mail: frankoz@juno.com

10-13—SECAUCUS, NEW JERSEY: Wholesale and retail show, "The NYC Metro Show"; Eons Expos RLLLP; Meadowlands Expositions Center, 355 Plaza Dr.; Thu. 9-6, Fri. 9-6, Sat. 9-6, Sun. 9-6; free admission; minerals, fossils, dinosaurs, crystals, gems, jewelry, meteorites, professionals only Thu. contact Christine Coyle, 38 Fox Ridge Rd., Sparta, NJ 07871, (516) 818-1228; e-mail: lowellcarhart@yahoo.com; Web site: www.nyc-metroshow.com

13-15—ANDERSON, CALIFORNIA: Show, "Northern California Treasures CFMS Show & Convention"; Superior

continued on page 32

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Kellogg, Idaho, Pyromorphites

They're the World's Finest Specimens

Story by Bob Jones



BOB JONES PHOTO

Testing might prove this fine group of mimetite crystals to be pyromorphite, since some crystals started as one mineral and ended up being another.

PPyromorphite is a secondary lead mineral. The better specimens of this species are among the most gorgeous minerals ever found. When pyromorphite is tan or brown, it is simply an attractive mineral. But when its color ranges from brilliant lime green to yellow to bright orange, it can be the star of a mineral display! It has also been found in clusters of sharp hexagonal crystals that are so large that two hands are required to carry them.

Some exciting finds in Idaho in the 1980s have produced the world's best pyromorphites. The most beautiful are the bright-green crystal groups. Yet, these are rivaled by a different type of pyromorphite: bright-orange botryoidal masses with high luster, often found in the same pockets as the well-crystallized bright-green specimens.

For more than 1,000 years—ever since mining records have been kept—pyromorphite has been one of the secondary species encountered in many lead and silver deposits throughout Europe, then America, and now China. Among the earliest silver discoveries in the last thousand years were the great German deposits. These were rich sources of the valuable white metal, usually as argentiferous galena or as native silver. Work began in these mines in the 10th century and continued for centuries. The pyromorphites found in German silver deposits, especially around Bad Ems, were some of the world's finest at the time.

The mines of the Ems region produced lead and silver for centuries and eventually became very well known for huge quantities of tan to brown pyromorphites. So much pyromorphite was mined and saved that small groups of these subparallel, curving clusters of crystals are still for sale today.

The finest Bad Ems specimens we can see today are rich green crystals in tight, subparallel clusters, with individual crystals measuring about an inch long, in fine hand-size specimens. Some of the finest examples from Bad Ems are in the Carl Bosch collection, which is part of the National Collection in the Smithsonian Institution.

Bosch's collection contains choice pyromorphite groups that are shaped like open mouths. Perfect crystals hang down and project up like hexagonal green teeth. These specimens came from the Friedrich-segen mine at Lahnstein, near Ems, which opened in 1209.

The last great find of this lead mineral occurred at the Rosenberg mine near Ems in 1867 when a small cave measuring about 35 feet by 7 feet and extending about 40 feet into the rock was opened. It was completely lined with large crystals of pyromorphite ranging in color from gorgeous apple green to a lustrous tan. Many of the crystals were in subparallel, tightly packed clusters. Most of the crystals are fat in the middle and taper to a termination in a true barrel shape.

TOP: This is interesting Idaho specimen has both pyromorphite and mimetite crystals on it.

CENTER: This choice mimetite is typical of what was found intimately developed with the pyromorphite from the Bunker Hill mine at Kellogg, Idaho.

BOTTOM: This very fine green pyromorphite shows the mineral's typical hexagonal crystal form and hopped terminations.

A small and mostly unimportant deposit in Les Farges, France, has produced some remarkable pyromorphite. Discovered in 1963 by specimen collectors, this deposit produced gorgeous crystal groups of the lead chlorophosphate. Vibrant lime-green, sharp crystals to an inch or more formed plates a few inches across. They created a lot of excitement when they appeared in the latter half of the 1970s. The quantity of these beauties was not large when compared to the production from Bad Ems and other localities described herein. Still, these green beauties rank high on the list of the world's finest pyromorphites.

Here in the United States, a lead deposit was discovered in 1783 near the town of Phoenixville, Pennsylvania. Mining began in 1853, and the deposit, named for the mine operator, Charles Wheatley, produced this country's finest pyromorphites until the discoveries at Kellogg, Idaho, in the '80s.

The Wheatley mine specimens tend to be hand size, with small to medium-size green hexagons tightly packed over the matrix. Crystal sizes tend to be under an inch, though larger crystals and specimens were mined in the early stages of ore extraction. The Wheatley mine was a very important source of lead and lead minerals during the Civil War, though Charles Wheatley had sold the properties by 1858.

Shortly after the Wheatley mine shut down around 1870, mining of lead ores began in the Coeur d'Alene district, near Kellogg, Idaho. Initially, gold miners were at work in the hills of the Idaho panhandle, but silver-rich galena was abundant there. By the 1880s, gold was no longer the main target—lead and silver had emerged as the metals of value. With their extraction came phenomenal pyromorphites, the likes of which had never been seen!

What makes the Idaho specimens the world's best pyromorphites is the sheer number of specimens, the amazing quality of the pyromorphite, and the timing of the discovery, which made it possible to save huge quantities from the Bunker Hill mine, in the Coeur d'Alene district, near Kellogg, Idaho.

Unlike quartz, tourmaline, selenite, and many other species, which can form crystals measured in feet, Idaho pyromorphite crystals seldom reach 2 inches in length. Such modest size is offset by a phenomenal assortment of colors and tight crystal clustering, producing plates of bright, colorful



BOB JONES PHOTO



BOB JONES PHOTO/GROBEN COLLECTION



BOB JONES PHOTO

TOP: Variations in the chemical content within this specimen produced remarkable multicolored crystals.

BOTTOM: The Bunker Hill mine produced some of the world's finest pyromorphites after ore mining ceased in 1981.

crystals so large miners sometimes had to break them apart to carry them out of the mine. In one case, specimen miners at Bunker Hill had to use an electric cart to haul one treasure to the lift.

Equally large—and even larger, in some cases—were the thick botryoidal masses of orange pyromorphites often found lining the lower portion of some crystal pockets. The Coeur d'Alene mining district deposit is made up of a series of replacement veins in rocks that date as far back as the Precambrian, over 500 million years ago.

Though choice pyromorphite was found off and on throughout the years of mining here, the most amazing discoveries, made between 1979 and 1982, are what raised them above all others.

In a *Mineralogical Record* article, Kellogg locals Jack Crowley and Normal Radford state that the pyromorphite is “easily the best found in the United States in over 50 years” (Vol. 13, No. 5, page 284). In the same article, Houston Museum of Natural Science president Joel Bartsch states that Idaho pyromorphites are “the finest pyromorphites ever found”. This same sentiment was also expressed by the fellows who actually mined the specimens. Surely, the great quantity of specimens that hit the open market—many thousands, according to those involved in mining them—the amazing crystal form seen in the specimens, and their vibrantly rich color variations have something to do with it! Without argument, Idaho pyromorphites are true modern classics.

Pyromorphite, a lead chlorophosphate, is the end member of a series of lead minerals. Mimetite, a lead chloroarsenate, is at the other end of this solid solution series. These two minerals are capable of interchanging their radicals, phosphate and arsenate. This creates visible changes in specimens. In most cases, a pure end member of this series is unlikely, since both radicals are common in many ore deposits. At Kellogg, however, the brightest green pyromorphite is considered a virtually pure end member. The Les Farges specimens are also practically pure phosphate.

If the phosphate dominates the chemistry of a specimen, the mineral is labeled pyromorphite. If the arsenate radical comprises over 50 percent of the mineral's composition, it is mimetite. All the Bunker Hill specimens are composed of less than 50 percent arsenate, so they are all pyromorphite, regardless of their color and external form.



LYNN VARON PHOTO/WAYNE SORESENSEN SPECIMEN



LYNN VARON PHOTO/WAYNE SORESENSEN SPECIMEN

When their arsenate content is high enough, the specimens are considered arsenian pyromorphite. They often take on a rounded crystal form and occur in aggregates of subbotryoidal form. Huge quantities of this brown to orange pyromorphite were found in the Bunker Hill mine.

Pyromorphite is a hexagonal mineral and its crystals are sharp and well formed when they lack the arsenate radical. As the arsenate content increases, the crystal shape changes to the more common barrel shape. At the extreme end, the botryoidal shape forms when the arsenate content is significant. The entire range of these crystal forms is seen in the Bunker Hill mineral suite.

The Idaho pyromorphite specimens that qualify as the world's finest are the bright yellow-green to rich green, well-crystallized specimens. These are followed by the exceptional tan to brown, brown to orange, and orange to red-orange botryoidal specimens, which are far superior to similar specimens from any other source.

The discovery that really put Kellogg on the “world's best” map was made in the Deadwood-Jersey vein on the 9 level of the Bunker Hill mine, just before it was scheduled to be closed! A series of pockets was opened that produced plates more than 2 feet across bearing 1-inch and larger crystals. Larger specimens were broken up so they could be brought to the surface.

The majority of the crystals here are slightly barrel shaped and in aggregate arrangement. They also form in hemispheric masses. The hexagonal crystals are mostly hopped, with hollow terminations. They may also be color zoned. Some are a lighter green shade around the tips of the crystals, while others are yellow at the base, tending toward a tan termination.

All too often, when active mining underground ends, so does any chance of finding fine minerals. Granted, plenty of old, abandoned mines have been searched and choice specimens have been recovered. I

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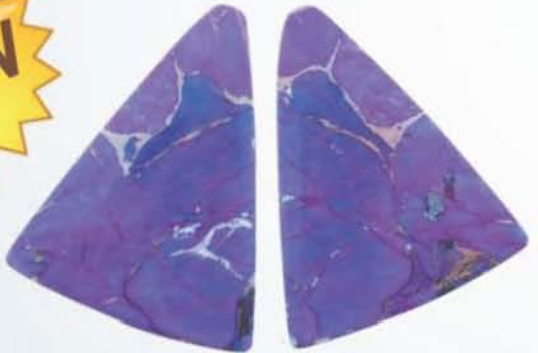
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Kellogg, Idaho, Pyromorphites from page 14



This closeup of Bunker Hill mine pyromorphite shows the unusual ragged terminations of the crystals.

have spent many a day underground in old mines, with reasonable success.

Ore production at the Bunker Hill mine ended in 1981, though specimen collecting was carried on into 1982. In the last days of ore mining, contract miners opened a series of pockets that, as described above, produced superb pyromorphites.

In October 1981, a vug was opened that was big enough for a person to crawl inside. The collectors started removing specimens from the outer perimeter and worked their way to the back of the pocket. The hundreds of specimens that came out of this find were arsenian, ranging in color from brown to yellow to orange. Yellow crystals up to 2 inches long were also found in this pocket.

The next month, more pockets were opened and more specimens were recovered. Some of the finest yellow-green to olive green crystals, in plates a foot or more across, were found here. Others in this remarkable specimen cache ranged in color from yellow to orange.

In the last month of mining, more crystal pockets were being worked for specimens. In December 1981, remarkable specimens of this lead mineral were being extracted by specimen miners under the benevolent eye of local bosses, who realized the value of the specimens. They had hit an amazing pocket, which took two miners, who mined ore for the company and collected specimens in their free time, three weeks to clean out. The finest specimens came to grass in their lunch buckets, which naturally limited the size of specimens collected.

It was in the very last days of that month that the best pocket of all was opened. One day before the official closing of the mine, a remarkable pocket was breached. The finest green pyromorphites hung from the ceiling of the pocket. The floor of the pocket was lined with bright-orange botryoidal specimens of the mineral. Later tests showed that the arsenic content of the deep orange to red-orange botryoidal specimens was 25 percent. The remainder was phosphate, hence, all were pyromorphite.

The company, realizing that something of value was being mined, got involved in the dig. The miners were able to siphon off the best specimens via the time-honored lunch bucket method, as they extracted specimens for the company. This company "batch" was sold separately from the specimens the miners dug. Final specimen mining of this big pocket actually spilled over into January 1982, but that was it at the time.

To read a detailed account of these finds see the chapter on the Bunker Hill mine in the remarkable book *American Mineral Treasures* (Lithographie LLC, 2008, p. 146). The book describes America's finest species in a series of chapters written by a host of mineral collectors and professionals, of which I am one.

The chapter on the Bunker Hill finds was written by my friends Wayne Sorensen and Wayne Thompson. Sorensen gives readers a glimpse into the quantity and quality of these late finds. He alone held more than 3,000 specimens in his hand at one time!

The specimens from these '80s finds were offered for sale in Tucson in February 1982 by dealer Harvey Gordon, who set up shop in the Travelodge along Interstate 10. The specimens caused such a stir that collectors lined up outside the motel room door just to see the amazing pyromorphite find.

A few more specimens were found in 1987. More importantly, the mine was later sold to a specimen miner who made a serious search for pyromorphite pockets. This effort, which collectors should admire and compliment, opened more pockets. From 1994 to 1996, thousands of specimen pyromorphite groups were mined.

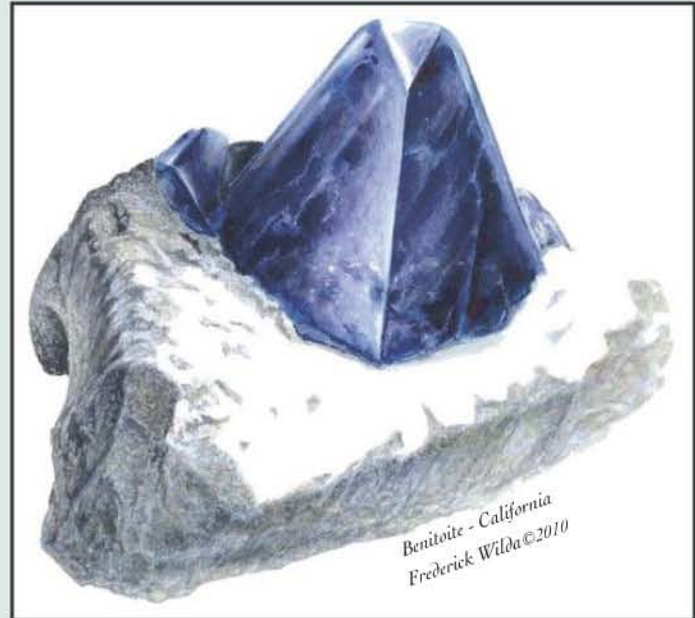
These latest finds, coupled with the thousands of specimens that came from the Coeur d'Alene district in previous years, have positioned the Kellogg, Idaho, mining area as the premier source of the world's finest pyromorphite specimens. Collectors are fortunate that the Idaho specimens were found so recently and in such great numbers that quantities of fine specimens continue to be offered for sale today! ♦

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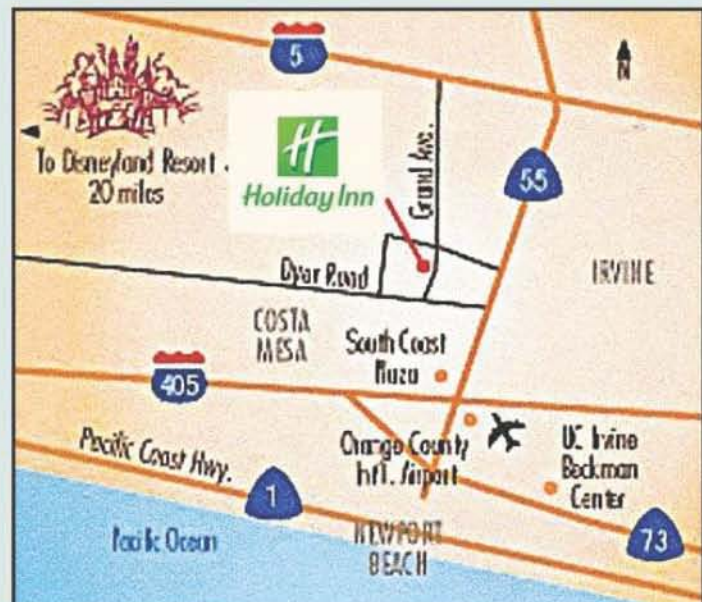
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S HOP TALK

by William A. Kappeler

Polishing Problems

From time to time, I get questions from *Rock & Gem* readers about how to fix things that go wrong in the cabbing process. Probably the most common problem I hear about is the pesky little flat spot on the top of the cab that isn't noticed until the final polishing. Of course, by that time, the only possibilities are either to pretend that you intended all along to have a flat spot there or go back to the sanding steps and do what should have been done in the first place.

Well, let's talk about what should have been done in the first place. The usual method of beginning to shape the dome on the grinding wheel is to grind around the perimeter of the stone, starting down at the girdle and slowly increasing the angle while progressing toward the top of the dome. This is commonly referred to as "peeling the apple". If it is done right, the peeling will end when the little flat spot is gone.

Then, to remove all those ridges that look like a mountain on a topographical map, the lapidary will shift from peeling to rocking the stone from the girdle to the dome while moving around the perimeter. At this stage, the flat spot may not quite be gone, but it can easily remain unnoticed by the lapidary. It is very easy to think that the flat is being ground away when, in fact, the wheel or disk is not even touching it. This is why the stone should be scrutinized carefully before going to the first sanding step.

It is easy to miss a tiny flat hiding in all of those grinder marks. If the stone has been scrutinized, but the flat spot is still missed, perhaps the lapidary, like me, has "mature" eyes. There is no shame in using a loupe or magnifying glass to aid the eye at this stage. When you are sure that the flat spot is gone, you can safely go on to the sanding and polishing stages, secure in the knowledge that the flat will not come back.

The second most common cabbing question people ask me concerns an unsatisfactory polish. Unlike the flat spot, which is pretty straightforward, there are lots of ways to ensure a good polish. First, of course, it is necessary to start with a stone that will take a polish. This sounds



rather obvious, but there are some stones that look like they might take a nice polish, but won't. Some types of stone will polish well in spots, but not in other places. The list of potential problems is almost endless. Sometimes, these problems can be discovered in the early stages of cutting and grinding, and sometimes they cannot. Life just ain't fair.

Assuming that the chosen preform is from a stone that will take a polish, the most important thing is to be sure that the work in the grinding and/or sanding stages is done as perfectly as possible. Every minute trace of the previous stage must be removed before moving on to the next. A loupe or magnifying glass is almost indispensable for checking these fine details at each stage.

Finally, there are a lot of different polishes on the market, from diamond to metal oxides, and some stones respond better to one type or another. If the polish is good, but you think it might be better, you can experiment with other polishes. There are guidelines you can follow for matching certain polishes and stones, but trial and error may be the only way to hit the sweet spot. ♥

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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All in the Family



A Daughter Learns to Facet from Her Dad

Story by Rachel Dery



PHOTO COURTESY DAVIDSON'S JEWELLERS

I cut this round checkerboard amethyst, which is set in a pendant designed by Davidson's Jewellers of Ottawa, Ontario, Canada.



RACHEL DERY PHOTO

Dad has taught me to be focused as I facet to lower the chances of making an error.

It was Thanksgiving morning. I was 7 years old. We had a few hours before we went to join the family for dinner. Dad asked me, "What do you want to do today, honey?" I didn't hesitate. "I want to cut a stone with you, Daddy," I said with a smile. I'd been patiently waiting for him to ask, desperately hoping it would be soon. I'd been eagerly anticipating this exact moment.

We cut my first stone that morning. Thus begins a story of a daddy and a daughter who share a passion for the art of gem cutting; a story of an extraordinary skill passed from father to child; a story of talent transferred from generation to generation. My journey begins with my dad's story.

My dad, Roger Dery, isn't just any gem cutter. In 1981, he began a wholesale colored stone business, Spectral Gems. Over the next 20 years, he was a traveling colored stone dealer, carrying calibrated gemstones that had been cut overseas. In 2001, he embarked on the journey of learning to facet his own gemstones. He re-cut his entire inventory and decided to take his company in a different direction. Spectral is now focused on precision-cut gemstones and is known throughout the country for quality gemstones and award-winning faceting.

That first stone of mine wasn't anything special; it was just an ordinary piece of white quartz. We didn't even do a fancy design, just a standard round. I cut that first stone sitting on Daddy's lap, his hand over mine on the quill. Honestly, Dad probably did more of the cutting than I did, but I was fascinated by it anyway. I couldn't wait to try it again. It was the first part of our journey, the beginning of this daddy and daughter sharing their passion for the thing that they loved.

We did it again the next Thanksgiving, then at Christmas and Easter. After a few years, he could leave me alone at the machine for a few minutes at a time. We moved beyond the basic round to ovals, squares and trillions. I even cut my first cabochon. Coincidentally, my favorite shape is the same as Dad's: the classic antique cushion.

And then, I sold my first stone: a 1.5-carat oval indicolite tourmaline. A jeweler called my dad looking for an oval blue-green tourmaline. My dad thought of my stone and said he would have to check with me, since I had cut it. The jeweler was enamored with my story and shared it with his customer. His customer purchased the stone from a 10-year-old gem cutter for his 10-year-old granddaughter. I proudly met the jeweler and reluctantly turned my stone over to him. I was selling my very first stone for \$365—and I could hardly bear to part with it.

A year later, Dad could even get some work of his own done while I cut. I was more confident and we were branching out to aquamarine, garnet, morganite and zircon. I couldn't get enough time in the shop. I loved learning about the Mohs hardness scale and mineral families, heat treatments and dopping techniques, different ways to polish and newly found mining sites. I was fascinated by where different minerals come from and how they are mined. I hung on words like grit, preforming, pavilion, crown, girdle, star and main facets, and culet.



One of my round cab-top morganites has been set with pearls in a slide designed by Michael Sherman Jewelry Designs of Carmel, California.



A hexagonal morganite I cut with scissor-style faceting has been set in a ring designed by Diamond Design of St. John's, Newfoundland, Canada.



The first stone I cut with Dad, at the age of 7, was an 8-millimeter round white quartz.

As an 11-year-old, I finally decided it was time for me to start my own business and sell my stones. Rachel's Rarities was born. I chose the name because I love how each stone is rare in its own way, with unique qualities and characteristics. Each stone is different and no two will ever be exactly the same. I created a logo and invoices, and from then on my gems were sold in Rachel's Rarities stone papers.

I tagged along with Dad whenever I could. I even got to join him in Tucson for the annual gem show. Dad said I was good at choosing rough (I'd been looking over his shoulder for years). People smiled at the 11-year-old who knew to lift the rough to the light in order to determine its clarity.

Sometimes, a kindly rough dealer would say I could choose a piece of rough for free. Everyone thought it was adorable that an 11-year-old had her own gem-cutting business. Little did they know what they had gotten themselves into. They thought I would just choose the largest piece, but they quickly realized I knew what I was doing. I had, of course, been trained by the best. I would sort, examine and discard with deliberation until I had made my decision. I never failed to leave without an excellent piece of rough that the dealer should have sold for a pretty penny.

Then I began purchasing my own rough with the proceeds from my stones. Systematically determining "my" piece of rough was my favorite part. I loved discussing with Dad what shape it would cut and what size it would become and what color it would end up. When I finally made my decision, I would proudly put down my money and watch the dealer write out the invoice to Rachel's Rarities. I couldn't help leaving with a smile on my face.

Dad finally had to buy a second machine so we could work at the same time. I thought (and still think) that nothing is cooler than cutting across from him on our own machines. The time arrived when I finished half a stone without him. Soon after, I cut the stone that I just couldn't sell: a rectangular cushion purple spinel from Ruaha, Tanzania. It now sits on my finger in a ring that I received for my 15th birthday. I love looking at it. It brings back memories—time with Dad, our mutual passion for faceting, and our love for gems.

I'm 17 now and Dad and I are still cutting together. I don't sit on his lap anymore and he doesn't have to guide my hand with his. We cut our own stones, chatting across the room as we work. Dad's teaching me more and more, but showing me less and less. He tells me how and I try it. He says I have to learn to figure things out on my own. I still ask lots of questions and I still make lots of mistakes, but he doesn't have to check on

me nearly as often. He says I'm a natural. I think I just had an exceptional teacher.

I've sold a lot of stones since that first one—30 to be exact. The proceeds from the stones I sell go into my college savings account. With all the other commitments that come with being in high school and a year-round competitive swimmer, cutting with Dad doesn't happen as often as I'd like, but I find a few spare hours to join him once again at the machine. Sometimes, cutting with Dad is the best remedy for a stressful day. It reminds me of when life was simple. It helps me remember what is important in life. Going to the shop is my way to relax.

My stones still go into his inventory in Rachel's Rarities stone papers. Sometimes, I still make out invoices for him when one of my stones sells. I always want to hear about the people who purchase my stones. I like knowing where my gems are going to "live". Sometimes, I get to see pictures of the finished jewelry, and every once in a while I even get to meet the new owner of my stone. I love getting to know gemstone lovers like myself and seeing them wear a stone that I cut. A conversation between two gem lovers is never boring.

My favorite part about cutting stones is discovering the fire and sparkle waiting to burst forth. I love gemstones for their beauty and for the time and patience that went into unearthing that beauty.

This daughter has learned many lessons from her time in the shop with Dad. I've learned discipline and determination from the times I've had to finish a stone, even when facets wouldn't match up or a piece chipped off the stone or an inclusion appeared. I've learned endurance and resolve from all the times my stone didn't want to polish or the transfer was crooked or I hit the wrong index setting. I've learned not to sweat the small stuff. At 8, my world was coming to an end when my stone popped off the dop. It never fazed Dad; he said it just happens sometimes. Now I know it's merely a part of the process.

The lessons I've learned in gem cutting help me in life, too. Much like life itself, faceting a stone can be a long process with many problems and issues to work through along the way. You could say I've learned a few life lessons from the art of gem cutting: perseverance, patience, appreciation of hard work, preciseness, and many more.

There have been many other milestones in the nine years since I started cutting and there are many more still to come. I still haven't cut a pear shape or a marquise; I



RACHEL DERY PHOTO

During preforming, I form the rough into the shape I want and take away unwanted material.



RACHEL DERY PHOTO

After polishing the pavilion, I am rewarded with a glimpse of the splendor of the finished gem.



RACHEL DERY PHOTO

Cleaning the stone with a paper towel and alcohol allows the fire and sparkle to burst forth.

just can't bring myself to do it. They seem so inferior to me compared to the antique cushion. So, one by one, I just keep poppin' out antique cushions. Perhaps I should vary my designs a bit.

I've been watching Dad as he creates designs in GemCad lately. I'm thinking I should learn how to create my own designs. Maybe I'll start getting the hang of that soon. I'll also have to learn how to dop. Dad says it's not so hard. I haven't gotten around to it, but I figure he'll be teaching me that any day now. Once I know how to dop, I'll be able to finish an entire stone by myself.

I've been on his case about taking me on one of his buying trips to Tanzania or

Madagascar for a while now. He's just finished his thirteenth trip to Africa, and I'm thinking it's time for me to join him and see where the rough originates from.

We've come a long way since that first stone nine years ago, but I don't think it's the end of the story. Rachel's Rarities is still in business. The journey of a daddy and a daughter cutting gems isn't finished yet. We'll just have to see where the next stone takes us. Who knows what sort of facet we'll find in the road. 💎

Rachel Dery is a 17-year-old high school senior who lives in the greater Detroit area of Michigan. She hopes to combine her love for gemstones, journalism and history in her fu-

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ROCK SCIENCE

by Steve Voynick

The Deccan Traps

Although they are best known as the source of spectacular zeolite mineral specimens, India's Deccan Traps have another claim to geological fame: Many scientists link this enormous basalt formation, one of the world's largest volcanic provinces, to the Cretaceous-Tertiary (K-T) extinction that wiped out the dinosaurs and many other forms of life some 65 million years ago.

"Deccan" (pronounced dek'kan) is an anglicized form of the Prakrit *dakkhin*, meaning "south", a reference to the southern Indian subcontinent. The term "traps" comes from *trappa*, Swedish for "stairs", which alludes to the steplike hills that dominate the Deccan topography. The Deccan Traps cover much of central and southern India to depths of up to 6,000 feet.

Massive late-Cretaceous volcanic eruptions created the Deccan Traps. The Indian tectonic plate (actually the Indo-Australian Plate) had then just separated from the African plate and was drifting northeastward over the "Réunion hot spot", a mantle plume that underlies the Indian Ocean island of Réunion. Mantle plumes, or hot spots, are columns of magma that extend from the earth's molten core through the mantle almost to the surface. As the Indian plate, fractured by its separation from the African plate, drifted over the Réunion hot spot, enormous quantities of basaltic magma erupted onto the surface.

These eruptions began 68 million years ago. Over the following 5 million years, an estimated 300,000 square miles of basaltic magma extruded onto the surface in massive floods that solidified into superposed individual layers of basalt from 3 feet to 400 feet thick. Finally, 60 million years ago, as the Indian plate continued its northeasterly drift, the fractured section through which the magma had erupted passed beyond the Réunion hot spot. A stronger section of the plate "capped" the mantle plume and ended the volcanic activity.

The formation of the Deccan Traps coincides with the K-T extinction event, which decimated life on earth. Some researchers now believe that the Deccan eruptions actually caused the event by releasing vast volumes of volcanic gases that catastrophically altered worldwide habitats and climates.

But pinpointing the cause of the K-T extinction has been complicated by the Chicxulub (chik'shoo'loob) meteor, which impacted Mexico's Yucatán Peninsula and



the adjacent Gulf of Mexico 65 million years ago, seemingly simultaneously with the start of the main phase of the Deccan eruptions. This meteoric impact generated worldwide clouds of sunlight-blocking, climate-altering dust and debris. After the 120-mile-wide Chicxulub crater was discovered in 1991, some scientists considered it to be the "smoking gun" of the K-T extinction.

But recent radiometric dating of Deccan rocks places the beginning of the Deccan eruptions 3 million years before the Chicxulub meteor impact. Paleontologists note that, during these 3 million years, worldwide numbers of biological species were rapidly declining, ostensibly because of the release of large volumes of climate-altering volcanic gases, meaning that the K-T extinction was underway well before the impact. Accordingly, many paleontologists now suggest that the dramatic global warming following the Deccan eruptions had already doomed the dinosaurs, and that the Chicxulub impact merely accelerated their demise.

The fact that the Chicxulub impact apparently occurred simultaneously with the main Deccan eruptive phase has produced another intriguing theory: that the powerful, worldwide shock waves generated by the impact further fractured the already-weakened Indian plate to actually trigger the main phase of the Deccan eruptions.

Increasingly accurate radiometric dating of Chicxulub and Deccan rocks are providing a better understanding of the events that led to the K-T extinction—and to the creation of those wonderful zeolite specimens from the Deccan Traps. ♦

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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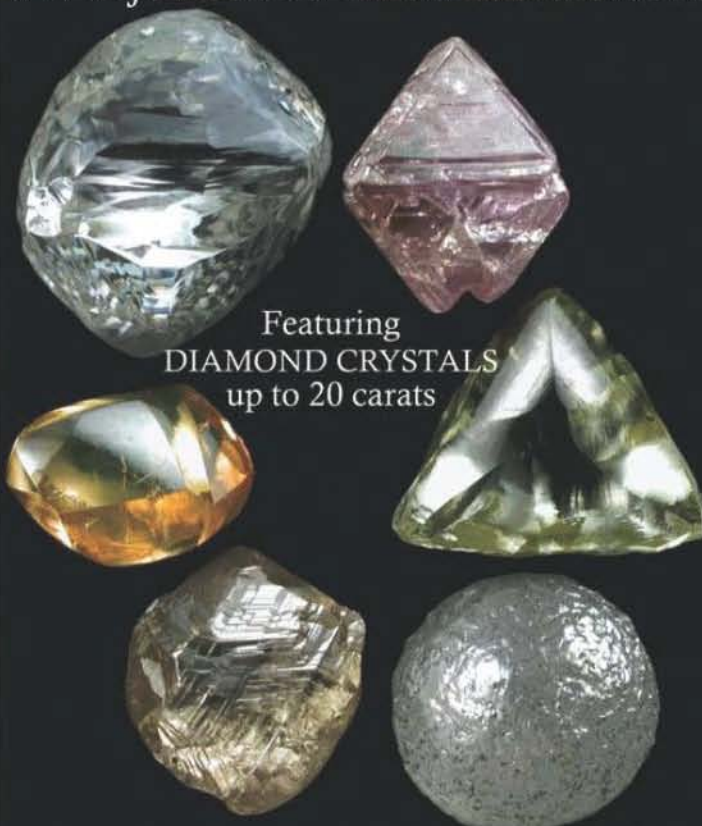
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FIELD TRIP



BUSH FARM MINERALS

Harvesting Crystallized Specimens in New York

Story and Photos by Michael Walter



Large, lustrous, damage-free uvites like this cabinet specimen can still be found at this classic East Coast locale.

St. Lawrence County is the most prolific mineral-collecting region in New York State and possibly one of the finest in the country. It contains numerous classic localities that have produced fine quality minerals in well-crystallized specimens as early as the mid-1800s. The Bush farm is one of the most important of these historic sites.



Heavy equipment is useful, but not required, for removing upper soil and rock layers from the mineral-bearing rocks at the Bush Farm collecting area.



Tremolite is the mineral that is most commonly found at the Bush farm.



Diopside crystals from the Bush farm can attain large sizes and have good crystal form.

The mineral occurrence is located southwest of the village of Richville, but falls within the bounds of the famous mining township of Gouverneur, New York. Uvite, diopside, tremolite, fluorapatite, pyrite and mica comprise the litany of well-crystallized species found at the Bush farm. This site is most famous for its tourmalines, and for uvite, it is second only to the famous occurrence on the Powers farm in the northern part of the county.

Classic specimens are most often simply labeled "Gouverneur, New York", while more contemporary pieces may have "Richville", "Reese farm", or "the Jones farm" on their labels. Because of the tourmaline's rich brown color, many specimens have been labeled "dravite". More recent analysis has shown these tourmaline crystals to be uvite in composition.

Unlike so many other classic East Coast localities, the Bush farm remains accessible to mineral collectors. Decades of serious digging have made it challenging to find good specimens on this property; however, fine examples have been produced in modern times. Below the soil surface, collectors will encounter highly metamorphosed marble of Grenville age (approximately 1.1 billion years

old) that contains the target species. This marble has openings that worm their way throughout the country rock. They are fractures that have been mineralized by well-formed crystals and were later filled by massive calcite. Near-surface fractures have subsequently been weathered free of the calcite, exposing the crystals that are so coveted by area collectors.

The species of minerals to be found at the Bush farm include diopside in blocky, opaque, white, low-luster crystals. They can reach 3.9 inches in length, are very common, and are often found in large aggregates in calcite or as linings within fractures. Diopside, as well as other species, is often badly stained by iron oxides, which can be removed by various cleaning methods.

Rock & Gem gives locality information for reference purposes only. Readers should never attempt to visit any of the sites described in this publication without first verifying that the location is open to collecting and obtaining the permission of the land and/or mineral rights holders.



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Tremolite is also common and crystals can reach over 5.9 inches in length. It forms in well-developed blocky to acicular crystals that have high luster and nice translucence. The terminations of these crystals are normally poorly developed and in some cases are almost fibrous.

Pyrite is seldom found in good crystals here. More often, it will be observed in concretion-type aggregates in the marble or massive calcite. Mica is uncommon, but when found it is in clear to silver colored books up to 3 inches in diameter. Fluorapatite is uncommon in large sizes, but can be found in beautifully formed crystals of a pleasing blue shade. Individual crystals can exceed 1.9 inches, but are more commonly 0.39 inch or less in length and translucent to transparent, with high luster.

The primary targets mineral for collectors visiting the Bush farm are the magnificent tourmalines. Reaching sizes in excess of 5.9 inches, they are impressive to say the least. The luster on good specimens is mirrorlike and the color a deep, rich brown. Average specimens will be a medium brown and have less translucence than the best examples. When doubly terminated, the crystals occasionally show well developed hemimorphism. Hemimorphism is when the crystal has different forms on each of its two ends. In rare cases, the terminations are complex and steep. Unlike tourmalines from other regions, these crystals are almost never striated. Loose crystals can be found, as well as fine matrix specimens. Clusters of crystals are rather unusual; individual crystals that were once part of larger groupings are most common. In some cases, if all the pieces of a pocket are retained, crystal groups can be reassembled.

Over the long history of this collecting area, a great deal of serious work has been done to discover nice specimens. Documentation shows that, in the distant past, collectors used aggressive techniques such as dynamite to open the rock. In more recent times, there have been several attempts to find tourmaline by using backhoes to remove the overlying glacial soils and weathered bedrock. Even with the employ of these methods, fine specimens have always been uncommon.

In the 1970s, I first heard of this mineral occurrence and found myself making the trip to try to discover some of these interesting tourmalines. After paying Mrs. Bush the digging fee, I navigated the electric fences, swampy field, barbed wire, and curious cows to find the collecting area. The location was on a small, low-lying ridge that was being used for pasture land. A mix of large deciduous trees, small shrubs, and briars blanketed most of the ridge. Follow-



Steeply terminated crystals are uncommon at the farm, but can be found with effort.

ing the cow trail, I came upon two diggings that showed potential.

The first digging was in a bank at the beginning of the cow trail. It looked like no one had dug there in quite some time. A ledge had been undercut, but no fresh material was exposed. There were, however, large chunks of marble with embedded tremolite. The light-colored tremolites crystals could be seen disseminated throughout the rock. I was not able to find any signs of tourmaline at this location, so I continued along the path in search of better prospects.

About 54 yards farther up the trail, on the other side of the ridge, the vegetation began to clear and more extensive diggings came into view. Straight ahead of me, at the base of a huge maple tree, was what looked to be the most recent digging at the locale: a large pit dug into what looked like tailings from other collectors. I hopped down into this pit and found myself to be about 6 feet below the surrounding ground.

After removing the loose rubble from the floor of the pit, I found the bottom of the hole to be on bedrock of similar composition to the first digging found on the other side of the ridge. Within this light-colored tremolitic marble were brown stringers of massive tourmaline. These thin tourmaline stringers seemed to be the indicator to follow, so I set to work with crack hammer and chisel and began excavating. After moving a little over 3 feet through this relatively soft rock, I came to what could be best described as a pocket. The entire opening was no larger than a grapefruit, but it was entirely filled with a dark-brown material like caliche and what appeared to be broken tourmaline crystals. I gingerly removed the grungy-looking sections of the pocket and inspected them more closely in the sunlight.

With my fingers, I was able to break away much of the coatings and get a better look



Nicely contrasting specimens of uvite on diopside such as this one are what collectors hope to find.

at the tourmalines. Most were only between 0.39 inch and 1.57 inches in their largest dimensions. There were no clusters from what I could tell and none of the crystals were attached to the wall rock matrix. It was easy to see that this pocket and the crystals it contained had seen better times. As poor as the pocket's contents appeared, it was evident that the crystals within it were fairly well formed and probably would have a nice luster once thoroughly cleaned.

Continuing on through the rock, I found a second and third pocket. All three seemed to be aligned with a bedding plain that dropped off away from the pit at about a 45-degree angle. Up to this point, I had been digging predominantly to my right as I faced this sloping bedding plain. Ready for a change, I started digging to the left instead. After removing about 7.87 inches of rock, I hit an opening about the size of a soccer ball. It had all the same characteristics as the previous pockets: broken crystals, a grungy brown material filling much of the void, and an apparent lack of crystal clusters.

When I had nearly emptied the pocket, I realized that there were actually crystals attached to the wall rock. Only one crystal looked to be undamaged. It was a stocky, brown point with a single termination that appeared to be about 2.36 inches long and was wedged in the bottom-most region of the opening. I was able to chisel a small hole below the pocket into which I inserted my 6-foot pry bar. I slowly applied pressure to the end of the bar and carefully pried out the crystal. Once out, it was easy to see that this specimen would make all the rest I had collected that day look insignificant. The grunge that coated it wiped away easily to reveal a damage-free crystal, perfectly formed and with the highest luster. Though this was my first day collecting at the Bush farm, it may rank as one of the most suc-

cessful days I have had at the location in my many decades of collecting there.

On another visit in the 1990s, I decided to try to find a new area on the ridge in which to dig. Below a small ledge back amongst the briars, there was evidence that the bedrock sloped back into the hillside. After several hours of serious shovel work, I began to open up a large, highly weathered area. Though no crystals were found in these soils as they were removed, I could see that the bottom of the large opening had a large fracture. I continued the excavation, which was now approximately 3 feet down into the fracture. The dirt being removed from this opening contained a few white tremolite crystals, but no tourmalines.

As more material was removed, the opening began to take shape. It looked to be a very large pocket, at least 6 feet in diameter. This pocket had been partially exposed on the surface, and over the centuries, any crystals within it had been weathered away into sand. The seam running out of the pocket's base ran under a layer of bedrock, which afforded it better protection, though the bedrock was also highly weathered.

Continuing on this trail along the fracture I was very excited. An enormous pocket of this size with a seam almost 1½ feet wide had to be a good sign. The sad news is that it wasn't. After following this seam for two days and exploring numerous offshoots, I found no decent specimens. Only a few small tourmaline crystals were recovered from a tiny section of calcite I found attached to one of the walls of the fracture.

In 2010, an area of the site was stripped of soil in preparation for the St. Lawrence County Rock & Mineral Club's annual August show. Several large seams were exposed and collectors once again enjoyed a period of increased access to the fine minerals that the Bush farm can supply. I was able to collect for several weekends in late September and early October and enjoyed collecting of the type that might normally have required weeks of intensive work. On my birthday, Sept. 25, I was treated to the best gift a field collector could experience: tourmaline pockets!

I had begun my dig by following a narrow tremolite seam downward into the marble. Within this seam, I was finding blue fluorapatite crystals, each of which were ⅙ inch or longer. Although not very impressive in comparison to that from other locales in North America, the fluorapatite at the Bush farm is an elusive species and difficult to find in nice crystals. The rock I was moving through was highly weathered and the digging was initially relatively easy. Along the way, I encountered a massive seam of solid brown uvite. No crystals

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Bush Farm Minerals from page 29



Holes that are dug down into unexplored rock produce the best results in collectible crystals.

were formed within the uvite, but it was an extremely encouraging sign.

At a depth of about 6 feet, the rotted material began to firm up and crystals that were "collector worthy" started to be found. Tremolite and diopside crystals up to 1.96 inches each, as well as the occasional lustrous brown crystal of tourmaline, started to show themselves. Then, suddenly, directly below my feet, an opening in the tourmaline seam appeared. The void was filled with gray glacial clay and nothing in the space was clearly visible. The first crystal I removed was broken into three pieces, yet it was still impressive. The single crystal of uvite measured 4.7 inches and would be considered huge for the locale. Mother Nature had broken this large uvite into three sections, but I was hopeful that it could be repaired.

As specimens were removed from this pocket, it was nearly impossible to tell much about their quality. I seldom make any attempt to clean specimens on site other than to lightly brush them off. Because the clay adheres tightly to these crystals, it was not until later that I discovered that many of them were of superior quality. Several were well formed, large, highly lustrous, and a rich brown. The crystals were translucent, and some smaller regions within them were gemmy in nature. On occasion, uvites were in combination with tremolite or diopside, making for specimens with nicely contrasting colors. This opening became a pair of well-developed pockets and was certainly a birthday present I will always remember.

The following weekend, my father joined me at the Bush farm. We quickly broke into a second tremolite seam, which was running parallel to the one I had already been working. This seam, however, was of staggering dimensions. It was an open void measuring approximately 6 feet by 13 feet and averaging about 1½ feet wide, from what I could see. The opening dropped down below the water table and continued for an unknown distance. The side I had en-

tered into had a large pile of debris filling it. While digging this material out, I found no clean specimens that were free of damage; most had been exposed to nature's wrath and were highly weathered. Over a period of several days, this seam was excavated and produced no noteworthy crystals.

CLEANING SPECIMENS

In my 35 years of experience collecting minerals from the Bush farm, probably the most challenging aspect of adding one of these great uvites to my collection has come after they were home. Cleaning these often fragile crystals is exceedingly difficult. Although tourmaline has a reputation for being hard and resistant to almost anything, these crystals are normally easy to abrade or break. Both chemical and mechanical methods of removing clay, stains, calcite, and other detritus can badly damage specimens. This is another reason damage-free specimens from this locality are so uncommon.

I recommend first drying specimens for at least a week in the open air, longer if the humidity is high. Next, quickly clean them with a toothbrush and water. Try not to immerse the crystals for any period of time, as they will occasionally exfoliate areas, especially faces on the terminations of crystals. It is better to just dampen the toothbrush and rub the clay or stain off the smooth crystal surface. If done gently, this will usually loosen the material enough for a quick rinse to wash away the residue.

Next, lightly remove any stubbornly clinging material with a razor blade, scalpel, or dental tool or with 000 steel wool. Take care to slide the blade or point between the crystal face and the overlying coating and never apply pressure to the crystal. Slide the tool away from the termination of a crystal, down and parallel to the surface of the prism's face, toward the center of face you are attempting to free of debris. The junctions of faces are where damage can be accidentally inflicted during cleaning, so give them extra-careful attention. Your

cleaning skills will improve with practice, so it's a good idea to bring home a supply of junk specimens to practice on.

Finally, to remove excessive iron oxide stains, soak the crystals in a warm solution of Iron Out and water. I only attempt this final step with good crystals that appear to be stable and to not contain any noticeable surface fractures. If you do elect to soak a specimen, it is recommended that you do not try any further mechanical cleaning methods until the piece has thoroughly dried.

The process of etching crystals out of massive calcite is seldom as successful with Bush farm specimens as it is with specimens from other locations. It seems that the crystals almost always crumble to dust once the pressure of the encasing calcite is removed. Furthermore, the calcite often fills cracks in the crystals and acts as a natural stabilizer. Immersion in acid etches away this stabilizer and the specimens just seem to fall apart. Selective surface etching techniques will sometimes produce positive results.

To get to the Bush farm from the town of Gouverneur, New York, which is located 105 miles northeast of Syracuse, take the Rock Island Road (County Route #11) four miles northwest. On a small rise, just before crossing the Oswegache River, turn right (north) onto Welch Road and follow it just over one mile to a white house, which is on your left, and a large barn, which is on your right. Pay your collecting fee (\$5 at the time of this writing) to Mr. or Mrs. Bush and get directions to the dig site.

In these times of ever-changing land use restrictions, finding places to field collect is challenging. Furthermore, being able to collect at a classic locale and find impressive specimens here on the East Coast is almost unheard of. The Bush farm offers rockhounds a rare opportunity to add great specimens from a classic East Coast locality to their collection. ♥



The underlying bedrock at the Bush farm diggings is highly metamorphosed Grenville-age marble.

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13-15—JOPLIN, MISSOURI: 5th annual Outdoor Rock Swap; Tri-State Gem & Mineral Society; Schifferdecker Park, 7th and Schifferdecker Ave.; Fri. 8-6, Sat. 8-6, Sun. 9-4; free admission; contact Joplin Museum Complex, 504 Schifferdecker Ave., Joplin, MO 64801, (417) 623-1180; e-mail: jmc-cwiseman@sbcglobal.net

13-15—SACRAMENTO, CALIFORNIA: Show; Gem Faire Inc.; Cal Expo/Bldg. A, 1600 Exposition Blvd.; Fri. 12-6, Sat. 10-6, Sun. 10-5; \$7 weekend pass; contact Yoo Nelson, (503) 252-8300; e-mail: info@gemfaire.com; Web site: www.gemfaire.com

13-15—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

14-15—DULUTH, GEORGIA: Retail show; Intergalactic Bead & Jewelry Shows; Gwinnett Center, Hall C, 6400 Sugarloaf Pkwy.; 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, delicats; contact Angela Couch, (888) 729-6904; e-mail: angela.couch@beadshows.com; Web site: www.beadshows.com

14-15—FOUNTAIN HILLS, ARIZONA: Retail show; Rick Obermiller; Fountain Hills Community Center, 13001 N. La Montana Dr.; Sat. 10-5, Sun. 10-4; adults \$2, children under 12 free; indoor show, mostly Arizona dealers, gems, minerals, jewelry, fossils, kids' activities, drawings, raffles; contact Rick Obermiller, 1332 N. Jesse St., Chandler, AZ 85225-1598, (602)826-2218; e-mail: obrocks@gmail.com

14-15—HAMILTON, MONTANA: Annual show; Bitterroot Gem & Mineral Society; First Interstate Events Center, Ravalli County Fair Grounds, 100 Old Corvallis Rd.; Sat. 9-5, Sun. 9-4; contact Steve Vieth, (406) 369-5489; e-mail: viethsteve88@gmail.com; or Mike McConnell, (406) 360-4944; e-mail: micker1949@yahoo.com

14-15—LEESPORT, PENNSYLVANIA: 43rd annual show; "World of Gems and Minerals"; Berks Mineralogical Society; Leesport Farmers Market Banquet Hall, Rte. 61; Sat. 10-5, Sun. 10-4; contact Jim Woodeshick, 246 State St., Hamburg, PA 19526; e-mail: brwoodpile@yahoo.com

14-15—WAUWATOSA, WISCONSIN: 54th annual show; Wisconsin Geological Society; Mueller Bldg., Hart Park, 72nd and W. State St.; Sat. 10-5, Sun. 10-4; adults \$3 (2 for \$5), children under 16 free with adult; 22 Midwest dealers, lapidary supplies, tools, books, rough material, slabs, finished specimens, cabochons, jewelry, carvings, fossils, children's activities, exhibits, displays, presentations; contact Paul Schmidt, 8213 Red Arrow Ct., Wauwatosa, WI 53213, (414) 771-8668; e-mail: pvs@wi.rr.com

14-15—WHEELING, WEST VIRGINIA: Show and sale; Near Earth Object Foundation, Smarto Centre Market, Prehistoric Planet; 2nd Presbyterian Church, 2001 Market St.; Sat. 10-6, Sun. 11-5; free admission; door prizes, museum-style exhibits; contact Ray Garton, PO Box 200, Barrackville, WV 26559, (304) 282-2306; e-mail: garton@prehistoricplanet.com; Web site: www.prehistoricplanet.com

20-22—MARTINSVILLE, VIRGINIA: 21st annual show; Treasures Of The Earth Gem & Jewelry Shows; National Guard Armory, 315 Commonwealth Blvd W. (across from Liberty Fair Mall); Fri. 10-6, Sat. 10-6, Sun. 11-5; free admission; jewelry makers, goldsmiths and silversmiths, gem trees, wire wrap, wire sculpture, pearls, stone beads, stone setting, amber, opal, mineral and fossil dealers, door prizes, grand prize, classes, sluice; contact Van Wimmer Sr., 5273 Bradshaw Rd., Salem, VA 24153, (540) 384-6047; e-mail: van@toteshows.com; Web site: www.toteshows.com

20-22—SANTA ANA, CALIFORNIA: Wholesale/retail show, "Spring West Coast Gem & Mineral Show"; Martin Zinn Expositions; Holiday Inn-Orange County Airport, 2726

continued on page 42

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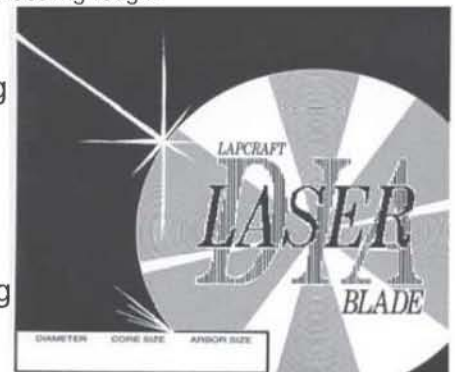
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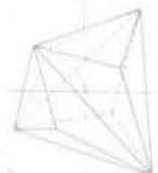
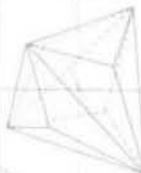
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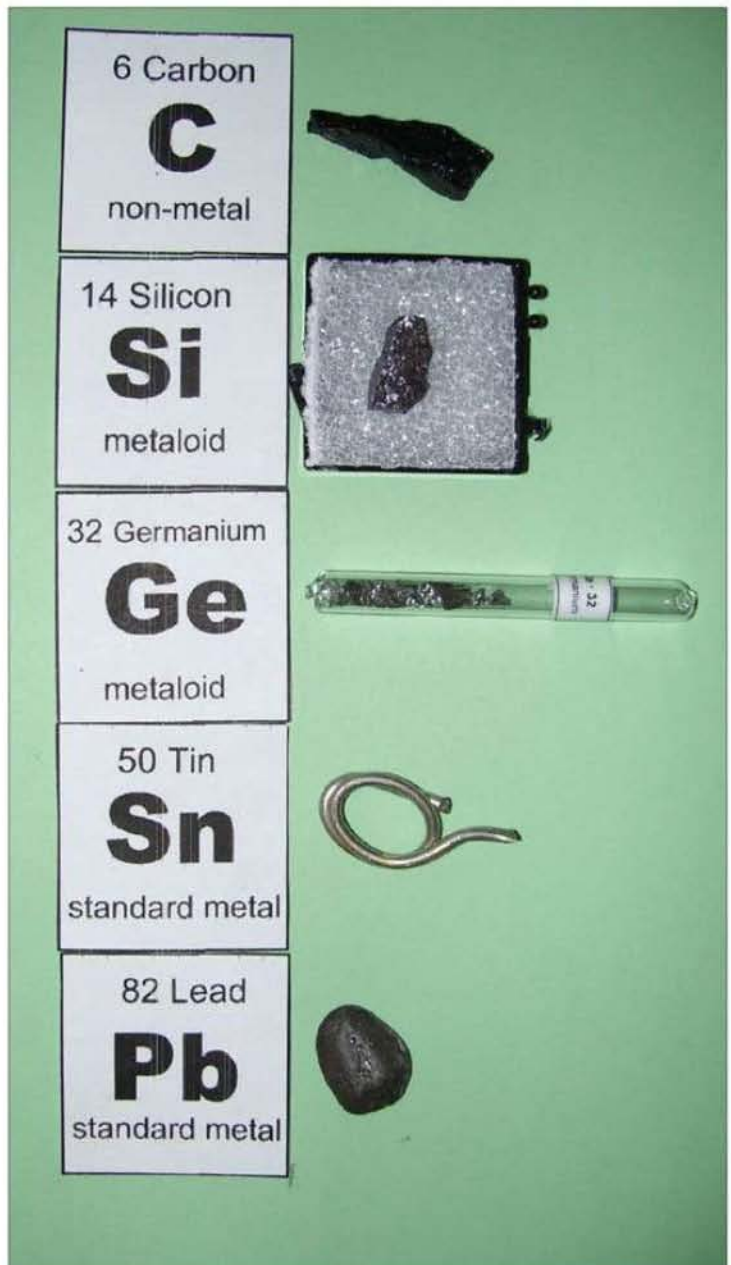
Samples of the Building Blocks of Minerals Can Enhance Any Collection

Story and Photos by Jake Gorczyca

I've had a lot of different collections over the years. The most notable include coins, postage stamps, seashells, and rocks, minerals and fossils. I have stopped collecting most of these things now, but I have not yet lost interest in my rock collection. I think that all of this began when I found my first brachiopod fossil at the age of 5. It has been 13 years since that day and I am still adding to my collection with every new specimen that I find. About one year ago, I added the Periodic Table of the Elements to my long list of collections. Though most of the elements have fairly drab appearances, their fascinating properties make them worth collecting.

I had always known about the elements—or rather, I knew of their existence—but I knew very little about them. In my high school chemistry class, however, I learned about how elements combine in nature to form compounds and that out of 92 naturally occurring elements 70 are considered to be metals. The rocks and minerals that make up my collection are made up of relatively simple compounds, some of only two or three different elements. Perhaps the most interesting thing I learned about the elements was the fact that all known forms of matter are composed of them. I find that simply amazing: 92 simple substances are the building blocks for billions and billions of things. I read once that six Lego® plastic blocks can be combined in more than 100 million different ways. It is the same idea with the elements, so I have now begun to call them “God’s Legos”.

Another interesting tidbit of knowledge that I received when reading about the elements is that, while each element has its own properties, the compounds that it can form do not always share those properties. For example, sodium is a poisonous metal that is so reactive it will just about explode in water and chlorine is a poisonous gas that is also very reactive, but when chemically



With the addition of the metalloid germanium, I was able to successfully collect all of Group IVA on the Periodic Table of Elements.

combined they form the compound sodium chloride or table salt, which is both edible and stable. The same is true in the reverse; carbon is pretty much edible and oxygen is not dangerous, but when chemically combined the two elements can form carbon monoxide, which can kill someone if inhaled in large quantities.

I also discovered that this same principle works with the elements' colors. With a few exceptions there are basically only five colors to the 92 elements: silver/gray, colorless, yellow, brown and black. Their compounds, however, can have dazzling colors. For example, copper (brown), carbon (black), hydrogen and oxygen (colorless gasses) combine to form blue-green turquoise, dark green malachite, or deep blue azurite. All these interesting facts made the elements a pretty interesting subject for me to study.

I also realized that people have the wrong ideas about some of the elements. One of the biggest misconceptions is that table salt and sodium are the same thing. Sodium, as I mentioned before, is a kind of metal. Pure sodium is soft, silvery-white, and ductile (ductile is another word for “bendy”). Table salt does not fit these descriptions because it is not sodium, but rather a sodium compound. Another such misconception is that hard

water deposits are calcium. Calcium, like sodium, is a silvery, ductile metal. Hard water deposits, on the other hand, are calcium compounds. Between a high school-level chemistry class and a little extracurricular reading, you can learn a lot of interesting things about the elements!

The chemistry class ended, but my extracurricular study of the elements did not. I read all I could about the elements and I learned all I could about how pure elements are used in industrial and domestic applications. I gradually came to realize that there were a great many elements lying about my house in uncombined form. If I wanted to, I could start a collection of the Periodic Table. I was interested in the elements for a number of reasons, and I now realized that I could collect them fairly easily so I decided to see just how many I could find.

COLLECTING THE ELEMENTS

A few elements were fairly easy to find. My rock and mineral collection already contained pure samples of sulfur, carbon (in the form of coal), gold and bismuth. I also found a number of elements in my home: chromium is present as a steel coating; steel is, by definition, at least 98 percent iron; lead is used to make fishing sinkers; zinc can be found in coins; and tin and copper are both used in electrical and plumbing applications. I found samples of all of these in either my home or my garage, and I was quite content to start my collection with them.

Some of the elements were a little harder to find. Doing some snooping through a book about rocks and minerals, I discovered that a lot of incandescent light bulbs have filaments that are made of tungsten. I eagerly smashed open the first dead light bulb I could find and extracted its tiny filaments. I had to tape them to a little label to keep from losing them because they were smaller than the hairs on my head! **Safety note:** Do not break open a light bulb until you are sure it does not contain mercury, a poisonous element!

Later, I found a package of jump rings in a craft store that had been plated with rhodium. I happily purchased them and added my first "exotic metal" to the collection. That store also carried platinum-plated pins, and I bought some of those for my collection, as well. My dad was able to save some silver that he found in an industrial electrical component—with his company's permission!—and I purchased the alkaline earth metals calcium and magnesium from a catalog that offered chemistry supplies. By the time my church science club's chemistry week came about, I had 18 samples of elements to share with the club.

When chemistry week ended, I did not stop adding to my collection. I added the



All of these household items contain samples of some of the elements in their pure form.



Sphalerite (left) is composed of the elements sulfur and zinc, neither of which is brown.



ABOVE: The elements aluminum, nitrogen, sulfur, copper and carbon illustrate the five basic colors of the elements: silver, colorless, yellow, brown and black.

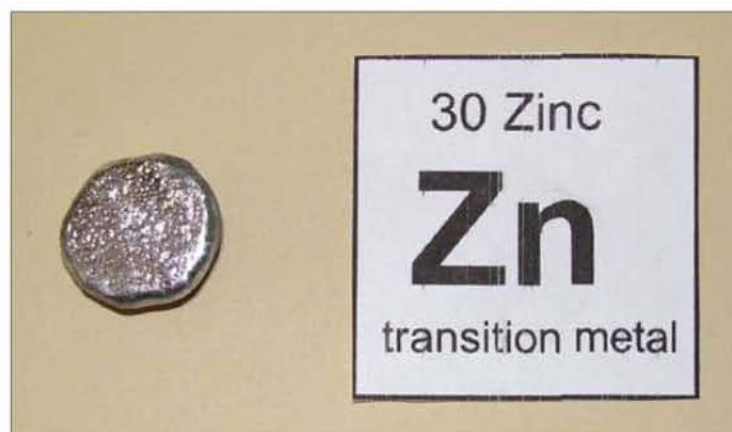
RIGHT: Boron can be found in minerals like tourmaline, axinite and hambergite; I found my pure sample on eBay.



I keep toxic elements, like lead and silicon, in plastic display cases or bags to minimize contact with them.



I make an effort to store the reactive elements I have collected, such as this sample of the alkaline earth metal magnesium, safely.



The samples' labels list the elements' names, atomic numbers, symbols and types. This label identifies zinc as a transition metal with the symbol Zn and atomic number of 30.

metalloid silicon, which I found in the chemistry supplies catalog. (I did not want to bring silicon to the club because it is mildly toxic.) Then I added an older American nickel to the collection as a sample of the metal nickel, bringing my collection to 20 elements.

After that, I found nothing more for a while. Then I decided to look around online and see if anyone offered any products that were made of less common metals. I typed the word "vanadium" into the search engine, and to my surprise I found an entire online store devoted to the sale of element samples. I eagerly bought some of my favorite elements: vanadium, titanium and yttrium. Later, I bought selenium, boron, strontium and germanium, which completed Group IVA in my collection. I am glad that the Lord granted me self-control; otherwise I would have blown my life's savings on element samples and lost the thrill of the hunt in the process!

I store my collection in the same manner as my rock collection. I use plastic beading boxes because they are inexpensive and fairly durable. They also improve storage dramatically, seeing as each box can hold 20 samples. I house my benign elements—those that are neither toxic nor highly reactive—directly in the box's compartments with their labels, which give the element's name, atomic number, symbol and type. The toxic materials, on the other hand, I like to keep either in plastic bags or plastic cases to keep from touching them directly and to trap any dust that might fall off them.

I have to keep the reactive elements in plastic cases, as bags are easily torn or punctured and simply do not offer enough protection. My calcium samples will eventually corrode completely into a little pile of limestone powder even in a sealed plastic bottle, as some air is trapped inside. I have to keep the rest of the calcium in the container it originally came in, which, unfortunately, is not transparent. Until I can figure out what kind of oil will protect calcium from the air, I will simply have to retrieve a new specimen every time I wish

to display the element. My main goal in the area of storage is to keep the elements and their viewers safe from harm.

I am still on the hunt today! It seems that I am always discovering a new place where pure elements are used. My most recent addition to the collection was cerium. While reading about the lanthanide metal in an encyclopedia, I learned that most of the "flints" used in devices like lantern sparkers and some lighters are made of a material called "misch metal". Misch metal is made of about 50 percent cerium, so I accept it as a sample of the metal.

I have also added nitrogen to the collection, bringing the number of elements collected to 30. Nitrogen is one of the most recent additions to the collection, but it actually could have been the first. I would also say that nitrogen is the easiest element to find because the air that we breathe is more than 70 percent nitrogen! I simply took a clear tube, sealed both of its ends with masking tape, and presto! I had a sample of 70 percent nitrogen gas. If only I had thought of that earlier!

I have a short list of elements that I might soon be able to add to the collection. All members of this list are either difficult to retrieve or their presence in certain applications is questionable. There are certain flashlight bulbs that may contain krypton gas, but I haven't learned enough about those to add the bulbs to my collection just yet. The catalytic converters that have been put on all cars in the United States since the 1980s usually contain platinum, palladium or rhodium. I don't know how to distinguish these metals, so even if I found an old catalytic converter, I would not know which metal I had, but it is still a thought for the future.

I have also learned that the heads of many matches might be made of phosphorous. I am actually fairly confident that they do, but I do not know for sure yet, and therefore am not ready to collect match heads as a phosphorous sample. I am also researching the possibility of extracting elements from their compounds. I know of two chemical reac-

tions that produce hydrogen and oxygen as byproducts, and if I can learn of a feasible way to trap gasses, I can add those two to the collection along with helium, which I have in a balloon tank.

There are some elements I probably will not ever be able to collect. Anything radioactive (such as thorium, uranium, actinium or radium) would pose too great a health risk to keep in my collection, even if I could find any samples of it. There are some elements that are not even found on earth. Technetium and promethium are both found in some stars, but are not present in the earth's crust so there is a good chance that I will not be able to collect either of those!

I think that a collection of the elements can make a nice addition to any rock and mineral collection. After all, rocks and minerals are composed of the elements! Keep a weather eye out and you can find samples of pure, uncombined, elements in many places. 💎



I house my collection of elements in the same manner as my rock collection: in plastic beading boxes.

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Rhodochrosite, or manganese carbonate, takes varied forms. In crystal form, it may occur as boxy rhombohedrons or pointy scalenohedrons. They vary from gray-white to rose-pink and may be opaque or glassy clear. The best crystals look like little wedges of vivid red Jell-O®. More massive, granular forms occur as banded lumps, crusts or stalactites.

Weathering alters massive rhodochrosite to manganese oxide upon, creating a black crust on its surface. These weathered specimens look like heavy lumps of coal, but grind away the crust, and beautiful pink bands appear!

Famous rhodochrosite deposits occur in Africa, Argentina, Brazil, Peru, Russia, and the United States. In Montana, rhodochrosite was mined as an ore of manganese, which is used in stainless steel and aluminum alloys.

The mineral forms in hydrothermal veins, where it may be associated with copper, silver and lead sulfides. It's often described as a "gangue" mineral of copper and lead ore veins. Dictionaries define gangue as the worthless rock in which valuable minerals occur, but to collectors and lapidary artists, this rock is anything but worthless!

Wonderful deep rose-pink crystals have been found at the Sweet Home mine in Colorado. These breathtaking beauties led to rhodochrosite being named the Colorado state mineral. Good specimens are rare, making them super expensive. At gem shows, you might find less expensive specimens from Peru.

In addition to being beautiful display pieces, rhodochrosite crystals can be faceted into gemstones, even though they're fairly soft (Mohs 3.5-4). Massive rhodochrosite may be cut as cabochons or beads for

jewelry or fashioned into carvings with attractive pink-and-white bands.

—Jim Brace-Thompson



Pennsylvania's State Rockhound Symbol

Pennsylvania has but one rockhound symbol: *Phacops rana*. This species of trilobite was named the state fossil in 1988 as the result of a lobbying effort by elementary school students. *Phacops rana* got its name because the head, with its prominent, bulging eyes, looks strikingly like a frog's. *Rana* is the genus name of the common frog and *phacops* is Greek for "lens" or "eye".

Trilobites were arthropods and are related to modern creatures like crabs, lobsters, insects and spiders. All arthropods have a hard outer shell called an exoskeleton, jointed legs, and segmented bodies. The trilobite's body had three segments: a cephalon (head), thorax (abdomen), and pygidium (tail). In addition, they had three (tri-) lobes running lengthwise down their bodies, from which we get the name "trilobite" (pronounced tri'lə-bit). Some trilobites could roll their bodies like a pill bug when threatened, protecting their soft undersides within their suits of armor.

During the Paleozoic Era (550 million to 245 million years ago), trilobites were common on earth's seafloors, but they disappeared in an unexplained mass extinction event at the start of the Mesozoic Era. *Phacops rana*, in particular, prowled shallow seas during the Devonian Period, 405 million to 365 million years ago.

During the several years I lived in Pennsylvania, I enjoyed searching for specimens in the shale beds of the Hamilton Group Mahantango Formation. They were relatively abundant and their life histories are well documented, with specimens ranging from babies measuring a fraction of an inch long to full-grown adults that are 4 inches or longer.

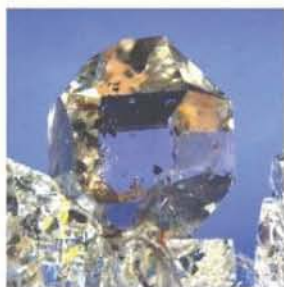
Trilobites grew by molting; their hard exoskeleton would split and they would emerge as a somewhat larger animal with a soft shell that quickly hardened. Because of this, specimens are often fragments of discarded shells rather than a whole trilobite.

—Jim Brace-Thompson



The Bigger Picture

Look at the partial photos below. Search through this issue of *Rock & Gem* to find the full-size photo and write the page number in the blank. Read the caption for more information about the photo. Check your answers at www.rockngem.com beginning June 1.



The Quiz is open to U.S. residents 17 and younger. Mail your answers to **May Quiz, Rock & Gem magazine, P.O. Box 6925, Ventura, CA 93006-9899**. Five winners will be drawn from the valid entries received by **May 31, 2011**. Valid entries must include the correct answers, the entrant's name, age and address, and the signature of a parent or guardian. This month's prize is samples of the California minerals mariposite and serpentine, generously donated by the Mariposa Gem & Mineral Society.

The Quiz

1. Weathering creates a black crust of _____ on massive rhodochrosite.
2. Rhodochrosite crystals may occur as boxy _____ or pointy _____.
3. A _____ mineral is considered worthless by miners.
4. The trilobite's hard outer shell is called an _____.
5. Trilobites grew by _____.



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The Spodumenes of AFGHANISTAN

This Mineral-Rich Country Is Still Producing

Story by Bob Jones

It has been some years since I've written about Afghanistan and its mineral wealth. In spite of the turmoil in this mountainous country, collectors have been enjoying a wonderful suite of Afghanistan minerals, mainly from complex pegmatite deposits. Of these, the spodumenes have probably created the greatest stir.

This vast country is still largely undeveloped, at least by modern standards. The political turmoil and endless fighting over the land, which has been going on for centuries, has really impeded any major development of the country's mineral wealth, which is considerable. But without this development, the country will continue to struggle financially. Granted, gem production is significant, but it is hardly a major part of the country's income, assuming the monies enter the civilian economy.

Afghanistan's lapis deposit has been known for thousands of years. Marco Polo brought back fine examples of this blue gem material. This one gem can hardly be expected to shore up the country's economy, though. Modern awareness of Afghanistan's gem minerals probably dawned when the Russians sent scientific teams into the hinterland, ostensibly to study the geology, in the last quarter of the 20th



PHOTO COURTESY THE ARKENSTONE

This fine spodumene on matrix from Afghanistan has a skirting of bladed albite.

BELOW: This superb violet-pink kunzite crystal specimen on matrix was recovered from Nuristan, Afghanistan.

RIGHT: A choice violet-colored kunzite shows light striations from oscillatory growth and a perfect termination.



PHOTO COURTESY THE ARKENSTONE



PHOTO COURTESY THE ARKENSTONE

century. During their mapping quest, the geologists came across pegmatite debris on the slopes of mountains. Such lovelies as elbaites, beryl, kunzite, and other gem minerals were mixed in with the weathered rock. During early collecting, these loose crystals were simply put in gunny sacks for transport, which subjected the crystals to damage. How sad!

Once the word was out that fine minerals were to be had, small groups of scientists and local mineral enthusiasts and professionals made the quite arduous journey into the hills in hopes of developing these mineral treasures. One such trip that was made back in the 1970s was led by my friend Pierre Bariand, curator of the mineral collection at the Université Pierre et Marie Curie. The group's journey was difficult and transportation was spotty at best, but the samples they brought back gave a good indication of the pegmatite's potential.

Pierre gave a most informative talk at the Tucson Show shortly after his collecting trip. His group's findings encouraged more searching, and the door to Afghanistan's mineral deposits slowly opened. We began to see fine minerals available at major shows, particularly at Tucson, Arizona, and Munich, Germany.

Today, there is a burgeoning gem mining industry in this remote country. Quantities of mineral specimens are being extracted, such as choice elbaites, superb kunzites, fine emeralds, excellent topazes, amazingly large pollucite crystals, fluorapatites, and beryl, including morganite. Of course, lapis lazuli, the blue gem material of ancient importance, is still being mined diligently.

Aside from the prolific pegmatite deposits, there are metal deposits we seldom hear about. They have already shown they can produce important strategic metals like cobalt, lithium, niobium, and the good old reliables iron, copper and gold! Such deposits are of interest to mining companies, who would like to develop them once stability settles over the country. Imagine what that would do for this remote land.

For mineral collectors, the more exciting minerals from this mountainous country are the pegmatite minerals. While beryls and elbaites are eagerly sought, the species that has created the greatest interest is spodumene in several varieties, which is found in exceptionally large crystals. These crystal specimens rank with, and in many cases exceed, the finest ever found for the species.



BOB JONES PHOTO

Spodumene can easily be etched and almost always shows some striations and rough-faced terminations.

What makes the Afghanistan spodumenes so special is that many of them hit the specimen market still on matrix! Care must be taken during mining to extract specimens that are still attached to the host rock. Spodumene from California, Madagascar and Brazil are almost always mined as loose crystals that have been naturally cleaved from the pocket walls, so until now, spodumenes on matrix were a rarity indeed.

The mineral has two perfect cleavages, so any pocket eruptions or major crustal disturbances, manmade or natural, cause the crystals to cleave off the base on which they formed. Afghanistan

spodumenes on matrix are really the first to be found in quantity.

Initial finds of spodumene in Afghanistan were the typical loose, single crystals in pockets. And when miners first encountered spodumene still attached to the wall rock, they simply cleaved off the crystals for easy collecting and transport. This was necessary, since collecting these crystals was illegal, and only crude tools were available because of the remoteness of the areas.

It did not take long, however, for more formal mining to be introduced, bringing better equipment and skills to the local miners. Equipment like diamond chain saws turned specimen recovery into an art! That's when matrix specimens began to appear in some quantity, and these brought a greater financial reward for the miner. Specimens of pegmatite rock matrix with superb kunzites, other spodumenes, and beryl crystals on the same piece are highly prized and very expensive to own. Still, for us average rockhounds, a fine matrix kunzite is a lovely thing to behold!

Spodumene is a colorless mineral when pure or only slightly impure. This variety is usually called triphane. When one of the transition metal elements is added during crystal growth, however, this monoclinic mineral takes on a delicate color. Triphane sometimes shades into a pale yellow and may fluoresce. It is a wonderful collector mineral, but since it lacks a vivid color, it usually does not stir the same reaction among collectors as do hiddenite and kunzite.

When chromium is a trace element in spodumene, it gives the bladed crystals a vivid green color. In many cases, the chromium seems to act in concert with manganese to generate this shade of green. Such spodumenes are called hiddenite after W.E. Hidden, who found the first crystals of this variety. The original source, Hiddenite, North Carolina, is also named for him. Some hiddenites may derive their color from the transition metal element vanadium.

Hiddenite is the rarest of the spodumenes and occurs in crystals that are very slender, not as thick as a pencil. They range in length from under an inch to perhaps 3 inches. Their color ranges from very pale green to a good, rich green, but few crystals are cut into gems of more than a couple of carats because the crystals are too slender and short and often lack intense color.

Afghanistan has not produced hiddenite crystals, but it does produce very pale green spodumenes. They are not true hiddenites, as their color is due to manganese acting in concert with iron, which is also a transition metal element.

The most popular and eagerly sought variety of spodumene is kunzite, which exhibits a lovely pink to violet color due to the presence of manganese atoms acting



BOB JONES PHOTO/COLLECTOR'S EDGE SPECIMEN

This long, slender specimen is an excellent example of a multicolored spodumene crystal.



PHOTO COURTESY THE ARKENSTONE

Note the typical deep, parallel striations on this excellent prism of spodumene on matrix from Nuristan.

as a chromophore. Kunzite is named for Dr. George Kunz, who was a noted gemologist and the vice president of Tiffany & Co. of New York in the early part of the 20th century.

Though the pink to violet spodumenes are named for Kunz, Dr. John Sinkankas, in his excellent text *Gemstones of North America* (Van Nostrand Reinhold, 1959) provides data that calls into question whether Kunz was the discoverer of this pink to violet type of spodumene (pp. 151-152).

The initial recognition of kunzite may well have been described in print by W.S. Valiant of Rutgers College in New Jersey several months before Tiffany made its official announcement. Since the honor of naming of a new mineral usually falls to the person who made the initial discovery, Sinkankas suggests Valiant may well have deserved it.

Kunzite (lithium aluminum silicate) is found only in chemically complex pegmatite deposits. It can occur as large, flat, single crystals, and less often as twins. It is almost always well terminated, but is often heavily etched, sometimes to such an extent that the crystal shape is nearly lost.

Spodumene crystals are easy to recognize by their swordlike form. They are heavily striated longitudinally due to an interesting growth phenomenon in which side-by-side prism faces interfere with each other's growth. This is sometimes called "oscillatory growth". A face will start to grow and be blocked by the prism growing next to it. The result is a deep groove or striation between them. This repeats again and again during the growth cycle.

Kunzite crystals show distinct pleochroism, the property of exhibiting different colors when viewed along each of the three axes of the crystal. Viewed from the front, the crystal will show one shade of pink; from the side, yet another shade of pink; and down the long axis of the crystal, the color is far more intense, approaching violet or purple. For this reason, faceters always cut their kunzite gems across the long axis so that this stronger color will dominate the gems. It is a delicate task because of the species' perfect cleavages.

Whatever color the spodumene is, if it is left in strong sunlight for a long period of time, the tint will fade or even change. The blue spodumenes from the Dara Pech deposit in Kunar Province, Afghanistan, will change from blue to green. Spodumenes can be displayed in strong light for short periods of time, but should be kept in subdued light most of the time. I suspect that most of the kunzites initially found by the Russian geologists on the slopes of high mountains were bereft of strong color. Intense ultraviolet radiation at high altitudes is especially destructive to crystal colors.



BOB JONES PHOTO

This delightful example of an Afghanistan kunzite on matrix has superb color.

Varicolored spodumene crystals are also fascinating. A crystal may be a lovely pink at one end, but the color gradually shifts to green and ends up a pale blue at the opposite end of the blade.

The more important region that produces fine spodumenes in Afghanistan is Nuristan Province, located northwest of Kabul. It has produced the greater number of spodumene specimens and some of the finest crystals found in Afghanistan. Within that province are the sources Kunar, Lagham and Mawi. You'll see many spodumene specimens simply labeled "Nuristan", with no more specific information. This may be because the original source is not known or because the miners prefer to keep the information a secret, since it is illegal for anyone except the government to mine gem minerals in Afghanistan.

The spodumenes from Nuristan come in a variety of colors. The Mawi area has produced fine green, blue, pink, yellow and colorless triphane crystals. The green crystals are not hiddenite, since the cause of color is not chromium. The kunzites are a rich pink and sometimes show twinning, with two crystals grown in parallel arrangement. They are easily identified, as the termination consists of two offset faces. The size of some of the Mawi crystals is amazing, with fine specimens reaching an impressive 2 feet! Imagine something that size on matrix.

Kunar Province has also produced fine spodumenes. Fine green spodumenes have been mined from Pech. Some of these may well have been a nice blue when they were mined, but exposure to the sun has caused them to fade to a pale green.

If such an abundance of mineral treasures is reaching the market from a country in turmoil, imagine what these deposits could produce in a time of peace. ♥



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JUNE 2011

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

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 and DE, free mineral samples for kids, free identification; contact Joshua Sloan, PO Box 118, Bally, PA 19503, (484) 241-5490; e-mail: sloantech@gmail.com; Web site: www.paprospector.com

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, delicats; 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, silent auction; contact Phil Potter, Colburn Earth Science Museum, 2 S. Pack Square, Asheville, NC 28801, (828) 254-7162; e-mail: ppotter@colburnmuseum.org; Web site: www.colburnmuseum.org

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 semiprecious gemstone beads, sterling silver, findings, freshwater pearls, hand-blown glass, vintage beads, crystals, delicats; 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

continued on page 52

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SILVER TOPAZ, fine cut, 3 mm round brilliant cut, \$0.75 each, 6 mm round, \$3.60 each

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Gemstone artist John Dyer has won 36 cutting awards since 2002 with his trademarked designs.



This Dreamscape™ gem, created out of orange Brazilian citrine, has been cut in an abstract flame shape.



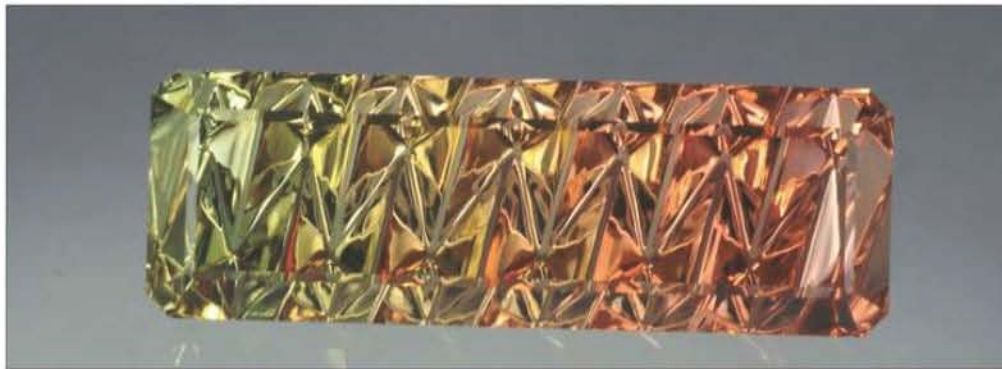
This golden beryl Sculptural Gem™ titled "Golden Reflections" won second place at the 2011 AGTA Cutting Edge Awards.

Unusual Artworks for Jewelry Designers and Collectors

Story by John Dyer/Photos by Lydia Dyer/Gems Courtesy John Dyer & Co.

My father, David Dyer, and I started Precious Gemstones Co., a gemstone dealership, in 1996 due to my early love of gemstones. Neither of us was a gem cutter at the time. I was 16 or 17 and my father had

done many things, but nothing gem or jewelry related. We traveled to Asia, Africa, South America, and other locations to find good values and a diversity of rough gemstone materials.



The ZigZag© cut is faceted with V-shaped grooves alternating on the pavilion to make a culet that zig-zags down the gem.

We gave some of the rough gems to a faceter for cutting, but we were outraged by the price charged and the poor quality of the cutting. Indeed, two of the three emeralds were so badly faceted that, after we were unable to sell them for a number of years, we had to have them re-cut. Finally, I decided to take matters into my own hands and purchased an UltraTec faceting machine.

I am a “self-taught” faceter in the sense that I never took classes or had a mentor. I did pick up tips from books and conversations, but much had to be discovered for myself by experience and experimentation. I mainly use the UltraTec faceting machine for the flat faceting. There are also a great variety of other tools that I use, some of which were made in my father’s machine shop and some that we purchased. I use these machines for various phases of the cutting process. Often, multiple machines will be used on the same gem.

I first entered a gem in the AGTA Cutting Edge Awards in 2000. I did not win that year and then waited another year or two to try again. I won my first award in 2002 with a Pakistani peridot, which took second place in the flat faceting category.

In 2005 and 2007, I swept the Flat Faceting Category at the AGTA Cutting Edge Awards, taking first, second, third, and Honorable Mention. In 2010, I won my first German award, taking third place in the Idar-Oberstein cutting competition.

Most recently, I won three second places and one third place award in the 2011 AGTA cutting Edge Awards and first place in the Specially Cut Gems division and Best of Show (tied) in the 2011 *Lapidary Journal* Gemmys competition.

The main focus of our business is selling my artistic gems to jewelry designers and collectors. Because of the desire to keep them as unique as possible, I have not published any designs. For more information, visit www.johndyergems.com. 💎



The Light Weaver™ cut features thin grooves on the pavilion that give brilliance and appear to weave into grooves on the other faces.



The RippleTop™ Cut has a faceted pavilion with “waves” or ripples carved into the crown that give the gem a sort of “liquid brilliance”.



The Super Trillion™ cut is all flat-faceted with many small facets and is extremely brilliant.



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Show Dates from page 49

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: mjbhch@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: richknight@gmail.com; Web site: www.prinevillerockhoundpowwow.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 Museum of Mining & Industry, 225 N. Gate Blvd., I-25 exit 156A; Fri. 9-4, Sat. 9-4, Sun. 9-3; adults \$5, children \$2; dealers, gems, minerals, jewelry, fossils, talks, gold panning demonstration, rock identification, Kids' Area, noncompetitive displays, silent auction, exhibitors, equipment demonstrations; contact Ronald Yamiolkoski, (719) 488-5526; e-mail: info@csms.us; Web site: www.csms.us

24-26—COLORADO SPRINGS, COLORADO: 48th annual show; Colorado Springs Mineralogical Society, Rocky Mountain Federation of Mineralogical Societies; Best Western Academy Hotel, 8110 N. Academy Blvd., I-25 exit 150; Fri. 9-4, Sat. 9-4, Sun. 9-3; convention meetings; adults \$2, children free; dealers, rocks, gems, fossils, jewelry, meteorite exhibit, competitive display cases; contact Ronald Yamiolkoski, (719) 488-5526; e-mail: info@csms.us; Web site: www.csms.us

24-26—SAN DIEGO, CALIFORNIA: Show; Gem Faire Inc.; Scottish Rite Event Center, 1895 Camino del Rio S; 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

25-26—OSAGE BEACH, MISSOURI: 10th annual show; Osage Rock & Mineral Club; The Inn at Grand Glaize, 5142 Old Hwy. 54; Sat. 11-5, Sun. 11-5; adults \$2, seniors (60+) and kids 10 and younger \$1, families \$5, Scouts in uniform free; gemstones, jewelry, geodes, fossils, minerals, quartz crystals, custom jewelry, cabochons, gift items, demonstrations, displays, kids' games and prizes, fluorescent mineral display; contact ORMC, 417-532-4367, or Roger Varvel; e-mail: rvarvel@centurylink.net

25-26—POMPANO BEACH, FLORIDA: Retail show; Intergalactic Bead & Jewelry Shows; Emma Lou Olson Civic Center, 1801 N.E. 6th 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

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26—COLUMBUS, NEBRASKA: Swap; Loup Valley Gem & Mineral Club; Izaak Walton Cabin, junction of Hwy. 81 and Hwy. 30; Sun. 8-5; free admission; minerals, gems, fossils, silent auctions; contact Ben Vrana, 3576 Linden Dr., Columbus, NE 68601, (402) 563-3265; e-mail: mlemppke68601@yahoo.com

JULY 2011

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

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

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.oxfordcountymineralandgemassoc@blogspot.com

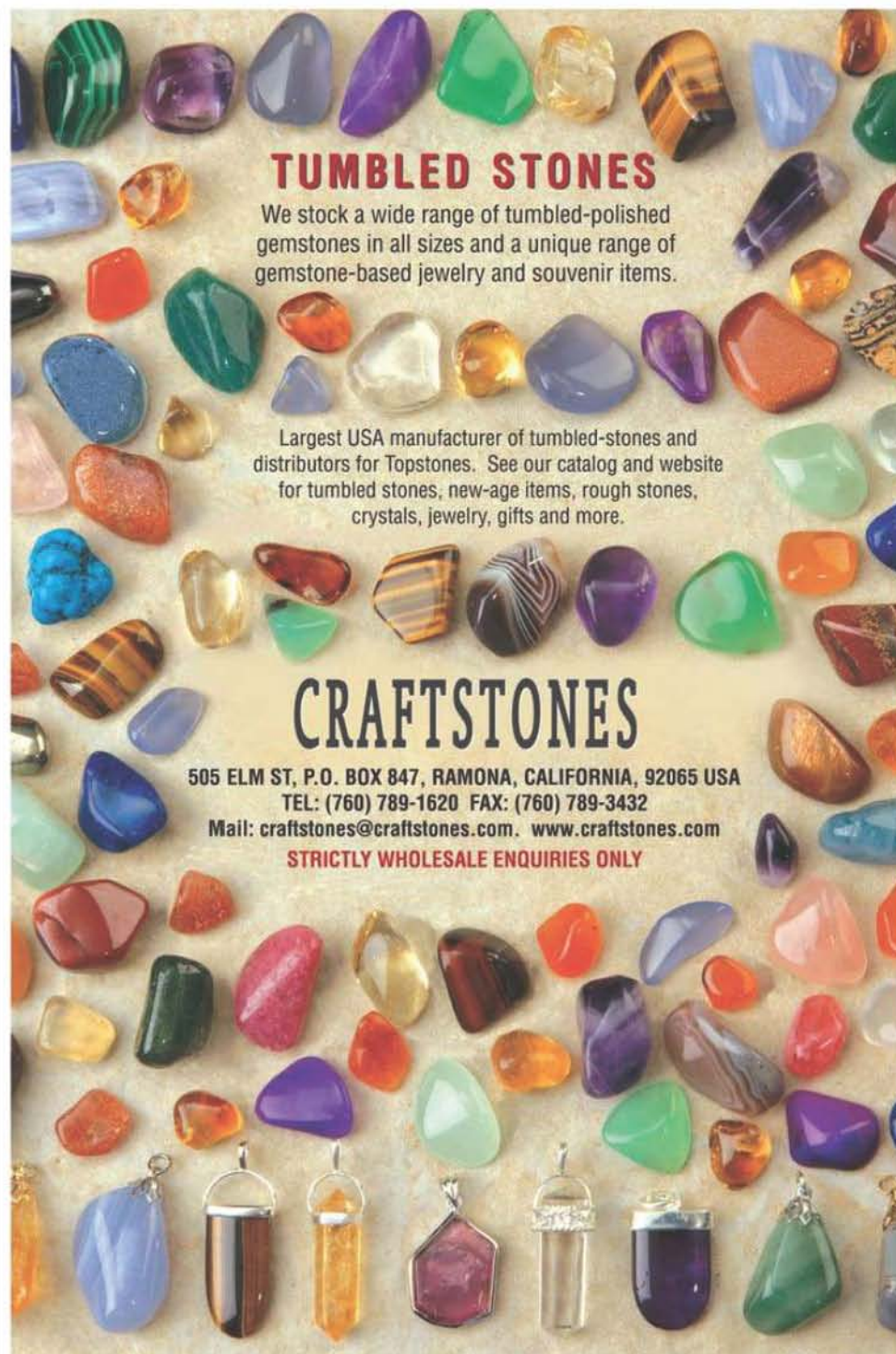
9-10—CODY, WYOMING: Show; Wyoming State Mineral & Gem Society; Cody Auditorium, 1240 Beck Ave.; Sat. 9-6, Sun. 9-3; admission \$3; contact Stan Strike, (307) 587-6448; e-mail: strikes@bresnan.net

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

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

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

continued on page 62



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OFF THE DOP

by Jim Perkins

Polishing Techniques

It seems that polishing problems have many new faceters baffled. I agree that polishing is one of the hardest things to accomplish on faceted stones; the facets are flat, rather than curved as on cabochons, and it is definitely harder to polish a flat surface than a curved surface.

Good polishing starts with good grinding practices and good control of contamination. Using modern electro-bonded diamond laps reduces a lot of contamination compared to the old days of charging copper plates with diamond powder and oil. However, grinding "swarf", which is a combination of stone dust and diamond particles, accumulates in and around the splash bowl and on our hands while we work, so clean up the splash bowl and faceting head and wash your hands when changing from coarse grits to finer grits to help control contamination.

I think many faceters use too coarse of grinding wheels, like 100, 180 or 260 grits. I seldom use anything coarser than 360, as the deeper you dig into the rough, the more material must be removed to get below the previous wheel's scratches. For fine grinding, I use a 600 grit diamond wheel, and for final grinding, I use a 1200 grit diamond wheel.

As a lubricant and coolant, I use water with a drop of Woolite® in it to break the surface tension. For pre-polishing, I now use a Batt Lap™ charged with 8,000 diamond powder and candle oil as a lubricant and coolant. I wet the wheel with oil, then wet my index finger, dab my finger into the diamond powder, and spread it over the wheel. Batt Laps act like a diamond sponge and will eat all the diamond powder you're willing to feed them. There is no chance of overcharging them.

All my stones are pre-polished with the Batt Lap except very soft stones such as opal or feldspars. For polishing, I use different laps depending on the hardness of the stone. For stones less than Mohs 8, I will generally use a Darkside Lap™ charged with cerium oxide or aluminum oxide. There are two acceptable methods; the cleanest is the Battsticks™ available at www.battlap.com.

For more budget-minded people, cerium and aluminum oxide slurries have been around a long time and work as well today as ever. They are extremely messy, but I believe every lapidary should know how to use slurry. I apply it with a paint brush and keep the lap moist with a spray bottle of water with surfactant.



For stones with a hardness of Mohs 8 or greater, I use a Batt Lap charged with 100,000 diamond and candle oil. Diamond is a scratch polish and will always leave some type of scratch pattern; it simply becomes finer as we use finer diamond powder. I do not like diamond sprays, as I can't control the amount of diamond in them or where they go. After I have done my best with diamond, I will usually use a Darkside charged with aluminum oxide to remove any tiny scratches I can see with a 10X loop. I do have many alternate laps, which I still use on occasion, as some days one lap seems to work better than another. However, these days my Batt and Darkside are my standard go-to laps for polishing.

Some days, I simply can't get a polish on any lap, so I go do something else and try again the next day. I have no idea why this works, but it does. I always facet and polish in the mornings when I'm fresh and alert. If you are having difficulties, don't try polishing corundum or cubic zirconia. Start on garnet, beryl, tourmaline, or synthetic spinel, all which polish easily with diamond or aluminum oxide. Quartz, corundum, and cubic zirconia can all be problematic due to growth directions, hardness or brittleness. With quartz, occasionally changing wheel direction will help to get a polish. Sometimes, changing wheel speed or the amount of polish and or lubricant helps.

When all else fails, seek help from a master cutter. Reading or watching a program are great, but are no substitute for working face to face with a professional. ♥

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.



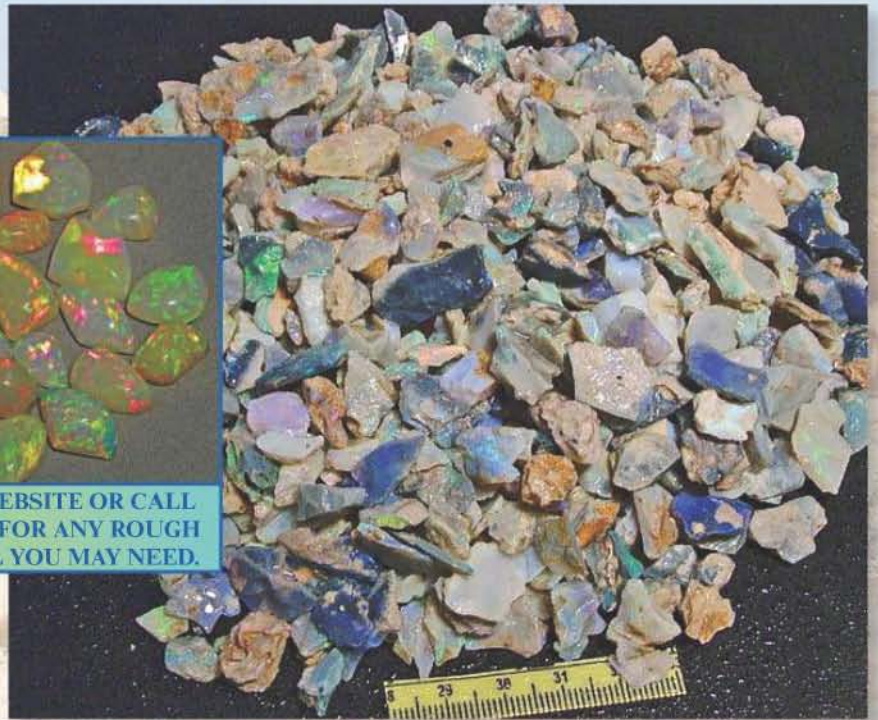
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The GREAT MOROCCAN VANADINITE RUSH

Thousands Flocked to Mine Near Mibladene

Story and Photos by Bob Farrar



Vanadinite crystals from Mibladene often form on a matrix of barite, which is the main gangue mineral in the mineralized beds.

Many mineral collectors, myself included, love all minerals, from abelsonite to zykaite. However, there are certain minerals that, for aesthetic appeal, rarity, history, or other reasons, are particular favorites among collectors. One such mineral is vanadinite. Its beautiful colors, interesting crystals, and the relative rarity of good specimens make vanadinite

among the most collectible of minerals. And, as most collectors know, no other country produces as many fine vanadinite specimens as Morocco. I have had the opportunity to travel to Morocco several times in recent years and to visit some of the country's famous mineral and fossil localities, including, most recently, Mibladene, the most famous vanadinite locality.

Much has been written about vanadinite and the other fabulous minerals of Morocco. I have read with great interest about the

geology of Morocco and about the world-class crystals found there. However, as is the case with all mining endeavors, there

is a human side of the story, which sometimes gets overlooked. On my recent visit to Mibladene, I was able to hear directly



The brilliant color of vanadinite from Mibladene is one of the characteristics that help make it a favorite of mineral collectors everywhere.



Vanadinite specimens like this one are mined from stratabound carbonate-hosted deposits that rest some 450 feet below ground.

from men who make a living as miners how their lives revolve around their enterprise. It was there, too, that I heard the story of the great Moroccan vanadinite rush.

Like previous trips, this visit to Morocco was arranged by tour leader Sara Mount of Silver Spring, Maryland. In Morocco, Sara works with Adam Aaronson and his brothers, Aissa and Brahim. In addition to serving as tour guides, the Aaronsons are in the fossil business and have developed connections with fossil and mineral dealers all over Morocco. It is through their contacts that we are able to see many of the geological riches of Morocco. Our most recent trip was in October 2008. The spring and the fall are the best times to go to Morocco; the summer can be brutally hot, and in the winter there can be heavy snow in the mountains.

Morocco is an easy country to visit and is very safe for Americans. The people are friendly everywhere, but the Berbers are particularly so. The Berbers are the native people of Morocco. Though the Arabs have been in Morocco for hundreds of years, the Berbers still maintain their own culture and languages. Berbers constitute the majority of the population in many of the mining areas of Morocco, but particularly in Midelt and Mibladene. And it is Berber miners whom we must thank for many of the beautiful minerals and fossils that collectors have come to associate with Morocco.

Vanadinite, or lead chlorovanadate $Pb_5(VO_4)_3Cl$, crystallizes in the hexagonal system. Crystals are commonly barrel-shaped, but may also be short and tabular and can be of "cavernous" or "hopper" form. Acicular, fibrous or mammillary formations also occur. Mineralogically, it can be grouped with pyromorphite and mimetite, which have similar composition, but contain phosphate and arsenate, respectively, instead of vanadate, as predominant components. Vanadinite can be distinguished from these minerals by blowpipe tests.

Vanadinite is commonly a brilliant red to orange, but may also be brown, yellow or, on rare occasion, white. The arsenic-rich va-



Lahrou (left) and Hmad are two of the friendliest guys you could meet anywhere.



The ground at Acif is still pockmarked with small shafts or "wells" via which miners reach the vanadinite.

riety, endlechte, is usually brown to silvery gray. Red specimens tend to darken and dull with prolonged exposure to sunlight. Vanadinite is found in the weathered zones of lead deposits and typically occurs in arid regions, though there are exceptions. Besides

Morocco, many important vanadinite localities are found in the southwestern United States and in neighboring areas of Mexico.

Vanadinite has been found at several localities in Morocco. Jebel Mahseur, near Oujda, is in the northeastern corner of the

country, not far from the Mediterranean coast. This locality is famous for large vanadinite crystals—up to 3 centimeters is common, while up to 12 centimeters is rare—coated with descloizite. Another locality is Taouz, which lies about 36 miles southeast of Erfoud, on the edge of the Sahara desert near the Algerian border. Taouz is famous among fossil collectors as the source of dinosaur teeth, such as *Spinosaurus* and *Carcharodontosaurus*. Vanadinite crystals are found on a matrix of psilomelane in a lead deposit near Taouz.

Perhaps the most famous and prolific vanadinite locality in Morocco, and likely in the world, though, is Mibladene. Mibladene is located near the town of Midelt, about 144 miles southeast of Rabat, the capital of Morocco. Great numbers of brilliant orange-red to red vanadinite specimens have been mined there over the years.

Mibladene and Midelt lie on a plateau between the High Atlas Mountains to the southeast and the Middle Atlas Mountains to the northwest. The elevation averages around 4,000 feet, which makes the climate of these towns among the coolest in Morocco. In October, when we were last there, it was cool, and there had been unusually heavy rains. Fall tends to be the rainy season in Morocco, but 2008 was exceptionally so; some places had catastrophic floods, though we were lucky enough to avoid the worst of it. Winters in Mibladene are cold, and can bring a fair amount of snow.

Geologically speaking, the formations in which vanadinite occurs at Mibladene are classified as stratabound carbonate-hosted deposits. The host rocks consist of limestones and dolomites of Lower Jurassic age. Mineralization occurs in two horizons, each measuring from 35 feet to 70 feet thick, that occur within the upper 450 feet of the formations. Within each horizon are several mineralized beds ranging from a few inches to a few feet thick. Galena is the main ore mineral, while barite is the main gangue mineral. Common secondary lead minerals include cerussite and vanadinite. Wulfenite also occurs at Mibladene, but is much less common. Vanadinite crystals are often found growing on a matrix of barite, but can also be found on the country rock and on fossils. I have a large fossil clam that is encrusted with vanadinite.

Large-scale mining at Mibladene began in the 1930s. Both open-pit and underground mining techniques were employed. Commercial mining ended in 1983, how-



Vanadinite crystallizes in the hexagonal system, but many interesting variations in crystal form occur.

ever, and the mines have been officially closed since then.

Midelt is the headquarters for anyone who wishes to visit Mibladene today. The town of Mibladene still exists, but it is a shadow of its former self. Midelt, on the other hand, offers nice accommodations and good food. Midelt could be considered the mineral capital of Morocco, which is quite a distinction considering how many famous mineral localities there are in the

like to visit, if I had to pick only one place, I would pick Midelt.

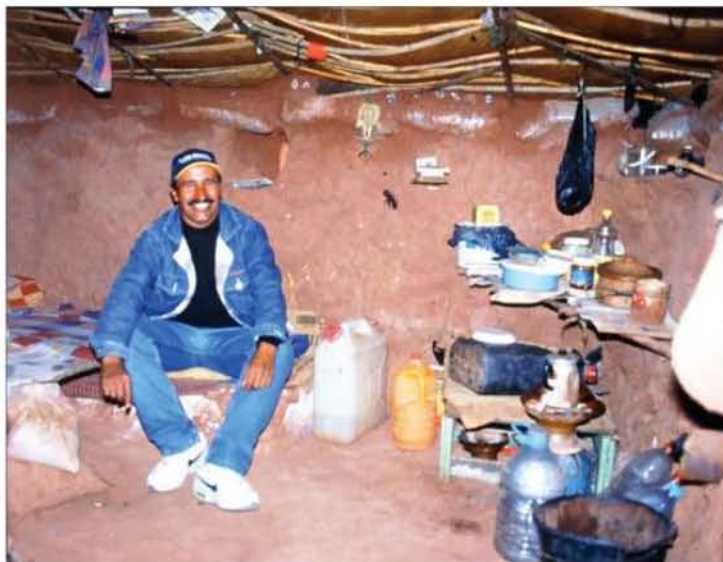
When we arrived in Midelt, we soon hooked up with two Berber miners we knew from previous trips, Hmad and Lahrou. These men are old friends of Adam and have served as guides to the Midelt area on each of Sara's previous trips. They both come from families of miners, and know the geology of the area like the backs of their hands. In the past, they had taken Sara's groups to hunt for azurite, malachite, fluorite and agate (see "Berber Country Agates", August 2007 *Rock & Gem*).

Hmad and Lahrou are two of the friendliest guys you could meet anywhere. They could not do enough to help us. When they are not serving as guides, they mine vanadinite and other collectible minerals. One day, they took us to their mining area, a place called Acif ("river" in the local Berber dialect), which is between Midelt and Mibladene. While we were there, they related the story of the great vanadinite rush.

Vanadinite has been coming out of Mibladene for a long time, having been found during the course of lead mining. When commercial mining ceased, it brought about economic hardship for the people of Mibladene. Seeking to eke out a living, local miners would enter the old mines to collect mineral specimens. This practice continues today. Eventually, however, it was discovered that vanadinite could be found close to the surface at Acif by digging small shafts, or "wells", down to a level of perhaps 6 to 12 feet. Word soon spread, and people from all over Morocco descended on Acif. By 2000, there were several thousand people mining vanadinite. The situation soon began to get out of hand.

The next part of the story reads a bit like the plot of a bad movie. It seems that there were two men working one particular well. Another man came to buy specimens from them. Later, the man returned and tried to rob the two miners. They killed him in self defense, but they still went to jail. The dead man's brother then showed up and began working the same well. He proceeded to unearth a pocket of vanadinite specimens worth some \$70,000. Not exactly poetic justice, is it?

Now, it was one thing for a few local miners to scratch out a living mining vanadinite, but all the outsiders coming in looking to get rich quick and the trouble they caused were just too much. After another homicide and an accidental death, the local



Hmad and Lahrou sleep in this 12-foot by 4-foot "bungalow" when they are mining.

country. There are numerous mineral dealers and rock shops in Midelt. Some of these cater mostly to tourists who have little knowledge of minerals and are only interested in something pretty to sit on a shelf. Others specialize in fine mineral specimens that any collector would love to own. Besides vanadinite, there is erythrite from Bou Azzer, apatite from Imilchil, fluorite from El Hammam, geodes from the High Atlas Mountains, and many other specimens. While there are certainly many places in Morocco that a mineral collector would



Loose vanadinite crystals can easily be found on the surface of the ground at Acif today. I gathered dozens of them in just a few minutes.

authorities had had enough. They moved in and shut the whole place down. Today, vanadinite mining is back in the hands of a few local miners, like Hmad and Lahrou.

Stories like this might make one think that Morocco is a wild and dangerous place. I would like to reiterate that this is absolutely not the case. The people of Morocco, especially the Berbers, are very friendly toward Americans and we never felt threatened at any time.

After hearing about the vanadinite rush, we were shown the area where it took place. There were dozens of wells still visible, most of them wide open. There were also lots of little crystals of vanadinite lying about. I picked up dozens of loose crystals from the surface in just a few minutes. I was also able to chisel a few specimens off of larger rocks. None of the specimens were great, or they would not still have been there, but the half hour or so that we were there was more productive than many all-day field trips I have been on in this country. Most of the vanadinite that we picked up had lost some of its original brilliance and faded to a dark red, which vanadinite tends to do on long exposure to sunlight. Nevertheless, I was able to get a few nice thumbnail-size to miniature specimens that I will treasure.

Hmad and Lahrou went on to explain to us how they mine vanadinite today. They have a home in Midelt, but when mining they live out at the site. There they have built a "bungalow" in which they sleep. Their bungalow is a structure made of rocks, mud, sticks, and sheets of plastic. It is tiny, measuring perhaps 12 feet square and only about 4 feet high, with a wooden door, a small window, and a pole with some scraps of plastic tied to it to keep goats from climbing on top. Inside were beds and cooking utensils. According to Hmad and Lahrou, at the height of the vanadinite rush there were as many as 3,500 such bungalows; now there are about 30.

Lahrou and Hmad do not work the wells as was done during the rush. Instead,

they work one of the old underground lead mines. They enter through a small hole at the surface and proceed down at an angle to a depth of around 450 feet. Then they follow the tunnels horizontally for some 1,600 feet to the area in which they collect vanadinite. Using only hand tools, they dig side tunnels barely wide enough for a man to pass through until they find vanadinite or until they give up and try another spot. Using hammers and chisels, they may only progress a few inches in a day. They have to use a pump to force fresh air into the side tunnels, but the main tunnels have enough air to breathe. That far underground, the temperature stays fairly constant and is warmer than the outside air in winter. Therefore, during the winter, Hmad and Lahrou spend as much as 23 hours a day underground. They come out for an hour each day to refill their carbide lamps, throw out trash, and get fresh supplies. We were not offered the chance to see the underground workings, but it is just as well; none of us would have had the guts to go down there.

Lahrou and Hmad love what they do. Being skilled miners, they have been offered steady jobs. However, they prefer to pursue that which they desire. I returned to Morocco in 2010 and learned that they had hit it big in 2009. Working at a depth of about 250 feet at Acif, they followed a tiny vein for over 300 feet until it opened out into a huge pocket of vanadinite. This pocket measured over 12 feet long, 3 feet wide, and 1 1/2 feet high. The vanadinite was not as brilliantly colored as some, but the crystals were especially well developed. Some crystals were over an inch across and some were 1/2 inch thick. Hmad and Lahrou estimated that the retail value of their find was between \$80,000 and \$90,000. It really did my heart good to see two such friendly and hardworking guys do so well.

Those of you who go to a lot of rock shows, as I do, have surely seen lots of beautiful vanadinite specimens from Mibladene. Many of these came out during the vanadinite rush around 2000. You may be thinking that the end of the rush might mean the end of the specimens. However, while the flow may have slowed, it has not dried up. The deposits are nowhere near exhausted, and there are still fine vanadinite specimens from Mibladene to be had. And, as long as there are men like Hmad and Lahrou, there always will be. 💎

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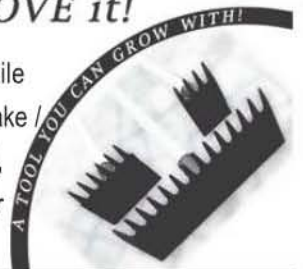
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Show Dates from page 53

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—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

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—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@totoshows.com; Web site: www.totoshows.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

30-31—OKLAHOMA CITY, OKLAHOMA: Wholesale and retail show; The Bead Market; Oklahoma State Fairgrounds Expo Hall 3, 3212 Wichita Walk; Sat. 10-5, Sun. 10-4; free

admission; pearls, gemstones, vintage beads and buttons, seed beads, findings, silver, books, tools, jewelry; contact Rebekah Wills, (903) 240-7198; e-mail: rebekah@thebeadmarket.net; Web site: www.thebeadmarket.net

30-31—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—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 Tunnick, 1130 Francis St. #7010, Longmont, CO 80501, (720) 938-4194; e-mail: ctunnicklff@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.totoshows.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,
continued on page 66



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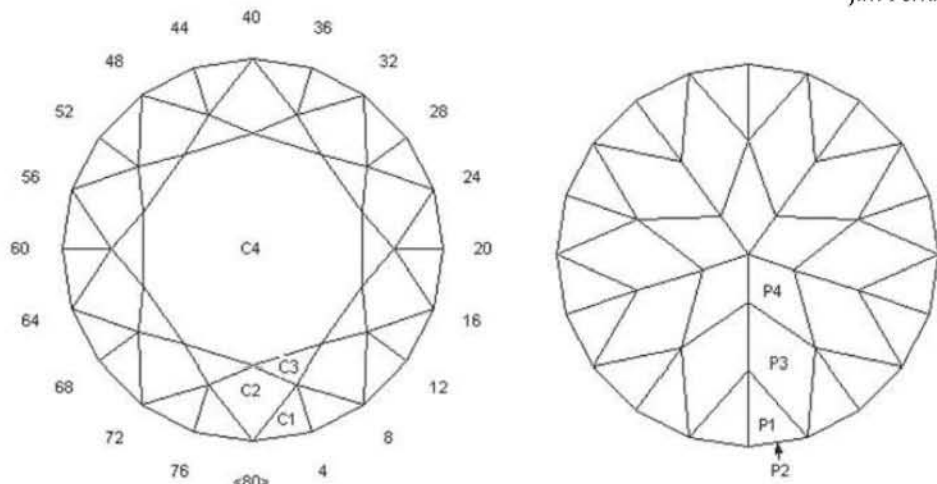
Recently, I received a request from *Rock & Gem* reader Rex Girton to publish The Texas Star again so he could cut it for his local pastor. I decided it would be good to revisit this design as, after studying gemological optics this past year, I have taken a very different approach to my preferred design angles. I cut this stone from Creative Gems laser gem material LG-102 "Alexandrium", which contains neodymium, so it looks pink in incandescent and blue in fluorescent lighting.

My design was inspired by The Lone Star Cut by Dr. Paul W. Worden Jr. and his brother Gary B. Worden, circa 1974. Their design objectives were a little different than my design, as they polished the five point star. Texas House Bill #97, signed by Governor Dolph Briscoe on May 25, 1977, made it the official facet design for the state of Texas.

My design is a true meet-point design and the five-point star is frosted rather than polished, so it seems to float just under the polished table. To get this effect I rub the P4 facets in on a worn 360 lap after polishing the P1, P2 and P3 facets. My design has good optical performance and proportions for my intended design purposes. Therefore, it also has a more modest depth, so it can be set in a standard jewelry setting.

The Texas Star is a popular design and I believe it performs better with the new angle choices, so I hope that, if you've cut it before, you'll enjoy cutting it even more now.

—Jim Perkins



MEET POINT TEXAS STAR

CAD by Jim Perkins, jimperkins@zoominternet.net

© January 2011

Requested by Rex Girton

Angles for R.I. = 1.550

76 + 20 girdles = 96 facets

10-fold, mirror-image symmetry

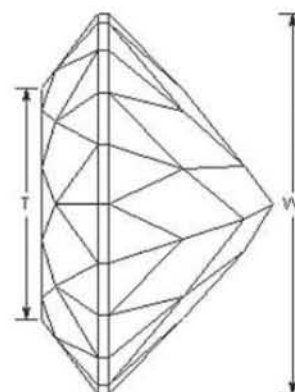
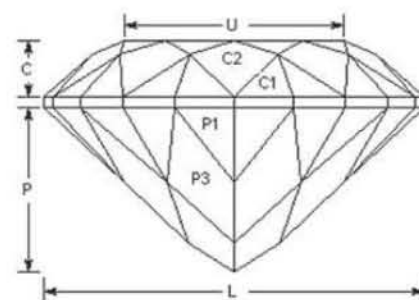
80 index

L/W = 1.000 T/W = 0.609 U/W = 0.579

P/W = 0.434 C/W = 0.147

Vol./W³ = 0.220

PAVILION			
P1	45.40°	02-06-10-14-18-22-26-30-34-38-42-46-50-54-58-62-66-70-74-78	Create a center point
P2	90.00°	02-06-10-14-18-22-26-30-34-38-42-46-50-54-58-62-66-70-74-78	Set size; polish girdle
P3	43.00°	04-12-20-28-36-44-52-60-68-76	Girdle meet point (GMP)
P4	38.00°	08-24-40-56-72	Scratch in on dead wheel
CROWN			
C1	41.00°	02-06-10-14-18-22-26-30-34-38-42-46-50-54-58-62-66-70-74-78	Set girdle height
C2	37.00°	80-08-16-24-32-40-48-56-64-72	GMP
C3	24.00°	04-12-20-28-36-44-52-60-68-76	MP @ C1 - C1
C4	0.00°	Table	MP @ C2



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Show Dates from page 62

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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

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: crosstimberrsd@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

20-21—BOSSIER CITY, LOUISIANA: Annual show; Ark-La-Tex Gem & Mineral Society; Bossier City 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—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—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.stlawrencecountyminealclub.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

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

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—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—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.allen@sbcglobal.net; Web site: http://groups.yahoo.com/group/delvers

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

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

continued on page 71

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Rock & Gem

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SEPTEMBER 2011

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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@aol.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@aol.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

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ON THE ROCKS

Hall of Fame Nominees

The majority of gem and mineral clubs in America belong to the American Federation of Mineralogical Societies (AFMS) through their membership in the seven Regional Federations. Clubs join the federation for good reason: There is strength in numbers. The Federation offers insurance coverage, communications, and educational programs, and maintains groups that promote and protect mineral collecting sites and watch legislative efforts, good and bad, that affect the hobby.

One of the federation's national programs is the National Rockhound and Lapidary Hall of Fame. Each year, the American Federation solicits nominations of individuals who have made outstanding contributions to the earth sciences and lapidary arts. The categories for nomination include minerals, education, fossils, lapidary, jewelry and tribute, which recognizes individuals who have made contributions to the hobby.

Not all categories are represented in the nominations each year, probably because some club members simply are unaware of the program. Also, a nomination may not specify a category because the nominee has been universally active within the club.

For 2010, for example, six club members from across the country were nominated, but only two were nominated in specific categories, jewelry and minerals. I hope this column will encourage readers to participate in the future and recognize their fellow artists and collectors by submitting nominations to the program.

The National Rockhound and Lapidary Hall of Fame was initiated in 1987 by June Culp Zeitner, the "Mother Superior" of our hobby. June did more to guide and promote our hobby than just about anyone else. The Hall of Fame is one example of her efforts to recognize fellow artists and collectors. It is located in the Pioneer Auto Museum in Murdo, South Dakota. Part of the museum is June's original mineral museum, which she started decades ago.

Nominations to the Hall of Fame can be made by clubs or individuals. Be sure the nomination indicates the person's profi-



June Culp Zeitner (seated) established the Rockhound Hall of Fame in 1987 to recognize fellow artists and collectors.

ciency in and dedication to his category for a period of at least 15 years. The nomination must include as much biographical and other relevant information as possible to help the committee evaluate the nominee.

If you need more information about the Hall of Fame or wish to read about these notable artists and collectors, visit www.rockhoundhalloffame.org. I'm listed in there somewhere.

For 2010, the American Federation of Mineralogical Societies inducted two great nominees. In the jewelry category, Frank "Franko" Zambrotto was recognized for his nearly 30 years of expert wire wrapping. His skills are well known in his region. Franko taught workshops, assisted with club shows, and demonstrated his skills at shows. He always made a special effort to help youngsters get into our hobby.

In the minerals category, Peter Rodewald, a well-known amateur mineralogist and rockhound, was recognized for his outstanding skills in sharing his mineral knowledge through slide presentations, field collecting, and involvement in club activities. He was one of the charter members of the St. Croix Rockhounds Club and held every important office in that club throughout the years. His mineral

displays at shows are educational and well received. As a side light, Peter became a talented photographer and took excellent photos of minerals with color patterns, such as iris agate and agates that fluoresce. When his photographic slide programs were submitted to the AFMS competition, they twice won awards. Such slide programs are available to clubs for program use. Unfortunately, shortly after Peter was selected for induction to the Rockhound Hall of Fame, he passed away.

The remaining four nominees were not assigned a specific category, but were recognized for their superior contributions within their respective clubs. Two clubs from the California Federation submitted nominations. The Rockatomic Gem & Mineral Society nominated member Linda Ralph as their Rockhound of the Year. She worked as bulletin editor, show volunteer, did club displays and more.

The Ventura Gem & Mineral Society nominated Luther and Angela Brown as their Rockhounds of the Year. Angela is a skilled graphic artist and redesigned the club insignia, pins and letterhead, made posters, and created show advertising. Luther was active in show security and setup and has made many mineral donations to the club museum.

From the South Central Federation, the Hi Plains Gem & Mineral Society nominated Mildred Matlock for her work as club treasurer and Show Chairperson, as well as her many contributions of time and effort to help the club. Mildred is a charter member of the club, helping found it in 1957!

From the Rocky Mountain Federation, the Tulsa Rock & Mineral club made a wonderful nomination, 17-year-old Aaron Rowlett. Aaron is a high school senior. He helps during show setup, works the club booth, helps run the silent auction, does demonstrations at the show, and has worked for dealers at shows.

Anyone who has made major contributions to the hobby over a period of years is eligible to be nominated. Two or more persons have to make the nomination. Indi-

vidual clubs are also invited to make nominations. Nominees can be club members or nationally known individuals who have made major contributions to the hobby. The more information that accompanies the nomination, the better opportunity the Rockhound Hall of Fame consultants will have of selecting the better qualified candidates each year.

This is a special way to express your admiration and support for local artists and collectors and those individuals in your club who have been most diligent and unselfish in helping others in our hobby! For more information, contact Steve Weinberger, P.O. Box 302, Glyndon, MD 21071-0302 or visit the Hall of Fame Web site.

SPRING SHOWS

As spring emerges from the cooler climes of winter, it is time to start planning your show schedule. Mid-March offers Californians one of the better local club shows at Turlock, California. The Mother Lode Mineral Society does a wonderful job of encouraging youngsters to get more involved in our hobby by visiting local schools and providing them with educational materials.

While Turlock is only one of dozens of local shows worth visiting, it so happens that my wife and I have enjoyed being a part of the Turlock event: she as a dealer and I as a speaker. We particularly enjoy the hospitality of the show committee. And who can resist Marion Robert's cooking?

I also find that local shows like the one at Turlock are great places to seek out bargains and enjoy special exhibits by local artists and mineral collectors. It was at the Turlock Show that I met Al Troglin, a rock artist I wrote about in the November 2009 issue of *Rock & Gem*.

Each of the seven regional federations in the AFMS—California, Eastern, Midwest, Northwest, Rocky Mountain, South Central, and Southeast—holds an annual regional federation show hosted by a local club or clubs. One of these shows is dubbed the national show, with the AFMS taking part. The honor rotates, so each region hosts a national show every seven years!

The first regional federation show of 2011 is the South Central Federation show, held in Alpine, Texas, Apr. 15-17. Next is the California Federation Show, held in Anderson, California, May 13-15. The show committee has already contacted me to be one of the show speakers.



Attend the National Show in Syracuse July 7-10 and you will be able to dig for quartz "diamonds" at nearby Herkimer, New York.

The Rocky Mountain Federation show will be in Colorado Springs, Colorado, June 24-26. I especially enjoy that region, as I spent many a summer in the Colorado Springs area, hiking the old Pipe Line and eating wild raspberries while searching for float amazonites and smokies!

The AMFS-Eastern Federation show will take place July 7-10. Hosted by the Gem & Mineral Society of Syracuse, New York, this show will be a winner. Its close proximity to the world-famous "Herkimer diamond" region of Herkimer and Middleville, New York, will bring out special displays of gemmy, doubly terminated quartz crystals. And you can count on a field trip or two, so you can dig your own crystal pocket. I may even try that myself!

The theme of the national show is "Gems along the Erie Canal—A Diamond Celebration". This is an appropriate theme as small Herkimer diamonds were often encoun-



Encouraging and teaching kids in the art of lapidary helps our hobby grow.

tered during the digging of this important canal back in the 1800s.

You might also plan to attend the Saturday evening banquet on July 9. Show Chairperson Cathy Patterson has already asked me to be the banquet speaker and I've agreed. I have no idea what I'll talk about, but we'll have some fun with it! For more information on the national show, visit www.gmss.us.

I hope you read my article in the August 2009 issue about Joe Kapelewski and

his dad, Tom, who has been successfully digging Herkimer quartz for over 40 years. They own some of the finest examples of Herkimer crystal singles and clusters that have ever been dug! They are regular exhibitors at the Syracuse shows and I guarantee you will not believe some of Joe's Herkimer crystals. Tom has created special

exhibits using these gemlike crystals. Be sure to visit the national show to see their phenomenal exhibits.

The Syracuse show committee has identified three fee-digging sites in the Herkimer area for you to visit. The first is the Herkimer Diamond Development Corp. north of Herkimer, which has a rock shop and plenty of areas for digging. Digging is really tough going, as the rock is hard and tight. Sledges and chisels are the order of the day.

Perhaps better known, because it has been around for decades, is the Ace of Diamonds mine, located next to the Diamond Development property. Digging here isn't a lark, either. The outcrop is a dozen or more feet high and composed of really hard rock that has to be attacked with the heaviest equipment you can manage.

A third possibility, not too far from the Herkimer sites, is Crystal Grove in Saint Johnsville, New York. I have never dug here, but it is reported to be a bit easier digging. You'll have to find out for yourself.

To learn more about these dig sites, get on the computer and visit www.herkimerdiamonds.com for the Diamond Development facility; www.towercrystals.com for the Ace site; and www.crystalgrove.com for the St. Johnsville mine. All these sites are less than a two-hour drive from the National Show in Syracuse.

Just remember, each region of the country holds a selection of local shows that complements the work of the federations in promoting our hobby to the public. So be sure to support as many shows and their

dealers and activities as you can. They are the lifeblood of our hobby! 💎

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.

Remembering Roger Pabian

Roger Pabian passed away in his sleep in December 2010. He was a very prominent figure in the agate field in this area and has written several books and papers. He taught me virtually everything I know about lapidary and rock identification, and he was quoted in a *lot* of books on agates. He also taught at the University of Nebraska for about 35 years, where I believe he taught geology and related subjects. He also taught lapidary classes in Lincoln, Nebraska, and he was a very accomplished silversmith and lapidarist.

—Robert Cropp
Lincoln, NE

Polish Problem

I'm attempting to polish sphalerite, which is a very soft gem, and any information you could send me would be greatly appreciated.

—Mike B.
via e-mail

Sphalerite, according to *Descriptions of Gem Materials*, by Glenn and Martha Vargas, is zinc sulfide (ZnS), with a Mohs hardness of 4.5 to 4. It has perfect cleavage in six directions. Fluorite has a hardness of 4 and perfect cleavage in four directions. Therefore, both materials are very soft and challenging to cut and polish.

One of the Dare Devil Faceters I met in 2001 at the North West Faceting Conference, Cliff Jackson (now deceased), cut fluorite regularly and was one of the leading experts on faceting it. He developed a special wax lap for polishing fluorite that I think he charged with diamond. Alpha Supply used to sell these wax laps, but I do not know if they are available any longer.

I would expect sphalerite would be a challenge to cut and polish not only due to its softness, but also its cleavage, and I would not want to try it. However, if I did, I might try an Ultra Lap at very slow speed with lots of water. Good luck and let me know if you are successful.

—Jim Perkins
Off the Dop columnist

No-Fault Theory

Each month, I learn something new in your magazine. I am wondering if it is permissible for a rockhound to present a theory that will challenge the big boys to ponder

and report to *Rock & Gem*. My theory is that the well-known "New Madrid Fault", located at the southeast corner of Missouri and the northeast corner of Arkansas under the Mississippi, is not a fault.

The books tell us that the pressure of magma coming from the Mid Atlantic Ridge has pushed our North American Plate westward for a great number of years. This causes uplifts, forming the mountain ranges running north and south in our Atlantic states. They say this same pressure caused our plate to push against and override a Pacific Plate, resulting in the uplifting and forming of the mountain ranges running north and south in our Western states. Then, the South American Plate decided to move north and caused the uplift of the mountains that run east and west in Arkansas and Missouri.

None of this action seems to have caused the "New Madrid Fault" to form, since it is under the Mississippi River, which runs basically north and south in that area. It is well known that this area is loaded with caves formed by underground streams and rivers eating away the huge limestone deposits left by ancient seas. I believe an underground river below the Mississippi River dissolved a huge amount of limestone, forming a cavern of tremendous size, something like the football stadium-size rooms in the Kartchner Caverns of Arizona.

Evidence is there that many caverns around the world have had their roofs collapse. It is my belief that this is what happened at the "New Madrid Fault". The collapsed roof produced a tremendous explosion like vibrating waves radiating through the earth's crust, causing an extreme amount of fracturing and leaving the many small cracks known to be in the surrounding states. The local Indians reported that the Mississippi River flowed north for a time. This would be because the river on the south side of the hole was trying to help the river on the north side fill the hole with water. The increased velocity of water flow would have moved tremendous amounts of sediment into the hole.

It would be interesting if geologists around the country could figure a way to prove or disprove whether that area under the river is void of limestone and whether the hole is filled with river sediment.

—Eugene P. Manning
West Monroe, LA

Anyone who is interested in addressing this question in an article to *Rock & Gem*

should contact me at (805) 644-3824 ext. 129 or editor@rockngem.com for a Contributor Agreement. Our writers' guidelines are on our Web site, www.rockngem.com.

—Editor

Sharing Sapphires

I have a large sapphire mine on the Eldorado Bar. I work it alone for the most part. I would like to share a photo of all natural Eldorado cut sapphires from my mine. I do not have a Web site; I usually sell cut stones in lots. I have two properties, one of which is suitable for hand digging. I have never charged anyone yet. I am considering opening it up for private digging by appointment. I do not have the time to take on a full-time hand-dig operation and mine. If you are interested, check out my videos on www.YouTube.com under "thegemminer".

—Neal Hurni
(406) 443-4652
forquest@aol.com



Polisher Patented

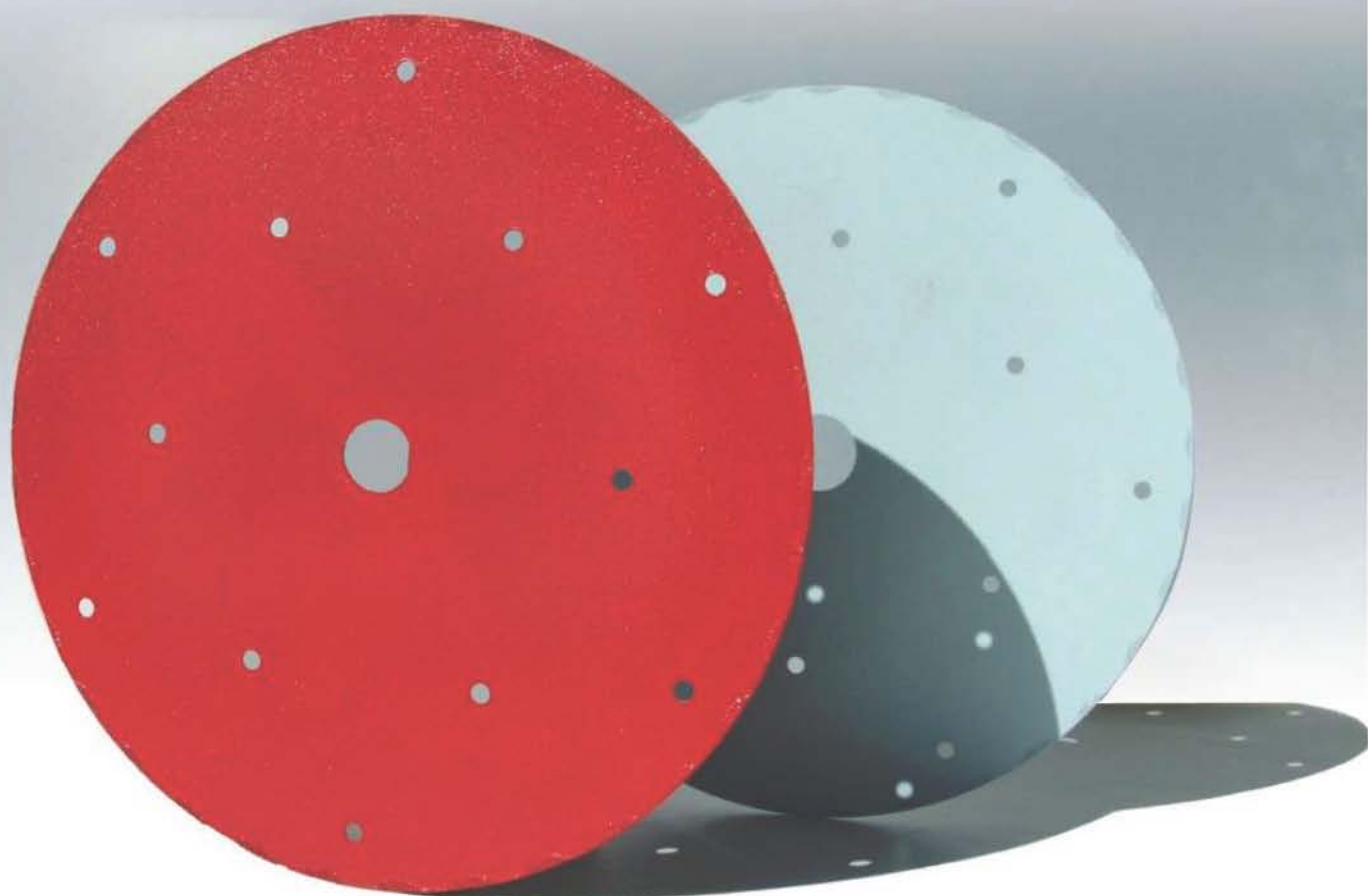
I have been awarded a patent (#7874897) by the U.S. Patent Office for my Gemstone Flat Polisher Mechanized. I described this device in my article titled "A Mechanized System of Flat Lapping" (June 2010 *Rock & Gem*, page 62).

This patent may be viewed on the U.S. Patent Office Web site, www.uspto.gov. Special plug-in software is required to view patent drawings. This software may be downloaded from www.internetiff.com and is free for simple uses. Patent text may be viewed without additional software.

There is no restriction for amateurs and hobbyists to build and operate one of these devices. I will gladly answer any questions regarding this device. I can be reached at aggateer@aol.com. Please reference patent #7874897 in the title of your e-mail.

—O.B. (Bud) Marshall
via e-mail

IJS



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