TC ROCKHOUNDS

June 2023 issue

The June 21 meeting will start at 6:30 p.m. at the VFW Post at 3400 Veterans Drive in Traverse City.

The program will feature our annual silent auction. Members are asked to bring an item or two for the auction. These donations to the club can be rock related, jewelry, baked goods, books about our hobby, etc.

May Highlights

The collection of food and hygiene items continued, and 8 door prizes were presented. The club is looking to possibly hold an outdoor “trunk sale” on August 5. Let Pierre know by July 15 if you are interested in a 10x10 foot space for the show.

The program was demo night where several club members demonstrated various types of projects and techniques.

Food Pantry Donations

Lorna would like to thank everyone that brought items for the food pantry donation in May. Due to the success of the program, she would like to continue this at every meeting. Non-perishable food items or personal hygiene products (including hotel soaps and shampoos) that are donated, will be given to various food pantries.

Pebble Pups and Earth Science Scholars

May was the last VFW meeting for the Pebble Pups until September. The Pups will be going on some field trips this summer. They will be contacted by email about the trips, and they will be listed on the Club’s Facebook page.

Facebook Page

Visit the club's Facebook page at this web address. There is also a link on our club website. https://www.facebook.com/TCRockhounds

Membership Information

From Deb Bull, Membership Chair:

You must be a paid member in order to continue to receive club benefits (participation in club sponsored classes, outings and receiving club newsletters.)

Membership dues may be mailed to:
Deb Bull, Membership, GTARMC
6091 Creighton Rd SW
South Boardman, MI 49680

Name badges are an additional $8 per badge. Thank you!

Upcoming Field Trip Planning

Here is the update on trips for 2023 from Gary Bull, Field Trip Coordinator and Deb Bull, who presented the following information.

GTARMC (members only) Field Trips

Suggestions for trips? Contact Gary at 231-590-3397.

June 18th: 11:00am (lunch at noon) Rock hunt & potluck picnic at beautiful Norwood Township Park on Lake Michigan. 1 hour north of Traverse City. Bring a dish to pass and your own beverage, chair and plastic/paper picnic-ware. **Please use the above number to RSVP, to let Gary know how many to cook for.**

July: To be determined. Gary is working on a quarry outing.

August 20 (Sunday) **4pm** Club picnic at John Matz's home on Old Mission Peninsula. The club will provide the meat dish. Bring a dish to pass, your choice of beverage (tea and lemonade will be provided), a chair, and your own plastic and paper picnic-ware.

September: **6-9th** Keweenaw Peninsula collecting. 7+ hour drive to Hancock, MI. This is a multiple day event, requiring a campground reservation or a hotel reservation. See Kevin Gauthier for details.

October, November suggestions??

December *Date to be determined.* Annual Club Holiday Dinner at the VFW.

Club Email Addresses

gtarmc@tcrockhounds.com (main club email address)

If you have any photos that you would like to share of club events or members, those can be sent to:

photos@tcrockhounds.com or noonanjohntc@gmail.com

To view club photos on Flicker, enter the following web address:

GT Rock & Mineral | Flickr

For scheduling requests for classes or workroom time, please send email request to:

scheduling@tcrockhounds.com

President	**Vice President**	**Secretary**	**Treasurer**
Eric Hallman	Janet Ryan	De Elder	Sandie Bull
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Field Trip Coordinator	**Education & Training**	**Workroom & Classes**	**Facebook Page**
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Newsletter & Website	**Membership**	**Refreshments**	**Club Show Chair**
Lauren Vaughn	Deb Bull	Pat Captain	Lauren Vaughn
231-276-6150 H	231-590-2316	231-946-3026 H	231-276-6150 H
231-342-3613 C	debannbull@gmail.com	231-342-6674 C	231-342-3613 C
maple2b@aol.com		cappat@aol.com	maple2b@aol.com

The above contact list will be included in each newsletter so that you know who to contact for various items.

Items Needed for Pebble Pups

“I need study specimens for the Pups. I was thinking that maybe a few members might have some extra specimens to donate. They could all be the same or different. We would use them as study specimens, and then I would give them away to the Pups. Members could contact me via my email if they want to help the pebble pup program in this way. Steve”

The **Future Rockhounds of America Program**, sponsored by the American Federation of Mineralogical Societies, is an important part of the Grand Traverse Area Rock and Mineral Club’s Pebble Pup program. All pebble pups are urged to participate in the program and earn merit badges. Here is the link:

https://www.juniors.amfed.org/about-fra

Below is an article on Mohawkite written by new President, Eric Hallman

Mohawkite is a rare and beautiful copper mixture that can be used for making stunning jewelry and decorative items. Mohawkite has a metallic yellow to grey color, sometimes with a blueish-green tarnish. It often forms spiderweb-like patterns or solid nuggets in a quartz matrix.

Found in January 1900, near No. 1 shaft when a fissure vein of copper ore was cut. The Mohawk Mine is located on the Keweenaw Peninsula of Michigan, and it is the only known location for this mineral compound. Mohawkite was originally thought to be a new mineral species by George A Koenig, of the Michigan College of Mines (now known as Michigan Technological University), who analyzed the ore and named it after the mine. However, a reanalysis of the material in 1971 found it to be an intimate mixture of copper and nickel arsenides, and the mohawkite name was discredited as a mineral species.

However, cutting mohawkite with a rock saw is not a simple task and requires special precautions and equipment. In this article, we will explore some of the hazards of cutting mohawkite with a rock saw and how to avoid them.

What is Mohawkite?

Mohawkite is a name given to a mineral mixture that contains algodonite and domeykite, two arsenic-rich copper minerals. It has a formula of Cu 3 As up to Cu 6 As, and a hardness of 3–3.5 on the Mohs scale.

What are the Hazards of Cutting Mohawkite with a Rock Saw?

Cutting mohawkite with a rock saw involves grinding through a very hard and tough material. Rock saws are powerful machines that use diamond-coated blades to slice through rocks at high speeds. However, not all rock saws are suitable for cutting mohawkite, and there are certain risks involved in the process.

Some of the hazards of cutting mohawkite with a rock saw are:

- **Arsenic exposure**. Mohawkite contains arsenic, which is a toxic element that can cause serious health problems if inhaled or ingested. When cutting mohawkite with a rock saw, the blade generates a lot of dust and mist that can contain arsenic particles. Breathing in this dust or mist can lead to arsenic poisoning, which can cause symptoms such as nausea, vomiting, diarrhea, abdominal pain, headache, drowsiness, confusion, seizures, and even death[2]. Ingesting arsenic can also cause cancer, skin lesions, cardiovascular disease, and neurological disorders[2].

How to Avoid the Hazards of Cutting Mohawkite with a Rock Saw?

To avoid the hazards of cutting mohawkite with a rock saw, it is essential to use the right equipment and follow the proper safety measures. Some of the steps to take are:

- **Use a wet tile saw or a lapidary saw**. These are specialized saws that are designed to cut stones and masonry materials. They have a mechanism that releases water onto the blade and the stone during cutting. This helps to dampen the dust and mist, cool down the blade and the stone, and lubricate the cutting process[3]. Wet tile saws and lapidary saws also have a table that slides toward the blade, allowing for more precise and controlled cuts.
- **Use a diamond blade**. Diamond blades are the best choice for cutting mohawkite, as they are very durable and can cut through hard materials easily. Diamond blades are coated with diamond crystals that grind through the stone without dulling or breaking. Diamond blades come in different sizes and shapes, depending on the type of saw and the desired cut.
- **Use protective gear**. When cutting mohawkite with a rock saw, it is vital to wear protective gear to prevent arsenic exposure and injury. Protective gear includes:
    - A mask or respirator that filters out arsenic particles from the air. A P100 half-face mask is recommended for this purpose.
    - Eye protection such as goggles or glasses that shield the eyes from dust, mist, and flying debris.
    - Gloves that protect the hands from cuts and burns.
    - Ear protection such as earplugs or earmuffs that reduce the noise and vibration of the saw.
    - Clothing that covers the skin and hair from dust and mist. It is also advisable to shower after cutting mohawkite to remove any arsenic residue from the body.

Conclusion

Mohawkite is a rare and beautiful copper mixture that can be used for making stunning jewelry and decorative items. However, cutting mohawkite with a rock saw is not a simple task and requires special precautions and equipment. To avoid the hazards of cutting mohawkite with a rock saw, it is essential to use a wet tile saw or a lapidary saw with a diamond blade, wear protective gear, and follow the instructions. By doing so, you can enjoy cutting mohawkite safely and create amazing slabs for your projects.

With all that said, there will be a slab of Mohawkite in the silent auction at our next meeting.

Eric Hallman

Next is an article by Steven Veatch, about the Red Elephant Mine in Colorado:

The Red Elephant Mine:
Crystal Peak Area, Colorado

Steven Wade Veatch

For as long as I can recall, I wanted to experience what it would be like to find the legendary crystals and gemstones that Pikes Peak is famous for. In some places Pikes Peak Granite contains an incredible suite of minerals that formed magnificent crystals in cavities at least a billion years ago. Large crystals of white microcline or feldspar are common. Amazonite, a variety of microcline, is present in well-formed crystal groups in varying shades of blue, ranging from a faint pale-blue to a brilliant blue-green color. The distinctive color is thought to be derived from varying levels of lead present in the amazonite when it formed, although this is still debated by mineralogists.

Microcline feldspar variety Amazonite with smoky quartz from the Halpern Mineral Collection, Colorado, USA. This file is licensed under the Creative Commons Attribution-Share Alike 2.5 Generic license. Photo Date 2006 by Eric Hunt.

The amazonite from the Lake George area is distinctive because of its large, well-formed crystals, and its large size, and its intense blue color. Amazonite, named after the Amazon River where unusual rounded pebbles of this gemstone were found, was part of the Pharaoh Tutankhamen's ring and was described as the third stone in Moses' breastplate.

Smoky quartz crystals are associated with the amazonite crystal groups, and most of the smoky quartz crystals are flawless—ranging from pale brown to midnight black, all with a stunning gem clarity. The smoky color is caused by radioactive elements in the granite. Slowly, over the millennia, the quartz darkens in response to the radiation. Purple, greenish, and light blue fluorite crystals also occur in this suite of minerals. These magnificent gemstones eluded me for over four decades.

One summer day, I asked my rock hounding friend, Dave Jackson, to go with me to the Crystal Creek area, which is noted for deposits of these gems, and to look around. The area is reached by following a two-track Pike National Forest road that begins at Lake George, Colorado then branches off at a towering raw granite formation known as Sheep’s Head, fords Crystal Creek, and then follows a steep grade to a ridge.

On our first trip there, I noticed the hillsides were perforated by numerous holes dug by previous prospectors. I thought that was a good sign that others searched here before us. After parking Dave’s truck, we manhauled our gear in five-gallon buckets the rest of the way. We each carried two buckets: one in each hand; one bucket was empty; the other bucket had our tools. The empty bucket was for the gems we might find.

We began our hike up the steep hill. It was a beautiful climb: granite boulders were spotted with various species of lichen; mountain mahogany dotted the landscape; and

kinnikinnick grew near the top of the ridge, where a cool mountain breeze passed through the pines. Dave and I decided to go to where the pine trees edged a small opening in the ground and to dig under the dumps of several small, abandoned prospects.

My old friend Rich, a first-rate prospector, ran into us on that sunny summer day and showed us an old gem mine next to where we were: he knew this site would be a good one for us to work. Rich said, “I worked the area next to this spot with good results. I’m telling you this is a good place to dig.” Rich is one of the rare people in life whom you run into who are doing exactly what they were meant to do. Rich is an exemplar in the mineral world, and spends most days outdoors working at his mines. His face and hands are weather-beaten—almost like leather—from a lifetime of mining, both as a profession and a hobby.

Discussions with Rich that day brought back to me a number of pick and shovel moments of chipping crystals out of a cave together six years before in the mining town of Ouray, Colorado and being run out by the property owner. Rich and I did not know it was private property. Four years earlier we had collected blood-red agates on a hill of volcanic ash near Cañon City, Colorado. Exposure to the weather turned the ash into bentonite clay, and recent rains made it swell up with a surface slippery as ice. While trying to pluck red agates out of the bentonite with Rich, I tripped and slid down the hill on my back, getting covered with wet bentonite clay. It took forever to get the clay out of my clothes and inside of the car. Rich laughed for hours.

I was glad we ran into Rich that day and got his help finding a good place to dig for gems. Dave and I followed his advice and began the arduous work of digging with picks, shovels, pry bars, old screw drivers, and rock hammers. When the pick struck the granite,

it would vibrate in our hands, sometimes sparks would fly, and always the thud of the pick against the granite filled the forest. The granite would break up from the relentless pounding with the pick—leaving piles of crumbled granite. We shoveled the granite gravel into a bucket and then hauled it to the surface and dumped the gravel on the ground, forming a “tailings pile.”

In the Crystal Peak area, the gemstones and crystals occur inside of what is called a “pocket” or ancient bubble in the Pikes Peak Granite. This granite was formed just over a billion years ago as a melting, monstrous blossom of red magma pulled off the Earth’s mantle in a stately phenomenon forming a magma plume in that hostile and hellacious inferno. This molten plume made an unrelenting climb through the beleaguered crust, mixing the mantle and crustal material together and forming the Pikes Peak Granite.

Amazonite and Smoky quartz diorama, located in the First-Level Rocks & Minerals Exhibit at the Denver Museum of Nature and Science. Representing an unspecified 'Crystal Peak' location in Colorado.

A view of Crystal Peak near Florissant, Colorado. The area is known for its gem mining sites, most are under claim. Photo date 2006 by S. W. Veatch.

Parts of the Pikes Peak Granite became pegmatite, a coarse granite that sometimes yields precious gems. The granite pegmatite is derived from magma in the Pikes Peak Granite that formed during the last stages of its cooling. At this point volatile components trying to escape the magma, were trapped in the granite as bubbles. As the granite cooled and contracted, the bubbles or open cavities provided a space for crystals to grow to unusually large sizes and line the interiors of the voids. Our prospect hole was in just such a granite pegmatite.

Rich's directions paid off; after digging a few hours, Dave and I made a-six-foot-deep excavation that we could both fit in. We took turns with the pick and shovel work. The pick would break up the granite. When the disintegrated granite became deep, one

of us would shovel it into a plastic bucket and haul it to the surface to dump. It was cool and damp in our excavation pit, and the scent of fresh dirt and moist gravel was strong.

There is an abrupt change in the pegmatite as one approaches a gem cavity. The feldspar and, quartz that form the pegmatite change in appearance near a pocket. The component minerals become elongated or contorted, revealing what look like small swimming tadpoles or cuneiform writing—a mysterious script with an important, yet coded message declaring gemstones are near for those who are clever enough to follow the clues and find them. This is known as graphic granite.

Suddenly Dave yelled, “Look at the granite, it is changing—it is graphic granite for sure! See that old pine tree-root? It has worked its way through granite cracks and disappears straight into the rock. There must be a pocket behind the root.”

“Let me take a look,” and I yanked out the root, and then took my glove off and carefully put my finger into the hole. I said to Dave, “Holy God, I can feel the crystal faces!” My throat tightened, my heart almost beat out of my chest, and Dave’s eyes were open wider than an owl’s at night.

The root sought out moisture in a small cavity, leading us to that discovery. We immediately switched to wooden tools: tree branches, wooden skewering sticks, and wooden mallets, to open up the cavity slowly, carefully, and methodically. Metal tools can nick or fracture the valuable crystals and gems. Once we enlarged the hole to the cavity, our flashlight revealed shining smoky quartz crystals; a gemmy, sky-blue amazonite-crystal group; and sparkling deep purple and light blue cubic fluorite crystals. One group of fluorite crystals clustered around the base of a gleaming smoky quartz crystal.

Our next step was to empty the pocket, about the size of a grapefruit, of its gem

hoard. Each crystal and gem had to be carefully wrapped in newspaper for carrying it down to Dave's old truck. This pocket was the sign we needed to continue working the gem mine. If there is one crystal pocket, there will be others.

Our digging and removing crystals from the pocket burned up most of that first day. The shadows were shifting in the forest, and the sky was filled with pastel colors. I took one last look to the west and watched the setting sun redden the clouds over the boundless, tree-covered ridges; it was time to leave. Soon the dark blue of evening would spread, and it would be hard to travel along the old road in the dark. The moon was beginning its rise over Crystal Creek, and it was time to leave.

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We came back the following weekend working the claim for a few hours and then having lunch near some fallen pine trees blown down by a violent summer storm. But on this day, the logs were our seats for lunch under a thick canopy of towering aspen trees. We each had a can of Red Elephant, an imported beer that has a great flavor and comes in giant cans and has a punch—it even made my lips numb. We decided to name our mining claim after the beer.

While relaxing and finishing my Red Elephant beer, I noticed a nearby decaying stump was full of life and realized that one day the forest would consume it. The stump was actually a dwarfed ecosystem. Many types of insects lived in the stump. A beetle stuck its head out from a hole it had bored in the bark. It left a pile of frass just below on a blanket of pine needles. I spotted a pill bug and a centipede, and noticed the different colors of moss and lichen that covered the stump. During the stump's decomposition, new niches for life opened and old ones closed as the stump evolved from fresh-cut

wood leaking resin to rotting wood dripping nutrients into the soil. The stump will eventually become crumbled fragments and mold, invaded by roots of plants and covered by dead twigs and leaf litter fallen from the canopy of the trees above. It was time to stop thinking about a stump and return to the hard pick and shovel work of the afternoon.

After several hours of moving rock and gravel, we had a hole that was ten feet deep—straight down. I found out just how hard this work is: breaking through granite by dint of force and muscle with a pick is not easy at this depth, the gravel and rocks have to be hauled to the surface in a bucket on the end of a rope. The deeper the excavation, the harder the work is—gravity is constantly working against us. In our deep hole, we opened up a pocket larger than a watermelon.

A treasure trove of mineral specimens lined the pocket. Some crystals had detached from the pocket ceiling due to local vibrations from earthquakes and freezing and thawing cycles over many winters and fell flat on the pocket floor. The pocket floor was filled with flawlessly formed amazonite crystal groups—most over nine inches across—on sections of pegmatite granite. There were clusters of 12-inch-long smoky quartz crystals radiating out in various directions. Most of the crystals were as black as midnight.

I took my jacket off and covered the crystals on the floor of the pocket so they would be protected as we removed the ceiling crystals and as we broke away more of the granite rocks above. Removing the crystals and gems requires care. Any rush to extract them could make an ugly chip or fracture. All of the crystals were carefully removed by hand and then wrapped in newspaper to protect them. I carefully cleaned the pocket out with a wooden chop stick and whisk broom, and then sprayed the interior with water for a

good view. At this point, the world's problems melted away and we are focused on protecting these gems. We were the first ones on the planet to see these primordial, unique, and quite valuable crystals.

On the way out, the buckets full of wrapped gems in one hand and the buckets of tools in the other hand balanced us as we walked down the hill. Crystal Creek was flowing with a murmuring joy within its banks. Willows lined the creek until the road crossing where we drove through it. Some little birds were dipping at some of the pools of Crystal Creek. Deer were keeping an eye on our activities. Dave and I glanced at each other, and I said, "We sure hit it big, Dave; we made a big strike today." Our excitement filled the gem fields.

* * *

On our last trip to the Red Elephant that summer, Dave's truck was being repaired, and I was willing to risk my brand new Jeep on the forest roads and all of its hazards to get to our mine. I drove my new Jeep Cherokee up the road and got stuck. Dave and I pushed, pulled, swore, and sweated, but remained stuck on the old 2-track road in the middle of Pike National Forest. My biggest concern was what my wife would do to me if I banged up our new Jeep. Cell phones did not exist yet, so I could not call out for help.

Soon we heard the sound of another car, and it was headed in our direction. I could not believe we would run into anyone on this road on a weekday. It was Ray Berry, a member of the local rock club (Colorado Springs Mineralogical Society) I belonged to. Ray is another mineral exemplar. On his way to work his claim, he pulled us out in seconds with his winch.

Dave and I began to work the Red Elephant, and soon we were down to 14 feet

when our pick shattered the typical granite and revealed graphic granite—a sure sign we were close to a pocket of gemstones. We discovered several more pockets ranging in size from a softball to a basketball. Some of the pockets we found were located by following quartz veins to the crystal-lined pockets. The color of the granite also provides a clue that a pocket is nearby—reddish granite tends to bear more pockets. Other pockets that day were located by pure luck.

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The entire Crystal Creek area has been yielding amazing gemstones for centuries, providing material for an expanding gem market and yielding specimens that provide clues to help scientists understand the nature of the Pikes Peak Granite. Today there is still gemstone mining activity over the entire Crystal Creek landscape.

This land also has meaning beyond the valuable gems and as a gateway to scientific understanding. I noticed an old cabin and a few outbuildings in the forest. The cabin is deeply weathered. Parts of the buildings are gone or caved in. The chicken coop, always an important homestead structure, is still in good shape, built as strong as Fort Knox. Eggs and skillet fried chicken were important to a family that eked out a living in this remote forest a century ago.

Before homesteaders, this quiet land once belonged to the Ute people. Chief Ouray and his wife, Chipeta, camped in tepees during the summer, and Ute braves hunted in the area. When they were not hunting, the men climbed hilltops with good views and made arrow and spear heads from stone. The women made clothing from deer and bison hides and attended to other duties. Children played games in the aspen trees.

* * *

Currently, the area is an active gem mining site, and the place where I finally experienced the excitement of making a rich strike. On weekends, countless hobbyists work their claims. Some people work their claims all summer long.

It was the last day of our mining season. Leaning back on a ponderosa pine on the surface near the Red Elephant, I reflected on the season. After hunting the elusive Pikes Peak amazonite for decades, I finally found it. I learned from this experience to never give up on something you want to accomplish. If you give up, you will never know what could have been. This is an important lesson for many aspects of life.

Then there is the hard work—the digging; digging deep into the ground that yielded the elusive gems. The digging that put me into direct contact with the nature of the granite gave me a deeper insight to the geology of the site and the architecture of Pikes Peak Granite over wider areas. I realized that I could physically keep up with the hard digging. I learned about people: that Dave was fair and split the specimens we found evenly, and that Rich was a good friend to direct us to a site that he knew contained valuable gemstones. Rich did not have to provide that information. I also experienced nature on a deeper level. When I took a break from digging, I saw the cycle of life at the decaying stump. It was truly a season with nature, one without the technology that has invaded every dimension of our lives. I knew there was more to learn out there in the forest, and that means to continue digging, always deeper.

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It was getting late on our last day of the mining season. We packed up our gear and headed down the trail, crisscrossed by deer tracks, to my jeep. With darkness fast

approaching, we drove down the old forest-service road. As the Jeep forded Crystal Creek, a small herd of deer—waiting to get a drink—watched us from the trees. A hawk silently flew overhead, towards the setting sun.